Land, Water, Air and Freedom

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Land, Water, Air and Freedom

The Making of World Movements for Environmental Justice

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Preface

This is a book of global comparative political ecology. It focuses on ecological distribution conflicts across the world – at the frontiers of commodity extraction and waste disposal. The book sees these conflicts through two main lenses of ecological economics, namely valuation contests and the growth and changes in social metabolism (the flows of energy and materials in the economy).

My first book of ecological economics was published in 1987. It was not a textbook, but a valuable research book that can now be downloaded at no monetary cost. Entitled *Ecological Economics: Energy, Environment, Society* (Blackwell, Oxford), it was the first book ever with "ecological economics" in the title. It was inspired by Nicholas Georgescu-Roegen, whose basic statement in *The Entropy Law and the Economic Process* (1971), was that the industrial economy is not circular but entropic (i.e. that material and energy degrade in each transformation, so new inputs are continuously needed). Life operates by current photosynthesis and is "anti-entropic" (at least for a while), but the industrial economy feeds on photosynthesis that occurred in the very distant past (fossil fuels) and is entropic. The "circularity gap" or "entropy hole" explains the growth of environmental conflicts at the frontiers of extraction and waste disposal. This is lesson number one in a course of ecological economics and political ecology. My 1987 book traced the history of such ideas from precursors (biologists, physicists, chemists), who had complained since the nineteenth century about the divorce between economics and the study of social metabolism. The noted economist David Pearce (1941–2005) wrote in *The Manchester School* that I had written a "remarkable book… Anyone wishing to understand ecologists cannot do better than begin with this book. […] they will also be delighted and entertained by the gallery of authors that Martinez-Alier parades before them. A tour de force if ever there was one". This was encouraging, although a few years later Pearce wrongly classed me among the partisans of an energy theory of value.

At that time I realized that ecological economics was not about accurate economic valuation of externalities and fair intergenerational allocation of exhaustible resources. Rather, ecological economics has three foundation stones. First, the ability to describe the economy in the language of social metabolism, not only of economics; these are non-equivalent descriptions. Second, the incommensurability of values, which implies that it is not appropriate to evaluate results or decide between alternatives using cost-benefit analysis in money terms, when people regularly manifest plural values. Third, the study of institutions that historically and today regulate the use of the environment, allowing the expression of plural values by different groups of people.

Scholars have long known that we live in a material world in which the economy is fundamentally a process of transformation of energy and materials into commodities and waste. My 1987 book discussed how most economists and social scientists had long refused however to consider the relations between the economy, society and energy. For instance, the chemist Wilhelm Ostwald in 1909 had written that one could interpret economic history in

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terms of two regularities: the increase of energy use and of efficiency in energy use. This made sense but it infuriated Max Weber. Some 30 years later, Weber's fury was shared by Friedrich Hayek who criticized the "social engineering" promoted by Ostwald, Patrick Geddes, Lancelot Hogben, Frederick Soddy and Lewis Mumford. Hayek dismissed them all rudely because they viewed the economy in socio-metabolic terms. Hayek's main foci were Otto Neurath's *Naturalrechnung* and democratic planning (Martinez-Alier 1987). Inspired by Neurath, Karl W. Kapp published in 1950 *The Social Costs of Business Enterprise* with the following main thesis: "externalities are not occasional market failures but systematic cost-shifting successes". Kapp brought together "ecological economics" and "political ecology" even before these terms were used.

FROM ECOLOGICAL ECONOMICS TO POLITICAL ECOLOGY

From studying social metabolism, I moved in the 1990s to study environmental conflicts. I published a second research book in 2002: *The Environmentalism of the Poor. A Study of Ecological Conflicts and Valuation*. I wrote it in 1999–2000 at the Agrarian Studies program of Yale University, led by Jim Scott. Around 1995, with Martin O'Connor and Frank Beckenbach we had introduced the notion of "ecological distribution conflict".

The 2002 book described around 150 socio-ecological conflicts around the world, many of them taking place at the commodity extraction frontiers. The book highlighted that quite often the main social actors who defend the environment are poor and/or Indigenous groups. Through their grievances and claims, they display a variety of languages of valuation (ascribing value to nature in terms of economic accounting, sacredness, ecological values or livelihood, for example). They argue that "extractivism" impoverishes them in some respects, even when there is monetary compensation. Economic distribution is not coterminous with ecological distribution. Poverty is "multi-dimensional".

The "environmentalism of the poor" was an idea I picked up in India and in Latin America before 1990, which led to the publication in 1997 of *Varieties of Environmentalism* with Ramachandra Guha (who had published a book on the Chipko movement in 1989). Together with most economists, historians, sociologists and political scientists at the time, Ronald Inglehart assumed that the poor were "too poor to be green" and too busy with survival. In stark contrast, the "environmentalism of the poor" did not consider environmental preservation as a luxury good. Strong environmental movements were obvious by the 1980s and 1990s in Asia, Africa and Latin America. After making these points with Guha, my book of 2002 traced explicitly the links between ecological economics and political ecology. I asked the question: in any conflict on the environment, who has the power to simplify complexity and impose a particular language of valuation?

Besides questioning the power of valuation languages, I was also concerned with sources: "in which archives will historians find the materials for reconstructing the grassroots history of the environmentalism of the poor?" This brought me to the Environmental Justice Atlas (EJAtlas) and to this third book. This trilogy was not planned in advance, although in retrospect, it is consistent. The third book has been made possible by longevity on my part, and by an ERC grant and a Balzan prize (2020) that allowed bringing together younger researcher-activists who thought of creating the EJAtlas (Temper et al. 2015, 2018; Scheidel et al. 2020).

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After many academic articles derived from the EJAtlas, it is time for this book that follows a similar framing of ecological economics across to political ecology.

Over these years, perception of climate change, biodiversity loss and damage from ecotoxics has increased. There is more knowledge of key scientific concepts and measurements such as the carbon cycle, the Keeling curve, the increased Human Appropriation of Net Primary Production (HANPP), the nitrogen and phosphorus cycles and eutrophication, the water cycle and the associated hydro-social cycle, and the material intensity of the economy. Confronted with planetary boundaries, however, there are large disagreements on what is to be done. Some believe in ecological modernization, changing technologies, internalizing externalities into the price system, or geoengineering. Others are inclined to *collapsology*, a state of mind that prevents rational and collective action.

I believe instead in social movements that show desirable possible futures, and among them, feminism and the environmentalism of the people. Social movements across the world are sometimes successful in stopping the growth in metabolism, under the banner of "environmental justice".

ENVIRONMENTAL JUSTICE MOVEMENTS AS SOCIAL INNOVATIONS

The concept of an environmentalism of the poor (and of the Indigenous) was articulated around 1990. The EJAtlas has been collectively built up since 2012. A decade later, the main purpose of this book is to show (with empirical support from the EJAtlas) that a world movement for environmental justice is in the making. The poor and the Indigenous are at the frontlines of extraction and waste disposal. They are increasingly disrupted by neo-colonial incursions in search of fossil fuels, metals, biomass. They are also the main actors of a just socio-ecological transition, unless repression and fear hinder action. In many instances, mobilizations have led to successful outcomes. A mapping of 649 cases from the EJAtlas of resistance movements against both fossil fuels and low carbon-energy projects, shows that over a quarter of such projects have been cancelled, suspended or delayed – demonstrating the success of place-based movements (Temper et al. 2020). By resisting dispossession in the Arctic (a commodity frontier; Hanaček et al. 2022), Indigenous pastoralists and fisherfolk are drawing attention to how the extractive industries and transport infrastructures overstep biophysical limits even in such fragile environments. The examples multiply along frontiers of commodity extraction and waste disposal.

The EJAtlas is work in progress as an archive of environmental conflicts (described in Chapter 1), where all the entries are open access and provide summaries and further sources of information. This book analyzes about 500 conflict cases drawn from the EJAtlas, a "sample within a sample" of the over 3,800 conflicts documented by December 2022. In reality, there is a larger, unknown number of cases outside the EJAtlas. The 500 selected cases are grouped into chapters. Some chapters focus on geographies around the world and others on specific themes, such as nuclear energy, sand mining, biodiversity conservation, Indigenous revival, working-class environmentalism, women environmental defenders (WED), religious participants, *Leaving Fossil Fuels Underground* (LFFU) conflicts, ecologically unequal international trade, "post-normal" science and environmental conflicts, environmental liabilities

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of transnational companies, and population and the environment. This is one of the first books based on the EJAtlas, other books are possible.

Violence (and fear) is widespread in the world. Killing people is just one way of keeping them quiet. The book is full of such cruelties. But, ultimately, it is optimistic by focusing on the protagonists of the social transition to sustainability. This book demonstrates that local movements often display intersectional struggles (along race, gender, social class, urban or agrarian contexts). These support coalition-building and allow the exposure of a plurality of values, while imagining and enacting alternative futures. Since the 1980s and 1990s, these movements have developed a rich iconography, and a set of concepts and campaign slogans and songs to describe and intervene in socio-ecological conflicts. The EJAtlas team started to collect these forms of expression in 2014 (Martinez-Alier et al. 2014), and I revisit them in the present book. The book looks eagerly at such symbolic aspects of reality while it is also soundly based on a materialistic analysis of the world economy. It draws on industrial ecology and *Warenkunde*, the old science of commodities. For readers who are not as keen as I am on social conflicts, social movement theory, social history and the defence of the downtrodden and the Indigenous, a focus on innovations could be a more appealing framing. Much talk about technical innovations hints at hopes for ecological modernization (Mol and Jänicke 2009). This technology-based approach requires endless economic growth, the feasibility of which this book questions as many other scholars do, including many economists. In my view, the movements for environmental justice can be seen as crucial *social innovations* in the post-growth era.

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Acronyms

4M	Movimiento Mesoamericano contra el Modelo Extractivo Minero (Mesoamerican Movement Against the Mining Extractive Model)
AAB	Articulação Antinuclear Brasileira (Brazilian Anti-nuclear Articulation)
ABREA	Associação Brasileira dos Expostos ao Amianto (Brazilian Association of People Exposed to Asbestos)
ACUMAR	Autoridad de Cuenca Matanza Riachuelo (Matanza Riachuelo Basin Authority, Argentina)
AGRA	Aliansi Gerakan Reforma Agraria (Agrarian Reform Alliance, Indonesia)
AIKMM	All India Kabaddi Mazdoor Mahasangh (National Green Assembly on Waste Legislation and Waste Pickers, India)
AMAN	Aliansi Masyarakat Adat Nusantara (Indigenous Peoples' Alliance of the Archipelago, Indonesia)
ANWR	Arctic National Wildlife Refuge
ASEAN	Association of Southeast Asian Nations
A SUD	Ecologia e Cooperazione (Italy)
ATCA	Alien Tort Claims Act (USA)
AVA	Asambleas de Vecinos Autoconvocados (Assembly of Neighbours, Argentina)
AVAAC	Association of Asbestos Victims of Catalonia
AVG	Alliance Voahary Gasy (Madagascar)
AWID	Association for Women's Rights in Development
BAN	Basel Action Network
BINGO	Big International Non-Governmental Organisation
BIPOC	Black, Indigenous, and People of Color (USA)
BRI	Belt and Road Initiative (China)
BRN	Burma River Network (Myanmar)
CAC	Corporate Accountability Convention
CAFO	Concentrated Animal Farming Operation
CAINQUIAMA	Associação dos Caboclos, Indígenas e Quilombolas da Amazônia
CALG	Coalition against Land Grabbing (Philippines)
CBD	Center for Biological Diversity (USA)
CCM/RS	Mega-Mining Combat Committee in Rio Grande do Sul (Brazil)
C-CONDEM	Coordinating Corporation for the Defence of the Mangrove Ecosystem (Ecuador)
CDM	Clean Development Mechanism
CENSAT (Agua Viva)	Centro Nacional Salud, Ambiente y Trabajo (FoE in Colombia)

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CERCLA	Comprehensive Environmental Response, Compensation and Liability Act (federal Superfund law, USA)
CERD	UN Committee on the Elimination of Racial Discrimination
CFPP	Coal Fired Power Plants
CHRB	Corporate Human Rights Benchmark
CITES	Convention on International Trade in Endangered Species
CKD	Chronic Kidney Disease
CL	Coastal Links
CLAES	Centro Latino Americano de Ecología Social (Latin American Center for Social Ecology)
CNNC	China National Nuclear Corporation
CONACAMI	Confederación Nacional de Comunidades del Perú Afectadas por la Minería (The National Confederation of Peruvian Communities Affected by Mining)
CONAIE	Confederación de Nacionalidades Indígenas del Ecuador (Confederation of Indigenous Nationalities of Ecuador)
COP	Conference of the Parties (global climate summits)
CPT	Comissão Pastoral da Terra (Pastoral Land Commission, Brazil)
CRIIRAD	Commission for Independent Research and Information on Radioactivity (France)
CRN	China River Networks
CRZ	Coastal Regulation Zone (India)
CSE	Centre for Science and Environment (India)
CSIR	Corporate Social Irresponsibility
CSO	Civil Society Organisations
CSR	Corporate Social Responsibility
DBCP	1,2-Dibromo-3-chloropropane (pesticides)
DDT	Dichloro-Diphenyl-Trichloroethane (pesticides)
DENR	Department of Environment and Natural Resources (Philippines)
DESAMA	Didipio Earthsavers' Multipurpose Association (Philippines)
DPSIR	Drivers, Pressures, State, Impact and Response (causal framework for describing the interactions between society and the environment)
EACOP	East African Crude Oil Pipeline
EAWS	East African Wildlife Society (Kenya)
EBRD	European Bank for Reconstruction and Development
ECCSCM	Environmentally Concerned Citizens of South-Central Michigan (USA)
EDCs	Ecological Distribution Conflicts
EDF	Electricité de France (Electricity of France)
EIA/RIMA	Environmental Impact Assessment/Report
EJ	Environmental Justice
EJCs	Environmental Justice Conflicts
EJOs	Environmental Justice Organizations
EJOLT	Environmental Organizations, Liabilities and Trade
ENDA Pronat	Environnement Développement Action (Environment Development Action, Senegal)
ERA	Environmental Rights Action (FoE in Nigeria)
ERC	European Research Council

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EROI	Energy Return on Energy Investment
ESG	Environmental, Social Governance of the Firm
EUA	Ecologically Unequal Exchange
FAO	Food and Agriculture Organization of the United Nations
FDI	Foreign Direct Investment
FENAMAD	Federación Nativa del Río Madre de Dios y Afluentes (Native Federation of the Madre de Dios River and Tributaries, Peru)
FIDH	International Federation of Human Rights
FIOCRUZ	Oswaldo Cruz Foundation (Brazil)
FoE	Friends of the Earth
FON	Friends of Nature (China)
FRA	Forest Rights Act (India)
FSC	Forest Stewardship Council (USA)
FSNN	Federasi Serikat Nelayan Nusantara (Archipelago Fishers Union Federation, Indonesia)
FTA	Free Trade Agreement
FTAA	Financial Technical Assistance Agreement (Philippines)
FUNAI	National Indian Foundation (Brazil)
FUNDECOL	Fundación de Defensa Ecológica (Ecological Protection Foundation, Ecuador)
GAIA	Global Alliance Against Incineration
GCM	Global Coal Management Resources
GDP	Gross Domestic Product
GEV	Green Earth Volunteers (China)
GHG	Greenhouse Gases
GMO	Genetically Modified Organism
GOB	Grup Balear D'Ornitologia (Balearic Ornithology Group, Spain)
GPII	Grands Projets Inutiles Imposés (Big, Imposed and Useless Projects, France)
GRAIN	Genetic Resources Action International, pro-peasant network
GroundUp	Environmental group and publication (South Africa)
HANPP	Human Appropriation of Net Primary Production
HCPF	Holistic Conservation Program for Forest (Madagascar)
HRW	Human Rights Watch
IACHR	Inter-American Commission on Human Rights
IARC	International Agency for Research on Cancer
ICCA	Indigenous and Community Conserved Area
ICSID	World Bank's International Center for the Settlement of Investment Disputes
ICTA-UAB	Institute Environmental Science & Technology, Autonomous University of Barcelona
IEV	Instituto Evandro Chagas (Brazil)
IFC	International Finance Corporation of the World Bank
IIRSA	Initiative for the Integration of the Regional Infrastructure of South America
ILO (Convention 169 of)	The Indigenous and Tribal Peoples Convention (International Labour Organization)

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INC	Ipilan Nickel Corp (Philippines)
INSEE	Indian Society for Ecological Economics
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
ITOPF	International Tanker Owners Pollution Federation
IUCN	International Union for Conservation of Nature (NGO)
JAEA	Japan Atomic Energy Agency
JALA	Jaringan Advokasi untuk Nelayan (Advocacy Network for North Sumatra Fisherfolk)
JATAM	Jaringan Advokasi Tambang (Mining Advocacy Network, Indonesia)
Kalikasan-PNE	Kalikasan People's Network for the Environment (Philippines)
KEPCO	Kansai Electric Power Co., Inc. (Japan)
KIA	Kachin Independence Army
KIARA	Koalisi Rakyat Untuk Keadilan Perikanan (People's Coalition for Fisheries Justice, Indonesia)
KSMTF	Kerala Swathantra Malsya Thozhilali Federation (the Kerala Independent Fishworkers Federation in South India)
LFFU	Leave Fossil Fuels Underground movements
LGBTQI+	Lesbian, Gay, Bisexual, Trans, Queer, Intersex and Other
LNG	Liquefied Natural Gas
MAB	Movimento dos Atingidos por Barragens (Movement of People Affected by Dams, Brazil)
MAPDER	Movimiento Mexicano de Afectados por las Presas y en Defensa de los Ríos
MCEJO	Mfolozi Community Environmental Justice Organisation (South Africa)
MEFA	Material and Energy Flow Accounting
MGB	Mines and Geosciences Bureau (Philippines)
MIQCB	Movimento Interestadual das Quebradeiras de Coco Babaçu (Interstate Movement of Babassu Coconut Breakers, Brazil)
MNCR	Movimento Nacional de Catadores de Materiales Reciclables (Brazil)
MSCL	Mumias Sugar Company Ltd (Kenya)
MST	Movimento dos Trabalhadores Rurais Sem Terra (Landless Rural Workers Movement, Brazil)
NAPM	National Alliance of People's Movements (India)
NGO	Non-Governmental Organization
NGT	National Green Tribunal (India)
NIABY	Not In Anyone's BackYard
NIMBY	Not In My BackYard
NOAH	Friends of the Earth Denmark
NPA	New People Army (Philippines)
NPP	Nuclear Power Plant
NRA	Nuclear Regulation Authority (Japan)
NSC	Nuclear Safety Commission (Japan)
NTCA	National Tiger Conservation Authority (India)
NTFPs	Non Timber Forest Products

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OCMAL	Observatory of Minerals Conflicts in Latin America
OECD	Organisation for Economic Co-operation and Development
Oilwatch	a network of resistance to negative impacts of the oil and gas industry
OLCA	Observatorio Latinoamericano de Conflictos Ambientales (Latin American Observatory of Environmental Conflicts)
PCB	PolyChlorinated Biphenyl (highly carcinogenic chemical compounds, banned Stockholm Convention on POPs, Persistent Organic Pollutants in 2001)
PCSD	Palawan Council for Sustainable Development (Philippines)
PESA	Panchayats Extension to Scheduled Areas (India)
PFBR	Prototype Fast Breeder Reactor (India)
PNRAG	Preston New Road Action Group, Lancashire (UK)
PNS	Post-Normal Science (after Funtowicz and Ravetz. c. 1990)
PPT	Permanent People's Tribunal
PRDCL	Pollution-Related Health Damage Compensation Law (Japan)
PTB	Physical Trade Balance (in international trade)
PX	Para-Xylene (chemical)
RAFI	Rural Advancement Foundation International (USA)
RAIPON	Association of Indigenous, Small-Numbered Peoples of the North, Siberia and Far East of the Russian Federation
RAMSAR	Ramsar Convention on Wetlands of International Importance
RCC	Resource Cap Coalition
REDD	Reducing Emissions from Deforestation and Forest Degradation
REMA	Red Mexicana de Afectados por la Minería (Network of People Affected by Mining)
RESEX	Reservas Extrativistas (Sustainable Extractivist Reserve, Brazil)
RSPO	Roundtable on Sustainable Palm Oil
RVUNL	Rajasthan Vidyut Utpadan Nigam Limited
SADR	Sahrawi Arab Democratic Republic
SDGs	United Nations Sustainable Development Goals
SENAPA	Serengeti National Park (Tanzania)
SEO Birdlife	Sociedad Española de Ornitología (Spanish Ornithological Society)
SINALTRAINAL	Sindicato Nacional de Trabajadores del Sistema Agroalimentario (The National Union of Food Industry Workers, Colombia)
SLAPP	Strategic Lawsuit Against Public Participation
SLO	Social Licence to Operate
SOCAPALM	Société Camerounaise de Palmeraies – plantations in Cameroon
SRI	Socially Responsible Investment.
TANY	Collectif pour la Défense des Terres Malgaches (Madagascar)
TAR	Tibet Autonomous Region (China)
TARDA	Tana and Athi Rivers Development Authority (Kenya)
TEPCO	Tokyo Electric Power Company (Japan)
TEPU	Taiwan Environmental Protection Union
TNI	Transnational Institute
UDAPT	Unión de Afectados por Texaco (Ecuador)
UFW	United Farm Workers of California (USA)

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UNCED United Nations Conference on Environment and Development, the Earth Summit
UNEP United Nations Environment Programme
UNESCO United Nations Educational, Scientific and Cultural Organization
WALHI Wahana Lingkungan Hidup Indonesia (Indonesian Forum for the Environment)
WBCSD World Business Council for Sustainable Development
WCD World Commission on Dams
WED Women Environmental Defenders
WFFP World Forum of Fisher Peoples
WGEEP Western Ghats Ecology Expert Panel (India)
WIEGO Women in Informal Employment: Globalizing and Organizing
WISE World Information Service on Energy (anti-nuclear)
WoMiN: an African ecofeminist alliance against extractivism
WRM World Rainforest Movement, an international initiative
WWF World Wildlife Fund (NGO)
ZAD Zone à défendre (Zone to Defend, France)
ZAL Logistics Activities Zone (Spain)

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1. Introduction: comparative political ecology – the EJAtlas, geographical and thematic perspectives

There is a global tide of environmentalism of the poor and the Indigenous born at the frontiers of commodity extraction and waste disposal where conflicts arise on access to land, water, clean air, the extraction of fossil fuels, other minerals and biomass, the burdens of pollution and the sharing of uncertain environmental risks. I attribute this wave of conflicts mainly to the fact that the world economy is not circular, it is entropic (Georgescu-Roegen 1971).

This book shows that there are counter-movements for environmental justice. This conclusion is based on a large inventory of such conflicts gathered over the last ten years in the Atlas of Environmental Justice (Temper et al. 2015, 2018, 2020; Scheidel et al. 2020, 2023; Martinez-Alier 2021a). It is a database made available for research, teaching, networking, and advocacy, housed at the Institute of Environmental Science and Technology (ICTA) at the Universitat Autònoma de Barcelona. Since 2012, academics and activists collaborate to write the entries, a large sample from a much larger unknown number of conflicts. The present book takes a sample of about 500 conflicts from within the 3,800 registered by December 2022. The EJAtlas registers the iconography of such conflicts displayed in striking banners and theatricality (Sanz and Rodriguez-Labajos 2021). It provides descriptions and coded variables for research on comparative, statistical political ecology. One of its main purposes is lifting the curtain of invisibility over movements for environmental justice, contributing to what Sousa Santos called a "sociology of absences".

The growth and changes in social metabolism and the socio-ecological conflicts are two sides of the same coin (Tetreault 2022; Yasin 2022). "Social metabolism" refers to the flows of energy and materials in human society. The EJAtlas analyzes the interactions between social mobilizations and ecological endowments as expressed in the flows of energy and materials entering and exiting the economy. To illuminate the reality of the physical economy, we start by explaining the entropy of the industrial economy, introducing also the Keeling curve, and continuing with the frontiers of commodity extraction and waste disposal. We start therefore on the first side of the coin. We then turn the coin around and continue with the analysis of environmental justice conflicts and the environmentalism of the poor and the Indigenous, a pluriverse of environmental injustices and "degrowth in practice".

THE SOCIAL METABOLISM

The world economy is not sustainable. There is an enormous "entropy hole" in the world economy, a great circularity rift or metabolic gap, that explains the continuous march to the

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frontiers of commodity extraction and waste disposal. This has become common knowledge. As President Gustavo Petro of Colombia said on 2 September 2022,

> the theories of degrowth arise from one of the best economists in the world: Georgescu-Roegen, who articulated the economic process to the laws of thermodynamics in physics. The economy is an accelerator of entropy, that is, of energy degradation. This does not mean that we stop eating or dressing up, but that the economy must slow down its most predatory branches, the ones with the largest entropic acceleration, and accommodate the times of growth to the balance of life on the planet. It must be an economy for life.

Although there is much talk about a new "circular economy paradigm" as an alternative to linear and unsustainable production and consumption systems, the industrial economy's "entropy hole" cannot be repaired or bridged easily. New virgin supplies would be required even in the absence of economic growth because of the dissipation of energy and materials. The ecological regime of the capitalist industrial system must be understood through thermodynamics. The economic process (based on fossil fuels) follows the entropy law. The concept of 'circular economy' would imply that material resources could be increasingly sourced from within the economy, reducing environmental impact by increasing the reuse and recycling of materials. The aim would be to minimize waste and move towards a closed loop economy. However, this socio-technical 'imaginary' has no relation to reality as revealed by biophysical, metabolic analysis. As economic growth (production and sale of more goods and services) takes place, the social metabolism of the economy grows and changes. There is much waste (mine tailings, excessive amounts of carbon dioxide), and there is an enormous requirement for new materials and energy that can only come from the commodity extraction frontiers.

Mainstream economics as one of the main arguments in politics (often disguised as an apolitical technocracy) is losing its appeal, both in its neoliberal and its Keynesian social-democratic varieties. The ecological critique is gnawing at it. In the 1970s, the first ecological economists challenged the conventional view of economic growth (Daly 1977) while, in 1972, the *Limits to Growth* authored by Dennis and Donella Meadows concluded that continued trends in resource utilization and waste production would lead to socio-economic collapse. Nowadays, one main empirical field of study is the metabolic profile of different countries and regions, of different social classes and of humankind as a whole, in terms of flows of energy and materials. So, when an explanation is required for today's pre-eminent "socio-ecological question", whether the cause is sought in capitalism, colonialism, overpopulation, patriarchy, the private property system, agriculture, industrialization or neoliberalism, my own answer is that all these causes are concomitant with but less important than the growth and changes in the Social Metabolism.

The Keeling Curve

By 2022, President Macron's speech of 24 August seemed to signal a turning point:

> We are living the end of what could have seemed an era of abundance … the end of the abundance of products of technologies […] of land and materials including water […] of endless cash flow, for which we must now face the consequences in terms of state finances. […] It is also the end, for those that had it, of a type of insouciance. War began again in Europe six months ago to the day. […] At the same time, the climate crisis and all its effects are there, tangibly, and new risks are appearing all the time, like cyber-attacks. We are living through a huge shift. This overview that I'm giving,

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> the end of abundance, the end of insouciance, the end of assumptions – it's ultimately a tipping point that we are going through that can lead our citizens to feel a lot of anxiety.

Where does Macron's phrase "end of abundance" come from? It could come from the "Degrowth" and "Post-Growth" literature since the early 1970s. But it comes rather from Pierre Charbonnier's book (2020) *Abondance et Liberté*. His main hypothesis is that, from the seventeenth century to the present day, the political philosophy and political economy of Grotius, Locke, the physiocrats, the liberals (Adam Smith), Marx and the socialists, Karl Polanyi, the Keynesians and the neoliberals did not put the study of social metabolism at the centre of political and economic analysis. Some attributed abundance to the ownership and improvements of land, others to the division of labour and the free market, others to the development of the productive forces, to social intervention and protection or to public investments in times of crisis. The reality of abundance characteristic of the Western economic system since colonial times and the industrial revolution was going to bring freedom for all.

Indeed, abundance brought with it freedom (for some), and those who were not yet free would be free in a hypothetical future. Political philosophers and economists relegated physical realities to the background, rather than putting them at the forefront of political reflection. So much so that climate change caused by coal combustion did not lead to any political reaction until the 1990s. During the twentieth century, coal combustion increased sevenfold, and oil and gas combustion increased much more.

It is not surprising that Georgescu-Roegen (1975, fn. 25) would write that "The continuous accumulation of carbon dioxide in the atmosphere has a greenhouse effect which should aggravate the heating of the globe" although he himself did not pay enough attention to climate change due mostly to burning of fossil fuels. He already suspected that "thermal pollution could prove to be a more crucial obstacle to growth than the finiteness of accessible resources". As early ecological economists of the 1980s, we knew that the continuous accumulation of carbon dioxide proceeded with impressive regularity since it was first measured in the Keeling curve in the late 1950s. Despite the warnings from the Intergovernmental Panel on Climate Change (IPCC) since the 1980s, there have been continuous delays in adopting effective top-down policy actions. The Kyoto agreement of 1997 was ineffective, the Copenhagen COP in 2009 was a failure, and in Paris in 2015, governments merely made voluntary promises of reduction of carbon dioxide emissions and denied the relevance of the notion of "liability". We have not yet reached peak emissions and much less will be a limit soon reached to the carbon dioxide concentration in the atmosphere. If we are optimistic, some degrowth of the human population, degrowth of the economy, some changes in technologies and the strength of LFFU movements (Leave Fossil Fuels Underground, Chapter 16) might then stop further growth of the Keeling curve before the end of the twenty-first century. International agreements based on the assumption that decreased emissions are compatible with economic growth have failed repeatedly since 1992. Figure 1.1 shows the Keeling curve, a daily record of global atmospheric carbon dioxide concentration maintained by the Scripps Institution of Oceanography at UC San Diego at its observatory in Mauna Loa, Hawaii pointing to 450 ppm before 2050 and possibly 500 ppm by 2100. I am aware that Green Industrial Policy (Allan et al. 2021) driven by states and also removing subsidies to fossil fuels and taxing carbon emissions can help in the energy transition. However, the extraction of new minerals and the space needed for windmills or for the capture of direct solar energy gives rise to new socio-ecological conflicts.

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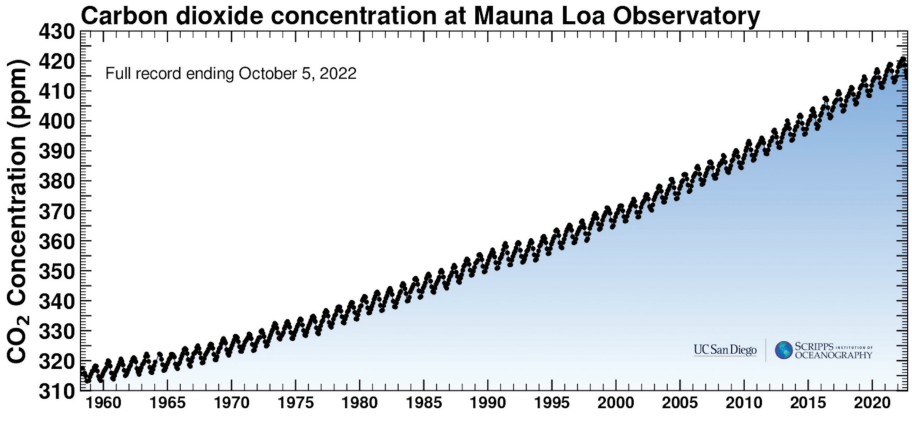
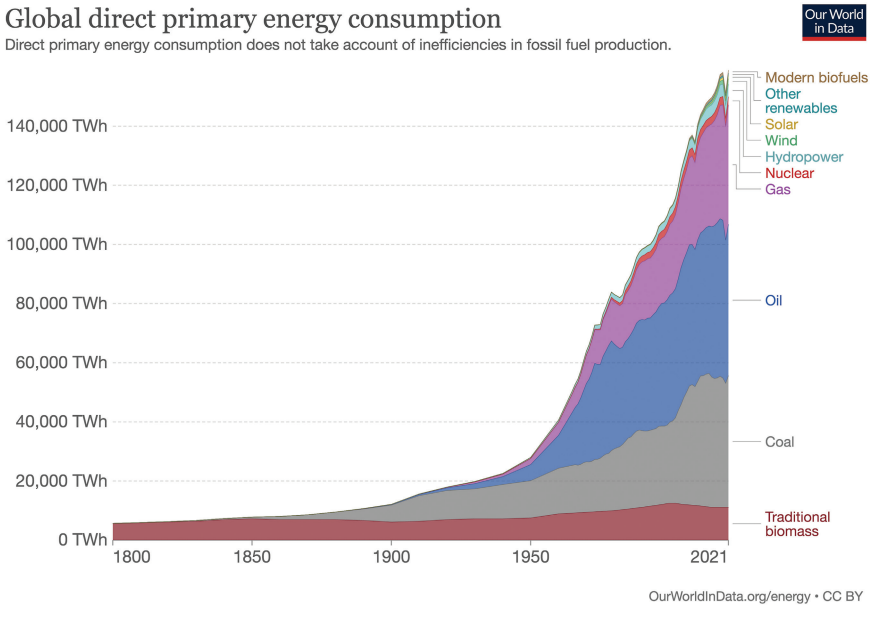


Source: Scripps Institution of Oceanography at UC San Diego

Figure 1.1 *The Keeling curve, growing despite (irrelevant) meetings and policies against climate change*



Source: Our World in Data based on Vaclav Smil (2017) and BP Statistical Review of World Energy.

Figure 1.2 *Commercial, exosomatic energy consumption*

In parallel with economic and population growth worldwide, the twenty-first century is seeing an increase in the burning of coal, oil and gas (Figure 1.2). This has been the march in the West since the late eighteenth century, followed later elsewhere. In 1896, Svante Arrhenius published his famous article "On the Influence of Carbonic Acid in the Air upon the Temperature of the Ground" followed by estimations of the amount of carbon dioxide

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that would accumulate in the atmosphere by the burning of coal. True, there have been other human-made alterations to climate before. Possibly, after the conquest of America the demographic collapse allowed more growth of vegetation, more carbon dioxide capture, less carbon dioxide in the atmosphere and the Little Ice Age. It was indeed "little" compared to effects of the march of the Keeling curve towards 500 ppm.

I remember being shown Arrhenius' statue at the University of Stockholm by ecologist Anne-Mari Jansson in 1986, at the time when I also met Bert Bolin when we were trying to start the International Society for Ecological Economics. I also remember many years later at the COP in Copenhagen, in 2009, spending a long afternoon in the plenary session with Fander Falconí, the foreign affairs minister of Ecuador, listening to one delegate after another getting up for five minutes to argue in favour of either a limit of only 1ºC increase in temperature (this was the poor countries) or a limit of 2ºC (this was the rich countries). The exact ppm in the Keeling curve was not mentioned. They were saying automatically "one degree, two degrees".

Arrhenius and others estimated the rise in temperature that increasing concentrations of carbon dioxide in the atmosphere would cause. All this was included in textbooks since 1910 although it took a long time for the science of climate change to influence international politics. This only happened after the IPCC was founded and had a successful meeting in Villach, Austria, in 1985, and after the United Nations Rio de Janeiro conference of 1992, where a treaty was signed on climate change. Since then, procrastination has been the main response, reaching in some cases denial of the science of climate change in a classic example of the "manufacturing of uncertainty" practised already by industry and governments regarding dangers to human health from tobacco smoking, asbestos or glyphosate use (Chapter 28).

Today the yearly extraction of coal reaches 8,000 million tons, to which must be added larger and larger amounts of oil and gas which also, of course, produce carbon dioxide when they are burnt. More economic growth will mean further excessive emissions of carbon dioxide. The economy of India is still moving in a transition towards coal (Roy and Schaffartzik 2021, Chapters 8 and 9). Climate injustices are central points of this book, and one transversal chapter is about growing LFFU movements (leave fossil fuels underground).

The Frontiers of Commodity Extraction and Waste Disposal

Throughout this book we shall be guided by a three-tier relation between: (a) the increasing and changing metabolism of human societies, (b) the ecological distribution conflicts among human groups and (c) the plural valuation languages deployed by such groups when they reaffirm their rights to use the environmental services and products in dispute.

The industrial economy is not circular, it is entropic (Giampietro 2019). Life is anti-entropic or negentropic to use Schrödinger's term (1944). Current photosynthesis from the sun sustains life and promotes biodiversity. This still goes on, of course. But in the industrial economy (Figure 1.2) the deposits of fossil fuels (photosynthesis from the distant past) are burnt and their energy is dissipated. From a chemical point of view, the fossil fuels become waste in the form of carbon dioxide and the earth systems cannot provide strong enough "sinks" (terrestrial photosynthesis and the absorption in the oceans) to take up and "neutralize", so to speak, the increasing amount of carbon dioxide in the atmosphere. Hence the increase in the Keeling curve in parallel to the increase in the world industrial economy. Some of the oil and gas is not burnt as fuel. It goes to the production of petrochemicals for the plastics industry which has notorious difficulties to recycle the materials produced (Mah 2022).

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Socio-ecological conflicts then arise at the frontiers of commodity extraction or waste disposal. *Commodity frontiers* (Moore 2000) are places converted into suppliers of materials and energy (at whatever environmental and social costs) for the creation of economic values. Such conflicts are not anecdotal, they are systemic. They also arise when attempts at closing a little this "entropic gap" or "circularity rift" (a giant chasm or abyss) are undertaken by mining the metals and harvesting the wood for the electricity transition or occupying common land for windmills or photovoltaic farms, or land-grabbing plantations for ethanol or biodiesel. The fact that the industrial economy is not circular at all implies the requirement to find, on the one hand, additional carbon dioxide sinks (through REDD – Reducing Emissions from Deforestation and forest Degradation – schemes that displace peasants and tribal peoples and simplify and even kill biodiversity by tree plantations) and, on the other hand, the invasion of the "commodity extraction frontiers" to get hold of energy and materials. These places (reaching to Amazonia or the Arctic, Chapter 7) are very often inhabited by humans and certainly by other species, and therefore the folly of climate change is compounded by violence and injustice against such human groups and also against other species.

The "fresh" material input into the world economy (not counting water) is about 92 Gt per year and the recycled material is about 8 Gt. Let us assume that the world economy grows slowly and merely doubles the material input requirement in 70 years. Of the material input of 200 Gt, let us assume that 100 Gt are recycled. An enormous improvement in the recycling rate from 8 per cent to 50 per cent, however still a small increase (from 92 Gt to 100 Gt) in the "fresh" material input required. The so-called Circularity Gap Report (based on calculations in Haas et al. 2015, 2020) asserts that 92 Gt of virgin resources were extracted in 2017 and only 8.6% of all materials used were recycled. The gap or rift will increase with further economic growth. Less than 10 per cent of materials (including the energy carriers) are recycled, where do the other 90 per cent come from? My answer is: from the new commodity extraction frontiers and also to some extent from customary sources. Thus, aluminium may come to some extent from recycling, it may come from bauxite from old mines which are used more intensively, or it may very likely come from new bauxite mines.

There is a new collective initiative for the historical study of commodity frontiers and a new journal. This concept (Moore 2000) is becoming ever more relevant. Two processes of growth and changes in socio-metabolism are associated with the commodity extraction frontiers: commodity-widening and commodity-deepening (Banoub et al. 2020). The first implies the spatial extension of nature appropriation, via territorial claims to control and use natural resources and associated acts of dispossession. The second implies the intensification of exploitation at existing sites by socio-technical innovation and investments in the same places as for instance the mining of metal ores or coal by open cast techniques discarding previous subterranean mining, or also energy-intensive fishing or plantation agriculture. At the fossil fuel extraction frontier, the concept of "commodity-deepening" is similar to that of "extreme energies". For instance, a study of impacts of fracking in Lancashire, UK (Chapter 28) states that the depletion of conventional reserves "is leading to increasing pressure to exploit more 'unconventional' sources… the term 'extreme energy' (describes) a range of new higher-risk 'unconventional' fuel extraction processes, such as oil/tar sands production, mountaintop removal and deep-water drilling, that are increasingly being used as more accessible supplies dwindle" (Short and Szolucha 2019).

Most conflicts in the EJAtlas can be classified as taking place in either commodity-widening or commodity-deepening frontiers. The industrial economy marches all the time to the

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extraction frontiers in search of materials and also travels to the waste disposal frontiers. The waste is deposited anywhere (solid or liquid waste, or GHG – Greenhouse gases), or sometimes a small part of it is economically valued by recyclers, or in REDD schemes for "capturing" carbon dioxide (Chapter 21), or in locally noxious cement kilns that burn urban waste or tyres (Schindler and Demaria 2020).

Thus, the energy transition must be approached from different angles. It must be based, as in mainstream thought, on a change in the fiscal system against fossil fuels (which is politically difficult to implement) with compensations for "energy poverty"; also, a technological change towards renewable energies. This will cause new socio-ecological conflicts because of mining and biomass needs (lithium and cobalt but also *balsa* trees, for instance) and should not include nuclear power (Chapter 10) and large-scale hydropower (Del Bene et al. 2018; Temper et al. 2020; Brand et al. 2021). Third, there must be economic degrowth of the rich economies. Fourth, the Blockadia and LFFU movements (Chapter 16) must be supported. Fifth, the movement against population growth which I call "eco-feminist neo-Malthusianism" must also be supported until zero population growth is achieved by 2060 or before by women's freedom, men's responsibility (including more voluntary vasectomies) and by persuasion rather than by coercion (Chapter 29).

ECOLOGICAL DISTRIBUTION CONFLICTS (EDC) AND VALUATION CONTESTS

These concepts bring together ecological economics and political ecology. Ecological economics studies the metabolism of the industrial economy, i.e. the increasing and changing amounts of energy and materials entering the economy and exiting as waste. The procurement of energy and materials causes conflicts at the commodity extraction and waste disposal frontiers. They are conflicts countering the appropriation claims over land, water and clean air. The study of such conflicts is done by political ecology. These conflicts are also "valuation contests", i.e. the protagonists of the conflicts display different valuation languages. Some would insist on the economic valuation of negative "externalities" while others appeal to ecological values, to livelihood needs or to the sacredness of items of nature like special animals or trees, rivers or mountains. These values are not commensurate (Martinez-Alier 1995b; Martinez-Alier and O'Connor 1996). Unresolved ecological conflicts can involve discrepancies within the same value, such as divergences with respect to monetary values of damages, but also across plural values such as loss of biodiversity, the sacredness of the territory and nature, human rights or money compensation.

EDC is a term for environmental injustices that originates from the field of ecological economics. It has been used since 1995 to describe social conflicts born from the unfair access to natural resources and the unjust burdens of pollution. We can also use "socio-ecological conflicts" (Yasin 2017, 2022). Yasin posits that such conflicts characterize the present situation similarly to how labour conflicts characterized the nineteenth and twentieth centuries in the West, in the form of the so-called "social question". However, labour conflicts are growing in the new industrialized countries. Moreover, some labour conflicts (for instance of industrial health and pollution) overlap with ecological conflicts (Navas et al. 2022; Chapter 20). The "socio-ecological question" has been added to the "social question", the "agrarian question", the "urban question", the "anti-colonial question" and the "women's liberation question".

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Sometimes, the term eco-territorial conflicts is preferred (in Latin America) as distinct forms of place-based social movements, organized as territorial defence of life against the threat of resource extraction on their land. However, other conflicts are on industrial pollution and health. In cases of silicosis or asbestosis, the "territory" is the human body. Economists will tend to subsume all such environmental conflicts in the language of externalities. Here we use EDC because ecological and cultural values are also in dispute in such conflicts. Environmental gains and losses are distributed in a way that causes such conflicts. Poor people who lose access to land, water and clean air because of a mining project might get waged jobs and even some money compensation but somehow, they are poorer than before. Poverty is multidimensional. Moreover, the mine will last only for 20 or 30 years. And it leaves behind acid drainage and the risk of failures of tailings dams. Therefore, the poor complain. Some of their values are being sacrificed. EDCs give birth to movements of resistance, to the point that we can speak of a global movement for Environmental Justice. The EDCs, if they obtain successful outcomes (stopping coal-fired power plants, nuclear power plants, hydropower dams, palm oil or eucalyptus plantations), contribute to move the economy in a less unsustainable direction.

While the term "economic distribution conflicts" in political economy describes conflicts between capitalists and labour (profits versus salaries) or between landlords and peasants (over land rents), or conflicts on prices between sellers and buyers of commodities other than land or labour, the term EDC in political ecology stresses the idea that the unequal or unfair distribution of environmental goods and evils is not always coterminous with economic distribution.

For instance, a factory may be polluting the river which belongs to nobody or belongs to a community that manages the river. This is not a damage valued in the market. The same happens with climate change, causing perhaps already sea level rise in some Pacific islands or in Kuna islands in Panama or in the Sundarbans. Equally, a copper or bauxite smelting factory or a coal-fired power plant will pollute the air, perhaps causing respiratory illnesses. Such conflicts take place at local scales but also at national and international scales. Extractivism and waste disposal increase poverty which is multidimensional. If you get some extra money but lose access to land, water and clean air because the extractive industries grab your place and pollute your family, you are poorer in some dimensions than before. Your autonomy, freedom and capabilities have been further curtailed. These poor people experience in their own real worlds, at the frontiers of commodity extraction and waste disposal, the clash between economic growth and the environment.

More than market failures (a terminology that in mainstream economics implies that such externalities could be valued in money terms and internalized into the price system) these are "cost-shifting successes" (Kapp 1950) which oftentimes lead to complaints from those bearing them. In these complaints, incommensurable values are deployed. For instance, if a "sacred grove" or small forest belonging to a tribal community in India is destroyed by opencast coal mining, financial compensation may be a way out for the company responsible but other valuation languages (biodiversity, the "rights of nature", human rights, the livelihood of local populations, Indigenous territorial rights, sacredness) will then be sacrificed. Sand mining in river beds is sometimes opposed by appealing to environmental values or local livelihoods or legal regulations, and sometimes by appealing also to the sacredness of rivers. Values cannot be measured in the same units.

Without denying that economic compensation is appropriate sometimes, particularly in court cases after damage has been done already, the fact is that economic valuation and

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compensation means in practice the exclusion of social values which cannot be expressed in money terms, or which the protagonists of the conflicts prefer to express in other terms. For instance, impairment to health from pesticides such as DBCP or chlordecone in banana plantations can certainly be expressed in terms of genetic damage, or years of labour lost and of taking care of illness and disability in adults and old people. Such damage can be translated into money terms. However, some people might much prefer to count the damage also directly, without money translation, in units of human health and life. Not least because we know that "the poor sell cheap". In any case, who has the right or rather the naked power to impose one particular valuation language when several incommensurable values are in dispute?

In the view of "development as freedom" by Amartya Sen, his canvas is much wider than income per capita, and it is summarized in the idea of "capabilities". Development should mean acquiring the material circumstances and the mental and social abilities to choose as much as possible your own path in life. However, economic development means in India (as elsewhere) large environmental and cultural losses and lack of access to land, water and air (Martinez-Alier et al. 2016), as shown in so many examples in the EJAtlas. Environmental damage is not captured in the HDI ("Human Development Index").

PHYSICAL BLINDNESS ALLOWS ECONOMIC COMMENSURATION

Human material dependency is hardly questioned by anyone. However, there are different understandings of humans' relations to the environment. In the mid-nineteenth century, Moleshott and Liebig introduced the concept of "metabolism" (*Stoffwechsel* in German) that Marx applied to the economy in some passages of his work (Martinez-Alier 1987). "Metabolism" was not used only as a metaphor (as one could talk of the circulation of money and commodities in a market as similar to the circulation of blood, with the banking system as the heart). It was a physical description. As Alfred Schmidt (1962) explained, Marx used "metabolism" in a physical sense taken from Moleschott and Liebig. However, he was not an ecological economist in today's sense, he did not say that the industrial economy was entropic, and he (and his followers) *did not count the flows of energy and materials* in the economy (Chapter 30).

How to explain the growth of the economy, the functioning of the generalized market system and the logic of capitalism without taking into account the flows of energy and materials, the enhanced greenhouse effect and the loss of biodiversity? It cannot be done. However, not only economists, also historians and geographers long lived in their own disciplinary cages or silos. The geographers absurdly divided themselves into "physical" and "social" leaving aside the insights of Patrick Geddes and Jean Brunhes who were concerned with the energetics of the economy and with the notion of *Raubwirtschaft* that we now call "ecologically unequal exchange" (Chapter 26). Social geographers, even the Marxist geographers, have not usually placed at the centre of their analyzes the growth and changes in the social metabolism that cause thousands of ecological distribution conflicts. Meanwhile, mainstream historians placed their discipline in the "humanities", and until recently they did not discuss the destruction of biodiversity, the enhanced greenhouse effect and the entropic character of the industrial economy (Sieferle 1982 [2001]; Crosby 1986; McNeill 2001; Hornborg et al. 2007).

There are impressive statistical series reconstructing the economic growth of the world in terms of GDP (Madison 1983) but the accounts of energy and materials inputs into the

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economy (MEFA), the accounts of carbon dioxide emissions and other socio-physical facts, such as the Human Appropriation of Net Primary Production (HANPP), had to wait until the 1980s or 1990s. Such accounting was done by research institutes or university departments (such as the group in Vienna led by Marina Fischer-Kowalski) until finally Eurostat and UNEP (United Nations Environment Programme) took such statistics on board. The statistics by Haas et al. (2015, 2020), showing that less than 10 per cent of the inputs of materials in the world economy comes from recycling, have been nurtured by this Vienna group and by the industrial ecology of Robert Ayres and others since 1969 which improved the old *Warenkunde* or science of commodities. The EJAtlas is an archive of conflicts on commodities (Chapters 26 and 27).

Economists and politicians have known in practice that the economy works with materials and energy, and in fact, wars have been fought for such reasons. Thus, the Arabian Peninsula was politically shared among different states and independent sultanates according to their deposits of oil and gas. Throughout the 1930s, Kuwaiti people opposed the British-imposed separation of Kuwait from Iraq. This political movement was suppressed by the British by force. However, while acknowledging such geological realities, most economists and politicians have tended to be optimistic regarding new sources of energy. If not fossil fuels, then something else. Thus, in the 1950s, the slogan arose that "nuclear energy would be too cheap to meter", and in March 1989, a collective belief in the discovery of "cold fusion" occupied for some weeks the cover pages of normally sober publications such as *The Economist*.

Mainstream economists and even economic historians have been as bad as geographers and mainstream historians in leaving aside the environmental prerequisites and impacts of the growth of the economy. The neoclassical economists (market fundamentalists) introduced one hundred years ago (with Pigou) the notion of "externalities". They said that the so-called externalities should be "internalized" in the price system. But "externalities" are systematic social cost shifting (as K.W. Kapp put it, 1950 [1963/1978]) and in general they are not amenable to economic valuation. If measured in money terms, they would perhaps be bigger than the "internalities" of the market. But in reality, there are many incommensurable languages of valuation as we discover empirically in the cases recorded in this book and in the EJAtlas.

Commensuration is a political process imposed by force. The issue is not the difficulty in finding interpreters for diplomatic exchanges and negotiations between holders of different valuation languages. The subaltern people usually have to learn the languages of the oppressors; they make efforts to understand and they speak several idioms. This includes the language of markets and money (even fictitious markets). There are political opportunities for dialogues across valuation languages. However, the outcomes will depend on power relations. To diplomatic niceties and the subtleties of translations, the powerful people (and the extractive industries) prefer the language of money and, if not, the language of the gun or incarceration. They are practical business people.

Physical blindness allows economic commensuration. Instead, here we use the concept of Ecological Distribution Conflicts. The EJAtlas may be seen as a large sample of EDCs which I also call "environmental conflicts" for simplicity. On their side, common people (politically and economically weak although culturally strong) sometimes answer these questions in practice by refusing economic compensation and asserting environmental justice, sacredness of nature or Indigenous rights. Or they only accept economic compensation after being defeated and when the polluting projects are already put in place.

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ENVIRONMENTAL JUSTICE CONFLICTS AND ENVIRONMENTALISM OF THE POOR

This is a book of ecological economics, political ecology, environmental sociology, industrial ecology and contemporary socio-environmental history in support of the global and local movements for environmental justice. The methodology consists in organizing and analysing many hundreds of "ecological distribution conflicts" in the EJAtlas (Figures 1.3 and 1.4).

The world economy is increasing and changing its input of energy and materials, and also its output of different sorts of waste. The environmental load of the economy is growing all the time even when the economy is based on the service sector, Hence the many EDC that arise. They are not only conflicts of interest but also conflicts of values. In socio-ecological conflicts over resource extraction and waste disposal, poor people are often in favour of nature conservation because they live from it very directly.

Everywhere, the changes in society and economy because of capitalism have happened together with the deregulation of the systems of use of land and water. This reaches today the large changes in the carbon cycle but also the trespassing of other "planetary boundaries" because the industrial capitalist system is unable to really produce sustainably the basic elements to pay the workers and on top to achieve profits and capital accumulation. The system merely extracts and dissipates such elements, creating an enormous metabolic gap or circularity rift, an "entropy hole". The need for obtaining new commodities of a previously uncommodified nature is often attributed to the logic of capital accumulation to find new cheap raw materials and energy to be exploited. This is true but the underlying cause for the persistent search for new materials and energy is that those obtained now will no longer be available beyond a short period. This is why there are so many EDCs at the points of extraction, transport and waste disposal.

Making old or emergent EDCs more visible contributes to placing political ecology and socio-environmental justice at the centre of politics, displacing mainstream economics. I am writing at the time when the European Commission is discussing whether investment in nuclear energy and gas can be declared officially to be "green", and when announcements are made of the coming of a "circular economy" that will allow further economic growth. These are failed attempts to de-politicize crucial environmental issues. The rumour that environmental issues were "post-politic" and could be managed technocratically has been proven false.

The Chipko movement in the Himalayas in the 1970s (Guha 1989), and the movement of the *seringueiros*, linked to Chico Mendes in Acre, Brazil, in the 1980s, represented two emblematic cases of "environmentalism of the poor" in defence of forests when this notion was developed in the 1980s. Other contemporary examples of this type of environmentalism were the Ogoni, the Ijaw and other Indigenous groups protesting the damage from oil extraction by Shell in the Niger Delta; resistance against eucalyptus in Brazil, Thailand and elsewhere on the grounds that "plantations are not forests"; the movements of displaced people due to dam construction as in the Narmada river in India (mostly Adivasi) and the *atingidos por barragens* in Brazil; and new peasant movements such as Via Campesina against agroindustries and biopiracy. For "ecosystem people" (as Gadgil and Guha called them), economic development might imply more money but also less freedom of access to land, water and clean air. A rural household can be considered "poor" using different indicators (e.g., income per

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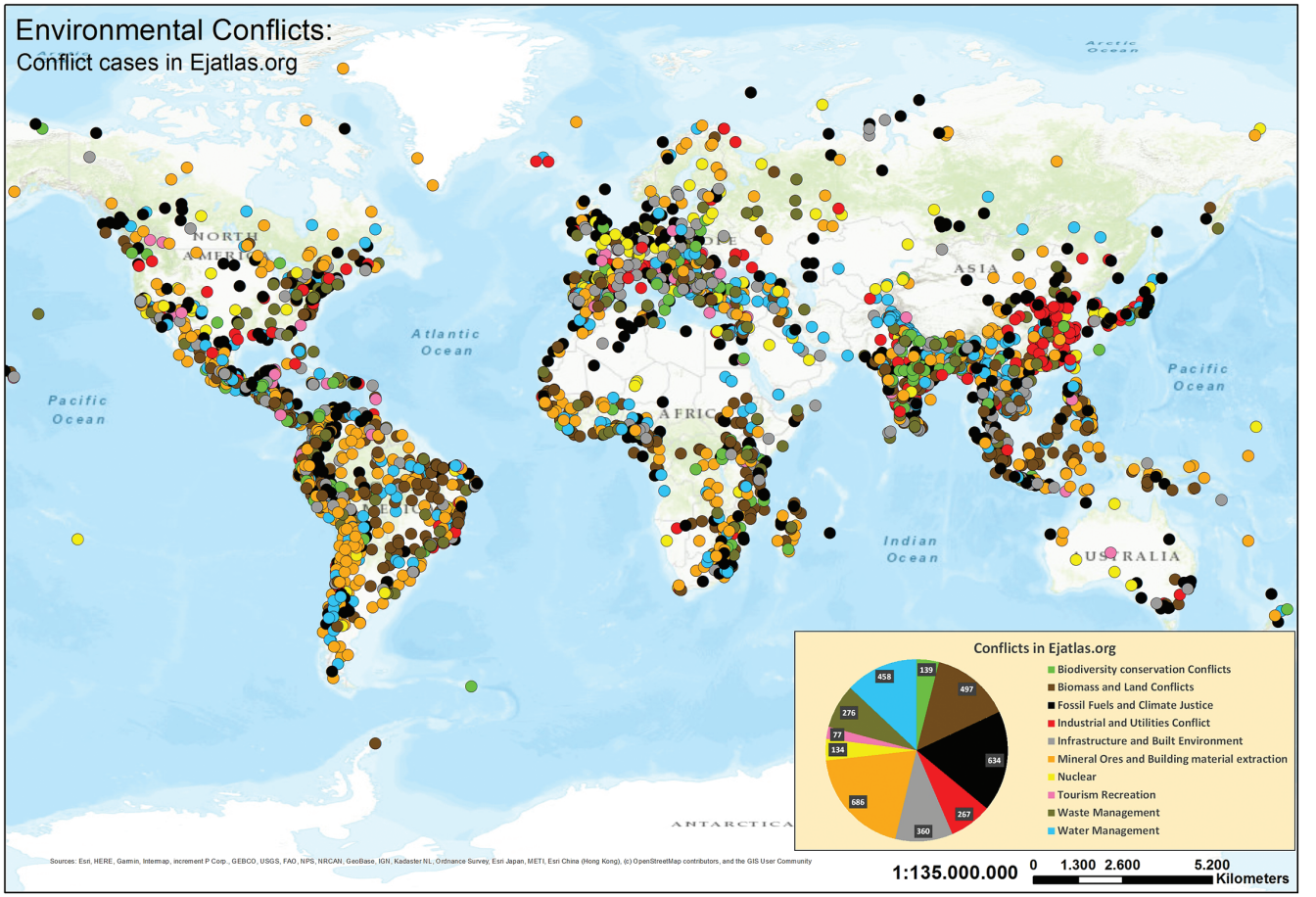

Source: A. Grimaldos

Figure 1.3 *Environmental conflicts cases in the EJAtlas*

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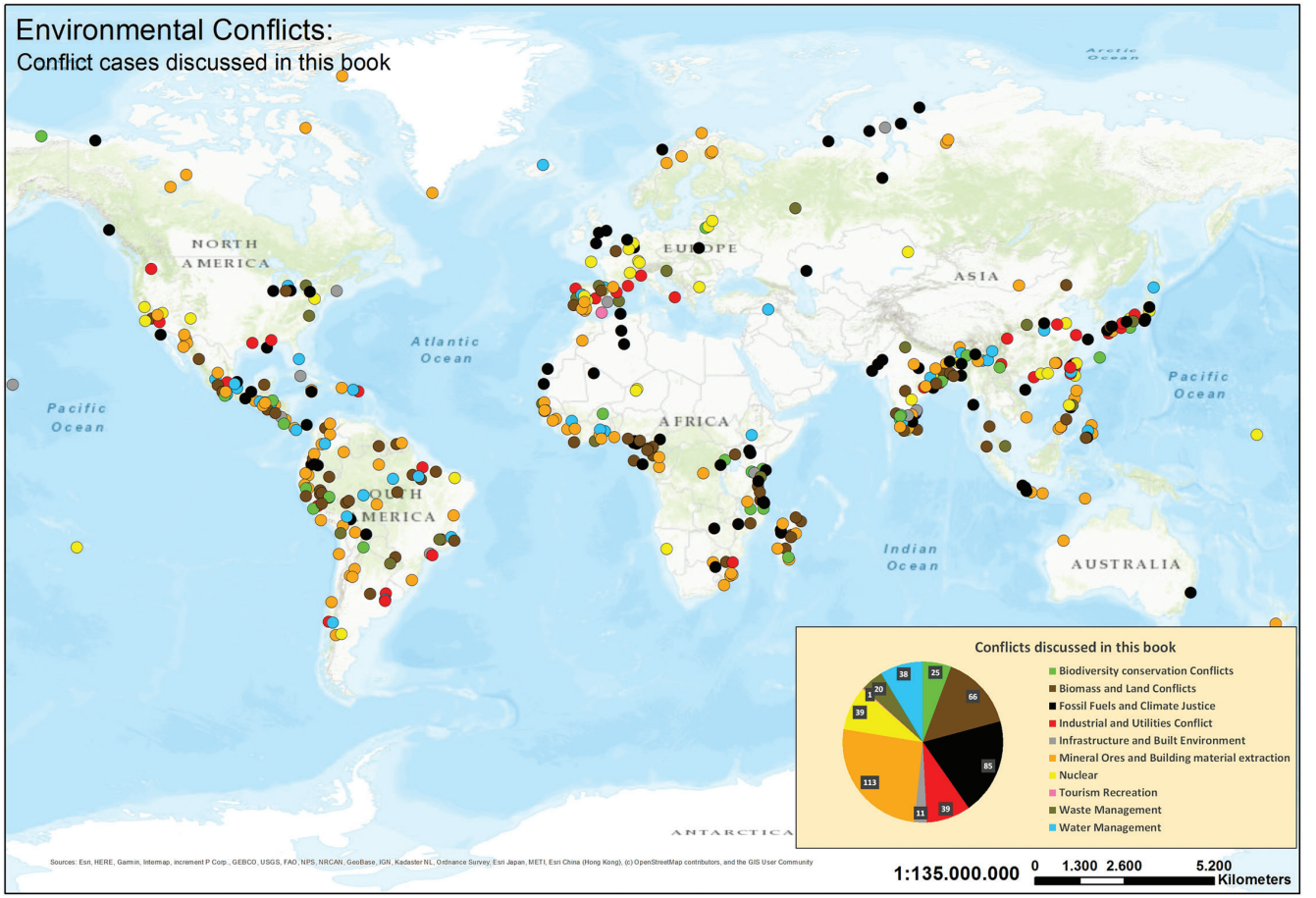

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Figure 1.4 Environmental conflicts cases in this book

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capita, access to healthcare or in terms of access to water and land for livelihood). Poverty is multidimensional, as Amartya Sen emphasized. The environmentalism of the poor and the Indigenous is a reaction towards the increase in poverty as they lose land, water and clean air. They react against the diminished chances to improve their standard of living. They lose freedom. The EJAtlas was born in 2012 from the activism and the knowledge of this type of environmentalism in South America, in India and elsewhere in Asia and in Africa (and in particular in the Niger Delta, where the cry "leave the oil in the soil" against oil spills and gas flaring was raised by Environmental Rights Action – ERA – and Nnimmo Bassey since the 1990s). We asked then, is the environment a "luxury good" and are the poor really "too poor to be green"? (Martinez-Alier 1995a). On the contrary, there was an environmentalism of the downtrodden that remained hidden from most academics.

Ultimately, the sum of all these conflicts in a world environmental justice counter-movement represents today a powerful force for greater sustainability (Scheidel et al. 2018; Scheidel et al. 2020). The EJAtlas is an outcome of the environmentalism of the poor and the Indigenous and of the global environmental justice movements. Until thirty or forty years ago, the social actors in such conflicts rarely saw themselves as environmentalists. Their main concern is still now with livelihood. This is the majority of humankind, those who occupy relatively little environmental space, who have managed sustainable agroforestal and agricultural systems, who make prudent use of carbon sinks and reservoirs, whose livelihoods are threatened by mines, oil wells, dams, deforestation, and tree plantations to feed the increasing throughput of energy and materials of the economy within or outside their own countries.

THE SOCIAL ACTORS OF ENVIRONMENTAL CONFLICTS

This book explores and organizes the findings of the EJAtlas to reach a sound theory of "ecological distribution conflicts" and to explain and support the movements for environmental justice. Sometimes I have been asked: "you say that there is a world movement of environmental justice – can you do a social class analysis of this movement?". Although the question might sound like old-fashioned Marxism to some readers, I think it is a valid one which I answer in this book. The environmental conflicts that we gather in the EJAtlas show a variety of social actors (Figure 1.5) and they exhibit different forms of mobilization or "repertoires of contention" (Figure 1.6). Women often take the lead in such movements (Tran et al. 2020, 2021, 2022) (Chapter 4).

They all form the incipient world movement for environmental justice which, as Zehra Yasin has explained (2022), must be seen as an "antisystemic movement" (Arrighi et al. 1989) as this term was used after 1968 but before the environmentalism of the dispossessed and downtrodden became so visible as it is today. In about 40 per cent of cases in the EJAtlas, Indigenous and traditional peoples are the main protagonists, often at the commodity extraction frontiers (Chapter 25). But there are many other participants such as local Environmental Justice Organizations (EJOs) and the "neighbours and citizens". In general, this variety of participants is not a surprise. The EJOs of the South defend local identities and territories (Escobar 2008); however, their growth is explained not only by the strength of identity politics but also by the conflicts erupting. The local EJOs, the local neighbours, peasants or small farmers, fisherfolk and pastoralists, workers and trade unions, the Indigenous peoples and their networks are, then, a main force working to make the world economy less unsustainable.

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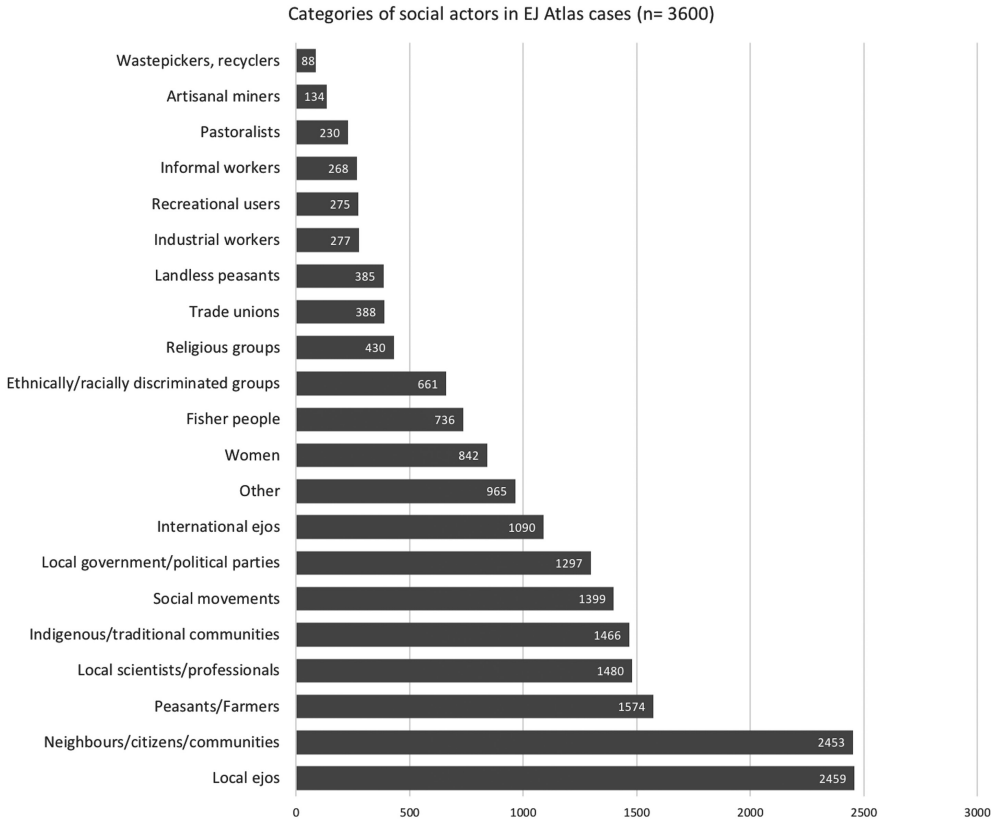

Figure 1.5 *Categories (not mutually exclusive) of social actors mobilizing in conflicts registered in the EJAtlas*

This is an "environmentalism of the common people". But the international EJOs, scientists and professionals, local government officials or members of political parties, or religious groups, also sometimes take part in the conflicts registered in the EJAtlas. They are not so poor or Indigenous.

Looking at the participants in demonstrations in Europe organized by the young militants of Fridays for Future, mostly girls, complaining against policy inaction against climate change (see also Chapter 16, on Disha Ravi in Bangalore, India), Della Porta and Portos (2021) found out that many participants in these demonstrations were not "the rich kids of Europe". Their statistical results showed the "heterogeneity of the social composition of the protests" in terms of income or social class – although being in urban Europe, there was a lack of farmers and peasants, fisher people, pastoralists or Indigenous peoples who instead appear in Figure 1.5 and do not take part in European Fridays for Future demonstrations.

Throughout this book there are many occasions to discuss in particular instances of conflict the multiple identities of the environmentalists and the heterogeneity of their social composition. I shall use the word "intersectionality". This is a concept coming from Black feminist theory in the United States (Crenshaw 1989) (Di Chiro 2021) (Chapter 30).

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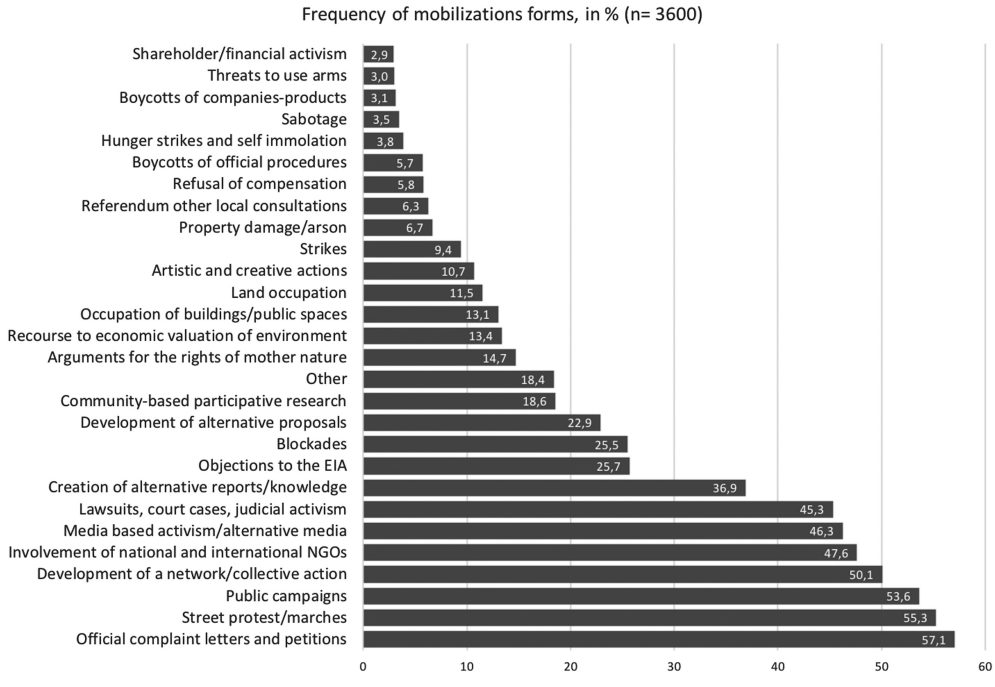

Figure 1.6 Frequency of mobilizations forms recorded in the EJAtlas (in percentage)

Before 1990, environmentalism was often interpreted as a "full stomach" phenomenon (Guha and Martinez-Alier 1997), a luxury only the rich could afford. Postulating the emergence of postmaterialist values, Ronald Inglehart (1995) argued that the rise of environmentalism in the 1960s in the Global North was a result of a shift from materialist to "postmaterialist" values, a change from prioritizing sustenance and safety towards self-expression and quality of life. This shift was attributed to unprecedented levels of economic and physical security in the 1960s in Europe and the USA. Indeed, one main contribution of political scientist Ronald Inglehart (1934–2021) was his theory of 'value change'. He kept the world "material" for economic issues (salaries, employment) and funnily called environmental issues "non-material" or "post-material". He claimed that, as advanced industrial societies increasingly meet the material needs of their citizens, the values, attitudes, and political opinions of these citizens would be shaped by "non-material" questions – such as the toxic effects of DDT and other pesticides, the chemicals acting as endocrine disruptors, the nuclear radiation (from accidents such as Three Mile Island, Chornobyl and Fukushima), the change in composition of the atmosphere because of "greenhouse gases" leading to climate change, the rapid loss of biodiversity. This caused great confusion among generations of political and social scientists who believed that the environmental movement was "post-material", a movement of people seeing themselves as dematerialized angels.

The "environmentalism of the poor" does not envision environmental preservation as a luxury good, contrary to what Inglehart did. It is also contrary to Ulrich Beck's view of environmental risks as being impartial to social class (1992). Even somebody like the anti-colonial thinker Edward Said once apparently described environmentalism as the indulgence

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of spoiled tree-huggers who lack a proper cause.[1] The theory of the environmentalism of the poor was proposed by Ramachandra Guha and myself around 1990 (Guha 1989; Martinez-Alier and Hershberg 1992) and later in the book *Varieties of Environmentalism* in 1997, when it was still an academic novelty.

Although Inglehart's "post-materialist" interpretation continues to dominate in political science, there were other views from the United States on the origins of environmentalism, of which Schnaiberg's "treadmill of production" was influential (Schnaiberg 1980; Schnaiberg and Gould 1994). In a nutshell, Schnaiberg argued against the "eco-modernists", blaming capitalist production and the search for profit from continually exploiting new natural resources and generating new environmental problems.

The poor and the Indigenous often struggle for environmental justice. What matters is not whether they express "environmental concerns" in opinion surveys but *what they do* when confronting extractive industries or waste dumping. Such environmentalism of livelihood is often based on the defence of legally established old community property rights. Sometimes, new community rights are invoked. The intermediary NGOs have given an explicit environmental meaning to such livelihood struggles in the last decades, connecting them into wider networks and proposing new policies of local or worldwide relevance. For instance, the chapters on India mention the new Forest Right Act several times, while an article on 38 mining conflicts in Argentina based on the EJAtlas (Walter and Wagner 2021) shows how legislation banning open cast mining was controversially enacted in some provinces because of such conflicts, jumping scales in practice: from NIMBYs (Not In My BackYard) to NIABYs (Not in Anyone's BackYard).

Throughout all such variations, a fundamental fact is that the processes of exploration and exploitation to feed the industrial capitalist economy take place mainly at the commodity frontiers. The instances of resistance are not "militant particularisms" based only on local identities; on the contrary, they are the nodes of the global movement for environmental justice, the existence of which is not yet always recognized. It has been environmental and human rights civil society groups (Global Witness, Front Line Defenders) that started publishing the statistics and the names of victims, not social scientists and not UN rapporteurs and much less UNEP.

WORLD ENVIRONMENTAL JUSTICE – A MOVEMENT BORN IN 1991 IN THE USA

The words "environmental justice" were used in the US since the early 1980s to claim redress in situations of "environmental racism" (Bullard 1990, 1993). The movement sprang from roots in the Civil Rights movement of Martin Luther King and others. It was observed that the geographical allocation of industrial waste and dangerous installations did not happen randomly but was concentrated in areas inhabited mostly by the Black population. Some years later, in 1991, a multinational meeting of "people of color" in Washington DC promulgated the excellent 17 Principles of Environmental Justice which inspire the EJAtlas and the present book.[2] Black ideas matter, indeed. Some of these Principles are:

Environmental Justice affirms the sacredness of Mother Earth, ecological unity and the interdependence of all species, and the right to be free from ecological destruction.

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Environmental Justice demands that public policy be based on mutual respect and justice for all peoples, free from any form of discrimination or bias.

Environmental Justice mandates the right to ethical, balanced and responsible uses of land and renewable resources in the interest of a sustainable planet for humans and other living things.

Environmental Justice calls for universal protection from nuclear testing, extraction, production and disposal of toxic/hazardous wastes and poisons and nuclear testing that threaten the fundamental right to clean air, land, water, and food.

Environmental Justice affirms the fundamental right to political, economic, cultural and environmental self-determination of all peoples.

Environmental Justice demands the cessation of the production of all toxins, hazardous wastes, and radioactive materials, and that all past and current producers be held strictly accountable to the people for detoxification and the containment at the point of production.

Environmental Justice affirms the right of all workers to a safe and healthy work environment without being forced to choose between an unsafe livelihood and unemployment. It also affirms the right of those who work at home to be free from environmental hazards.

Environmental Justice must recognize a special legal and natural relationship of Native Peoples to the US government through treaties, agreements, compacts, and covenants affirming sovereignty and self-determination.

Environmental Justice affirms the need for urban and rural ecological policies to clean up and rebuild our cities and rural areas in balance with nature, honouring the cultural integrity of all our communities, and providing fair access for all to the full range of resources.

Environmental Justice opposes the destructive operations of multinational corporations.

Environmental Justice opposes military occupation, repression and exploitation of lands, peoples and cultures, and other life forms.

Environmental Justice requires that we, as individuals, make personal and consumer choices to consume as little of Mother Earth's resources and to produce as little waste as possible; and make the conscious decision to challenge and reprioritize our lifestyles to ensure the health of the natural world for present and future generations.

It is then obvious that the environmental justice movement in the US took from the very beginning a position that recognized the ontology of Mother Earth, and the variety of social groups concerned (urban, rural, Afro-American, Indigenous). It also recognized how livelihoods and social values were threatened by environmental degradation. It blamed multinational corporations. It was an environmentalism of the BIPOC. In our own reconfiguration of a world environmental justice movement we share the grassroots methodology of the US EJ movement of the 1980s, and we co-produce knowledge with the relevant social actors and their networks across the world. In practice, the EJ movement in the USA disputed Inglehart's postmaterialist theory.

Many years later we see that the US EJ movement has to some extent been co-opted by "policy-makers" in the USA while the Principles are more relevant than ever for the world at large where movements for environmental justice are growing and networking, while developing rich repertoires of action, iconographies and vocabularies of environmental justice in many languages. The US movement continues to be relevant as conflicts such as that on the Flint water quality crisis showed recently in Michigan with a successful implementation of popular epidemiology and explicit claims to environmental justice (Chapter 24). Poor people

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have defended the environment in rural areas, and also in cities in the USA and elsewhere. Many of the top extractivist corporations (Chapter 27) have been from the USA, but the US environmental justice movement has rarely tackled them. The US movement focuses on "minorities" inside the country whereas environmental justice is a worldwide movement of majorities. Francia Márquez, Goldman Prize winner and elected vice-president of Colombia in 2022, wants to represent the poor, women, ethnic peoples, peasants, LGTBQI+ community, youth and working class that bets on a better country. She calls those people "the nobodies" and she is one of them.

Recently, Pellow emphasized from the United States an internationalist "critical environmental justice" perspective with which I agree. He lists four characteristics or pillars. Namely, intersectionality, multi-scalarity (or "glocality"), state violence, and indispensability. The latter means that the *wellbeing of all people, species, and ecosystems is indispensable to building socially and environmentally just and resilient futures for us all* (Pellow 2016, 224). With these or other names, these characteristics of Pellow's "critical environmental justice" will appear throughout this book.

A PLURIVERSE OF ENVIRONMENTAL JUSTICE AND "DEGROWTH IN PRACTICE"

Economic growth is still at the centre of politics around the world. However, calls for Degrowth (Schmelzer 2022) are on the rise. What are the connections between Degrowth and the world movements for environmental justice?

The social and political march towards freedom, social justice and fraternity/sorority cannot rely any more on the prospects of the economic growth promised by industrial capitalism, whether neoliberal or Keynesian social-democratic (Charbonnier 2020). It is time for political ecology to occupy the centre state in politics. Political ecology can still draw some force from the socialism of the First International of 1871 (that briefly united Marxism, Anarchism and Narodnik positions) but there is more strength today in the eco-feminist movements and in the environmentalism of the poor and the Indigenous of the Global South. And also, in the Degrowth or Post-Growth movement in the Global North which offers a strategy against collapse through a voluntary downscaling of its material production, consumption and waste, a socially equitable and globally just simplicity which defines human well-being in terms of a non-acquisitive life meaning.

This relatively small Degrowth movement (of which I am a member, Martinez-Alier et al. 2010; Demaria et al. 2013) is rather solipsistic despite its inspiration in global thinkers such as Georgescu-Roegen and Serge Latouche, despite also its theoretical interest in the "pluriverse" realities in Asia, Africa, Latin America researched and theorized by Ashish Kothari, Arturo Escobar and others (Kothari et al. 2019). It emphasizes social movements ranging from community gardens and worker-owned co-ops to farmers' markets, alternative food networks, Transition Towns, urban gardening, community energy. It sympathizes with the discourses of *Buen vivir* and post-extractivism in Latin America, the pluriverse of Ubuntu or the ecological Swaraj but it tends to ignore the actual geography of the myriad struggles for environmental justice and their hundreds of victims and successes around the world. It is rather obsessed by roof food gardening, urban squatting, vegan or vegetarian diets, night-trains and similar courageous examples of trying to live a life without economic growth as agents of our own

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destiny. Degrowth in the North implies also recreating the commons. Small-scale changes are already under way with numerous experiments like permaculture or dispersed electricity communes. But this movement in the North with its proposed public policies, summer schools and festivals, is very distant from the realities of the Global South.

However, in Giorgos Kallis' words (2018), this small Degrowth movement finds

> natural allies in movements against extraction and for environmental justice in the Global South (movements that confront in practice, rather than in theory, the growth of the insatiable metabolism that supports the imperial mode of living) as well as among indigenous groups who profess values of sharing, sufficiency and common ownership, in their own language and with their own significations.

The present book brings the concerns of world-systems theory, ecologically unequal trade and ecological imperialism squarely into the Degrowth discourse. Advanced industrialized countries have consumed the Earth's resources and pollution sink-capacity. Consequently, the Degrowth discourse, so far largely focused on the reduction of material use through domestic changes within the economies of the Global North, needs to systematically adopt a world vision, a vision from the Global South as shown in the EJAtlas.

In other words, the movements that stop or try to stop the extractive industries and waste dumping, are obvious allies of the post-growth or Degrowth movement in Europe, the USA and Australia. There is a collective alternative vision emerging from the billions of people involved in such socio-ecological conflicts worldwide, and these many people are in reality promoters and practitioners of less unsustainable economies (Gerber et al. 2021; Mailhot and Perkins 2022). Strategies from Oilwatch since 1997 on LFFU, Food Sovereignty as proclaimed by the Via Campesina, Popular Consultations against extractive projects (Urkidi and Walter 2011), the implementation of Indigenous territorial rights (the ILO convention 169, or the FRA in India) go in the same direction but more robustly than the Global North's niceties of proximity agro-ecology or car-sharing. Research by ecological economists on Degrowth is a flourishing field. Sometimes it is said that this research should be written from the "margins" – that is from the point of view of those "marginalized" in the growth economy. But they are not "marginal": they are central in terms of the provision of materials and energy to the world economy. They are the protagonists of this book. What matters is not what environmentalists from the South say about "degrowth" or "post-growth" (Rodríguez-Labajos et al. 2019) but *what they do* in practice.

In summary, Degrowth is

> not just a critique of excess throughput in the global North; it is a critique of the mechanisms of colonial appropriation, enclosure and cheapening that underpin capitalist growth itself. If growthism seeks to organize the economy around the interests of capital (exchange-value) through accumulation (of profits), enclosure, and commodification, degrowth calls for the economy to be organized instead around provisioning for human needs (use-value) through de-accumulation, de-enclosure and de-commodification. Degrowth also rejects the cheapening of labour and resources, and the racist ideologies that are deployed toward that end. In all of these ways, degrowth is about decolonization. (Hickel 2021)[3]

The present book is therefore a very empirical book about "degrowth in practice" and its links to the world movements for environmental justice (Martinez-Alier 2012). Degrowth is both a current of thought and a (Northern) movement with its intellectual origins in the fields of

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ecological economics, political ecology, economic anthropology, and also in environmental and social activism (Martinez-Alier et al. 2010; D'Alisa et al. 2014). The world movements for environmental justice stop mines, they stop pipelines, they stop plantations. They stop polluting industries including nuclear power plants and waste deposits. They keep fossil fuels underground. They protest against copper, nickel or lithium mining and also against water and land grabbing by hydropower and industrial windmills.

There is some resistance in the Global North as in the Ende Gelände movement in Germany, and by *zadistes* or *les soulèvements de la terre* in France, and in post-Soviet countries (Velicu 2019). But there is more resistance at the main commodity extraction frontiers in the Global South. I plead for a confluence of the *zadistes* with the *zapatistas*. In 1910, it was Zapata who carried the banner of Land and Freedom, *tierra y libertad,* that came to Mexico from the Russian narodnik movement via Spanish anarchism and Ricardo Flores Magón. I sympathize with the slogan "Land and Freedom", used for instance by Ken Loach for a film on the struggles in Catalonia at the time of the Spanish Civil War (a couple of years before I was born), and by the KLFA (Kenya Land and Freedom Army) in the 1950s in the anti-colonial Mau-Mau rebellion. Now, we can add Water and Air, and have Land, Water, Air and Freedom as a slogan and also a short description of the aims of the world movements for environmental justice.

ECONOMIC GROWTH AS ONE MISTAKEN UNITED-NATIONS "SUSTAINABLE DEVELOPMENT GOAL"

Degrowth is the opposite of the term "sustainable development" introduced by the UN in 1987 as one of the first in a litany of greenwashing terms to confront the environmental challenges. The United Nations not only left aside the environmentalism of the poor but also dismissed the critiques against economic growth that had been put forward since the 1960s and 1970s. Sustainable Development was the response by Keynesian social-democracy against the environmental critiques against economic growth. The Brundtland report of 1987 preached "sustainable development", and it was explicitly in favour of further economic growth. The UN has not changed its views. Since 2015, the UN have promoted with fanfare the so-called Sustainable Development Goals (SDGs), a collection of desirable objectives to end poverty and safeguard the environment particularly with respect to climate change. One can agree with many of the SDGs. However, SDG no. 8 contradicts many of the other worthy goals. It calls for "economic growth". Did they not realize that SDG no. 8 calls for economic growth on a finite planet? (Hickel 2019; Menton et al. 2020).

One favourable trend towards environmental sustainability is that the human population is likely to reach its peak by 2060 at 9.5 billion. It was 1.5 billion in 1900. Other social and economic trends are still negative for environmental sustainability. In the UN SDG no. 8, "Decent Work and Economic Growth", the word "growth" was not euphemistically left aside (as in "sustainable development"). In the UN's words, the objective is to "sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries". This is supposed to be possible, without environmental collapse, by "improving progressively, through 2030, global resource efficiency in consumption and production and endeavouring to decouple economic growth from environmental degradation". Not a word about the carnage going on at the commodity extraction frontiers.

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SDG no.8 is contradictory particularly with goal no.13 on Climate Action. A better SDG would have been to stop economic growth in the rich countries, and simultaneously support social and environmental justice by facing the ecological debt from North to South, and also support the many environmental movements.

THE EJATLAS AS AN ARCHIVE FOR CONTEMPORARY SOCIO-ECOLOGICAL MOVEMENTS

Sousa Santos' metaphor is that when we try to speak on behalf of the subaltern, we are at most "ventriloquists", privileged researcher-activists echoing the voices of marginalized and racialized communities. I prefer to see myself as a social historian with a loudspeaker trying to argue in favour of the world movements for environmental justice. This book relies on the data sheets collected in the EJAtlas, and it is a contribution to the field of comparative political ecology written in the style of contemporary social history. It combines a comparative, statistical approach to socio-ecological conflicts with a cosmopolitan orientation in contemporary socio-environmental history.

The conflicts are classified in the EJAtlas into ten major categories and very numerous subcategories. The main categories are Nuclear Energy; Mineral Ores and Building Materials; Waste Management; Biomass and Land Conflicts; Fossil Fuels and Climate Justice; Water Management; Infrastructure and Built Environment; Tourism Recreation; Biodiversity Conservation Conflicts; Industrial and Utilities Conflicts. The frequency of participant groups (Figure 1.5) changes slightly depending on the type of conflicts or the type of participants we consider. We might select for instance International EJOs and see the type of conflicts and the geographies where they are disproportionately present in the EJAtlas. We have also found out that depending on the impacts selected such frequencies change to some extent. Thus, by selecting conflicts with visible health impacts, Navas el al. (2022) revealed a "working class", trade-unionist environmentalism somewhat "hidden" in the very voluminous EJAtlas. Similarly, we may hypothesize that selecting impacts such as "loss of landscape/aesthetic degradation/loss of sense of place" or "loss of traditional culture" would elicit a change in the frequency of mobilizing groups in ways that are being checked at present (Hanaček 2023, forthcoming). Another hypothesis is that choosing only the urban conflicts would elicit a frequency ranking of such social actors different from the EJAtlas as a whole.

If the EJAtlas is a large sample of an unknown, very large number of EDCs, this book is a sample of the sample with only 500 cases from all over the world, grouped by country, region or theme. As rearguard amanuenses we arrive after the battles, celebrating triumphs or counting the dead and wounded, making sense of the socio-ecological conflicts collected and classified in the EJAtlas. Social historians go to archives and libraries looking for information on what they want to study. For instance, peasant rebellions or *jacqueries* in France, China or India, "in Allahabad and Ghazipur districts during the Sepoy Rebellion of 1857–8" (Guha 1989), the revolution in Mexico in 1910 with Zapata deploying the slogan "Land and Freedom", the recent history of the feminist movement in one country or another (Delap 2020) or the history of anti-colonial movements before or after 1945. The EJAtlas is such a "social history" archive for environmental conflicts worldwide. We are not going into dusty paper archives because we have built up our own archive on the web.

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Looking at the EJAtlas as social historians brings also some peace of mind because we have been uploading environmental conflict cases since 2012 at a rhythm of one per day, and we are very conscious that there must be five or six new remarkable conflicts around the world starting every day. We are always late, and incomplete. Never mind, social historians wrote memorable books on other social movements using fragmentary dusty archives. So, as a social historian I venture into this archive which I know well although I am scarcely aware of its many corners.

The EJAtlas is a product of collaborative research on ecological conflicts within a global perspective. The expansion of global industrial capitalism (including China) spreads around diverse geographies of injustice along commodity chains. Yet, at the same time, through the environmental justice movements, local political ecologies are becoming increasingly transnational and interconnected. The EJAtlas, as a tool for academic research, activism and advocacy, goes beyond the political ecology based on a single or a few case studies. It allows wider systematic evidence-based comparative research into the politics, power relations and socio-metabolic processes surrounding environmental justice struggles locally and globally.

I also explain throughout the book the forms of mobilization or "repertoires of contention" that we find in the EJAtlas (Figure 1.6) in the conflicts under study. The movements for environmental justice simultaneously use "soft" methods such as letter writing, petitions to the authorities, challenging the EIA (Environmental Impact Assessment), litigation in local courts etc. and more radical methods such as street marches, blockades and land occupations, strikes etc. We could research by large countries or subcontinents which kind of methods predominate, in which kinds of conflicts and with which participants.

Many of the pages of this book are taken from the datasheets in the EJAtlas written by myself or by other members of the team. Taking our cue from EJOs we do comparative, statistical political ecology (Temper et al. 2015, 2018, 2020; Scheidel et al. 2020; Özkaynak et al. 2021; Hanacek et al. 2022; Navas et al. 2022). The EJAtlas followed in the steps of activist maps compiled by OCMAL (Observatorio de Conflictos Mineros de América Latina) and Fiocruz (Mapa de Saúde e Justiça Ambiental no Brasil) (Porto 2013). It was inspired by them, as also by Ricardo Carrere (World Rainforest Movement), ASUD in Italy, Acción Ecológica and Oilwatch in Ecuador, ERA in Nigeria with Nnimmo Bassey and Godwin Ojo. The landmark Fukushima nuclear energy accident of March 2011 coincided with the start of EJOLT 2011–15, a project bringing together academic and activist organizations. Then came the ERC grant EnvJustice, 2016–21. Its start coincided to the day with Berta Cáceres' assassination in Honduras in a hydropower conflict. We have put the EJAtlas together over ten years with Leah Temper (who started it), Daniela Del Bene (who coordinated it), Arnim Scheidel, Begum Özkaynak, Beatriz Rodriguez Labajos, Irmak Ertör, Grettel Navas, J.F. Gerber, Matsui Kenichi, Paul Mohai, Julia Snorek, Louisa Mathies, Ksenija Hanaček, Dalena Tran, Sara Latorre, Mario A. Pérez Rincón, Raquel Neyra, Emiliano Teran, Sara Mingorria, Max Stoisser, Federico Demaria, Juan Liu, Swapan Kumar Patra, Beatriz Saes, Eleonor Fanari, Arpita Bisht, Brototi Roy, Camila Rolando Mazzuca, Lena Weber, Jen Goby, Bowen Gu, Marcel Llavero, Teresa Sanz, Mariana Walter, Lucrecia Wagner, Talia Waldron, Yannick Deniau, Federico Guzman, Sofia Avila, Jovanka Spiric, Linda Dubec, Alice Owen, Daria Rivin and other interns and students at ICTA-UAB, and local activists and academics around the world. Some of their names appear in the endnotes of this book. We have relied on the creator of the platform, Yakup Cetinkaya – without whom the EJAtlas would not exist. The EJAtlas has been financed by four research projects so far: EJOLT (2011–15), Acknowl-EJ

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(2016–19), EnvJustice (2016–21) and a Balzan prize (2021–23), and we shall continue updating and adding cases beyond 2023. The EJAtlas is in open access but it is certainly not an anonymous database. We have a protocol for quoting from the EJAtlas which I follow here. The references to the entries to the EJAtlas in this book have the names of the individual or collective main authors of the datasheets, and I also give other sources.

Since the early 1990s, the concept of the "environmentalism of the poor" underscored the diverse place-specific rural and urban instances of ecological distribution conflicts. These EDCs became multiple evidences of an incipient "global environmental justice" (Newell and Sikor 2014). In 2016, we expressed this as follows:

> There is a global movement for environmental justice, although almost all conflicts in the EJAtlas are local and they target specific local grievances. The movement is global because such local events belong to classes of conflicts that appear regularly elsewhere in the world (e.g. on open-cast copper mining, on oil palm plantations), or because they raise the conflict issue to a global level through movements' connections and networks and, by doing so, they actually create and operate at a global scale… We claim that there is a global environmental justice movement that shares some common goals, frames and forms of mobilization, although obviously there is no single united organization in charge, no politbureau or central committee. This is also the case, for instance, in the global feminist movement. (Martinez-Alier et al. 2016, 747)

This "global environmental justice movement" has been named and recognized as a new historically specific social movement. At the methodological level, how to prove its existence? In the EJAtlas (as in this book) we list and analyze example after example of ad-hoc mobilizations understood in terms of the recurrent metabolic sources of conflicts and the grievances, some common vocabularies, claims, goals and outcomes of the protests. We focus on events rather than organizations. But how to prove that these are not merely "militant particularisms"? What is their historical significance, their ability to change the social metabolism? Thus (as Zehra Yasin 2022 writes),

> the understanding of globality hinges on two main dynamics: One is the spatially globalizing impacts of the social connections and networks of the movements at the organizational level. The other one is the recurrence or comparability of the concrete social sources and nature of environmental conflicts and, therefore, common goals and claims emerging in each local "case". At the empirical level, these are crucial to the formation of a global wave of environmental movement. Yet, at the conceptual-methodological level, they do not specify how the diverse place-specific movements are globally united/related.

It is now time for me to start digging out conflict cases from the archive in order to write this book as other members of the team have already done for their doctoral theses and/or academic articles. This is one of the first books based on the EJAtlas but not the last one. There is already a book on environmental conflicts in Peru by Raquel Neyra. Another book on Mexico (by Aida Luz López et al.) is in advanced preparation in the steps of Darcy Tetreault (2022) who writes:

> socio-environmental conflicts typically pit affected popular groups from rural communities (women, smallholder farmers, indigenous people, and workers) who struggle to defend their territories, water, traditional livelihoods, culture, and collective well-being; against governmental agencies and private companies that promote extractive activities in the name of development. The former frequently find allies in civil society, including non-governmental organizations, university groups, collectives,

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religious groups, artists, and activists. Of course, the state is not monolithic and some state agencies may support – or at least rule in favor of – environmentally affected people organized in resistance to environmentally destructive projects.

Moreover, some of the movements are not rural but urban and periurban (Ruiz Rincón et al. 2019).

The present book is organized into country/regional chapters and thematic chapters dealing with different topics. In my view, the main merit of this book resides not so much in those geographical chapters but in the "transversal" thematic chapters which show the power of comparative political ecology in bringing together similar socio-ecological conflicts in different continents and countries trying to escape from "methodological nationalism".

Chapter 23 deals explicitly with "transboundary conflicts" between Spain and Portugal. After I wrote it, I realized that the book and the EJAtlas are full of transboundary conflicts and common movements across borders, and that this is a powerful method to establish the existence of a world movement for environmental justice. Thus, as we shall see, conflicts on dams or mining in Arunachal Pradesh in India connect with conflicts in Tibet (Buddhist monks), which then connect with conflicts in Yunnan, Qinghai, Inner and Outer Mongolia, and even Siberia. A copper conflict in Arizona is linked with copper conflicts in Sonora, Mexico. The company Grupo Mexico in Sonora connects with copper in Southern Peru, and then with other copper mines at the border with Chile in the Andes copper belt. Even between Kerala (India) and Pakistan, through fisherfolk movements, there is common action. And so around the world, with similar environmental conflicts across political borders, involving similar commodities, participants or companies. There is no need to look for a central committee of the environmental justice movement as we travel across political borders from territory to territory, along transnational watersheds or through similar plantation areas. Not only the injustices are transboundary, but also sometimes the resistances. A rosary of ad-hoc ephemeral EJOs has been built across borders around the world.

This book draws from Social Movement Theory (Diani 2022) but it focuses not on the form and organization of the environmental justice movements, as political scientists like to do, but on their historical significance. They resist the damages caused by the increased social metabolism. Their grievances, claims, actions and proposals for environmental justice point to a different economy.

NOTES

1. Quoted in a lecture by Rob Nixon at Utrecht University, 16 April 2013.
2. First National People of Color Environmental Leadership Summit (1991). 17 Principles of Environmental Justice, Washington DC.
3. Also in D. Boston's (2021) excellent analysis: Grappling with growth. Synergies and tensions between degrowth and people's movements, *Transnational Institute*.

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2. Japan: toxic archipelago

The environmental history of Japan seemed an example of "environmental modernization" until the Fukushima disaster in 2011. We can neatly separate the three strands that are present everywhere in the world: (a) the cult of wilderness or the defence of pristine nature; (b) ecological modernization or "the gospel of eco-efficiency" achieved through technological change; (c) the environmentalism of the people, of the citizens, the poor and the Indigenous, the movements for environmental justice.

Japan, an industrial country with less than 2 per cent of the world's population, has had several landmark environmental conflicts since 1900 (Tsuru 1999). First, copper smelting and water pollution in Ashio; later some terrible coal-mining accidents and the illnesses from industrialization such as Minamata; then the anti-nuclear movement before and particularly after the Fukushima disaster of 2011, and even later a significant anti-coal movement.

THE ASHIO CONFLICT[1]

The Ashio conflict is famous as an early instance of the "environmentalism of the poor" in a context (damage from copper mining and smelting) common then to other countries – as in Rio Tinto in Spain, in 1888, and La Oroya in Peru in the 1920s.

As narrated in the EJAtlas, this is the story of the encounter of two unequal forces against each other: the Furukawa Corporation and peasant protesters. Before 1880, prior to the Ashio mining activities, the surrounding area was densely forested. The destruction of the trees caused by the sulphurous acid from the mines caused the erosion of the topsoil, which allowed the rainwater to flow directly into the Watarase River, affecting the agricultural lands nearby. To further worsen the problem, the Ashio mine lacked storage facilities for the slag and untreated ores. Thus, these materials accumulated in the rice fields through the irrigation systems. The poisons also affected the quality of drinking waters, with effects on the people's health. In August 1890, serious flooding of the Watarase river basin occurred damaging 1600 hectares of farmland and 28 villages in Tochigi and Gunma prefectures. This flood caused the farmers and villages to get together and create movements for shutting down the mine. However, since 1868 the political context was the Meiji government, which wanted to increase military strength and expand industrial production. The Furukawa Corporation was one of the main actors in this wave of industrialization.

The Ashio Copper mining conflict is significant in Japanese history and in the history of world environmentalism, as one of the first, well documented socio-environmental movements. One main protagonist was Shozo Tanaka (1841–1913), who took direct action for this cause in December 1901, when he made a written appeal to the Emperor Meiji, whilst shouting for his attention. Shozo Tanaka, from a farming family, is widely acknowledged as Japan's "first conservationist" (Figure 2.1). He became a member of the Diet (the parliament) after organizing mass movements against the copper mining company such as protest marches

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Figure 2.1 *Shōzō Tanaka was a Japanese social activist and politician, Japan's first environmentalist*

between 1897 and 1900. The last march took place from 9 to 11 February 1900 and led to what is known as the "Kawamata incident", in which 4,000 marchers on their way to Tokyo clashed with police and many were arrested. Shozo Tanaka also took an active role in trying to prevent the Yanaka Village near the Watarase River from being demolished to become a poisoned water catchment lake. However, the village was demolished. The mine closed down in 1973, and refineries continued operating using imported ore until the early 1980s. Some compensation was paid later. Japan's experience of industrial pollution (later to be known as *kogai*) began at Ashio and other less famous cases of copper smelting around 1900.

Around 1900, between 8,000 and 9,000 tons of copper were produced per year. In an instance of early popular epidemiology, in 1889–90 Shozo Tanaka created a survey of the birth to death ratio in order to show that the copper mine was responsible for murder (Strong 1977; Stolz 2007).

BIODIVERSITY CONSERVATION CONFLICTS IN JAPAN

The EJAtlas contains some rather awful biodiversity conservation conflicts around the world, including Japan. We consider two cases: the dolphin hunting conflict in Taiji, Wakayama

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prefecture, and the expansion of the US Military base in Okinawa that endangered the Henoko Bay Dugong.

Dolphins at Taiji[2]

Thousands of dolphins are slaughtered during government-sanctioned *oikomi* (drive fisheries) in Japan as a whole. The disgusting killing at Taiji, a small town with a population of 3,500, has been condemned for many years. During the six-month hunting season, townspeople corral hundreds of the mammals into a secluded bay and butcher them. The cruel scene was featured in the documentary "The Cove", drawing unwanted attention to the little coastal community. Environmental campaigners visit the town every year during the autumn drive-hunt season to protest the killings and authorities try to prevent confrontations between locals and activists. The groups active in the defence of dolphins are international organizations like Sea Shepherd and the Earth Island Institute, and also local Japanese organizations like ELSA Nature Conservancy who as they themselves state "are working with Coalition members One Voice (France) and the Earth Island Institute (USA) to stop the cruel dolphin hunts in Japan".

The meat market brings some money while the primary economic incentive for the Taiji drive hunts is the aquarium industry. Some dolphins are spared and cruelly taken away for training as performers in Japan or abroad, fetching high prices. Live dolphins sell for around $50,000, and this is what keeps the hunters in business, as argued by P. Singer and J. Sosnowsk, in 2016. Taiji fishermen defend the hunt as a tradition; they say that hunting dolphins and whales is crucial to the region's economy. The dolphin captures and killings are done in the Yoshino Kumano Kokuritsu Koen, a national park. The Ministry of the Environment manages the area. Sea Shepherd says that Taiji cannot fall back on "tradition" because history shows that progress negates atrocious ideas. Moreover, it is alleged that high levels of mercury in dolphins captured in the cove make consumption of their meat a dangerous habit for the local people. According to W. Palmer, during the six-month season in 2015–16, the hunters killed 652 dolphins (while catching another 117 live dolphins to be sold to aquariums around the world).

The Dugong in Okinawa: Anti-imperialist Conservation[3]

In Okinawa, south of Taiwan and the Chinese coast, a conservation conflict occurred because of the expansion of a US base at the Henoko Bay, habitat of rare corals and marine mammals like the dugong. In 2003, a coalition of environmentalist organizations opposed the plan. Three Japanese citizens, six US and Japanese environmental associations along with Okinawa residents on behalf of the dugong as plaintiffs filed a claim against the US Department of Defense. The plaintiffs claimed that the US Marine base construction scheme in Henoko Bay would destroy the habitat of the dugong. For local Okinawa residents, the dugong is an integral part of their cultural and historical heritage.

This military facility was planned to replace the existing and controversial military base in Futenma. This replacement plan, however, met strong opposition from environmental activists and Okinawa people because of the impact on the dugong, but also because people had been overburdened by American military presence for too long. In 2008, the judge of the US district court dismissed the standing of the dugong in this case, but mostly agreed with the plaintiffs' argument, ordering the Department of Defense to conduct a proper impact

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assessment prior to the commencement of the construction. Prime Minister Shinzo Abe and his cabinet were later determined to continue construction. An elected Okinawa prefecture governor strongly confronted Abe and Chief Cabinet Secretary Suga.

By 2019, the Center for Biological Diversity (CBD) in the US said in a press release that more than a dozen US conservation and animal protection groups "urged the House Armed Services Committee to push for a temporary halt to construction of a U.S. military base in Japan that could wipe out the Okinawa dugong, one of earth's most endangered marine mammals". "We would not condone such activities at home, nor should we condone them abroad", states the letter from the CBD, Natural Resources Defence Council, Animal Welfare Institute, and ten other non-profit organizations. The ongoing construction ignored a democratic referendum in which an overwhelming majority of Okinawa voters opposed building the base over hundreds of acres of rich coral and seagrass habitat.

The CBD is what in the global environmentalist argot is called a BINGO, Big International Non-Governmental Organisation, here helping a movement of "conservation with the people" and not, as in other cases that we shall see in this book, "conservation without the people" or even "against the people". This Okinawa case we classified in the EJAtlas as a "biodiversity conservation" conflict but it is also a "military installation" conflict. Opposition drew upon the "cult of wilderness" but also on local and national feelings against the US military.

ONE BIG COAL DISASTER: THE MITSUI MIIKE COAL MINE[4]

This Japanese chapter includes episodes related to energy sources like coal and nuclear. Industrial progress leaves debris in its wake. I could instead insert some paragraphs on Zen gardens and the cult of human-made landscape in Japanese civilization, landscapes integrated into temples to be admired in Kyoto. However, I would rather stick to the material causes of and solutions to ecological distribution conflicts. We continue with a horrible but not atypical coal accident that marked a change in the energy system away from coal, ending the chapter with the short-lived coal renaissance after the Fukushima disaster of 2011. In the Chikuho coal region (Allen 1994) on 9 November 1963, there was a deadly coal dust explosion in the Mitsui Miike coal mine in Fukuoka and Kumamoto Prefectures. It was one of the worst ever recorded; 458 miners were killed and another 839 were permanently injured. In 1955, coal as a primary energy source provided 50 per cent of energy needs in Japan, but after the Miike labour dispute and mine explosion, the level decreased, dropping to 16 per cent by 1975. Coal production at the Miike mine was 14 tons per worker per day in June 1958, but this was increased to 44 tons as of October 1963.

A memorial ceremony was held on 9 November 2013 to mark the fiftieth anniversary of the country's worst mine accident in the post-war era. The mine, which closed down in 1997, was operated by Mitsui Mining Co. The explosion occurred in a mine tunnel roughly 500 metres below the mine's ground-level entrance. The blast and flame caused roof fall in many areas in the tunnels, which then quickly filled with carbon monoxide. Lack of safety provisions to prevent coal dust was the main cause. Coal-dust explosions are the worst type of explosion because a great amount of carbon monoxide is produced. As a result of this, many miners, even if they survive, continue to suffer from the long-term after-effects. Even if a coal dust explosion does not spread throughout the length and breadth of the mine, the resulting carbon monoxide gas does in fact spread in this way, and all the workers are poisoned. The Miike

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mine explosion of 1963 was an example of this. It was common knowledge that maintaining the site clean and moist could prevent such explosions; however, after a strong labour dispute in 1960, the insufficient number of safety personnel – caused by the employer's productivity-first policy – failed to take those measures.

Coal-dust explosions, moreover, present a particular problem, because coal dust is something that is produced at every point in the mining process and accumulates all the way from the mine entrance to the deepest shafts. Therefore, when a small explosion occurs, it is followed by a chain reaction fuelled by the coal dust, and the resulting explosion envelops the entire mine infrastructure. Although "the loss of life and health cannot be compensated with money or other material goods. But for those who are victimized by the system, it is necessary to provide living expenses and to guarantee medical treatment. In the case of the Mitsui Miike coal-mine explosion the victims received very poor compensation" (Hoshino and Iijima 1992). For the 458 deaths, compensation was set at 500,000 yen (rate of 360 yen to the dollar at the time), i.e. 400,000 yen (US$ 1,120) for condolence money and 100,000 yen ($480) for the funeral costs.

Up to that time the mining companies had not paid any money to victims' families when a death occurred. This understanding among mine-owners was brought into question when the Miike mine union demanded compensation. The executives of the union thought that the one-million-yen ($2,800) demand was rather high, as did the Sohyo (National Organization of Labour Unions), and in this regard the Miike mine workers were criticized even by their own trade unions. We know however that the poor sell cheap.

Wage-workers demand higher salaries, the abolition of piece-work, shorter working times, and safety in work – this has happened for a long time. Accidents and chronic pollutions in mines, factories and plantations continue to take place, in particular in South Asia and also (in coal mining) in China. Exploitation of workers includes bad, unhealthy conditions of work, and in response it is not difficult to find instances of working-class environmentalism (Chapter 20) (Derdak and Hast 1991).

SIX BIG INDUSTRIAL DISEASES

Arsenic Poisoning in 1955, Morinaga Milk: Trying to Enforce Liability[5]

From June to August 1955, in the western areas of Japan, 12,131 newborn babies were poisoned and 130 died (according to a 1956 Ministry of Public Welfare survey) because arsenic had been mixed into the Morinaga Powdered Milk "MF" produced by the Tokushima plant of the Morinaga Milk Company. The affected infants came down with diarrhoea or constipation, vomiting, swollen abdomens and darkening of skin colour. There was no clue as to the cause. On 23 July, the first infant patient of the Morinaga MF Milk poisonings was seen at Okayama University Medical School Hospital, and then one infant after another was brought into the hospital. On 5 August it was made clear that what the infants had in common was the intake of the MF milk formula. On 19 August, Professor Eiji Hamamoto of the Paediatric Department of Okayama University advised the production chief at the Tokushima plant that several points in the production process should be examined for imperfections. Professor Hamamoto reported the case to the Public Health Department of Okayama Prefecture 18 days after MF milk was found to be the causative agent. The government's Ministry of Public

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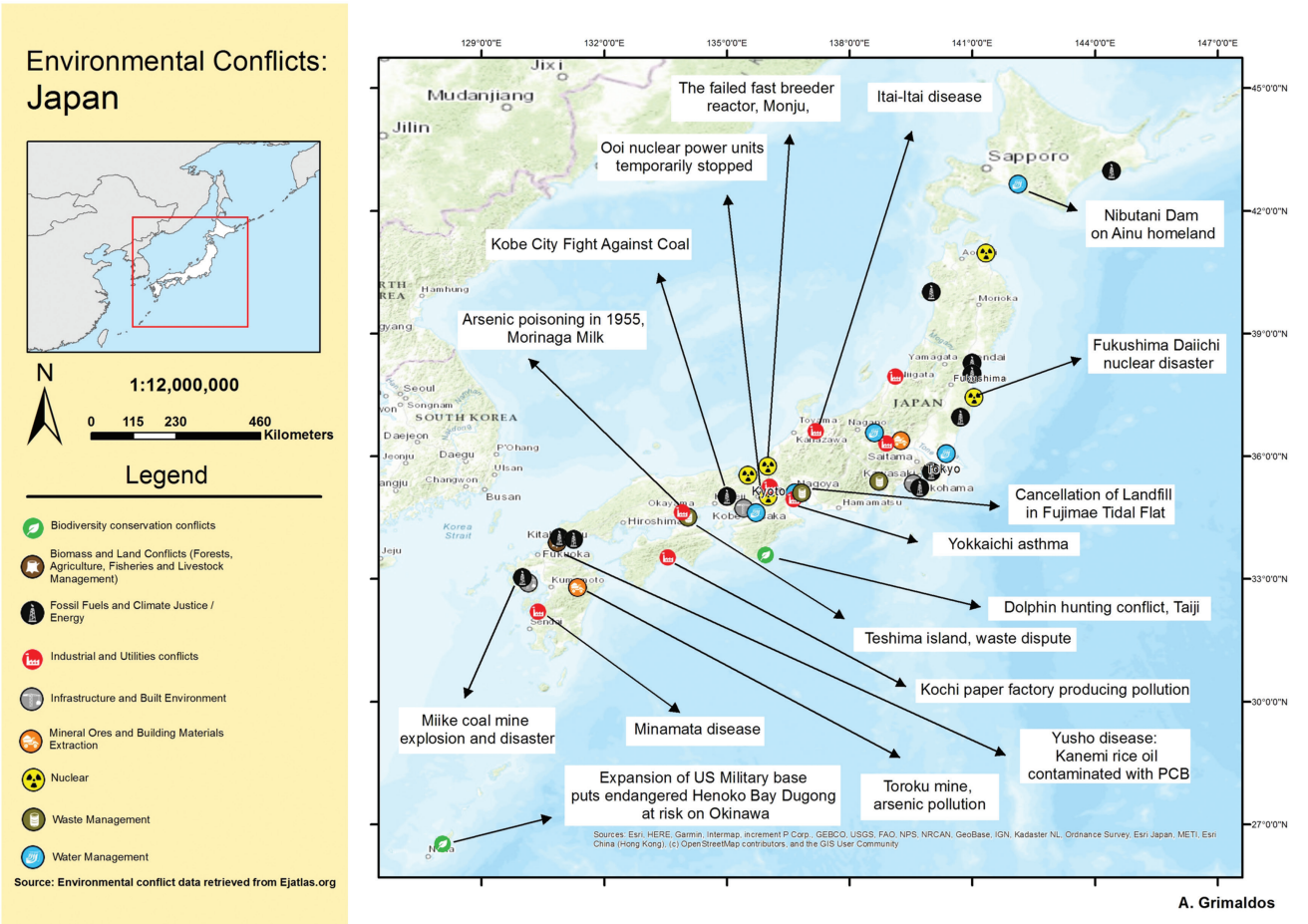

Source: A. Grimaldos

Figure 2.2 *Japan's cases considered in this chapter*

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Welfare issued an order for all MF milk to be withdrawn from the market and the Tokushima plant of the Morinaga Company to be closed (Shoji and Sugai 1992).

At that time, the parents of the infant victims came together to organize the Victim Patient Families Association. On 30 September, the Okayama association made the following three demands in relation to the incident: (a) that the company pay all expenses in relation to essential treatment, hospitalization, and hospital visits; (b) that compensation be provided by the company in relation to the poisoning after-effects; and (c) that compensation be set at 2,500,000 yen ($6,942) for each death caused, 700,000 yen ($1,943) for relatively seriously affected cases, and 300,000 yen ($833) for lesser degrees of poison-related degenerative involvement. The company did not respond to these demands, and so the struggle was organized on a nationwide basis. On 19 September, 1,955 victims held a meeting in Okayama City, and decided to form Zenkyo (Morinaga Milk Victims' Association) and to press for action in relation to their three demands. However, the number of victims was much larger than had been expected and the company appealed to the government to form an advisory committee.

On 21 October, the Ministry of Public Welfare created a five-member committee. On 5 December, this committee announced the results of their deliberations, which were far from meeting the demands of the victims' families. Zenkyo was very surprised and disappointed at these proposals and as a result decided to negotiate directly with the company. Zenkyo's demands were: (1) that the company compensate families of dead poisoning victims to the tune of 500,000 yen ($1,388); (2) that the company provide regular medical examinations for the living victims of the poisonings; (3) that a research institute be established to further progress in overcoming the lasting effects of the poisonings. On 26 December 1955, Morinaga indicated that none of these proposals were acceptable. Zenkyo protested to the Ministry of Public Welfare and organized demonstrations in concert with the prefectural associations, calling for a nationwide boycott of Morinaga products and staging sit-down demonstrations and strikes at Morinaga branch offices. Zenkyo gained nothing for its efforts, but some people belonging to the Okayama association of Zenkyo decided to file a suit in the civil courts.

After Zenkyo had been disbanded, an organization was established in Okayama Prefecture for the express purpose of providing protection for the Morinaga arsenic milk-poisoned children. In July 1957, it entered into negotiations with Morinaga in which they demanded and received a memorandum from the company that acknowledged the company's responsibility in paying for periodic medical examinations for poisoned infants. In October 1963, the Tokushima District Court handed down a not guilty verdict in the case against the Morinaga Milk Company. Angered by the unfair court decision, this same group decided to spread their movement throughout the country. In March 1966, the Takamatsu High Court reversed the Tokushima District Court decision and sent the case back to the district court for retrial. In the same year, the Okayama Association against Medicine Poisonings (a private organization) proved through careful surveys that the MF milk poisonings had serious after-effects. At this point the children were 14 to 15 years of age. A survey was completed, the title of the work was "Visit after 14 Years" and contained interviews with 68 people, 80 per cent of whom were found to have definite after-effects and abnormalities. Professor Maruyama held a press conference on 18 October 1969 to publicize "Visit after 14 Years". Many of the victims' parents were encouraged by the Maruyama Report, and once again a Morinaga Arsenic Milk Poisoning Protection Association was formed. In comparison to the situation in 1955, the new association had a much better chance of success, for there were anti-pollution movements in the making. The researchers found some very definite after-effects of the poisonings, tried to discover effective

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treatments for the problem and provided immunological analyses relative to victim medical prognosis. Professor Maruyama organized a committee to survey the after-effects of the poisonings in cooperation with the Japan Paediatrics Academy and the Japan Hygiene Academy.

On 12 December 1970, representatives of the Morinaga Milk Company met with those of the protection association in Okayama, and thereafter they met once a month until 11 July 1971. Bowing to pressure from the protection association and also from public opinion, the Ministry of Public Welfare agreed to make examinations of the poisoning victims. Its report was made to Okayama Prefecture in December 1972, and the conclusion was that there was no special need for the patients to worry. Public opinion was at this time in full support of the protection association. From autumn 1970 a boycott against Morinaga began to spread to all parts of the nation. In August of 1972, at the fourth national assembly of the association, it was decided that permanent measures should be specified for the victims of the Morinaga arsenic milk poisoning. The claims involved the payment of compensation for those who had died as well as those who were still suffering the after-effects of the poisoning. In 1972, the boycott movement against Morinaga products was already nationwide, and with these resolutions it spread like wildfire all over Japan. Before the boycott movement had gotten underway, the Morinaga Company held 45 per cent of the market for powdered baby milk, but after the boycott started that share went down to 17 per cent.

In April 1973, members of the Kinki branch of the protection association filed a suit for damages against the Morinaga Company in the Osaka District Civil Court. In the same year, a lawsuit was begun in the Okayama District Court in August and in the Takamatsu District Court in November. The Tokushima District Court case was reopened and in March 1973, after the Public Prosecutor had brought charges, the director and production chiefs of the Morinaga Company were sentenced to five years in jail. The boycott of Morinaga products and the court cases were the two most important aspects of the movement and were both long-term measures. On 23 December 1973, an agreement was reached. It attributed full responsibility to the Morinaga Company for the original problem. In April of 1974, the Hikari Foundation was established in order to help the Morinaga poisoning victims. It took 19 years for this organization to be formed. As of 1981, there were 17 district offices, managed by parents involved in the protection association. There was also a great deal of cooperation from medical doctors and from people working in special education. By the end of March 1983, 6,389 Morinaga victims were in communication with the Hikari Foundation. Brett Walker (2010) gives these figures for 1981: 13,389 ingested the milk, 600 died, 6,093 had health difficulties, 624 were plagued with retardation.

Yusho Disease and the Ban on PCB[6]

This case led to the banning of polychlorinated biphenyl (PCB); it was a crucial case not only for Japan but for the world in the battle to prove the risks of PCB. In 1968, "Kanemi rice oil" was contaminated. For deodorization, the oil was heated using PCB as the heating medium, circulating through pipes. Due to holes in the pipes, the PCB leaked into the cooking oil and contaminated it. From February to March 1968, a mysterious sickness occurred in poultry farms in western Japan, resulting in the death of over 400,000 birds. The contaminated rice bran oil had been sold to poultry farmers for use as a feed supplement and to consumers for use in cooking. About 14,000 people who consumed the contaminated rice oil were affected. Additionally, in children there were reports of poor cognitive development.

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From June to August 1968, effects on humans began to appear successively in western Japan. These effects were generically called *Yusho* (油症). In October 1968, from the investigations by scientists at the Faculty of Medicine, Kyushu University, and at the Department of Health, Fukuoka Prefecture, the cause of the diseases was determined to be the rice oil contaminated with Kanechlor 500 (KC-500), a brand name of PCB. Victims slowly organized to claim damages, and there were numerous court cases, still going on in 2013. These claims are usually interpreted as citizens' movements (*shimin undo*). Indemnities paid were low but at least the liability of the company was recognized.

PCB is thought to have effects as an endocrine disruptor, in addition to causing direct health effects. In Japan, victims were afflicted with various health problems, such as skin pigmentation effects, an increased foetal death rate and chlorine acne. Even before the harm to people was revealed, chickens were fed contaminated oil and a massive death occurred; however, these deaths were not initially considered a serious issue. If they had been taken seriously, then perhaps the Kanemi Yusho accident would not have happened. Over 30 years afterwards, victims were still suffering from their injuries. Poly-chloro-dibenzofuran (PCDF), a dioxin, was also found in the contaminated oil. Finally, in 2002, the Japanese Government admitted that the injuries were caused by PCB, as well as dioxin. After the Kanemi Yusho accident, people began to realize the toxicity of PCB and the movements to forbid it spread globally. In 1974, its manufacture and use were banned completely in Japan. Manufacture of PCB had started in 1929 at Swan Co., USA. Immediately after that, the toxicity of PCB began to cause problems such as the chlorine pimple disease in labourers. However, because of the "excellent" properties of PCB, its production was expanded (Tsuru 1999) (Koppe and Keys 2001).

Itai-itai Disease[7]

The outbreak of Itai-itai disease, a painful chronic cadmium (Cd) poisoning, took place in Toyama prefecture along the Jinzū River for many decades. The cause of the disease was discharge from the Kamioka zinc mine belonging to Mitsui Mining & Smelting Co. The name Itai-itai means "it hurts-it hurts", for the severe pains people with the condition felt in the spine and joints. The soil in rice paddies was polluted with heavy metals including Cd through irrigation water from around 1910 to the 1960s. Farmers and peasants who used the water of the Jinzū River for agriculture, as well as fishermen who fished those same waters noticed decreases of crop yields and catch of fish. Realizing that the pollution came from the Kamioka zinc mine, they established an Association for Fighting against Mitsui Mining and Smelting Co.

In 2006, the *Itai-itai-byo Taisaku Kyogikai* (Council on measures to aid Itai-itai disease victims) published a pamphlet to commemorate the fiftieth anniversary of its establishment. The pamphlet contains the testimonies of 56 people discussing the half-century of efforts to provide relief for victims. Efforts have included court battles with Mitsui Mining & Smelting Co. In 1972, the survivors and their families became one of the first pollution victims in Japan to win a lawsuit against a major company. According to Ryoshin Takagi, the deputy head of the council even after academics put forth the theory that cadmium caused the disease, sufferers and their family members were fearful to take action, concerned that the region's rice would stop selling and women would stop coming to the area to marry once word of the disease spread.

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The pamphlet carried an essay by Tatsuru Shimabayashi, a lawyer who died aged 82. He wrote, "the true nature of the pollution lies in the fact that the victims have suffered for life, and that local governments and the company responsible for the damage have ignored the victims' suffering". The estimated cadmium intake of Itai-itai victims was 1 mg/day (20 times the maximum permissible limit and 200 times the normal intake in unexposed populations). The number of people affected (mainly women) peaked in the years between 1955 and 1960. It caused severe bone deformities that resulted in pain upon walking, and chronic renal disease.

The Kamioka Mine has a long history dating back to the Yoro era of the Nara period (around 720), when gold was discovered on the site. As the country's rulers changed through the Muromachi, Azuchi-Momoyama and Edo periods, minerals continued to be extracted. In the Meiji period, in 1874 the Mitsui clan acquired the Kamioka mine and began modern mining operations. From that point to the suspension of mining in June 2001, the mine continued to contribute to the supply of zinc and lead. By the late 1950s, the cadmium poisoning contained in water of the Jinzū River was corroborated by epidemiological research conducted together with agronomist Kinichi Yoshioka. The Itai-itai disease became one of the 'Four Major *Kogai* Litigations' in the post-war period in Japan. Mitsui Mining and Smelting Co. lost the court case.

The costs of the disease were enormous in personal and financial terms. The costs of decontamination of soils run into hundreds of millions of USD. By 1990, about 4,340 ha, or 66 per cent of the approximately 6,510 ha of the most highly cadmium contaminated farmland had been restored (Walker 2010; Miyamoto 1987; McKean 1981; Kaji 2012; Tsuru 1999).

Minamata[8]

Minamata disease is caused by methylmercury poisoning. The name comes from Minamata Bay in Kumamoto prefecture, where the Chisso factory released industrial waste. During 1932–68 local residents, especially fisher families, suffered the consequences.

The Chisso Minamata factory first started acetaldehyde production in 1932, producing 210 tons that year. By 1960, production reached a peak of 45,245 tons. On 1 May 1956, a hospital director reported to the local public health office the discovery of an "epidemic of an unknown disease of the central nervous system", marking the official discovery of Minamata disease. By October 1956, 40 patients had been discovered, 14 of whom had died. During 1932–68, local residents, especially fisher families, suffered from a variety of symptoms. At first, doctors were unable to diagnose the cause of the disease. Then, in 1959, doctors at Kumamoto University determined that organic mercury poisoning was the cause of the symptoms. Mercury was used as a catalyst in the production of acetaldehyde, a chemical employed in the production of plastics. This highly toxic chemical bioaccumulated in Minamata Bay and the Shiranui Sea fish which were then eaten by the local population resulting in mercury poisoning. The cause (recognized in 1956) was the release of an estimated 27 tons of methylmercury in the industrial waste by Chisso Corporation petrochemical and plastics factory over a period of 36 years. Fishermen demanded compensation for fishing families and for damage to fishing grounds. Fishermen demanded 100.000.000 Yen, but they only received 35.000.000 Yen (less than $100.000).

Minamata disease symptoms include ataxia, numbness in the hands and feet, general muscle weakness, narrowing of the field of vision and damage to hearing and speech. In extreme cases, insanity, paralysis, coma and death follow within weeks of the onset of symptoms.

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Only in 1968, however, did the Tokyo government acknowledge that the mercury dumping by Chisso was the ultimate cause. Five years later, Chisso admitted legal responsibility. It was proven that Chisso withheld critical information in 1959 and continued to dump waste. They were not held legally liable for their negligence until 1972. Chisso stopped production of acetaldehyde when an alternative technology for producing plastics was developed.

As of March 2001, 2,265 victims had been officially recognized (1,784 of whom had died) and over 10,000 had received financial compensation from Chisso. Over $611 million has been paid to victims in compensation. In 1977, the Japanese government cleaned up the bay by vacuuming up 1.5 million cubic metres of mercury-contaminated sludge. After $359 million dollars and 14 years, the project was completed in 1997. Chisso continued to operate in Minamata producing chemicals and fertilizers. The local population has declined by 70 per cent since its peak. The film *Minamata*, based on the book by Aileen Mioko Smith and Eugene Smith showing harrowing images, was released in 2022 (McCurry 2006).

Yokkaichi Asthma[9]

Yokkaichi asthma (四日市ぜんそく *Yokkaichi zensoku*) arose in Yokkaichi city, where after 1955 many cases of asthma were reported after power stations, oil refining and petrochemical plants were put in operation. A court case was won by plaintiffs in 1972; this is again one of the so-called big pollution diseases in Japan. Yokkaichi is the city with the largest population in Mie Prefecture. The disease had its peak from the mid-1950s to the early 1970s. The burning of petroleum and crude oil caused large quantities of sulphur dioxide, and smog began to cover some quarters of the city resulting in severe cases of chronic obstructive pulmonary disease, chronic bronchitis, pulmonary emphysema and bronchial asthma. This industrial city faces Ise Bay on the Pacific Ocean side of the Japanese archipelago.

In the mid-1950s, a petroleum complex was built and began to operate. The complex included the largest heavy oil-fired power station and refinery in Japan at that time using crude oil with a high sulphur content (more than 3 per cent). The sulphur dioxide (SO_2) emissions caused air pollution. By the early 1960s, the incidence of respiratory diseases increased among people living in the vicinity of the complex, becoming a major health problem in Japan that was known as Yokkaichi Asthma.

A series of counter measures were taken since 1972, as a result of a successful lawsuit brought by nine inhabitants of Isozu against six companies in the Yokkaichi Court for reparations of health damage. The court case began on 1 September 1967, and a favourable verdict was obtained on 24 July 1972. Sulphur dioxide air pollution in this region has been markedly reduced afterwards. Deemed as one of the big pollution diseases of Japan, Yokkaichi Asthma was felt in the city for nearly 20 years, after Yokkaichi filled in its coastal lowlands in a successful bid to attract modern industries (McKean 1981).

Toroku Mine, Arsenic[10]

In the hamlet of Toroku, Miyazaki prefecture, there was arsenic pollution for many decades. The Sumitomo Metal Mining Co. had bought the arsenic mining rights in the 1960s and was later deemed liable for the pollution damage. The mine is located in Kyushu Island at 1,600 metres above sea level. According to Bampen Chaiyarak (2009), before World War II arsenopyrite production workers hammered ores into small pieces and moulded them with their

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bare hands before taking them to burn in a kiln. The kiln was designed to filter out arsenious acid. Kilns also produced smoke and ashes containing arsenic. Workers swept the ashes into the Toroku River which was also used for rice irrigation. Toroku villagers started to notice that trees died, bees disappeared, mushrooms no longer grew, bamboo shoots turned red and livestock died mysteriously. All these events caught the attention of a veterinarian in 1925. His investigation showed that environmental conditions had deteriorated. The Asia Arsenic Network documented the case of Kiemon Sato's family that lived only 100 m from a kiln. All seven members suffered similar symptoms, including blackened skin and bad coughs. Five members died between 1930 and 1931.

In 1941, a Buddhist organization, Wakokai, asked the mining company to stop producing arsenious acid. While arsenic production was temporarily stopped in 1941, the company announced that a new kiln would be built in 1951. Wakokai decided to stage a protest. but some villagers, mostly men, agreed to the construction in exchange for monetary compensation. A new kiln was completed in 1955. In 1967 mining rights passed from a small company to Sumitomo Metal Mining Co. A young school teacher and a journalist from *Asahi Shimbun* reopened the case, and "the Environment Agency finally decided in 1973 to designate the chronic arsenic poisoning as a *kogai* disease" (Tsuru 1999).

Miyazaki Prefecture assumed the role of mediator between the affected villagers and the company as negotiations for compensation proceeded (Chaiyarak 2009) but the patients were unhappy, as their evaluation was based solely on the patients' external wounds. A group of Toroku women organized an alternative movement to criticize the government for this and victims established the Association of Toroku Arsenic Pollution Victims. Some patients filed a court case demanding compensation. The victims won the case at both the primary and appeals courts. In 1990, the Supreme Court also directed the company to compensate victims under the Pollution-Related Health Damage Compensation Law (PRDCL). These were small victories, largely led by women, except that many victims had already died (George and Toroku 2013; Tsuru 1999).

WATER, LAND AND WASTE CONFLICTS

Ainu Complaints in Hokkaido[11]

One of the most interesting cases of defence of rivers took place in Hokkaido, an island to the North, involving Indigenous peoples. Two dams were built. The first dispute, over the Nibutani Dam, contributed to the better awareness of Ainu rights in Japanese courts and politics. One spin-off of the dam project was a large Ainu cultural museum and some recreational areas. However, the Ainu failed to prevent the dam being built.

The Nibutani Dam construction project was part of the Bureau of Hokkaido "Saru River General Development Project". The length of the dam is 550 m and the height 32 m. The construction began in 1973 and was completed in 1997. The initial purpose was to supply industrial water to the Eastern Tomakomai Industrial Area, about 30 km west of the proposed dam site. Later, the Bureau added hydroelectricity and flood control to this scheme that mainly supplies agricultural water to the rice fields below the dam and electricity generation for local needs. The flood control claim by the Bureau was questioned by many when there was a threat of dam breakdown in 2003 after a typhoon made the water level reservoir reach the critical point. Some households were damaged by flash floods at that time.

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The dam threatened the traditional livelihood of the Ainu people, Indigenous people in this area as also in Sakhalin and Kamchatka. The Ainu livelihood depended on harvesting salmon, an endemic species called *shishamo* and other fish that are available in this river. The dam site would destroy some parts of their traditional grave sites along with historical and sacred sites. It would also inundate areas some Ainu farmers received under the Former Aboriginal Protection Act of 1899. The valuation languages were not only or mainly economic compensation but Indigenous territorial rights, the local food sovereignty in the form of salmon, the preservation of endemic species of fish and the value of religious sites and ancestors' graves for the local population.

Two Ainu landowners refused to sell the land to the Bureau, and in 1987 the Bureau used the Land Expropriation Act to forcibly take their lands. In 1997, the Sapporo District Court of Hokkaido rendered its decision, acknowledging the illegality of applying the Land Expropriation Act without considering the cultural and religious significance of the Ainu people. The court also acknowledged that the Ainu people were among Japan's Indigenous people (previously known as "minority" people). However, as the dam had been already completed, the court argued that it would not be necessary to decommission it or discontinue operation.

As reported by Georgina Stevens in *Cultural Survival* (2004) there was a second edition on this conflict in the construction of the Biratori Dam, further upstream on the same Saru River. "Due to the Nibutani dam litigation, work on the second dam was delayed […]. They [the Ainu] are actively involved in the planning, development, and execution of a survey to assess and minimize the impact of the second dam on the region's Ainu people, culture, and environment". Participatory consultation was influenced not only by the Nibutani Dam judgment, but also by other legal developments in June 1997. A new article was added requiring river management authorities to take necessary measures to ensure that the views of local citizens were reflected. As a result, a committee made up of local representatives from the Biratori Township participated in the drafting of the maintenance plan for the Saru River system. Under this plan it was agreed that construction of the Biratori Dam would go ahead for flood control reasons (although likely also for economic reasons). Importantly, the plan also included efforts to consider Ainu culture in the preservation and management of the river.

A second legal development influencing the Ainu's situation was the July 1997 enactment of the Ainu Cultural Promotion Act. This law was aimed at "implementing measures to promote Ainu culture and realize a society in which the ethnic pride of Ainu people is respected".

Waste Disposal Dispute in Teshima Island, Kagawa Prefecture[12]

Over 700,000 tons of industrial waste, including heavy metals, PCB, oil and shredded materials were illegally dumped on Teshima Island. This tiny island is part of a group of islands in the Seto Inland Sea. This was a beautiful landscape, designated as a natural park in 1934. In the rapid industrialization process of Japan, refineries polluted some of these islands with toxic chemicals, while industrial waste was illegally dumped on Teshima. Inhabitants deserted the islands, leaving the elderly behind. The conflict outcome can hardly be considered a success in environmental justice because it took 25 years before a plan was worked out to shift the industrial waste away from Teshima.

During these 25 years, the heavily laden ships came to Teshima to dump their cargoes of toxic waste. Activist Shozo Aki started a yellowtail fish project in 1975, but he was forced to close down the fish farm when a huge amount of water laced with deadly dioxin leached from

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the beach into the sea in 1990. Aki went on to lead a grassroots campaign against the industrial waste disposal business. In 1995, a survey found toxic substances, including dioxins and PCB, on the island. Residents subsequently filed a damage suit against the company, seeking compensation and the removal of the industrial waste. The Takamatsu District Court ruled in their favour in late 1996. In June 2000, the residents agreed with the Kagawa Prefectural Government on a plan to remove all the waste. An impermeable wall was to be constructed on the north coast of the disposal area to prevent polluted water from flowing out to sea. A "solution" would be to re-send 600,000 tons of industrial waste to Naoshima Island. This material would be transformed into slag at a new melting furnace in Naoshima, with a capacity of 200 tons per day. The slag would be reused as aggregate in concrete. The plan also stipulated that the governor of Kagawa apologize to islanders.

By 2007, one-third of the waste had been removed. In 2007 the accumulation of industrial waste still occupied nearly 80,000 m^2 of the 15 km^2 island of Teshima. By 2015 it was reported that over 700,000 tons of waste had been treated so far, with a remainder to be treated within two years. The project costs increased to yen 79 billion from the originally estimated yen 49 billion, which are borne by the Japanese government and Kagawa Prefecture in halves (in USD, almost one billion).

Teshima's local resistance and activism on the island itself (with less than one thousand residents) cannot be understood as a NIMBY phenomenon in which people complain of waste dumped on the island and agree to send it to another island 40 minutes away. It became a well-known conflict that helped activists in other waste disposal cases. The nationwide problem of illegal dumping of industrial waste remains after Teshima and other cases prompted the Japanese government to tighten penalties against offenders. This successful cost-shifting takes place whether the waste dumping is legal or illegal. The case featured some outside support (including Greenpeace-Japan) (Labunska et al. 2000), and involvement of judicial and administrative authorities at wider scales. In March 2017, the last load of waste left Teshima to go to Naoshima. Among the people seeing the ship off, there was Shozo Aki. "Of the 549 islanders who filed the petition, 320 are already dead", he said.

Direct Action at Kochi's Paper Pulp Factory[13]

In contrast to other environmental conflicts, this conflict fiercely pitted fisher people and citizens against a paper pulp company. In the end, they got a successful sustainable solution by direct action, and the factory closed down in 1972. Before that there had been numerous attempts at negotiation of alternatives and compensation for damages. From the Tokugawa period (1760) onward, Kochi City was famous for its paper production and manufacture. As time went on, the rivers of Kochi became polluted and the people, particularly the fishermen, felt increasingly threatened. According to the UNU report on industrial pollution in Japan (Jun Ui 1992), in the 1930s a pulp-processing plant was built, releasing even more effluent into the environment. In 1948, a new pulp complex was proposed for the old pulp plant site. The city administration and prefectural government supported the project while the local fishermen and many citizens were against it. The plan included no facilities for treating industrial waste.

In July 1949 the anti-factory citizens' movement and the company came to an agreement in relation to pollution prevention. The company Kochi Pulp assumed responsibility for the damage done and it would ensure to pay compensations. The mayor of Kochi City and the

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governor of Kochi Prefecture signed the agreement. In 1951 the factory went from Kochi Pulp to Daio Pulp management with the name Nishi Nippon Pulp Factory, and in the process the validity of the pollution-prevention agreement was downgraded. Citizens staging a sit-down demonstration against the new plant were arrested by the police. The high quantities of sulphur dioxide that the factory emitted into the air damaged human health, and discharge into the river and Urado Bay killed all life in the aquatic environment. The prefectural office announced that the results of tests on water samples yielded no evidence as to the cause of the degraded aquatic environment.

In the ten years during which there was no waste treatment provided, the paper production grew but the Urado Bay fishing industry went into decay. In 1962, the fishermen gave up their fishing rights to the company in exchange for compensation of 100 million yen (about US$ 277,000). In the 1960s, the prefectural offices reclaimed land around the bay in order to build more factories. In August 1970, when a typhoon hit the city, the people realized the error of reclaiming wetland, because many homes were flooded, washing up accumulated pulp sludge into people's homes. With this turn of events, a second wave of protests against the pulp factory started in 1970. An environmental group in Kochi City and a group formed to protect Urado Bay initiated a movement to remove the pulp factory, or to ensure that the sludge discharged from it was fully treated.

On 31 May 1971, the management decided not to negotiate with the Urado Bay citizens' group. The four executives of the citizens' movement decided that the situation had reached crisis point and that there was only one course of action – to pour cement into the mouth of the factory effluent outlet. This action took place on 9 June, stopping factory operations for 15 hours. This protest was fully supported by the citizens of Kochi City, and the prefectural and city authorities were forced to ask the company either to install pollution-control equipment or to move the factory elsewhere. The factory was closed down in May 1972. Two of the four persons involved in the action were prosecuted in court providing an ideal platform for the protesters. National environmental protection groups and the mass media all supported the two people being tried in court and, as a result of the efforts, the court case ended on 31 March 1976 with the two being required to pay a fine of only 50,000 yen (about $200) each.

Tampering with Tidal Flats: Landfill in Fujimae, Aichi, and the Isahaya Bay[14]

The Fujimae Tidal Flat conflict was both on waste management and on biodiversity conservation, where environmentalists were successful because a plan to construct a landfill was cancelled after resistance from an expanded circle of activists. The role of international supporters was important. In general, industrial and domestic urban waste are subject to two different systems: landfill or incineration (with the caveat that incineration produces air pollution and requires space to deposit the ashes). In this case, in July 1981 Nagoya City announced a plan to fill 105 ha of Fujimae tidal flat for the construction of a landfill. The background was the population increase and the increase in waste due to the widespread use of plastic. On the other hand, the Fujimae Tidal Flat had become a valuable site and feeding ground for Japan's migratory birds. Hence, this plan became a major social problem from the aspect of protection of migratory birds and the conservation of tidal flats, and some grassroots groups developed their resistance.

February 1987 saw the formation of the "Community Meeting to Protect Tidal Flats in Nagoya Port" counting with 15 nature conservation groups. One of the activities of the group

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was the "100,000 Petition" in 1990, signatures were collected with the support of all parties. In March 1992, the project was revised to reduce the landfill area to 52 ha. In August 1998, Nagoya City put an artificial tidal flat maintenance plan on the assessment report, applied for the landfill, and proceeded to the approval. Then, the situation changed. In April 1998, the International Association for Impact Assessment adopted the "Fujimae Tidal Flat Recommendation", which called for a review of the assessment by Nagoya City. In December, the Environment Agency of the Japanese government pointed out at the International Wetland Symposium the threat from the Fujimae Tidal Flat's Reclamation. Then followed remarks by the Secretary of the Environment Agency and by the Minister of Transport, while the media also insisted on the conservation of the Fujimae Tidal Flat. What was critical, though, was people's opinion. The mayor of Nagoya in 1999 announced the cancellation of the project. Fujimae Tidal Flat was saved and designated as a Ramsar Site in November 2002.

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Meanwhile the Isahaya Bay conflict in Nagasaki and Saga prefectures was still ongoing. It is a conflict confronting farmers against fishermen, seaweed collectors and conservationists because of the ill-considered reclamation of land for agriculture. In 1997, the gates cutting off water to Isahaya Bay were closed, and the Isahaya tidal flat was drained. The construction of this dike by the Japanese government sparked conflicts for 20 years based on very material concerns about fishing and seaweed collecting, as well as on the appreciation for pristine nature in the form of marine life and migratory birds. There was an alliance between conservationists and fishermen against state authorities and farmers. The bay had been brutally closed on 14 April 1997 by a 7 km seawall constructed to create more farmland by the Ministry of Agriculture, Forestry and Fishery. According to the *Japan Times*, this was a 250 billion yen government project that divided the fishermen and Saga Prefecture on one hand, and the farmers and Nagasaki Prefecture on the other. The controversial Isahaya Bay Reclamation Project was blamed for reduced harvests of fish and *nori (seaweed)* in the sea.

What used to be one of the largest and richest staging sites of migratory birds with a very great number of molluscs and fish, was thus turned into farmland, causing a huge loss in biodiversity. The government was caught by two conflicting court decisions over whether or not to open the gates. Both fishermen and farmers won district court rulings in favour of their compensation claims. The government is obliged to pay compensation to the fishermen as long as the gates are shut.

OPPOSITION TO NUCLEAR POWER AFTER FUKUSHIMA AND THE FAILED MONJU BREEDER REACTOR[15,16]

The spectacular Fukushima accident of 2011 was a landmark in the story of nuclear accidents and anti-nuclear movements across the world (Chapter 10). Within the limits of this book, this is a summary of what happened. In 1961 the town councils of Futaba and Ōkuma had voted to invite Tokyo Electric Power Company (TEPCO) to build a nuclear power plant on the border of the two towns. On 11 March 2011, an earthquake hit the Japanese East coast, and knocked out the Fukushima nuclear plant cooling systems, causing hydrogen explosions and meltdowns at three reactors. The accompanying radiological release was rated at Level 7,

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the highest on the scale and on par with Chornobyl. The tsunami disabled the use of both the primary circuit of refrigeration and the emergency systems. The heat of the reactors became very high due to lack of refrigeration. Sea water was used to cool them down, after explosions took place. The spent nuclear waste in a pool outside one of the reactor buildings started to heat up again for some time, releasing radioactivity. Although it was known that tsunamis of a height of more than 30 m could occur in the region, the plant only had a 6-m containment wall and essential systems were located in flood areas. The accident caused the release of radioactive material into the sea for a long time.

The total power of the Fukushima Daiichi nuclear plant was 4,700 MWe. The write-off is several billion US$ and the potential liability is many billions more. The contamination will affect the marine ecosystems. Tens of thousands of people were evacuated and will not be able to come back. TEPCO is totally unable to face the very large liabilities from the accident. All nuclear power stations in Japan were closed, and the attempts by the government after 2015 to start some of them again encountered widespread opposition. Never again will there be a consensus on nuclear energy in Japan. One of the plants closed down was the Ōi NPP. It was reported that, on 7 June 2012, about 70 women including ten from Fukushima did a "die-in" in front of the Prime Minister's Official Residence to protest against the restart of Ōi Nuclear Power Plant. Before the "die-in", ten Fukushima women visited the Cabinet Office and met with officials to submit a letter of requests addressed to Prime Minister Yoshihiko Noda. Buddhist nun and writer Setouchi Jakucho joined a hunger strike to protest against restarting the Ōi nuclear plant. She became 90 years old on 15 May 2012.

The Kansai Electric Power Co., Inc. (KEPCO) is an electrical utility of Kansai region. Before the Fukushima nuclear disaster, 11 nuclear reactors supplied almost 50 per cent of the region's power. The Ōi nuclear plants in Fukui prefecture were part of them. Two 1180 MWe pressurized water reactors in Ōi were taken offline for Nuclear Regulation Authority (NRA) inspections in 2013 (Figure 2.3). Authorization to restart was pending. In Fukui Prefecture, many commercial nuclear reactors clustered along a short coastline, as nuclear-friendly politicians had dominated most of Fukui's government offices. KEPCO's application to resume operation of nuclear energy plants in Ōi met strong protests and the regional court granted an injunction against the operation in 2014. In the lawsuit, a group of 189 people from Tokyo, the plant's host prefecture of Fukui and 20 other prefectures contended that the No. 3 and 4 reactors at the Ōi plant had resumed operating in August 2012 even though their safety had not been certified. They claimed that the plant is sited near several active seismic faults and that KEPCO underestimated the maximum magnitude of an earthquake. The court ruled in favour of the plaintiffs and issued an injunction against Kansai restarting units 3 and 4.

An editorial in the *Japan Times* noted that Prime Minister Shinzo Abe, in reversing the nuclear phase-out policy, emphasized the economic viability and supply stability of nuclear energy. He dismissed the no-nuclear option in Japan's energy mix as unrealistic, noting that the nation was losing trillions of yen each year due to the increased cost of thermal power. The Ōi court ruling of 2014 discarded a similar argument by KEPCO noting that it is legally irrelevant to discuss people's fundamental rights to life on the same level as the question of rising costs of generating electricity. These were incommensurable valuation languages. However, in 2018, the Nagoya High Court's Kanazawa branch declared that the nation, having learned its lesson from the accident at the Fukushima No. 1 nuclear power plant in 2011, would not make the same mistakes again. The 4 July 2018 ruling overturned the Fukui District Court's decision of four years previously in favour of the plaintiffs.

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Source: *Kyodo News*, the *Japan Times*; Kyodo (2014). Fukui court blocks Oi nuclear reactor restart, in landmark ruling, *The Japan Times*, 21 May. https://www.japantimes.co.jp/news/2014/05/21/national/fukui-court-blocks-oi-nuclear-reactor-restart-landmark-ruling/

Figure 2.3 *21 May 2014: Lawyers hold signs reading "justice is alive" and "suspension has been ordered" at the Fukui District Court*

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The failed breeder reactor called Monju is a very significant case for Japan and the rest of the world. The failure came because of technical difficulties and not so much because of widespread protests. In September 2016, after spending ten billion USD, the government finally decided to stop the plutonium fuelled fast-breeder reactor in Fukui Prefecture. Tsuruga already hosted two conventional reactors, and in 1983 preparations had begun for the construction of a new fast-breeder reactor called Monju. The reactor, named after the Buddhist deity of wisdom, had barely operated since it first generated electricity in 1995.

Decommissioning Monju meant abandoning a project that has devoured large government funds. The government calculated that it would cost another US$6bn to restart Monju and keep it operating for another ten years. According to the Japan Atomic Energy Agency, decommissioning Monju will cost an estimated US$3bn. Monju was seen as a pillar of Japan's nuclear fuel recycling programme because it is designed to burn plutonium retrieved from huge stockpiles of spent fuel produced at other nuclear power plants. Moreover, fast-breeder reactors are supposed to produce more plutonium than they burn while generating power. On 27 January 2003, the Nagoya High Court's Kanazawa branch had handed down a historic ruling nullifying the government's 1983 permission for the construction of Monju. The verdict

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recognized three main areas in which the Nuclear Safety Commission's (NSC) pre-construction safety review was inadequate. However, this court decision was later reversed.

Monju dates back to the 1980s, when work began amid the realization of a need to reduce reliance on imported fossil fuels. The Monju reactor reached criticality for the first time in 1994 but was forced to shut down in 1995 after a leak of sodium coolant and a fire. There was an attempt at a cover-up. In November 2012, it emerged that the operator, Japan Atomic Energy Agency, had failed to check as many as 10,000 of Monju's components, as safety rules require. The Nuclear Regulation Authority declared that the government-affiliated JAEA was "not qualified as an entity to safely operate" Monju. It told the government either to find an alternative operator or scrap the project. The government was unable to find new management.

Meanwhile, decommissioning Monju after 2016 revived international concerns over Japan's massive plutonium stockpile, enough to produce thousands of atomic bombs. With no way to consume plutonium directly, the government planned to continue using MOX fuels – a mix of plutonium and uranium – in conventional nuclear reactors. But many commercial reactors remained idle at least for some time in the wake of the 2011 Fukushima nuclear disaster.

OPPOSITION TO COAL AFTER FUKUSHIMA

The electricity system of Japan relied more on coal after Fukushima, but even more on natural gas (Figure 2.4), which produces less CO_2 than coal. Fukushima and the consequent stoppage of many nuclear plants have been compensated by degrowth in electricity production, renewables, natural gas and coal-fired power plants (CFPP). Coal has not increased more because of civil society opposition, as reflected in the Kiko network and the Goldman Prize to Kimiko Hirata in 2021 (Chapter 16).

The Kobe Coal-Fired Power Plant[17]

There would be no world movement for environmental justice without some successes but the general rule is failure. Sometimes instructive failures, such as the Kobe CFPP, occur. This 1,400 MW project was one of many new power stations burning coal being challenged by lawsuits. As reported in Nikkei Asian Review (21 Nov. 2018),

> in Japan's port city of Kobe, a pair of 150-meter-high white chimneys tower over the bay, located just beside a residential area. Brushing aside protests from environmentalists and locals, plant owner Kobe Steel started construction on a huge expansion project that will double the size and emissions of the Kobe Power Plant. More than 14 million tons of carbon dioxide and other pollutants are expected to belch each year from the enlarged chimneys by 2022.

The Kobe Steel Power Plant Project is a plan to build two new power generating units just 400 m from the residential area of Nada Ward. Schools and hospitals are located nearby. Residents in the region have suffered health impacts from air pollution for years. Construction plans for these two new plants were submitted to the government in 2018. Therefore, the residents of Kobe City launched two court challenges. One calls for an injunction to prevent Kobe Steel Ltd from building and operating the new units. The other called for a judicial review to determine whether or not the national government had violated legislation by permitting

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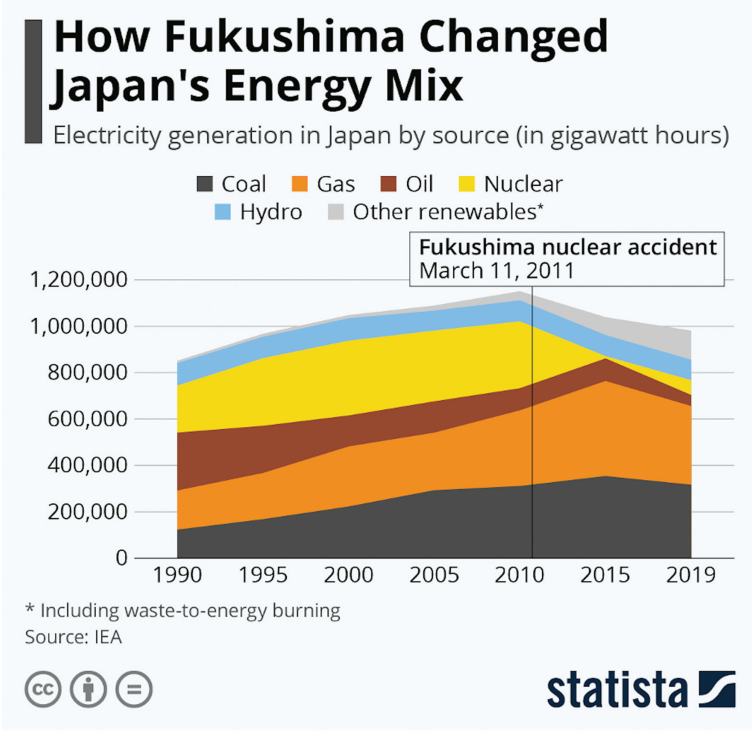

Source: IEA, K. Buchholz

Figure 2.4 How Fukushima changed Japan's energy mix

the plan to go ahead despite an insufficient EIA. The plaintiffs were the three generations of citizens living in Kobe City and the vicinity of the power plant, including grandparents' generations who want to leave behind a livable environment for children and grandchildren. The two new units planned would each emit 0.6 per cent of the nation's greenhouse gas emissions.

The first oral argument was held at the Osaka District Court in January 2019. Residents insisted on the cancellation of the confirmation notice from the Minister of Economy, Trade, and Industry in the EIA. The plaintiffs claimed that "Coal-fired power generation emits more than twice as much CO2 as natural gas". Based on the international Paris Agreement, they insisted that the government's CO_2 reduction target could never be achieved this way. One of the plaintiffs pointed out that "great damage will occur to people all over the world, including Kobe", due to abnormal weather and the rise in sea level. Another of the plaintiffs, Erina Imai, a senior student at Kobe University with active participation in Fridays for Future strikes, said that she was "very scared" because of the forecast compiled by international organizations. A general meeting of shareholders of Kobe Steel, Ltd. was held on 20 June 2019. About 20 plaintiffs and supporters protested close to the general meeting venue. However, on 15 March 2021, the Osaka District Court dismissed the action requesting the cancellation of the Kobe Steel CFPP under construction in Nada Ward.

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CONCLUSION: THE MATERIALITY OF POLITICAL ECOLOGY AND THE DOUBTFUL VICTORY OF ECOLOGICAL MODERNIZATION IN JAPAN

The Minamata illness and the Fukushima accident became household names around the world over the last 70 years. Industrial illnesses were brought into the judicial system in Japan and subject to compensation, but how could the country become so keen on nuclear energy despite the experience with radiation deaths and illnesses in Hiroshima and Nagasaki? This is something of mystery only explained by the rhetorical success in separating "atoms for peace" from "atoms for war".

Beyond such accidents, which are the main Japanese contributions to the world movements for environmental justice? The country had a long march to economic growth combined with militarization and imperialism in China and SE Asia until 1945, and more growth in the long period after 1945. This trajectory was marked by ecological modernization after the Ashio protests of 1900 and the legal changes brought by the "big industrial pollution diseases" of the 1950s and 1960s, together with the moderate complaints against land and water grabbing and infrastructure projects desecrating rural and coastal landscapes. This long march has recently halted. The economy scarcely grows, the public debt is very large, population does not grow, Japan remains a large net importer of materials but it is moving into a post-growth economy.

Contrary to Durkheim's dictum, social facts (such as environmental conflicts, economic changes) sometimes have "natural" causes, meaning causes studied in the chemical, physical and biological sciences. The readers must by now be aware of the "materiality" of the causes of the conflicts. Beyond interpretations of the industrialization of Japan in terms of militarization (until 1945), state-corporative-capitalism after 1945 or, recently, neoliberalism, we have described commodity extraction and exploitation such as copper mining, zinc and lead mining (and cadmium pollution); arsenic mining; coal mining and CFPP; hydropower and nuclear power; oil and petrochemical industry; the plastics and the paper pulp industries; the processed food industries (rice oil and powdered milk); trade in live animals (dolphins); incorporation of wetlands into agricultural production; industrial waste disposal (in Teshima island, and in other landfills); and threat to wildlife by military installations by a foreign country (in Okinawa).

The ecological distribution conflicts in Japan are thus similar to those in other countries or regions because their "materiality" is similar. The concept of *kogai* was introduced for illnesses caused by pollution. The existence of an environmentalism of the people (often as victims of such cruel instances of pollution) is complemented in Japan by a strong strand of ecological modernization that tried to cope with the effluents of increased economic affluence. In the next chapter we shall look at the conflicts that respond to the socio-metabolic profile of The Philippines, different from that of industrial Japan.

Political ecologists study the use of political power to distribute material resources (such as land, water, etc.) and pollution among social groups or classes. The narrative of this sample of conflicts from Japan started from the claims against damages from industrialization in the early counter-movements against copper mining and smelting. The Ashio Copper Mine is where the Furukawa *zaibatsu* began its long career. Some decades later, the big pollution diseases and the links between industrialization and health impacts (from arsenic, PCB, mercury, cadmium poisoning, asthma and other respiratory diseases) led to the establishment of a

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principle of legal environmental liability and state regulations already in the late 1950s. The disputed mechanisms of compensation for victims of coal mining accidents or industrial toxins clearly showed that enormous pain and loss of life could really not be made commensurate with money. The use of litigation was frequent but did not exclude sometimes direct action such as blockades and other imaginative items in the repertoires of socio-environmental contention as in the Kochi paper mill struggle. The frequent links between scientists and socio-environmental movements are obvious, although other scientists were faithful servants of the industrial corporations. The questionable use of the territory in coastal areas and tidal flats, and some conflicts on maritime biodiversity conservation have also appeared, as well as conflicts on industrial and domestic waste disposal. There are also a few environmental conflicts involving Indigenous peoples.

The oscillations in energy policy follow the pattern of very large growth of social metabolism concomitant to economic growth after World War II. Some hydropower conflicts arose. There was a clear option for nuclear energy (without military connections in Japan's case), interrupted by the failures at Monju and Fukushima. The current option for gas has come together with a short-lived option for coal-fired power plants even after the Paris Agreement of 2015, giving rise to a strong movement of opposition. Japan is also funding CFPPs from Vietnam to Indonesia.

The stagnation of the population in Japan (at 125 million) and zero economic growth is perhaps a model also for European industrial countries. Economic degrowth is compatible with stable or growing well-being and with an improved environment if the population decreases enough. This ideal-type Japanese model might encounter some financial difficulties. Without economic growth and inflation, how should the public and private debts be paid? Will economic stagnation cause unemployment? Will economic stagnation prevent positive technological innovations? How should the enormous stock of the built environment in Japan be maintained without further energy and material inputs? Will environmental social movements be able to impose an ecological political agenda?

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3. The Philippines: extractivism and violence

As we have seen in Chapter 2, Japan underwent a process of ecological modernization acknowledging some environmental liabilities combined with remarkable ecological disasters. In the Philippines, another "toxic archipelago", no parallel process of ecological modernization is yet to be seen. On the contrary, protests are met with heavy repression; the increased plundering of the country continues. The patterns of environmental conflicts in the Philippines are different from those in Japan, where conflicts arose from health issues related to industry, including, in the last years, the nuclear industry. The Philippines has no working nuclear power plants though it has the Bataan NPP built in 1984 that has never been operational owing to decades of activism. One type of conflict in both countries is that related to CFPP. The Philippines' economy is largely based on extractivism (a word introduced from South America by Gudynas, Svampa and Acosta), which means it is an economy based on the extraction (without reposition) of raw materials which in part are exported. It is a tropical *Raubwirtschaft* with many movements of grassroots resistance and environmental defenders killed. A country with Indigenous populations at the frontline of resistance. The Philippines is not a manufacturing economy, the economy is geared to local subsistence needs and also to export of some minerals, although not to the extent of South American or Indonesian economies.

The EJAtlas has collected almost one hundred conflicts in the Philippines of which this chapter has chosen a sample (Figure 3.1). The chapter will now proceed with descriptions of five or six conflicts related to mining, where nickel predominates, followed by copper and gold, and sand mining for metals. Protagonists are often Indigenous people, whose actions are a reaction against socio-environmental injustices. Individually, Victoria Tauli-Corpuz is one, an Indigenous leader and human rights defender from the Kankanaey Igorot people of the Cordillera Region, who was Chair of the UN Permanent Forum on Indigenous Issues from 2005 to 2010. She was actively engaged in the development of the UN Declaration on the Rights of Indigenous Peoples in 2007. She helped build the Indigenous peoples' movement in the Cordillera as a youth activist in the early 1970s and helped organize Indigenous peoples against the Chico River Hydroelectric Dam and the Cellophil Resources Corporation. These communities succeeded in stopping these projects.

MINING CONFLICTS IN THE PHILIPPINES

Didipio Gold and Copper[1]

We start with the Didipio Gold and Copper mine in Barangay Didipio in Luzon Island, 100 per cent owned by Oceana Gold Corporation from Australia, which has caused large human rights violations and environmental destruction in several countries. It was the first mining project awarded a Financial Technical Assistance Agreement (FTAA) by the Philippine

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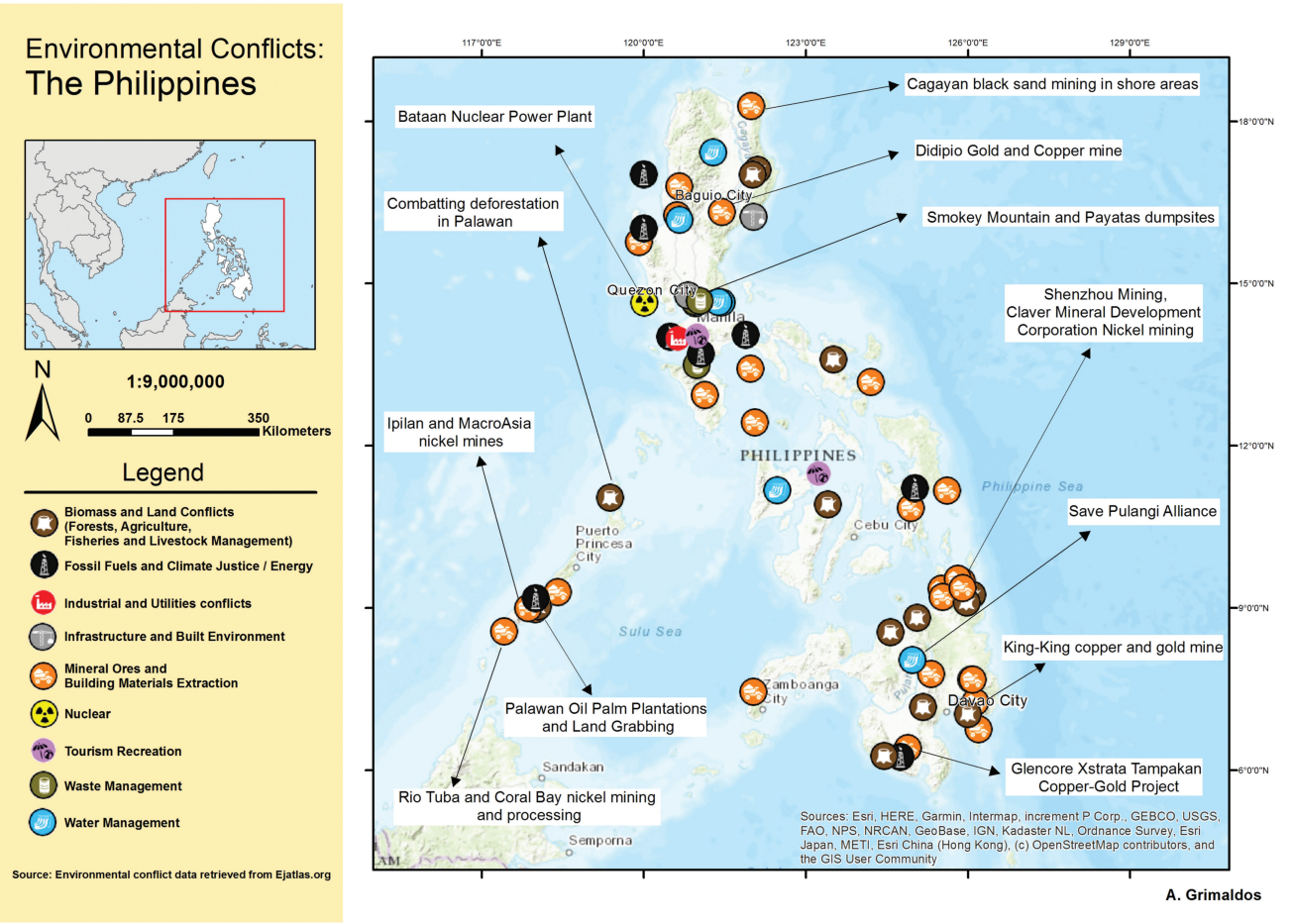

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Figure 3.1 *Philippines cases considered in this chapter*

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government. The mine is located in an area in which the majority of people are Indigenous although not deemed to be of ancestral origin. The company claims to have obtained a Free Prior Informed Consent of affected communities by creating a 'council of elders' composed of people that either did not belong to the communities or received rewards in exchange for their consent. Awarded the FTAA in the 1990s, the company started project implementation in 2000 and formal petitions against the FTAA were lodged in 2006 but dismissed. In 2009, it was reported that the company forcefully evicted local villagers, destroying 187 houses and using teargas against villagers.

Also, the environmental network Kalikasan reported that in 2012, two opponents of large-scale mining members of the Didipio Earthsavers' Multipurpose Association (DESAMA) were killed by unidentified assailants in Didipio.

Another murder is that of Cheryl Ananayo, who was shot dead along with her cousin-in-law Randy Nabayay as they were riding to Didipio in 2012. Nabayay was a small-scale miner who had differences with Oceana Gold over his property.

The Commission for Human Rights (CHR) of the Philippines urged the government to withdraw the FTAA due to evidence of human rights abuses. However, the government sided with the company. Construction was completed in 2012 and commercial production started in April 2013, increasing contamination of rivers by heavy metals, significantly exceeding the standard safety limits and strongly affecting the environment and the livelihood of local communities. People are concerned about declining fish stock and irrigation of nearby agricultural fields.

Petitions and protests against the Didipio mine targeting the company and the Department of Environment and Natural Resources (DENR) issuing the permits go on. On the national level, many mines are causing severe tensions between corporate interests and Indigenous communities aiming to preserve their identities, opposing these trends which they call "development aggression". In 2017, Oceana Gold appealed directly to Philippine President Rodrigo Duterte against the suspension of its gold and copper mine employing 1,800 workers, most of them Filipinos. At the time, the Environment and Natural Resources Secretary Gina Lopez, an ally of Mr Duterte, ordered a suspension or closing down of more than half of the country's mines, including Oceana Gold's Didipio mine. She was forced to resign. By 2019, the company reported that production and economics results at Didipio were better than ever before.

In June 2019, a key mining permit expired. The local community had been fighting this whole time and sensed an opportunity, so they erected a roadblock to stop Oceana Gold from accessing the mine. On 6 April 2020, Philippine police forces violently dismantled the roadblock. One leader, the anti-mining advocate Roland Pulido, chairman of DESAMA, was arrested while others were beaten.

Unexpectedly, the Australian Oceana Gold Corporation appeared in Central America in the conspicuous case of El Dorado gold mine owned by Pacific Rim (Chapter 18). On being denied permission to mine, Pacific Rim brought the country of El Salvador to the World Bank's International Center for the Settlement of Investment Disputes (ICSID) claiming payment. Oceana Gold bought Pacific Rim, trying to make money and perhaps hoping to mine. In an inter-continental action, the organizations Alyansa Tigil Mina (Alliance against Mining-Philippines), Lilak (Purple Action for Indigenous Women's Rights), Focus on the Global South and the EU-ASEAN anti-FTA Campaign Network denounced the bullying of El Salvador. On 14 October 2016 the ICSID decided in favour of El Salvador and charged Oceana Gold with US$ 8 million for judicial expenses. The conflict in El Salvador ended with the *Ley de Prohibición de la Minería Metálica* passed by Parliament in March 2017.

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King-King Copper and Gold Mine in Pantukan, Compostela, Mindanao[2]

Moving from the north to the south of the country, another big conflict on a gold and copper mine, involving activists' deaths, is on the King-King open-pit mine in Pantukan in Compostela province, a really conflictive place. The $US 2 billion project threatens local livelihoods and also the rich biodiversity of Southern Mindanao. Protagonists are international corporations, the Philippine army, local groups of grassroots environmental defenders, Lumad ancestral inhabitants and possibly the New People Army (NPA).

The environmental group Panalipdan-SMR cited the 2013 NI 43-101 Technical Report and Preliminary Feasibility Study of M3 Engineering & Technology (M3ENG), which warned that King-King mining will affect 12 "vulnerable or critically endangered" native or endemic plant species, 6 bird species endemic to Mindanao, and a total of 17 mammalian species and 10 reptilian species identified in the area. Several species of the region are listed as near-threatened or vulnerable by the IUCN Red List and the Philippine National Red List while others are protected by the Convention on International Trade in Endangered Species (CITES). The region is also home to the Philippine eagle *Pithecophaga jefferyi*, which would be further endangered. Panalipdan-SMR also highlighted the impact on the coastal and marine ecosystems, composed of several species of sea turtles, dolphins, whales and seabirds, of which the sea cow species and all species of sea turtle are also listed as endangered.

To the threat to biodiversity is added the threat to humans. Sixty-year-old Teresita Navacilla was shot. She was a member of the Save Pantukan Movement, a network of Indigenous peoples fighting for the right to their ancestral lands and opposing large-scale open pit mining by foreign corporations. On 30 January 2016, three days after being shot, she died in a hospital in Tagum City. One of the perpetrators entered her store in Purok Bardown and shot her twice, then both men rode away on motorcycles. They were reportedly soldiers from the 46th Infantry Battalion assigned to secure the King-King project. Inhabitants of the Compostela Valley said that the soldiers had arrested and assaulted members of Indigenous people Mansaka and other civilians from the region opposing the mining project. The commander of the 46th Infantry Battalion denied any involvement of his soldiers in the killing of Teresita Navacilla.

Front Line Defenders condemned the killing of Teresita Navacilla, motivated by her activities in the defence of environmental rights and rights of Indigenous communities, and also reiterated its extreme concern for impunity regarding the growing number of killings of human rights defenders in the country. On her part, Hanimay Suazo, general secretary of human rights group Karapatan, said: "She is the 54th victim of extrajudicial killings in Southern Mindanao since 2010 and the fourth victim here in just one month". There was a pattern of repression against environmentalists in the region, accusing them of membership of the New People Army, a tested technique ("red-tagging") of the police and the military.

The project is being carried out by two large-scale international companies, Nationwide Development Corporation (NADECOR) and St. Augustine Gold and Copper Limited (SAGCL). The King-King tenement is the second largest copper and gold deposit in the Philippines. In spring 2016, NADECOR, in partnership with SAGCL, planned to begin mining activities.

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Black Sand Mining for Magnetite[3]

Conflicts on sand and gravel mining for the building industry, and also on sand mining for metals (Chapter 15) appear relatively often in the EJAtlas. Here, we introduce the topic by a conflict initially involving the Chinese firm Nicua Mining Corporation. Magnetite ore is a ferromagnetic material and is one of several types of iron oxide. This is a raw material for steel making that is highly sought-after. More than 70 ha of the town's farmlands had been destroyed, or are drying out because the company has diverted the irrigation. The black sands of beaches have been scooped up in the quest for the valuable mineral, leaving coastal areas and river banks eroded and vulnerable to sea level rise, floods, and storm surges. In the case of Nicua's operations in MacArthur town in Leyte province, the activities centred on the exploration, development and extraction of magnetite sand, in order to produce magnetite concentrate. Before suspension in August 2012, production capacity was reported to amount to 500,000 to 600,000 tons per year.

While some companies – such as the Nicua Mining Corporation – held an official permit to mine black sand, there is also illegal mining in the region. Black sand is largely sold to other Asian countries, with China being the biggest buyer. In March 2012, the Bureau of Fisheries and Aquatic Resources (BFAR) reported that contamination from Nicua's mining operation led to a massive fish kill in Lake Bito. In June 2012, farmers and fishermen went to court and filed an application for a temporary environmental protection order. The villagers were afraid of the irreversible environmental impacts mining has on water sources and how it encroaches on their agricultural lands.

In response to the contamination of Lake Bito, in August 2012, the Mines and Geosciences Bureau (MGB) suspended the operation of Chinese firm Nicua. Moreover, Nicua employed Chinese workers without having permits, and authorized a second party to mine in the area without permission from MGB.

Several firms have been active in Cagayan province. Suspension orders are not respected. There are new projects for river sand and for submarine mining in Cagayan. In December 2020, an Apollo Global Capital's subsidiary announced that the Department of Environment and Natural Resources granted them a permit to start the country's first offshore magnetite iron mining project.

Nickel Mining in the "Last Ecological Frontier", Brooke's Point, Palawan[4]

The Philippines is one of the richest countries in terms of natural resources and mineral potential. The country ranks third in gold deposits, fourth in copper, fifth in nickel and sixth in chromite. Brooke's Point is one of several conflictive nickel mines in Palawan, an island of great biodiversity value. Two Philippine companies are involved, Ipilan Nickel Corp (INC) and MacroAsia Mining Corp. The local government of Brooke's Point vowed to press charges against INC after the latter resumed its mining activities despite the cancellation of its Environmental Compliance Certificate. Mayor Mary Jean Feliciano said they would also push for the cancellation of the company's Strategic Environmental Plan Clearance issued by the Palawan Council for Sustainable Development (PCSD).

In May 2017, after former environment minister Gina Lopez was dismissed from the government, the cutting of thousands of trees by INC in Palawan drew the ire not only of the local

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population but also of a Catholic bishop, not the only bishop active in environmental issues in the Philippines. Bishop Socrates Mesiona emphasized on Manila archdiocese-run Radio Veritas: "This is a tragedy because Palawan is the last frontier so we hope that our environment will be protected, especially the century-old trees".

The cutting of trees will affect 3,000 ha of agricultural land and 30,000 people in at least five barangays. Local officials were also planning to sue the mining company. By 19 May 2017, it was reported that the DNER director of the Mimaropa Region issued the order cancelling the tree cutting permit previously issued to INC. This company is an affiliate of Global Ferronickel Holdings Inc., one of the country's largest producers of nickel ore. The company was facing a cancellation of its permits but defended their validity and is also facing illegal logging charges and violation of Republic Act No. 9175, the Chainsaw Act of 2002.

Rio Tuba and Coral Bay Nickel Mining and Processing in Palawan[5]

Rio Tuba and Coral Bay are Japanese- and Filipino-owned nickel and cobalt mining and processing plants at the southern tip of Palawan. Environmental Justice organizations from both countries have been active in this case. Rio Tuba is designed to produce 10,000 dry metric tons of nickel to be recovered per year from low-grade ore coming from its open pit mining activity. Its nickel output will be exported to Japan. However, a massive amount of sulphuric acid, a highly toxic chemical used to produce nickel will be imported from Japan at the rate of 270,000 metric tons annually. In Coral Bay (the sister factory), imports of sulphuric acid were estimated at 600,000 tons in 2014. Coral Bay operated in 2007 at a capacity of 24,000 tonnes of contained nickel and 1,500 tonnes of contained cobalt per year in the form of a mixed nickel-cobalt sulphide, which is sold exclusively to Sumitomo for refining at its Niihama Nickel Refinery.

Apart from chemical risks to health, the open pit nickel mines are wiping out old growth forests and endangered plants and animals. The Rio Tuba Nickel Mining Corporation became the centre of major controversy in 2002. After a contentious past regarding its poor environmental performance, the company was granted an Environmental Compliance Certificate to expand its mining activities. The legal battle among the firm and NGOs finally resulted in a rally, attracting around 1000 demonstrators of the Bataraza municipality. This social dissatisfaction was a result of the expectations of the local population being let down by the company. It was also directed towards the environmental bureaucracies.

In 2009, it was reported by the Ancestral Land/Domain Watch (ALDAW) and the Centre for Biocultural Diversity (CBCD) mission that the mining activities in Bulanjao mountain would damage the best conserved forest in southern Palawan, with adverse consequences for the food production of Indigenous Palawan and migrant farmers' communities. The risk of landslides was very likely to increase, and the eco-tourism potential of this mountain would be jeopardized. Furthermore, some of the areas include sacred and worship sites regarded by the local Indigenous people as physical evidence of mythological events. The local inhabitants perceive their destruction as an obliteration of their history and collective memories. Certainly, their destruction cannot be compensated by monetary royalties. It was recommended that Rio Tuba Nickel Mining Corporation (RTNMC) and Coral Bay Nickel Corp (CBNC) should cease all mining activities in Bulanjao. They were to further comply with the provisions of the Mining Code, which ban mining development from key environmental zones and ancestral lands of Indigenous peoples, and with the IPRA law (Indigenous Peoples Rights Act). Also, they were to rehabilitate all damaged and eroded sites in the Bulanjao range.

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Not only is capital international, but resistance can also become international. In 2012, Friends of the Earth Japan (FoE-Japan) and the Kalikasan People's Network for the Environment (Kalikasan PNE) reported that nickel mining operations were to be blamed for the contamination of the Palawan River system, poisoned with unsafe levels of cancer-causing chemicals. The groups presented findings from an environmental field study conducted near the Rio Tuba Nickel Mining Corporation's (RTNMC) mining operations and the Coral Bay Nickel Processing Plant's operation. The 2009 study revealed that present levels of hexavalent chromium (Cr-VI) exceeded safe levels in the Togupon River. Both mining and processing operations are financed and pursued in partnership with Japanese multinational corporations and institutions, such as Sumitomo, the Japan Bank for International Cooperation and the Nippon Export and Investment Insurance.

In 2015, the plan to expand operations in untouched forest areas of southern Palawan sparked a heated exchange between local officials, led by Governor Jose Chavez Alvarez, and environmental groups. The Governor, presiding over a meeting of the so-called PCSD to discuss the proposed expansion of Rio Tuba Nickel Mining Corp. into Mount Bolanjao in Bataraza, challenged the head of environmental group Palawan NGO Network Inc. (PNNI), Robert Chan, to a fistfight. Chan had written to the PCSD objecting to the reclassification of areas covered by the mining expansion plan. The letter, Chavez Alvarez claimed, was disrespectful to the PCSD.

In 2016, things seemed to move in a favourable direction when Secretary of the DENR Gina Lopez inspected the Rio Tuba mine. However, the mining firms were pleased when she was dismissed after a parliamentary hearing. In this same year, FoE Japan issued a statement on water quality: it has been analyzing the water quality in the communities surrounding the CBNP and the RTNMP since 2009. Findings of water quality analysis for these seven years have clearly shown that hexavalent chromium or Cr-(VI) in the Togupon River in this area has been exceeding "Environmental Quality Standards Concerning the Protection of the Human Health". FoE Japan called for a joint investigation regarding water quality and effective mitigation measures against water contamination.

Tampakan Copper and Gold Glencore Project, at the Southern Tip of the Country[6]

Militarization and killings are key ingredients of one of the largest mining areas in South East Asia for copper and gold. The Tampakan Copper-Gold Project, owned by Glencore Xstrata from Switzerland, the Australian Indophil, and the local subsidiary Sagittarius Mines Inc (SMI), is one of the largest copper-gold mines in Southeast Asia, after Grassberg in Western Papua belonging to Freeport-McMoRan and liable for terrible damage to human rights. It covers an area of around 10,000 ha in the municipalities of Malungon (Sarangani), Columbio (Sultan Kudarat), Tampakan (South Cotabato) and Kiblawan (Davao del Sur). The company targets to complete the mining of 375,000 tonnes of copper and 360,000 ounces of gold per annum, over a 17-year period.

The Tampakan project directly impacts watersheds, endangers food and water sources, around 3,000 hectares of forest, and ancestral domains that are sacred for local populations. An estimated 5,000 people, mostly Indigenous, are to be re-settled. The risks of pollution, erosion, siltation, flash floods, landslides, and other seismic geo-hazards are also high. Bla'an people and other Indigenous tribes have been protesting against the mining project. However, this militarization of the area resulted in the killing of anti-mining and Indigenous peoples'

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leaders, and other violations of human rights. Juvy Capion and her sons were killed in 2012 in an operation mounted by the military in Sitio Alyong, against her husband, Daguel Capion, an Indigenous leader.

During the mandate of President Gloria Macapagal-Arroyo (2001–10) a governmental order was issued allowing police, military and paramilitary forces to defend investment projects that could be threatened by insurgents. It was the basis for the Memorandum of Understanding (MoU) signed between SMI and the local governments that created the Special Forces KITACO, in 2008. This MoU legalized the entry of military and paramilitary forces into ancestral Bla'an territory accompanied by violations of human rights and the murder of tribal leaders. The KITACO forces were composed of private intelligence groups, and of personnel of the police and army of the Government of the Philippines. The militarization of the area obstructed the contestation to the project and hampered any possibility of a local regulation prohibiting open-pit mining. In 2012, the Department for Internal Affairs and the Justice Department issued an order adding to the incapacity of the National Commission for Indigenous Peoples to defend the rights of the Bla'an people.

Networks of resistance support the Bla'an people. The London Working Group on Mining in the Philippines, the Tampakan Forum and the Dioceses of Marbel, Digos, Kidapawan and Cotabato, aided in presenting such a position at the Office of the Presidency, in Congress, at the Department for Environment and Natural Resources, the National Commission for Indigenous Peoples and other governmental agencies and authorities. In 2013, the Commission for National Cultural Communities of the Congress carried out a Parliamentary Hearing assessing the violations of human rights and the consequences of the militarization. Efforts have been made to campaign at international level, including at the UN Human Rights Council and the UN Forum on Business and Human Rights, especially by Fastenopfer, Franciscans International and Europe-Center Third World. The company, indeed, blatantly violates the UN Declaration of Human Rights, the UN Declaration of Rights of Indigenous Peoples, the International Labour Organisation Convention 169 on Indigenous and Tribal Peoples, as well as a whole array of national laws, including the Indigenous Peoples Law.

In a hearing that was held in Geneva in June 2014, the civil society Permanent People's Tribunal (PPT) listened to the testimonies of Rene Pamplona of the Social Action Centre Marbel, representing the Bla'an Indigenous peoples, and the Alyansa Tigil Mina. At the end of 2014, the PPT underlined how transnational corporations, including Glencore and its subsidiary in the Philippines SMI, violate human and peoples' rights, and acknowledged the necessity to improve international legislation, including through a binding treaty on transnational corporations to hold them accountable for their actions. This "binding treaty" remains an illusion.

Nickel Again: Blockades and Armed Confrontation in Claver, Surigao del Norte against Shenzhou Mining and Taganito (Sumitomo)[7]

Few royalties, few local jobs, but large environmental destruction: that is what Chinese nickel company Shenzhou Mining Corporation brought to the Indigenous communities of Claver, Surigao del Norte, in the north-eastern corner of Mindanao. This company was reported to be neither better nor worse than the others. From 2009 to 2013, it was the operating company of the 433 ha Mineral Production Sharing Agreement (MPSA), held by Claver Mineral Development Corporation (CMDC) since 1998. The company caused large environmental

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Figure 3.2 Map of Claver in Surigao del Norte

destruction within the ancestral domains of the Indigenous Mamanwa and Manobo tribes. Together with other companies, it operated its mines without proper siltation facilities, causing serious pollution of river and marine ecosystems, and damaging irreversibly mangroves and corals. Mining further destroyed sacred hills, prayer areas, hunting areas and burial grounds.

The Natural Sciences Research Institute of the University of the Philippines (UP-NSRI) showed that levels of nickel in drinking water were 190 mg/l. Likewise, soil samples showed 12,400 mg/kg, while the maximum tolerable level was at 50 mg/kg. Residents claimed to suffer from difficulties in breathing, and exposure to heavy metals. Further, fish stocks, were negatively affected. In 2011 the tribal commission of Mindanao (TRICOM) filed a petition before the Supreme Court demanding a stop of the Shenzhou Corporation.

Moreover, the companies refused to pay the claimed royalties to the tribes. Under the Indigenous Peoples Rights Act of 1997 (IPRA), the Indigenous are entitled to a 1 per cent share of gross production if the mining site is located on their ancestral lands. The Mamanwas claimed payments amounting to around US$ 540,000. On January 2012, the National Commission on Indigenous People (NCIP) sent a letter to the company, ordering it to cease operations and sent official letters to the MGB, asking them to stop issuing permits to the company. However, the company continued mining. In response, in May 2012, 100 members of the Mamanwa tribe took over the mine site of Shenzhou Company. The Indigenous set up campsites and blockades were built to prevent staff from entering and exiting; Chinese company staff were held inside the taken mine. They wanted the company to completely leave the area, adhering to NCIP'S cease order. Here the valuation languages deployed were money compensation, Indigenous rights and indeed sovereignty, and environmental damage

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including risks to human health. A week later, soldiers and private security and members of the 132nd Regional Public Safety Company (RPSC) stormed the mining site, removing the tents and blockades of the protesters.

In July 2012, the MGB finally ordered the suspension of mining due to excessive siltation in the area. However, the company was alleged to have continued mining. In July 2013, the regional Court ordered Shenzhou Corporation to vacate the area and to post a small bond of around US$ 22,000 for whatever damages caused. This was a small victory for environmental justice. However, in 2014, CMDC signed a new Joint Venture Agreement (JVA) with another Chinese company, CCIL Mining and Mineral Resources Corporation (CCILMMRC), to continue exploiting the concession area.

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The neighbouring and larger mine of Taganito (owned by Japanese interests) resorted to militarization, environmental destruction of Indigenous lands and unpaid royalties: these were the ingredients of Taganito Mining Corporation's (TMC) success. TMC was one of the largest nickel producers in the region, and had operated mines in the ancestral domains of the Mamanwa tribe since the 1960s. Conflicts intensified over unpaid royalties from a Mining Production Sharing Agreement (MPSA) for nickel ore exploration granted in 2008. In this context, in January 2009, a group from the Taganito Mamanwa Association set up a human barricade at the highway along Taganito, Claver. Following the barricades, TMC paid the royalties amounting to 51 million pesos, however only for 2006 and 2007. Furthermore, after a resolution of the National Council of Indigenous People (NCIP), TMC paid them to another tribe association, which had signed the Memorandum of Agreement with the company (MOA). This has caused division and conflicts between the different Indigenous groups.

By 2010, TMC continued to owe royalties, for which reason around 30 members of the Mamanwa tribes stormed TMC's mining site and torched mining equipment, including a bulldozer. In addition, TMC and five other mining companies active in the area were accused of heavy environmental contamination, extremely high levels of nickel in water and soil, siltation of rivers and marine ecosystems, as well as the destruction of sacred places of the Indigenous. Residents reported suffering from serious health problems and loss of fish stock. Therefore, in May 2011, the tribal commission of Mindanao (TRICOM) and other communities filed a petition before the Supreme Court demanding a stop of the active companies.

The conflict drastically intensified in October 2011, when 200 armed members of the New People Army attacked TMC and the Taganito HPAL processing plant in Claver town to punish and block their destructive activities, killing four guards, torching the mining equipment and taking hostage several mining officials. In parallel, another nearby mining company, Platinum Metals Group Corporation, was attacked the same day by NPA members. Subsequently, the Armed Forces of the Philippines (AFP) and the mining companies entered into agreements of training and employing special militia. The proposal however was strongly rejected by environmental groups, as there is a record of human rights violations related to increased militarization.

In 2012, an assessment team led by the MGB visited the area. Despite documented evidence of environmental problems, TMC and other active companies were allowed to continue mining, as they presented plans of how to handle the environmental problems. TMC together with Japanese Mitsui & Co. Ltd, Japanese Sumitomo Metal Mining Corporation (SMM) and

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its Philippine subsidiary Taganito HPAL Nickel Corporation further constructed a 30,000 tons-a-year smelting plant in Taganito, starting in 2013. The plant is using a High Pressure Acid Leach (HPAL) technology. The smelting plant was reported to be a 1.7-billion-dollar project and loans were partly provided by the Japan Bank for International Cooperation.

In 2015, heavy environmental degradation of Claver municipality and social tensions surrounding the mining operations went on. However, the government seemed to evaluate only tax benefits. As reported in *The New York Times*, the Philippine mining town of "Claver is busy with bakeries, fruit stands, pool halls and karaoke bars. In the mountains nearby, bulldozers cling to treeless slopes, scooping out red soil and leaving gaping pits. On the horizon, cargo ships wait to bring nickel ore to China. Many here are afraid that none of this will last". Therefore, the brief 2017 crackdown on mines, was really a shock. "In February 2017, Gina Lopez, the acting secretary of the environment, said she was shutting down the operations of 28 of the country's 41 mining companies. Those companies, which account for about half of Philippine nickel production, have been accused of leaving rivers, rice fields and watersheds stained red with nickel laterite". However, Gina Lopez had to leave office and the industry came back to normal rates of extraction and export, normal pollution, and normal disregard for human rights. Nickel exports are in command, in the Philippines as in Indonesia and New Caledonia.

SOME BIOMASS CONFLICTS

Palm Oil Plantations in Palawan[8]

"Biomass conflict" is the crude description in the EJAtlas for land conflicts caused by new plantations or by deforestation, and also by industrial fishing, agricultural pesticides and the like. Biomass conflicts are a good description, from a metabolic perspective, for the disruptions of flows of current photosynthesis. An example in the Philippines is the expansion of Oil Palm plantations, which is very visible.

Palawan preserves the largest contiguous forest block in the country. This isle in 1990 was declared "Man and Biosphere Reserve" by UNESCO. However, mining projects and oil palm plantations pose a threat to the environment and local communities. At national level, the DENR planned the conversion of 15,000–20,000 ha into oil palm plantations through private initiatives with the objective of reducing the dependence on imports and modernizing the agricultural sector. Since 2003, the Provincial Government of Palawan promoted this agrobusiness. The project in South Palawan is mainly operated by two companies: Palawan Palm & Vegetable Oil Mills, Inc. (60 per cent Singaporean and 40 per cent Filipino-owned), and Agumil Philippines, Inc. (75 per cent Filipino-owned and 25 per cent Malaysian). Their parent company is Malaysian Agusan Plantations Inc. Also, in recent years, a construction company, Cavite Ideal International Construction and Development Corporation, is becoming a land grabber. Until 2015, about 6,000 ha of land had already been converted into oil palm plantations in South Palawan.

Local organizations diagnosed many evils coming from plantations: the collapse of family-based economies, disappearance of non-timber forest products (NTFPs) on which the local economy relied, loss of agricultural land and crop diversity, loss of traditional swidden practices, decreased food security, limitations of free movement to reach upland fields and

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forests, exponential increase of pests over the traditional coconut crops, loss of biodiversity and medicinal plants, increment of flash floods, depletion of plantation soils, pollution of river sources and health hazards caused by chemicals used in plantations. All these impacts were not compensated for. Affected communities claimed that the Palawan Council for Sustainable Development (PCSD) was not assuming its role of monitoring the projects' socio-ecological impacts, and that Indigenous peoples had not given the necessary prior informed consent over their ancestral land. In addition, farmers engaged by contracts with companies raised complaints about the unfair conditions and the lack of transparency in the agreements.

The opposition was led by local Indigenous organization ALDAW (Ancestral Land/Domain Watch) since 2009 and supported by other advocacy groups from the Philippines and abroad. Affected communities submitted in 2014 a petition for a moratorium on oil palm expansion, filed affidavits against plantations by local communities, campaigned to pressure UNESCO to preserve the island, collected audio-visual evidence on oil palm expansion, published reports, did international online petitions and created other awareness campaigns. Indigenous people and traditional farmers formed the Coalition Against Land Grabbing (CALG). This is a case where concern for local livelihoods goes together with concern for conservation of nature.

Logging, Deforestation and Militarized Conservation[9]

In Palawan, illegal logging and deforestation are leading to murders of forest protectors and to calls for the "militarization of conservation". Deforestation by business or by local people takes place in Palawan and forest protection agents are encouraged to use violence against "timber poachers", while environmental NGOs such as Kalikasan do not approve of this "militarization of conservation". A difference must be traced between swidden cultivators cutting some trees and corporate deforestation. However, the truth is that forest guards are sometimes attacked by common people.

Palawan hosts most of the country's established national parks and protected areas. There is an influx of migrants to this commodity extraction frontier with resources available for exploitation, who have displaced Indigenous groups that historically occupied the island. Ruben Arzaga was one of the recent forest defenders who was murdered, shot in the head in September 2017 as he tried to approach illegal loggers. He was an environmental "para-enforcer" in the Palawan NGO Network Inc. (PNNI, created by Bobby Chan, an environmental lawyer). Ruben Arzaga's killing was the second attack on forest protection officers by illegal loggers and "timber poachers" in three weeks. In August 2017, Lito Eyala, a forester from the DENR, was shot by a suspected timber poacher while he and his team apprehended suspected timber poachers and confiscated an unregistered chainsaw in Bacungan. The owner of the chainsaw retaliated by firing a homemade gun that hit Eyala in the back and wounded him.

In September 2017, after Arzaga's murder, authorities apprehended two suspects in the killing. Allegedly, both suspects had a grudge against Arzaga, who had apprehended illegally cut lumber from them on several occasions. This case is controversial. On the one hand, Arzaga was an elected village captain in Palawan's tourist town of El Nido and had been trying to confiscate illegally cut timber as part of a crusade to stop rampant deforestation. It was reported that Environment Secretary Roy Cimatu, a former chief of the Armed Forces of the Philippines (AFP), had started mulling over the possibility of arming environmental patrollers with guns, in a show of "militarization of conservation". In a statement, Cimatu revealed

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that the DENR would ask the military and the police to train foresters in security protocols and the use of firearms.

The EJO Kalikasan disputed Cimatu's (and also Bobby Chan's) view. For the Philippines as a whole, Global Witness had indeed reported a total of 144 cases of environmental activists' killings since 2002, but "most murders were linked to mining, coal and extractive industries, whilst half of those killed were indigenous people". Deforestation by local people was in any case only one of the threats to the environment. Kalikasan said that in its own count, under the Duterte administration – from June 2016 to September 2017 – there had already been at least 23 environment-related killings. "Most of the victims, or 70%, were indigenous peoples and peasants, while 78% of the reported incidents involved communities and organizations opposing large-scale mining and agricultural plantation projects".[10] Kalikasan held businesses and the state responsible for these killings.

For this reason, the Kalikasan rejected Cimatu's proposal to arm forest guards. Instead, it urged their number should be increased and their salaries augmented. Kalikasan recognized the need to stop deforestation in Palawan, whether caused by business or by local people. In this proposal for "convivial conservation" Kalikasan joined the Coalition against Land Grabbing (CALG) and United Tribes of Palawan, which on 28 April 2015 said that recent years had seen an exponential increase in land deals across the Philippines. Meanwhile, traditional upland farming practices implemented through swidden technology are demonized and antagonized through restrictive legislation, despite the fact that they foster local self-sufficiency in the livelihoods and worldviews of Indigenous societies.

In summary, Palawan was not spared from massive investments in extractive resources and industrial agriculture, especially oil palm and rubber. And yet, Indigenous peoples and upland dwellers continued to be blamed for causing massive deforestation and ecological disaster.

SAVE PULANGI RIVER ALLIANCE IN BUKIDNON, MINDANAO[11]

In March 2018, it was announced that First Bukidnon Electric Cooperative Inc. (FIBECO) and Pulangi Hydro Power Corp. (PHPC) signed an MoU to begin construction of the 250-MW Pulangi 5th hydropower plant in Bukidnon province in Mindanao. Six years earlier, on 13 May 2012, the environmental group Kalikasan – People's Network for the Environment (PNE) – condemned the killing by an unidentified gunman of an environmental activist in south Bukidnon, Margarito Cabal, leader of Task Force Save Pulangi, who campaigned against the construction of the hydroelectric dam in Pulangi River.

Cabal was a government employee for the mayor's office and his son, Marjolie, told HRW that prior to his father's killing, the military's 8th Infantry Battalion in nearby Maramag town had summoned Cabal on suspicion that he was working for the NPA. The general secretary of the Save Pulangi Movement, a tribal leader named Datu Petronilo Cabungcal, said that the area has been the subject of military operations. The military engaged in "red-tagging" of environmentalists. "We are just fighting for our land, our livelihood that is threatened by this project. Why would that make us communists?", he said.

Clemente Bautista, national coordinator of Kalikasan-PNE, said at the time that Cabal was the thirteenth environmental activist killed under the Aquino administration. Nine of these thirteen cases of killing of environmental activists under Aquino occurred in Mindanao. "Government policies on protecting foreign investments and engaging in counter-insurgency

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are overlapping exactly because both are meant to undermine oppositions to these dirty projects", said Bautista. Peasant leader Jose Doton and Indigenous Dumagat leader Nicanor De los Santos were tagged as communist supporters or NPA members before they were killed. In most of these killings, military forces and agents were the suspected perpetrators. Doton and De los Santos were shot dead in 2006 and 2001, respectively. Clemente Bautista added that killings are "a result of intensifying militarization under the anti-insurgency Oplan Bayanihan of the Aquino administration. It is implemented particularly in areas where there is a huge corporate investment to exploit our natural resources".

In the Philippines, where under both presidents Aquino and Duterte there has been such a terrible toll of environmental defenders killed, there are continuous movements against mining and also hydropower projects, sometimes using the slogan "Damn the Dams". The Pulangi River is the longest river in Bukidnon. It is one of the major tributaries of the Rio Grande de Mindanao. It has a length of 320 km and traverses through municipalities of Bukidnon. The 5th Hydroelectric Dam is expected to generate about 300 megawatts of so-called renewable energy for Mindanao. The dam implies flooding 3,300 ha of mostly highly sloping lands along the riverbank in 22 barangays. An estimated 1,060 households will be affected. Opposition to the project claimed that the project would brutally submerge the burial site of Apo Mamalu, a revered ancestor of the Manobo Indigenous people in Mindanao, with both livelihood and sacredness value. In March 2017, it was reported that Chinese finance would become available for the Pulangi 5th hydropower project.

SMOKEY MOUNTAIN AND PAYATAS DUMPSITES, MANILA[12]

The industrial economy is entropic, it is not circular at all. It has a hunger for fossil fuels and other exhaustible inputs such as metals. It even destroys the renewable, permanent "funds" such as the forests and fisheries which directly depend on current sun energy for their maintenance. It also produces waste, gaseous, liquid or solid. The solid waste is incinerated (leaving behind toxic ashes) or it is dumped in legal or illegal landfills. Recyclers or waste-pickers try to make a difficult living out of such waste. So, the principles of ecological economics have a manifestation in the toughest places in the world. "Smokey Mountain" was a fishing village in the 1960s, before it became a dumping ground for four decades and a source of precarious livelihoods for thousands of people. The first conflict was initiated when the mountain was closed by the government due to its gaining international infamy in 1995. With the bulldozing of residents' houses, the local community was left with neither land nor employable skills. Their only option was to follow the trash trail, which in turn caused the creation of Payatas, also known as Smokey Mountain 2, and of other landfills.

The Payatas rubbish dump collapsed in 2000. The avalanche of rubbish and mud swept away the flimsy wooden homes of scavengers who worked on the dump, killing 500 people. Stronger regulations were enforced whereby a licence was required to be a scavenger, and children were banned from the site. Legislation, albeit comprehensive, was too idealistic. For example, the goal to convert open dumps into sanitary landfills (Republic Act No. 9003) was only achieved in 5 to 10 per cent of the cases. The government started talks to introduce a system of burning waste to generate electricity for local residents. This would drive scavengers further down into poverty, not to mention the toxic health risks for the local community associated with the incineration of plastic.

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The privatized initiative to transform waste into electricity using the scavengers as recycling entrepreneurs was slowly burgeoning. Although it's an environmentally friendly short-term solution, local environmental groups such as Greenpeace Philippines pointed out that this encourages irresponsible dumping of all waste and does not provide long-term, sustainable solutions that aim at waste reduction. The solution lies in improving the livelihood of thousands of people by upskilling them so they do not rely unprotected on the hazardous occupation of scavenging and recycling waste. These are worldwide issues. In 2019, on the occasion of the Global Waste Picker Day (March 1st), a research group on Informal Recyclers (led by Federico Demaria) in collaboration with the EJAtlas, the Global Alliance of Waste Pickers and WIEGO released a thematic map of socio-environmental conflicts in the Global South related to informal recyclers.[13]

THE BATAAN NUCLEAR POWER PLANT: A HAPPY ENDING?[14]

The Bataan Nuclear Power Plant (BNNP) was built in 1984 but has never been operational because of decades of activism and political engagement. After the 1973 world oil crisis, the Philippines began looking to nuclear power as a source of domestic energy. This led to an anti-nuclear movement throughout the late 1970s and 1980s to stop the construction of nuclear facilities and rid the country of US military bases, possibly housing nuclear weapons. In 1976, during dictator Ferdinand Marcos' martial law, the Pittsburgh, USA-owned Westinghouse Electric Corporation won a US$ 2.34 billion contract, pushed by "special sales representative" Herminio Disini, to build the 620-MW plant. This was a case of corruption. Interest on loans taken out by the government to finance the project later amounted to US$ 300,000 a day. The Nuclear Free Philippines Coalition (NFPC), Nuclear-Free Bataan (sister organization to Gloria Capitan's Coal-Free Bataan), No Nukes Philippines, and other groups began mobilizing in January 1981, gathering environmental activists in a nationwide campaign combining lobbying, protesting, media and international solidarity to stop the construction and operation of the BNPP. The BNPP, 100 km west of Manila, was dangerous for its location close to a volcano and in an active earthquake zone (Figure 3.3).

On 26 October 1983, 500 protesters marched from the University of the Philippines to the US Embassy in Manila, culminating in a public conference warning against nuclear power. In June 1984, approximately 2,000 activists rallied in front of the Embassy while burning an effigy of Uncle Sam. In June 1985, over 33,000 people including members of 22 anti-nuclear organizations performed a protest, march and strike for three days in Balanga, the capital of Bataan. This huge demonstration forced attention to the issue. In September after a two-day protest, the military and police authorities suspiciously reported that the New People's Army (Communist party) killed seven activists. There is no corroboration of this; it might have been "red-tagging".

By 1986, the first nuclear facility in Southeast Asia was almost ready to begin. Yet in February 1986 there was a revolution toppling the dictatorship. Corazon Aquino was elected president in April 1986, basing her campaign on promises to scrap the nuclear project as a corruption issue. Corazon Aquino had alleged that Westinghouse bribed Marcos for the contract when it initially lost the bid. Disini was also funnelling US$ 40–80 million from the commission. Moreover, on 26 April 1986 the Chornobyl accident happened. Immediately upon assuming office, Aquino disbanded Marcos' energy programme and suspended the NPP's

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Source: Bulatlat, Kalikasan – People's Network for the Environment

Figure 3.3 *Bikers for clean energy say no to proposed BNPP revival, with banner "No To Nukes"*

operation. Yet electricity is often shut off for eight to ten hours daily across Manila and many in Congress criticized Aquino for spending as much as US$ 30 million in the fight against Westinghouse. However, after many years of stalling, Westinghouse was later acquitted for its criminal allegations on 14 July 1993. The courts also found insufficient evidence to charge Disini.

In 1991, the anti-nuclear movement successfully convinced the Philippine Senate to remove US military facilities that left behind tons of toxic waste. Since 2009 the government has reopened the NPP as a tourist museum where guests learn about nuclear energy. Tours of the plant are booked months ahead, especially popular among Japanese tourists.

Reactivation concerns are still active, however, and Nuclear-Free Bataan (NFB Net) kept advocating to get rid of it completely through events such as protests, prayer rallies and bike rides. In retaliation to their advocacy, on 26–27 June 2009, Aurora Broquil, Francisco Honra and Emily Fajardo, leaders in the NFB Net, were stalked and received death threats through text messages, stating "The barrel of our guns will be the last thing that you will see! You, communists, who have blood debts with the Filipino people, will pay for it!"

In 2011, government efforts to restart the nuclear plant were suspended in the wake of the Fukushima disaster. Protestors from NFB and local religious groups rallied outside of the BNPP on March 2011, urging the President to dismantle the plant, wearing "death masks", burning a replica of the plant and blocking the entrance. Yet as of 2020, the energy minister proposed a formal executive order to the President's Office to include nuclear power in the country's energy mix. Foreign suppliers of equipment from the US, Japan, France and South Korea have already expressed interest in investing in the Philippines' nuclear power sector. The DoE also signed a memorandum of understanding with Russia's state-owned Rosatom for

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a pre-feasibility study on the construction of nuclear power plants in the country. Opposition to reviving Manila's nuclear ambitions remains strong, with advocates citing a reliance on imported uranium, high waste and decommissioning costs, as well as safety concerns. Better an eco-tourist museum than a Fukushima Daiichi.

CONCLUSION: RED-TAGGING AND ENVIRONMENTAL RESISTANCE

Thirty years ago, Robin Broad and John Cavanagh published an excellent text in political ecology: *Plundering Paradise. The Struggle for the Environment in the Philippines*. "As recently as 1900, lush tropical rainforests carpeted most of the Philippine archipelago. At the current rate of deforestation, however, the country will enter the twenty-first century a barren landscape, with nearly all of its rainforests destroyed". The main issue considered in their book was deforestation, including destruction of mangroves for shrimp farming. Metal mining and palm oil plantations were not yet featured to the extent that they appear in the EJAtlas and other sources. A new book could be written only on the Philippines, with emphasis on the killing of Indigenous environmentalists (Tran 2023). The repression, the victims and the "red-tagging" belong to the world movement against environmental injustices. The conflicts described are systemic. This becomes evident when you have a look at the commodities involved and their role in the world's social metabolism, at the well-known names of many of the companies, at the typical disputes on the EIAs and the variety of valuation languages displayed, at the participants and their forms of mobilization (including Indigenous people, local and international EJOs), and at the international attempts to secure respect for human rights. There are ancestral values placed on sacred hills, prayer areas, hunting areas and burial grounds destroyed by corporate mining or other investments. The bishops are clearly influenced by Liberation Theology. There are active movements for climate justice and for reparations for the social and ecological debt from North to South, intellectually reinforced by the Encyclical *Laudato si*.

In 50 of the 87 cases of environmental conflict in the Philippines recorded in the EJAtlas by October 2022, one of the social actors involved are religious groups, while in 65 cases Indigenous groups or traditional communities are involved. Of course, neighbours and citizens are also numerous. The share of Indigenous peoples in the Philippines is estimated at between 10 and 20 per cent of the population. The Philippines has adopted the United Nations Declaration on the Rights of Indigenous Peoples but nevertheless has not yet ratified ILO Convention 169.

Even the dismissal of well-meaning Minister for the Environment Gina Lopez in 2017 reminds us of similar events elsewhere: the resignation of Marina Silva from President Lula's government in Brazil or of Victor Toledo from President Lopez Obrador's in Mexico.

Comparing Japan to the Philippines, in 2019 Japan had an income per capita and year (PPP) of US$ 40,000, while the Philippines reached around 9,000. Japan has a stable or declining population of about 125 million people, and the Philippines is still growing at 110 million but with decreasing fertility. In Japan, the carbon dioxide per capita emissions per year were 9.5 tons in 2019, and in the Philippines of 1.4 tons. If all citizens of the world had the per capita emissions of the average Filipino, there would not yet be an enhanced greenhouse effect because CO_2 emissions would be absorbed by oceans and new vegetation into the carbon

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cycle, with no permanent dumping of the excessive amount into the atmosphere. On the contrary, if the average emissions per capita of Japan (or the EU, or the USA) went down to the world average, the necessary reduction at present would not have to be so drastic. Therefore, in some ways the Philippines is environmentally a better country than Japan. However, in the Philippines, the EJAtlas records that in 40 of the 87 conflicts registered there were one or more environmental defenders killed, while in Japan there was one death of an environmental defender in only one conflict out of 43. We have also seen the strong participation of women in many conflicts in the Philippines, and sadly the deaths of Teresita Navacilla, Juvy Capion (and her sons), Cheryl Ananayo and some other women (Tran 2023). The count continues in Chapter 4 with Gloria Capitan.

The companies present in the Philippines are often well-known transnationals, particularly in metal mining conflicts but also in palm oil plantations. There are some Chinese companies, and certainly Philippine companies such as San Miguel. International solidarity against corporations is one of the topics that can be researched. Here, we have noticed solidarity inside the confederation of Friends of the Earth and by international Human Rights groups.

In the forms of mobilization, there is the usual abundance of letter writing to the authorities, the disputes on the EIAs, perhaps less recourse to litigation in the courts than in other countries, street marches, some direct actions and some armed violence from the side of the people (and a lot of violence against the people). There is often the allegation that the state practises "red-tagging", blaming the environmentalists for militancy in communist organizations. And certainly, there are communist militants who take sides in favour of the environmentalism of the poor and the Indigenous. Internationally, there is support in civil society in the Philippines for a binding treaty on transnational corporations to hold them accountable for their actions. This treaty is an idea supported by a few governments. It coincides with a proposal for another treaty, this one against the proliferation of fossil fuels.

NOTES

1. Didipio Gold and Copper mine, Nueva Vizcaya, Philippines (Arnim Scheidel), EJAtlas.
2. King-King copper and gold mine in Pantukan, Compostela, Mindanao, Philippines, EJAtlas.
3. Cagayan black sand mining in shore areas, Luzon, Philippines (Alyansa Tigil Mina), EJAtlas.
4. Ipilan and MacroAsia nickel mines in Brooke's point, Palawan, Philippines (Sofia Mingorria and Joan Martinez-Alier).
5. Rio Tuba and Coral Bay nickel mining and processing in Palawan, Philippines (Master Gestión Integrada de Aguas – Asignatura 'Ecología Política del Agua' and Joan Martinez-Alier), EJAtlas.
6. Glencore Xstrata Tampakan Copper-Gold Project in South Cotabato, Philippines (Alyansa Tigil Mina), EJAtlas.

   Permanent Peoples Tribunal Hearing on Corporate Human Rights Violations and Peoples Access to Justice, EJAtlas.
7. Shenzhou Mining / Claver Mineral Development Corporation Nickel mining in Claver, Philippines (Arnim Scheidel), EJAtlas.

   Taganito Mining Corporation's Nickel Operations, Surigao del Norte, Philippines (Arnim Scheidel), EJAtlas.
8. Palawan Oil Palm Plantations and Land Grabbing, Philippines (Andreia Francés Silva & Master Gestión Fluvial Sostenible y Gestión Integrada de Aguas), EJAtlas.
9. Combating deforestation in Palawan, Philippines (Joan Martinez-Alier), EJAtlas.
10. Gamil, J. T. (2017). DENR mulls arming forest rangers. *Inquirer.net*, 30 September. https://newsinfo.inquirer.net/934516/denr-roy-cimatu-arming-forest-rangers.

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11. Save Pulangi Alliance, Bukidnon province, Mindanao, Philippines (Joan Martinez-Alier), EJAtlas.
12. Smokey Mountain and Payatas dumpsites, Manila, Philippines (Taran Arjun Dasani, Juan Miguel Verdadero and Gabriel Weber), EJAtlas.
13. Waste pickers under threat. New waste management policies undermine the informal recycling sector in the Global South, EJAtlas.
14. Bataan Nuclear Power Plant in Morong, Philippines (Dalena Tran), EJAtlas.

Albor, T. (1993). Philippines takes on US corporate giant, *The Christian Science Monitor*, 23 July.

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4. Women environmental defenders killed around the world

The death of Berta Cáceres in Honduras on 2 March 2016 brought me at 8 a.m. to the tiny consulate of that country in the Via Augusta in Barcelona. I went with some friends to complain. It also made me start this chapter collecting more cases of women environmental defenders killed (Martinez-Alier and Navas 2017). Murders of environmentalists are the most drastic and visible events in a pyramid of violence and fear that also includes the wounded, the displaced, the frightened and those silently suffering from exposure to toxic waste in instances of "slow murder". Killings take place in some countries but not in others, where repression takes less drastic forms. They are concentrated (according to the authoritative reports from Global Witness) in Colombia, the Philippines, northern Brazil, Mexico, Honduras and Guatemala which in 2020 comprised 175 of the total number of 212 environmental and land defenders killed. This is a pattern repeated year after year.

Of those victims recorded by Global Witness, roughly about one-tenth are women. This agrees with the evidence in the EJAtlas. Dalena Tran et al. (2021, 2022, 2023) have published outstanding articles on Women Environmental Defenders (WED). The cases described in this chapter are placed halfway between an anecdotal approach and a systemic, exhaustive analysis. The Women's Human Rights Defenders list published by AWID – a women's rights international organization – is also a good source. Global Witness' efforts to account for environmental defenders (men and women) killed around the world deserve a place in the world press every year.

This chapter starts with the case of Gloria Capitan in the Philippines, but in Chapter 3 the deaths of Teresita Navacilla, Cheryl Ananayo and other women in this same country have been mentioned. This chapter describes the violent deaths faced in different countries by about 25 women environmentalists; I record their names and the circumstances in which they died. All were environmental activists between the ages of 16 and 60. I chose and summarized these cases that I remember well but they are merely a sample.

GLORIA CAPITAN AGAINST THE COAL INDUSTRY IN THE PHILIPPINES[1]

Resistance to coal stockpiling led to Gloria Capitan's murder in 2016 in Bataan province, Philippines. Coal production in Bataan has resulted in severe pollution of the area and the destruction of the coastline and seabed. The local population, including the villagers from Lucanin where Gloria Capitan resided, suffer from skin allergies and respiratory diseases, caused by the toxic coal ash that remains after the burning of coal in power plants.

In 2017, there were 15 coal-fired power plants operating in the Philippines and 29 more were proposed. On the planet, coal extraction grew seven times in the twentieth century and it

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continues to increase. We live in the "age of coal", in the age of oil and gas, the age of hydroelectric dams and the expansion of solar and wind energy. The fight against the coal industry often unites local complaints with concern for global climate change. Sometimes, the global perspective predominates, as with the successful Ende Gelände movement in Germany, but in the case under consideration local concerns weighed more than global ones, although both were present.

Bataan is a peninsula that covers 1,373 km^2 with a dense population of around 760,000. The coastal belt has lost most of the mangrove forests, and there have been numerous oil spills in Limay port. Bataan is home to two coal power plants: a 140-MW plant owned by Petron in the town of Limay and a 600-MW plant owned by Ayala and Sithe Global in the town of Mariveles. There are coal storage facilities in Mariveles. One is in Barangay Sisiman, owned by Seasia Nectar Port Services. The other is in Barangay Lucanin where Gloria Capitan resided, and it is owned by Limay Bulk and Handling Terminals and Sea Front Shipyard Port Services Inc. Aside from these facilities, expansion is well underway: 1,200 MW for GNPower Mariveles, 600 MW for San Miguel Global Power in Limay and another 1,200 MW for San Miguel in Mariveles.

Gloria Capitan opposed the construction of coal stockpile facilities as leader of the local anti-coal movement, and member of the Philippine Movement for Climate Justice. She was shot dead on 1 July 2016. She was 57 years old, a grandmother, one of the leaders of the Coal-Free Bataan Movement and the President of United Citizens of Lucanin Association, a community-based organization opposing the operation and expansion of coal plants and open storage facilities in Mariveles, 60 km west from Manila. As a part of her human rights work, "Ate Glo" (as people called her) organized campaigns, filed complaints with the court, collected signatures for petitions and initiated other public actions, calling for a permanent closure of coal projects in the region. She was not a member of an Indigenous community, which makes her case different from so many others in the Philippines. The Philippine Movement for Climate Justice (PMCJ) believed she was killed because of her advocacy. "She had no personal enemies. It is clear that this was the biggest reason for her death", said Center for Energy, Ecology and Development (CEED) co-convenor Gerry Arances (Figure 4.1).

"If the murder of Gloria is a message to silence other anti-coal activists like her, then they are mistaken", said Valentino De Guzman, from the PMCJ. "On the ground where her body fell, more anti-coal activists will sprout. Instead of silencing us, it will only strengthen our convictions". Members of PMCJ, CEED, Sanlakas, and the Archdiocesan Movement for the Environment (AMEn) attended the emotional press conference after Gloria Capitan's death. Community partners feared that police investigating Capitan's murder were not serious about finding the culprits. Indeed, the Philippines is a hotspot for murders of environmental defenders. Gloria Capitan is perhaps the equivalent of the environmental justice movement in the Philippines to Berta Cáceres in Central America, Chico Mendes in Brazil (killed in 1988) and Ken Saro-Wiva and his companions in Nigeria (killed in 1995).

ADELINDA GOMEZ AGAINST MINING IN COLOMBIA[2]

Adelinda Gómez from Almaguer lived in the Macizo Colombiano, in the Cauca region. According to Edinson Arley Bolaños.[3] "Almaguer is embedded in the heart of the Macizo Colombiano, and it is one of Cauca's and Colombia's poorest municipalities. Nonetheless, it is

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Source: Focus on the Global South

Figure 4.1 Coal kills, Katarungan (the Tagalog word for Justice)

seated on the gold that was hidden in the mountains next to the villages of Jordán, Buenavista, Riñonada and El Tambo. Nowadays the Anglo Gold Ashanti Corporation has the concession of these areas" (Figure 4.2).

The sources of the mighty Magdalena and Cauca rivers lie in the Macizo Colombiano before they head north; the Caquetá River flows east and the Patía River to the west. The whole ecosystem was designated by UNESCO as a Biosphere Reserve in 1990. This does not stop the exploitation of this "commodity extraction frontier" by agriculture, livestock and especially mining. Indigenous people, afro-descendants and peasants live together within this territory.

Since 2003, peasant communities of La Sierra and La Vega were concerned about the work of Carboandes S.A. in the exploration, exploitation and marketing of coal and copper. Moreover, the Mines and Energy Ministry delivered 64 mining titles in the Macizo, to which those fraudulent must be added. There was continuous presence of workers and technicians arriving in the area in vans. Defending their right to work, these miners tried to gain the communities' goodwill by financing community parties and orchestras, giving away sports-wear with Anglogold Ashanti and Carboandes logos, and promising jobs, housing projects and reforestation. On their part, communities strengthened their resistance activities, with marches for life and water and visits to other regional basins.

It was against this background that on 30 September 2013, Adelinda Gómez Gaviria was killed by two strangers in Almaguer. She was 35 years old and a mother of three children. Maybe sensing the danger, her 16-year-old stepson was with her. Two men shot Adelinda and her stepson. She died instantly while the boy was badly hurt. He recovered but could not identify the murderers. Adelinda was a housewife and made some extra money by harvesting

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Source: Fundación del Macizo

Figure 4.2 *The* macizo colombiano*, with Almaguer to the south of La Sierra and La Vega, next to Bolívar, west of San Sebastián and Santa Rosa*

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coffee and other agricultural jobs. Besides participating in the "Comité de Integración del Macizo Colombiano", in February 2013 she promoted a hearing in Almaguer to denounce social and environmental impacts of mining. In Moritz Tenthoff's words, companies such as Anglo Gold Ashanti and Continental Gold had arrived together with small national companies with backhoes and dredgers, mainly from Antioquia. This was in the aftermath of military operations against left-wing insurgents.

In commemoration of Adelinda Gómez, in November 2013, the Macizo's communities organized the Caravan for the Defence of Life, Territory and Dignity. As often in Latin America, defence of the territory and of human bodies went together. According to the Network for Life and Human Rights, a month before her murder she was threatened by phone: "stop fucking up with mining; it is risky and you are going to be killed". A public hearing was held in Almaguer involving regional authorities and over two thousand people. Santa Rosa, Almaguer, La Sierra and Bolívar communities reaffirmed their opposition to mining be it by national or foreign companies. Throughout the same days the 4th Popular Water Convention – Patía River basin, took place. The event, convened by the "Proceso Campesino y Popular de La Vega", was a community initiative to defend water sources against the threats of mining. The Patía River basin is threatened by some 130 backhoes, mechanical excavators. "When they talk about development it usually means they want something to expropriate", said one of La Vega peasants.

GLADYS DEL ESTAL AND THE ANTI-NUCLEAR MOVEMENT IN TUDELA, SPAIN[4]

Another woman on the list was European, and she happens to be the earliest murder case in this chapter. Young environmentalist Gladys del Estal was killed by a Civil Guard's shot in the head on 3 June 1979. She was from Donostia (San Sebastián), born in Caracas in 1956 in a family of refugees from the Spanish Civil War. She had a degree in computer science. Gladys was part of the Egia ecologist group and Euskadi's Anti-Nuclear Committees. She participated in the preparation of cycling events and demonstrations against the Lemoiz nuclear plant. The crime took place in Tudela, where the young woman had come to take part in the International Day against Nuclear Energy convened by the Anti-nuclear Committees. The Civil Guard (militarized police) violently broke into Paseo del Prado, where the anti-nuclear event was peacefully celebrated. She was hit by José Martinez Salas with a gun, a Z-70 rifle. A shot sounded and Gladys fell to the road. She arrived dead at the hospital. The protest against her murder was widespread, with demonstrations and strikes throughout the Basque Country and other areas of the Spanish state.

Spain's National Energy Plan envisaged at the time a number of nuclear plants. Some were to be located on the Basque Coast and one in the Ebro River close to Tudela. The anti-nuclear movement was nourished in that region and at the time by the political and social effervescence of the Basque independence struggle. A journalist's chronicle in *El País* in 1980, on her first anniversary, recalls the atmosphere of those years:

> On Sunday in Tudela a demonstration of around four thousand people took place. The demonstration was organised within the acts convened by the antinuclear committees of Euskadi to celebrate the international anti-nuclear day and the memory of the young Gladys, who died a year ago as a

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result of shots by the Civil Guard. While the demonstration ended without incident, at eleven thirty at night, Civil Guard forces withdrew the monolith placed where Gladys del Estal died. The march began in the Paseo del Prado under the slogan *gogoan zaitugu* (Gladys, we don't forget you), then toured several downtown streets of Tudela, with shouts against the Iberduero company, the nuclear plants, the police and the Civil Guard. Once the demonstration reached the headquarters of the Civil Guard, there were moments of tension, as protesters intensified the shouts against the Civil Guard. After crossing the bridge over the Ebro River, protesters went to the place where Gladys fell dead. There, a stone monolith was erected with the inscription: "Gladys del Estal, murdered in Tudela for defending the sun, water and freedom. We do not forget. *Gogoan zaitugu*". That monolith was taken down by the Civil Guard.

In 1982, a moratorium against the construction of nuclear power plants was enacted throughout Spain. The Tudela plant was not built. Every year and still at present, in the Basque Country the commemoration of her death takes place.

KARUNAMOYEE SARDAR AGAINST SHRIMP FARMS IN BANGLADESH[5]

In Bangladesh, the promotion of commercial aquaculture by international banks and organizations in the 1980s led to large-scale land grabbing in the coastal districts. This transition to aquaculture was facilitated by armed representatives and strong political leaders who used sluice gates in the polders to flood the islands. Once the land was waterlogged, there wasn't much the local communities could do, unless the local anti-shrimp groups or village committees regained control of the sluice gates to let the water out.

One famous woman was killed in the fights against shrimp farms: Karunamoyee Sardar, a woman without land of her own who defended the commons. She is remembered every year on 7 November, when a ceremony takes place at the location where she died in 1990. Many others were injured. In Horinkala, Khulna – one of the largest villages of Polder 22 – there is a hermitage or oratory in her memory. She appears in a painting at the head of a march against shrimp farmers.

For their leadership in the anti-shrimp campaigns, the following women and men were killed: Gobinda Dutta, in Dohuri Bhaina; Dumuria Upazilla, in Khulna (22 July, 1988); Karunamoi Sardar, in Bigordana; Paikgachha Upazilla, in Khulna (7 November, 1990); Zaber Sheikh, in Korerdon; Batiaghata Upazilla, in Khulna (21 September, 1994); Mowla Box, in Mothbati; Upazilla Paikgacha, in Khulna (1989); Zaheda Begum, in Baburabad; Upazilla Debhata, in Satkhira (27 July, 1998); Kinu Gazi, in Khoria; Upazilla Paikgachha, in Khulna (24 September, 2008).

NASREEN HUQ AGAINST COAL MINING IN BANGLADESH[6]

The project of the English company Asia Energy, subsidiary of GCM Resources, in Phulbari, consisted of a coal mine and a 500 MW thermal power plant. The project would displace many people, including tribal groups. On 24 April 2006, Nasreen Huq, a 48-year-old activist who worked on ActionAid, was run over by a car in suspicious circumstances. This first death was followed by others. Three people died and hundreds were injured when a 50,000-strong

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Source: Dovydas Vilimas

Figure 4.3 *A woman makes visible the names of the three people killed in the Phulbari shooting*

demonstration was attacked by the Bangladesh Rifles on 26 August 2006. Demonstrations and repression continued in successive years until the Phulbari project seems to have been abandoned. There were also shareholder activism and demonstrations in London at the GCM headquarters.

In this age of coal in South Asia (Roy and Schaffartzik, 2021) the company in London continued to make optimistic statements. Apart from Phulbari, there are at least two other highly controversial coal thermal power plants in Bangladesh. Rampal is located in Sundarbans, the great mangrove forest. The other plant would be located near Chittagong, where there has been a strong environmental movement and several victims against so much injustice. A recent analysis (Rahman and Hasan, 2022) concludes, in the spirit of the present book, that the locally networked resistance movement against the Phulbari Coal Project met with a formidable opposition that forced the company to halt the project and leave the country.

> The success of the protest was amplified by shows of solidarity from international environmental justice movements … mobilization of movements and protests like this signify a global arcade of networked activism against… extractivism. Drawing from interviews and qualitative digital media content analysis, we identify common themes, similarities with global appeals and vocabularies, and the communicative architecture of the movements, including their digital turn. We pay attention to how local voices were picked up by national and transnational alliances. Although deeply situated in local cultures, the Phulbari movement shows that anti-extractivism has become a digitally networked and globally circulated cause.

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MONTHA CHUKAEW AND PRANEE BOONRAT AGAINST PALM OIL PLANTATIONS IN THAILAND[7]

The *Bangkok Post* reported on 5 June 2014, that more than 30 environmental and human rights defenders had been killed in Thailand since 2002 according to Human Rights Watch. Nevertheless, only about one-fifth of the total number had judicial consequences. One of these murders, on 11 February 2015, was that of Chai Bunthonglek, an activist over the age of 70 who fought a company that usurped land from the community of Khlong Sai Pattana for plantation purposes. He was a member of the Peasant Federation of South Thailand, in Chaiburi district, Surat Thani Province. In 2010, Somporn Pattanabhumi was also killed. On 19 November 2012, Montha Chukaew and Pranee Boonrat, two women in their fifties, from the same organization, were attacked and killed while going to the district's market by motorcycle. Several UN rapporteurs reported the deaths as also Human Rights Watch, Thailand's Assembly of the Poor and many other organizations.

The local population lives in fear. Khlong Sai Pattana community maintains a long-standing dispute with Jiew Kang Jue Pattana, a palm oil company. As is often the case, the government supports the company. Attempts were made to take the company to court for land theft, and the community received the Supreme Court's support in 2007. However, the Land Reform Office not only failed to execute the court decision but supported the displacement of landless peasants belonging to the Peasant Federation of South Thailand. Meanwhile, the Jiew Kang Jue Pattana company brought lawsuits against the Federation

MACARENA VALDÉS AGAINST A HYDROPOWER DAM WITHIN MAPUCHE TERRITORY IN CHILE[8]

El Desconcierto recounts that Macarena, a 32-year-old mother of four children, had the dream of leaving the polluted city of Santiago to head South. Three years before she died, she fulfilled this dream and went to live in the Newen-Tranguil community, in Liquiñe, with her partner Rubén Collío. She had specialized in environmental issues. Rubén was an environmental engineer. Together they were trying ways of teaching people about environmental problems. Macarena had quickly emerged as a leader for the defence of the territory and people's health.

Tranguil is a small Andean town which, with the consent of the regional authorities, had been "invaded" by RP Global, a company of Austrian, Spanish and Chilean capitalists that builds "small hydroelectric power plants" and wind energy "parks", violating collective rights and the ILO Convention 169. On 1 August 2016, Macarena Valdés spent the whole day in a road blockade to prevent RP Global from installing high-voltage cables. At 4 p.m., the Governor of Valdivia asked the community to attend a meeting to review the situation and ordered the company by phone to leave the land. The meeting was held on August 19 but the government gave excuses, raised general questions and extended the deadline.

Mapuexpress, a counter-information net, published on its website that on 21 August 2016, two envoys of the company arrived at the premises of Mónica Painemilla, who was housing Macarena Valdés and Rubén Collío. She had not given authorization to carry out work on her land. The envoys told Painemilla to throw Rubén Collío and his family onto the street. On the afternoon of 22 August 2016, one day later, Macarena Valdés appeared dead at home. That same noon, while Rubén had gone to remove Macarena's body, RP Global arrived again to

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insist on the installation of the high-voltage cables. The company was escorted by members of the GOPE, Carabineros de Chile Special Forces, with armoured vehicles. People of the community resisted with more anger and grief than before. There were pushes and police violence. At 1 p.m., the governor ordered the company to leave the land again. That night, Macarena's wake was held. Rubén Collío suspected that she was murdered. In Valdivia, he filed a criminal complaint against those responsible for her death. Although her death was officially registered as suicide, some physicians such as Luis Ravanal questioned the autopsy. He was interviewed by the journal *El Desconcierto* and argued against the diagnosis of death by hanging. He added: "a corpse can also be hanged. The autopsy report does not describe vital injuries to the neck which would demonstrate that a person died from that injury". On 25 August, her funeral took place.

On 13 October 2016, the company came back, this time with even more police armoured cars, and managed to install the high voltage cables violating the laws and political agreements with the authorities. In January 2017, despite the complaints, it became clear that the Environmental Evaluation Service (SEA) was not taking into consideration the impact that Indigenous communities would suffer from the installation of the Tranguil plant. The coordination unit "Justicia para Macarena Valdés", composed of Indigenous and rural communities of Panguipulli, delivered a letter to the SEA demanding investigation of the Tranguil project. Rubén Collio, a Mapuche activist, died in a car accident in 2022.

LAURA LEONOR VÁSQUEZ PINEDA AND MERILYN TOPACIO REYNOSO AGAINST MINING IN GUATEMALA[9]

El Escobal mining project is located in Santa Rosa and Jalapa departments. In 2010, Tahoe Resources Inc. bought from Gold Corp. (both Canadian) the silver, gold, lead and zinc exploration and exploitation licences. The "Comité Defensor del Pueblo de San Rafael Las Flores" (active since 2010) together with the "Colectivo Madre Selva" opposed the environmental impact study. They argued the Xinca Indigenous population was not consulted, and possible damages to water sources, territory and people's health were not taken into account. Protests, sit-ins and demonstrations were organized, and people were injured by rubber bullets. The community consultations carried out completely rejected the project.

During one of the demonstrations, on 27 April 2013, an attack against community activists left several seriously injured, and Merilyn Topacio Reynoso died. She was a 16-year-old from the Youth Movement of Mataquescuintla (MJM). To suppress the protest, the military presence and even the declaration of state of siege were used. In 2013, after many appeals filed against the mine, the Appeals Chamber of Guatemala declared "the immediate suspension of the license". The legal advice of CALAS (Centro de Acción Legal, Ambiental y Social de Guatemala) was valuable to reach this result.

However, the project was reactivated a few months later and came into operation in 2014. The CALAS group's main lawyer was subjected to death threats. After demonstrations and attacks on the facilities, the Grupo Golan, a "private security" company, was hired to counter the activists. Telesforo Odilio Pivaral González, a 33-year-old farmer, was murdered in April 2015. In January 2017, Laura Leonor Vásquez Pineda was shot in the head. Aged 47, she was in charge of two grandchildren and ran a small business on her property. Both were members of the "Comité Local en Defensa de la Vida de San Rafael Las Flores". In 2018, Ronal David

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Barillas Díaz was also killed for defending the rights of the Xinca people and the mining project consultation. The story goes on. After 2019, the mine owner became PanAmerican Silver (Canadian).[10]

JEANNETTE KAWAS FOR POPULAR AND INDIGENOUS ENVIRONMENTALISM AND CONSERVATION IN HONDURAS[11]

Jeannette Kawas defended a conservation area as well as the protection of Garífunas living in the area (an Afro-Indigenous population). A national park in Honduras formerly known as Punta Sal now bears her name. She chaired PROLANSATE (Fundación para la Protección de Lancetilla, Punta Sal, Punta Izopo and Texiguat), an organization preventing oil palm crops and other threats to an area already included in the Ramsar Convention for the protection of Wetlands named after the city of Ramsar in Iran, where it was signed in 1971.

She was from Tela, in northern Honduras, close to Punta Sal. Though she was a professional accountant, her value theory went beyond the usual company's profit and loss account. She placed a non-economic value on Punta Sal's forests, rivers, beaches and mangroves. Cattle farmers, tourist investors, timber merchants… everyone wanted a slice of that beautiful landscape. Kawas promoted PROLANSATE, and, in 1994, she convinced the government to declare that area a national park. She was practising what could be called "convivial conservationism" bringing the local population into action against threats from firewood, overfishing, sugar refineries, palm oil factories and waste from aquaculture, as well as ranchers and hunters inside the park. On 6 February 1995, at 7.30 p.m., Jeannette was shot dead in her house. After her murder, the Inter-American Court of Human Rights (IACHR) stated that her death was caused by her environmental work with PROLANSATE around Bahía de Tela in the Atlántida Department, improving people's life, denouncing the attempt to privately appropriate Punta Sal, as well as pointing out the pollution of lakes and deforestation. There are 1,500 Garífunas in the area carrying out small-scale fishing, and the park's norms protect their lands and lives.

BERTA CÁCERES IN HONDURAS

In Honduras, a more recent and well-known death was that of Berta Cáceres, leader of both Indigenous and environmentalist movements. Her death had global resonance. When she died, Gustavo Castro (from "Otros Mundos", an organization in Chiapas, Mexico) was with her. He survived and told the press what happened. The attempt to attribute Berta's death to internal fights within her organization failed. The financing of the Agua Zarca dam by European banks was eventually withdrawn.

On 24 August 2009 – during the post-coup de facto regime – the Law on Water and the Decree 233 were approved. The former grants concessions on water resources, while the latter repeals the previous decrees that prohibited hydroelectric projects in protected areas. The territory of Lenca people was one of the most affected by the construction of 17 dams, many of which have received funds from CDM (the climate change so-called "clean development mechanism"). Between the years 2010–13, the construction of the Aguas Zarca Hydroelectric Project was approved. It is located in the northwestern zone of Honduras, between the

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departments of Santa Bárbara and Intibucá and a few kilometres away from the Montaña Verde Wildlife Reserve. This small project aimed to generate 21.3 MW through a 20-year concession of the Gualcarque River, a river sacred for the Lenca including the space where the spirits of the Indigenous youth live and is a legacy of the Cacique Lempira, who fought in defence of these territories against the Spaniards during colonization.

In 2012, the Inter-American Bank for Economic Integration (BCIE) granted the Honduran company Desarrollos Energéticos SA (DESA) a loan of US$ 24.4 million for the construction and installation of the project. DESA, in turn, subcontracted the Chinese company Sinohydro, accused by local communities of invading their lands without prior consultation. It also contracted the German company Voith Hydro Holding for the construction of turbines. Due to the increased conflict, Sinohydro withdrew. In the December 2013 Evaluation Report, the Compliance Advisor/Ombudsman of the World Bank's Finance Corporation (IFC) noted that the IFC should stop financing the project. In 2011, the government authorities and the DESA group had entered the territory to persuade the local population to accept the hydroelectric plant. Despite their rejection, the works began and the Lenca argued violations of the ILO Convention 169 (signed by Honduras in 1995) since a prior and informed consultation did not take place. Those leaders who opposed the project were threatened, prosecuted and killed as happened with Tomás García and Berta Cáceres, both of the *Consejo Cívico de Organizaciones Populares e Indígenas de Honduras*. She was known for her long-lasting activism and for having received the Goldman Prize. Since 2013, the Lenca were prohibited from using water from the river. The same year, from April 1, a mobilization and blockade took place to close the road, demanding the withdrawal of all types of machinery. After the murder of Berta Cáceres on 2 March 2016, criminalization of protest and threats against those who oppose the dispossession of lands continued. Furthermore, other dams threatened Lenca territory.

BETTY CARIÑO, FABIOLA OSORIO, JUVENTINA VILLA, LUPITA CAMPANUR AND OTILIA MARTINEZ CRUZ KILLED IN OAXACA, GUERRERO, MICHOACÁN AND CHIHUAHUA, MEXICO[12]

Betty Cariño was internationally well-known at the time of her death in 2010. "Tiny, dismayed but strong, wearing their black and red huipiles, Triqui women loaded the brown coffin by relays […] to the cemetery of her hometown Chila de las Flores in the state of Puebla", wrote emotionally Luis Hernández Navarro in *La Jornada*. As well as a human rights and environmental activist, she was the director of CACTUS (Centro de Apoyo Comunitario Trabajando Unidos), a community organization in Oaxaca. On 27 April 2010, her caravan was ambushed by paramilitaries. They brought supplies to the autonomous Indigenous Triqui community of San Juan Copala, a place of about 700 inhabitants. Jyri Jaakkola, an activist from Finland, also died in the attack and over ten people were injured.

Betty Cariño was an advocate of food and water sovereignty, and the right to autonomy of Indigenous peoples in Mexico. She was born to a family of Mixtec Indigenous peasants, attended primary and secondary schools in Chila de las Flores, high school in Huajuapan de León, and became a teacher of primary education at the "Normal del Divino Pastor" in Tehuacán. Cariño worked actively in the Valley of Tehuacán for communities affected by poultry industrial farms and denim factories polluting their water. She organized women

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vendors of tortillas, promoted the formation of savings banks, developed solidarity economy projects, founded centres to support migrants and delivered reproductive health programmes. In 2000, she moved to her native land. She was linked to the fight against the high rates of the Federal Electricity Commission, for the dismissal of the governor of Oaxaca, Ulises Ruiz, and to resistance to dams; for the self-determination of peoples, the promotion of Indigenous community radio stations and the support for the autonomous municipality of San Juan Copala. She also participated in the *Frente Amplio Opositor a la Minera San Xavier.* Just before heading to the San Juan Copala community, Betty Cariño had been at the Second National Meeting of the Red Mexicana de Afectados por la Minería (REMA), of which she was a member, in Cerro San Pedro (Studnicki-Gizbert 2022). Since November 2009, she also participated in the lawsuit for the murder in November 2009 of Mariano Abarca, leader of REMA in Chiapas and leader of the Chicomuselo resistance to the Canadian company Blackfire.

On 10 February 2010, during a meeting of human rights defenders in Dublin, Betty Cariño denounced Free Trade Agreements, the plundering of natural resources and the neo-colonization of the Latin American countries: "The long night of the 500 years has not yet ended: now La Niña, La Pinta and La Santa María are called Iberdrola, Endesa and Gamesa".

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Fabiola Osorio Bernáldez was an environmentalist fighting against the construction of a dock by the Profepa to attract tourism in the very violent area of Guerrero. The dock was located in the lagoon Coyuca de Benítez, inside a mangrove forest in the town of Pie de la Cuesta, in the tourist municipality of Acapulco. "We lack proof. But Fabiola was a thorn in the flesh to the State Government", stated a representative of Guerreros Verdes, an association to which the killed environmentalist was linked. The spokesperson acknowledged that the members of Guerreros Verdes were frightened. Pie de la Cuesta dock's work was announced in October 2011. After a month, the work stopped at the Guerreros Verdes' own initiative. However, Fabiola denounced that the company was continuing with the work. In fact, she argued that over 5,000 metres of mangrove had already been filled in. Profepa attended to the complaint and closed down the construction because it lacked the Environmental Impact Manifestation (MIA) to be issued by the Secretaría del Medio Ambiente y Recursos Naturales (Semarnat). Five days later, after depositing a bond, the company resumed the work. In January 2012, Fabiola Osorio had begun a legal process in order to defend the concession on the mangrove she inherited from her mother. Five months later, on 31 May, she was shot dead at her home in Pie de la Cuesta along with another woman. The murder alerted 20 environmental organizations around the world demanding investigation of the crime. It also caused the IACHR to demand that the government investigate the crime.

Juventina Villa Mojica was also murdered in Guerrero. Her murder had a different social background. According to Greenpeace, the satellite images taken between 1992 and 2000 in 18 locations of the Petatlán mountain range and Coyuca de Catalán showed the loss of 86,000 ha of forest out of 226,203, due to excessive logging practised by the *talamontes* (as Mexicans call illegal loggers). In 1998, a group of peasants who had been fighting for years created the *Organización de Campesinos Ecologistas de la Sierra de Petatlán y Coyuca de Catalán*. Rodolfo Montiel Flores, along with Teodoro Cabrera, led this peasants' organization of 24 ejidos against the Costa Grande Forest Product, subsidiary of the company Boise Cascade. They demanded that local and federal environmental protection authorities take

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action and subsequently ran the so-called "wood strikes", community roadblocks. Later on, Boise Cascade company had to retire. After being imprisoned for several years, Montiel and Cabrera received the Goldman Prize in 2000. Juventina Villa was part of the same environmental peasants' organization.

For several decades now, the Sierra de Petatlán has witnessed an important mobilization of peasants with an environmental profile. It is not easy to carry out a fight of this kind in this place: guerrillas, "white guards", armed soldiers and drug trafficking proliferate along with *talamonte* chieftains. In November 2012, 45 families of La Laguna were getting ready to travel back to the community of Puerto de las Ollas where they hoped to take refuge from paramilitaries and *talamontes*. La Laguna's families' first displacement took place in February 2011, after Rubén Santana Alonso, Juventina's husband, was murdered. Although the government agreed to meet the needs of those affected by violence, no care was given and families returned to La Laguna to work their lands and herd cattle. On 28 November 2012, a new transfer was agreed to Puerto de las Ollas, with the state police guard. That day, Juventina Villa and Reynaldo Santana Villa, her 17-year-old son, were killed. One of her daughters was saved.

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In January 2018, Lupita Campanur Tapia was also assassinated in Chilchota's outskirts, in the state of Michoacán. She was a young activist in the struggle for the restitution of Cherán communal territory. Carolina Lunuen, friend and companion of the victim, wrote: "Her femicide hurts personally, communally and on a global scale. It is not just another crime against a woman. As a founding member of the Ronda Comunitaria, the grassroots ranger body, and as an active participant in the community, her absence affects us deeply".

Cherán has become a famous Indigenous community with a communal forest territory located on the Meseta Purépecha. Their forest has been historically exploited; the indiscriminate felling and the fires destroyed 20,000 ha of the 27,000 that belong to Cherán community. The conflict intensified when in 2008, Roberto Bautista of the PRI political party assumed the municipality's presidency. He had the support of the drug-trafficking "Familia Michoacana" in exchange for the extraction of wood. During Roberto Bautista's administration, violence, extortion and evictions increased. The community's livelihoods were destroyed and increasing timber extraction took place along with murders and disappearances of those who opposed clandestine logging. To this must be added the environmental consequences that directly affected the survival of the community such as the decrease of springs and aquifers, disappearance of animals (deer, foxes, squirrels, birds, etc.) and plants, including medicinal ones.

The Meseta Purépecha, including the forests of Cherán, is an aquifer recharge zone and a water catchment area. Deforestation worsens water shortage. The population of Cherán demanded the intervention of the municipal authorities, without achieving results. They then asked the state and federal government for help but their requests were ignored. As dissent and discontent grew, on 15 April 2011, a conflict broke out. The *talamontes* were extracting wood in the area where La Cofradía spring is, a place with cultural and environmental value from which the community and 40 other municipalities of the Meseta Purépecha are supplied. The women stopped the trucks loaded with wood and a confrontation between the *talamontes* and the community took place. Two people were killed. After this time, the Cherán community decided to organize itself to protect the forests, the water and their territory, their

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livelihoods and their own life by means of self-defence and community projects such as a nursery where they grow seedlings for reforestation. Between 2011 and 2015, 3,500 ha were reforested. In addition, they set up sawmills, brickyards, carpentry, a resin factory, a rainwater collection system for the supply of drinking water to the people, among others. They also managed "Radio Fogata", an independent radio coordinated by young people. Besides, they got recognition of "custom and habits" governance from the government allowing them to exercise their right to self-determination. The case of the Cherán community is seen as a triumph for environmental justice. However, they are still threatened, as the assassination of Lupita Campanur shows.

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The Sierra Tarahumara has become a grave for environmental defenders in *rarámuri* territory. Otilia Martínez Cruz was a 60-year-old WED who worked to defend her ancestral territory against the threats of illegal logging and mining. She was killed in early May 2019 along with her 20-year-old son, Gregorio Chaparro, in the community of Coloradas de la Virgen, Chihuahua. Her relative, Julián Carrillo, Indigenous community leader and environmental defender, was killed in October 2018. He had started a legal case filed by the community against forest harvesting permits, which the Semarnat had granted to mestizo settlers in the Indigenous territory of Baborigame. The area is dominated by drug traffickers and *talamontes*. From 2013 to 2019, at least another ten Indigenous defenders of forests were killed in Baborigame because of their opposition to criminal bands that illegally cut the forests. The men apparently responsible for the killing of Julián Carrillo and also, a few years earlier, Juan Ontiveros and Isidro Baldenegro (a Goldman Prize holder) were brought to justice, but killings continue and the population is migrating to other areas. The Alianza Sierra Madre is an organization helping the victims seeking environmental and agrarian justice. International human rights organizations such as Amnesty International and Peace Brigades International expressed grave concern over the violence against land and territory defenders in the Sierra Tarahumara over the past few years (Chapter 18).

NICINHA, MARIA DO ESPIRITO SANTO AND DOROTHY STANG IN BRAZIL

Nicinha, a Leader of MAB against the Jirau Dam, Rondônia[13]

Her name was Nilce de Souza Magalhaes and her nickname Nicinha (Figure 4.4). She died in 2016 for defending fishermen and people displaced by the Jirau dam. In 2011, the *ribeirinha* fisherfolk community of Mutum Paraná – upstream of Porto Velho City on the Madeira River next to Abuna almost at the border with Bolivia – was displaced by the flooding of Jirau's hydroelectric dam. The dam is owned by Energia Sustentável do Brasil (ESBR) – meaning "sustainable energy of Brazil". The community was relocated to a place baptized as Nova Mutum Paraná, a housing project for six thousand displaced inhabitants. That process did not work well because many houses were traded for money in favour of other people. Faced with this precarious situation, a group of affected families occupied empty houses in Nova Mutum Paraná in 2014. The neighbourhood, which already suffered from stagnated waters and lack

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Source: MAB/Divulgação

Figure 4.4 Nicinha, a leader of MAB, Brazil

of drinking water, was submerged by the Madeira River in 2014 in a terrible flood. In this context, Nilce de Souza Magalhães became a local leader of the MAB, the Brazilian movement of *atingidos por barragens*, those affected by dams.

Nicinha had arrived in Porto Velho, the capital of the state of Rondônia, 50 years earlier, a young girl from a family of *seringueiros* from Acre. With two colleagues, Lurdilane Gomes da Silva and Iza Cristina Bello (Índia), she formed a commission to defend the occupation of homes by the displaced. With the help of the public prosecutor of Rondônia, some local politicians and the MAB itself, they faced the hydropower company defending the rights of the families. For some years, with the help of fisherfolk's leaders, they also denounced the impacts of the dam on fishing in the Madeira River. This motivated the state and federal agencies to investigate the faulty implementation of the state programme to support fishing and the official manipulation of fishing data.

Nicinha disappeared on 7 January 2016. Six months later, on June 21 her body was found near the place where she lived as a refugee. She was submerged in the lake formed by Jirau dam, with hands and feet tied, kept down by the weight of a stone. It took another six months to confirm officially by DNA that this was her corpse. One year later, on 22 December 2006, MAB, other organizations and Nicinha's family organized a political event together in the Santo Antônio chapel on the Madeira River. Dom Roque, Porto Velho's archbishop, celebrated the funeral.

The trial of the two people accused of killing Nicinha, Edione Pessoa da Silva and Leonardo Batista da Silva, ought to have happened on 7 December 2016. It was postponed at the request of the defence because an examination by an expert was incorporated into the file only one

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day before the trial. Meanwhile, the threats against Ludma and Índia intensified and a request for protection was made to the Human Rights programme. MAB argued that this crime was not an isolated one. Within Rondônia State, over 17 people involved in environmental and land conflicts died in 2016, and many others received death or imprisonment threats. According to João Marcos Dutra, the IIRSA infrastructure is being built and two more hydroelectric plants are planned.

Maria do Espírito Santo against Deforestation in Pará[14]

Maria do Espírito Santo and José Claudio Ribeiro da Silva (Zé Claudio) fought for years against deforestation and degradation of the chestnut forest in Pará. Their struggle meant their death on 24 May 2011. Marabá is at the heart of the deforestation frontier in the state of Pará. Loggers and ranchers are responsible for the indiscriminate tree-cutting. In Nova Ipixuna, close to Marabá, efforts were made to establish a sustainable agro-extractive reserve (the word "extractivism" is used here as in Chico Mendes' "extractive reserves"). The forests of Brazil nuts, *castanha-do-pará* (*Bertholletia excelsa*) should be preserved. Many products can be extracted sustainably from these forests, like the chestnut itself from which oil can be obtained. Zé Cláudio and Maria do Espírito Santo led the Praia Alta Piranheira reserve's project. They tried to stop the *grileiros* (land grabbers) from stealing the land. María was also part of the Conselho Nacional das Populações Extrativistas. She had a university degree. They were ambushed near their house and shot dead despite the alert the police got about the threats to which they were subjected by loggers and cattle ranchers. In November 2010, at a conference, Zé Claudio himself said that he would be killed for his fight against deforestation. They died inside the Praia Alta Piranheira reserve where they had worked for 24 years.

These killings occurred at the time in which amendments to the country's forest protection laws were passed in Congress. These amendments were to weaken existing environmental controls and could therefore lead to an intensification of existing disputes. A speaker opposed to the reform referring to the news just received increased their impact. According to the Comissão Pastoral da Terra – CPT (Pastoral Land Commission, a religious organization that supports land and environment defenders, small farmers, priests and other rural workers), since 1988 and until 2011 more than 1,150 land and environmental rights defenders, small farmers, judges, priests and other rural workers had been killed in disputes over preserving land. The murders are mostly carried out by gunmen hired by loggers, ranchers and farmers to silence protests over the illegal cutting of trees. Although in that Amazon frontier environment and human rights defenders are often murdered with impunity, in this case both the gunmen and the landowner who ordered the crime were sentenced to long prison terms in two trials in 2013 and 2016.

Dorothy Stang against Deforestation[15]

In Pará, not far away, the nun Dorothy Stang was killed on 14 February 2006. The wave of murders aims to eliminate those who oppose logging. Deforested lands are used for livestock and also to plant soybeans. In the words of another nun,

> Dorothy arrived in the Amazon after the government handed over land to the immigrant peasants to settle the area once the Trans-Amazonian highway was opened. She thought the Catholic Church should give spiritual and material support to people. During the 1980's, loggers and ranchers already

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arrived in the area and seized the land given to the peasants who, without titles, could not defend themselves. During all those years, Sister Dorothy tried to get the federal and the State governments to protect the peasants.

Her murder happened close to Anapu, a small town east of Altamira, in the heart of rural violence in Pará. By 2015, Anapu's population was estimated at 25,000, a border city in Trans-Amazonian highway. Even though Dorothy knew that her life was in danger, she went to the country's capital, Brasilia, to testify to the Congress research committee on deforestation in 2004. She named the timber companies working in public lands in her region. Environmental organizations estimated that around 90 per cent of Pará's timber exports were illegal. Loggers described her as a terrorist and accused her of giving arms to peasants. She and other local leaders received death threats. However, she refused to leave and continued to work with peasants and landless in the Buena Esperanza project.

Since 1982, she had worked in Anapu for the CPT with a small group of nuns. The CPT was created by Brazilian bishops in 1975 in response to the increase in violence within the Amazon region. Land grabbers, *grileiros*, hired gunmen to eliminate the peasants. Dorothy Stang had been born in Dayton, Ohio. By 1948, aged 17, she joined the "Sisters of Our Lady of Namur". In 1966 she was sent as a missionary to Brazil when Liberation Theology was bursting in Latin America. Many priests and nuns went to live in urban slums or in rural communities with the poor and dispossessed. Dorothy was one of them. Like other CPT members, she knew her life was threatened, although being a nun was a protection. Her murder in 2006 was compared to that of Chico Mendes in 1988. Pará's environmental activists thought that the national and international wave of attention to Dorothy Stang's death would help stop the endemic impunity. Nonetheless, ten years later CPT documented that, since 2005, there had been 118 deaths due to land conflicts in Pará. For every death, there are many other cases of wounded, violent expulsion, threats and other physical violence. The judicial sentences for the death of Dorothy Stang included the young gunmen who killed her and also the *mandante* (someone who orders a hit). Of over one thousand rural murder cases documented by CPT between 1985 and 2013, less than 10 per cent went to court.

MARIA CHOQUE AND FELICITA CHERRES IN PERU[16]

The deaths of Felicita Cherres (45 years old) and Maria Choque (63 years old) had something in common. They were violent deaths: in one case, at the hands of land-grabbing goons, in the other one, by the police in a large demonstration of Aymara peasants in Puno.

The Chaparri Ecological Reserve was the first private conservation area under peasant management. It is managed by the Muchik community of Santa Catalina de Chongoyape. The Muchik are a pre-Inca people whose descendants still inhabit the northern coast of Peru. Under the initiative of National Geographic photographer Heinz Plenge and the president of the community in 1998, the reserve was officially created in 2001 with the aim of safeguarding the dry forest and endangered species such as the Andean bear and the condor. But the Regional Government of Lambayeque and the Ministry of Agriculture were planning to build La Monteria water dam. In May 2017, an entourage made up of SERFOR, the environmental police, the photographers and brothers Plenge, and other people who were to inspect the damage to the reserve, were attacked by a group of 30 people. Most residents of the community were opposed to the dam, but some of them were in favour of it. As members of the

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board, they had falsified documents. This was denounced by Juan Carrasco, president of the Salvemos Chaparrí Defense Front. The illegal board of directors led by Lazaro Rodas was selling land to fake farmers who resold it to the La Monteria project; the number of farmers had increased from 325 to 900 in just three years. The project was being built by Queiroz Galvao, a company linked to the Brazilian corruption scandal Lava Jato and to the Odebrecht and Camargo Correa companies.

Felicita Cherres Garrido, Irineo Martínez Purihuamán (41) and José Jesús Guerrero Becerra (42) were shot dead in the district of Salas, in Lambayeque, on 1 October 2016. The suspect, Jorge Cruzado, was later arrested in Yaipón, Chongoyape, when the police were conducting an operation against land trafficking. They were from the peasant community of St Francis of Assisi. They had spent the night at the site on the day of the attack to prevent invaders from breaking into the property again. Invaders had been evicted by police officers days before the attack and promised to take revenge. A year and a half later, it was reported that the population of Chaparri-Chongoyape lived in fear after the death of Lieutenant Governor of the community, Napoleon Tarrillo Astonitas, on 30 September 2017. The president of the Rondas Campesinas, Humberto Gonzáles Nuñez, said that the community members were afraid because strangers continued to invade the conservation area. Even the president of the Judicial Branch, Duberlí Rodriguez, and congresswoman Maria Elena Foronda received death threats for intervening in favour of the reserve, which is also threatened by local mining and fires.

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María Choque died at the hands of the police in 2011 in a protest against the Santa Ana mining project located in the Puno region of southern Peru, near the border with Bolivia. It is an open-pit mine for the extraction of 63.2 million ounces of silver for an 11-year period of mining. It was promoted in 2004 by the Canadian Bear Creek Mining Company, which obtained the rights to the mining concession between 2006 and 2007. The company was scheduled to start operating in 2012. In February 2011, the Environmental Impact Study was to be presented to the population of Huacullani. A group of community members called Propuesta Ciudadana opposed the project, fearing contamination of rivers and lakes (Lake Tititaca), the overlapping of the mining concession with nature reserves of socio-cultural value (Aimara Lupaca), and the fact that this open-pit mine contradicted Article 71 of the Peruvian Constitution, which prohibits mining exploration in border areas. Another argument was that the EIA was written in technical terminology in English, untranslated into Aymara language.

The social leaders of the affected areas met under the Front of Defence of Natural Resources of the South Zone of Puno. Between the months of May and June 2011, the largest mobilization of the population occurred through marches in the Puno region and in Lima. There were also stoppages and blockades in the Desaguadero international bridge between Peru and Bolivia. On 26 April 2011, it was reported that social protests during the 48-hour strike against the Santa Ana mining project left one person dead and several injured in the Kelluyo district. The victim was identified as María Choque Limachi, unable to breathe after the impact of a tear gas bomb. This occurred when hundreds of peasants in the area occupied the Yoroco bridge. About 60 policemen threw tear gas bombs, triggering a confrontation between *comuneros* and police. The inhabitants remained in the place and kept under their guard the wounded body of María Choque Limachi, who unfortunately died two days later.

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In June 2011, there were other anti-mining protests and more deaths in Puno. This made President Alan García repeal the D.S.083-2007-EM granting a concession to the Santa Ana mining project, prohibiting mining activities in Huacullani and Kelluyo. However, the mining company appealed and said it would finally abide by international arbitration to defend its rights. In 2014, it filed the case against the Peruvian State requesting the reactivation of the project:

> Bear Creek Mining remains open to the prospect that an amicable resolution of issues surrounding the Santa Ana project can be achieved. While Bear Creek Mining is willing to re-engage in settlement negotiations with the Peruvian government, the Company is currently pursuing an international arbitration proceeding against the Republic of Peru under the Canada-Peru FTA before the International Centre for Settlement of Investment Disputes in Washington D.C. In the arbitration proceeding, Bear Creek seeks full reparation resulting from, among other things, the expropriation of the Santa Ana project and Peru's violations of the TPA and international law.

Bear Creek won the appeal in Peru and then also the arbitration decision at the ICSID, Washington D.C.

In other words, in a country like Peru, there is the internal coloniality of state and police power (killing with impunity), as well as the coloniality of technical knowledge in the obfuscation regarding the risks of mining. Moreover, there is also international coloniality and what the US "environmental justice" movement of the 1980s called "environmental racism".

SUNIA BAI AND VALSA JOHN IN INDIA[17]

Welspun's proposed coal-fired power plant (CFPP) at Katni was in the eye of the storm for several years and triggered mass protests over alleged forced acquisition of agricultural land with the help of local officials. Tribals and Dalits took part in the protests. In November 2012, twenty farmers in Bujbuja village (Katni District, Madhya Pradesh) did something really extraordinary. They sat every day on funeral pyres with kerosene and match sticks at arm's reach to protest the acquisition of land for the Katni power station to be built by Welspun Energy (3 x 660 MW CFPP) on 180 ha of land. Katni district villager Sunia Bai died after she set herself on fire on Diwali day, in protest over land grabbing for the plant. She was 50 years old and committed suicide allegedly after notice was sent to her husband for vacating their land. Following the self-immolation, police responded to a protest by residents of Bujbuja and Dakaria villages with a lathi charge, seizing her body. According to villagers, the police had threatened to bulldoze the home of Sunia Bai and her husband Chhaka Gadari. In addition, police arrested 12 villagers as well as a member of the legislative assembly and Janata Dal party, Saroj Bachchan Nayak. Protesters demanded that land acquired for the project be returned to farmers, built further funeral pyres on their land and warned that they would immolate themselves if forcibly evicted. Two days later, a 30-year-old Dalit man tried to follow Sunia's suit by consuming some poisonous substance at Dukariya village. This village remained on the boil and witnessed police cane charges and more than six arrests.[18] Police resorted to cane charge after the villagers of Dukariya protesting with Sunia's body refused to part with it for cremation.

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One year earlier, an activist nun who fought Indian coal-mining companies was brutally murdered in Jharkhand. Sister Valsa John was beaten to death, allegedly by individuals hired by coal-mining companies but possibly also because of her defence of a rape victim. She was involved in the movement against displacement of tribal Santhal people, the Rajmahal Pahar Bachao Andolan, and in the campaign against the Panem Coal Company. She was reported to have gone on numerous occasions to the police after threats were made to her life. The following was written following her death:

> She was one of the remarkable breeds of Indian religious figures who are grassroots social activists, who immerse themselves in the most marginalized and impoverished communities and work on literacy, basic health care and human rights. Sister Valsa said she did Jesus's work by teaching the aboriginal people – adivasi or "tribals" – about their rights to their land.

CONCLUSION: EVERYDAY KILLING OF WOMEN ENVIRONMENTAL DEFENDERS

When the social metabolism grows and changes, ecological conflicts arise as well as protests. Repression comes down upon those who protest, sometimes in the form of extreme violence. Let's now pay tribute to the small sample of WED who were killed. They often belonged to or fought for Indigenous groups (Aymara, Lenca, Santhal, Purépecha, etc.). Other WEDs killed appear elsewhere in this book, for instance Fikile Ntshangase in South Africa in 2020 (Chapter 16). On 12 March 2021, the EJAtlas registered the death of Asháninka leader Estela Casanto, killed after many threats because of her defence of Indigenous land rights in Peru. This is one more instance of the Indigenous revival and resistance which is the topic of Chapter 25 of the present book.

The environmental resistance and the fierce repression against popular ecologists –which also extends to conservationists (such as Fabiola Osorio, Jeanette Kawas and Felicita Cherres) – are intimately linked to changes and growth of social metabolism leading to the usurpation of land, forests, wetlands and water; open cast mining; timber extraction; soy, palm oil and eucalyptus plantations. Even if they do not appear in this chapter, there have undoubtedly been many women victims protesting against landfills or garbage incinerators and against oil and gas extraction. Over many decades, in the Ogoni and Ijaw struggles against Shell and other companies in the Niger Delta, many unnamed women were victimized (Tran and Hanaček, 2023).

These women did not see themselves as professional ecofeminists. They were human beings very much concerned with social and environmental issues, braver than most of us. They were at the same time defenders of Indigenous and human rights, and defenders of the environment. They belonged to different classes and ethnic groups. There is one statistical regularity that is not socially surprising. Barring one or two suicide cases, killers were always men, sometimes policemen or the military, sometimes hitmen or gangs. Most of the time, murderers went unpunished.

This chapter is merely an attempt to give visibility to only about 25 WED killed as a sample from those registered in the EJAtlas (Figure 4.5). We list their names and briefly explain the

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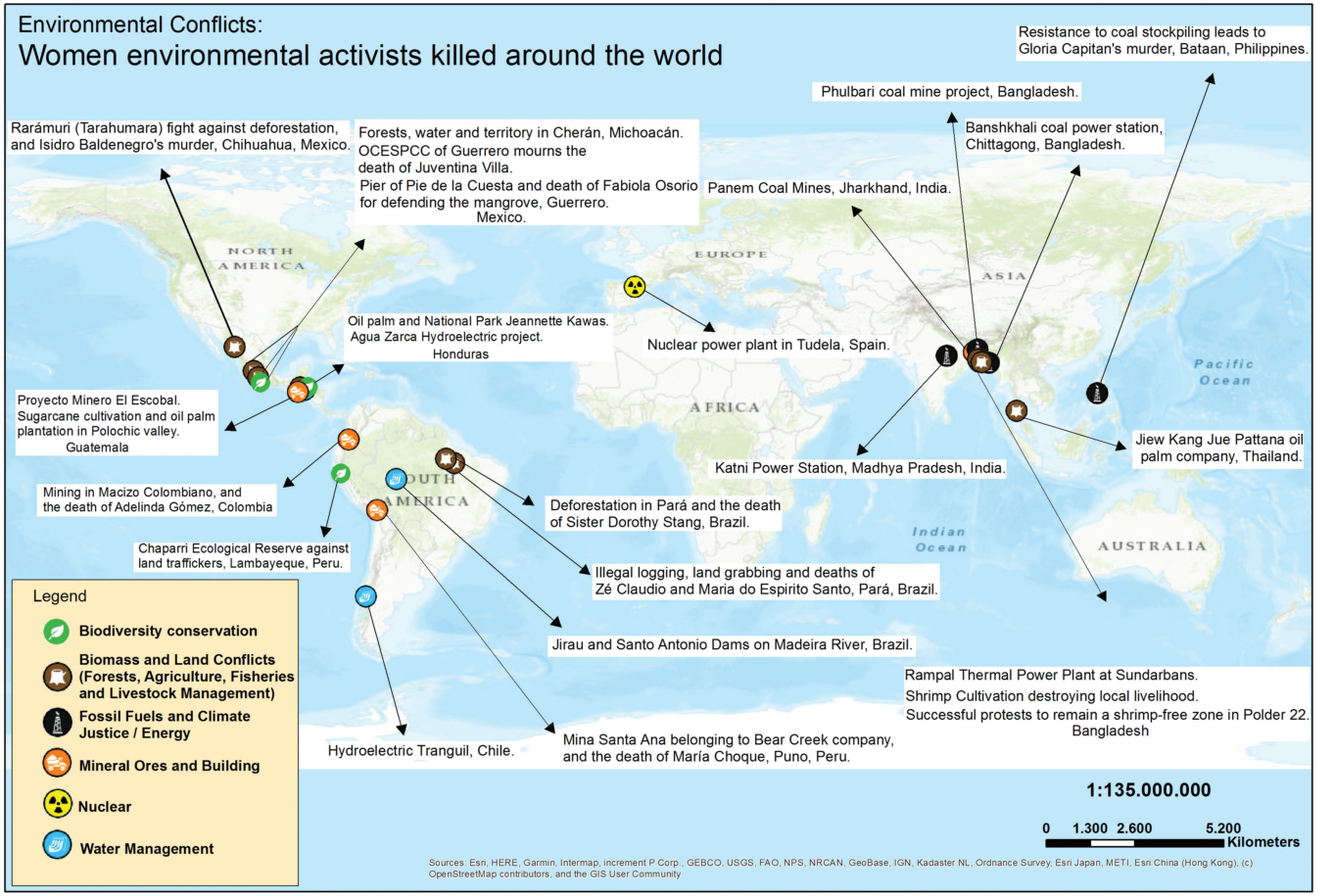

Source: A. Grimaldos

Figure 4.5 *Women environmental activists killed around the world*

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circumstances of their deaths. They were directly concerned with everyday socio-environmental issues. They defended the communities' livelihood, their access to water and their peasant agriculture, conservation of communal ecosystems.

Gloria Capitan / Philippines / Coal stockpiling and thermal plant
Teresita Navacilla / Philippines / Copper and gold mining (Chapter 3)
Adelinda Gómez Gaviria / Colombia / Gold mining, coal mining
Gladys del Estal / Basque country / Nuclear energy
Karunamoyee Sardar / Bangladesh / Shrimp farms
Nasreen Huq / Bangladesh / Coal mining
Montha Chukaew, Pranee Boonrat / Thailand / Palm oil
Macarena Valdés / Chile / Hydroelectricity
Laura Leonor Vásquez, Merilyn Topacio Reynoso / Guatemala / Gold mining
Jeanette Kawas / Honduras / Wetlands conservation, against palm oil
Berta Cáceres / Honduras / Hydroelectricity, Indigenous rights
Betty Cariño (and Jyri Jaakkola) / Mexico / Mining, Indigenous rights
Fabiola Osorio Bernáldez / Mexico / Mangrove defence
Juventina Villa / Mexico / Against deforestation, communal defence
Lupita Campanur / Mexico / Against deforestation, communal defence
Otilia Martínez Cruz / Mexico / Against deforestation, Indigenous rights
Nilce de Souza (Nicinha) / Brazil / Hydroelectricity
Maria do Espírito Santo (& J.C. Ribeiro da Silva) / Brazil / Against deforestation and livestock
Dorothy Stang, Sister / Brazil / Against deforestation and livestock
Valsa John, Sister / India / Coal mining
Sunia Bai / India / Coal-fired power plant
Felicita Cherres / Peru / Community land, conservation
María Choque / Peru / Metal mining
Estela Casanto / Peru / Land grabbing

Women's environmental activism has been discussed from different perspectives. The long struggle to show that the gender division of housework was not a fact of nature, and that exclusion of women from some forms of property or from well-paid work was not natural and could be reversed, was perhaps undermined by "essentialist ecofeminism". In 1992, economist Bina Agarwal, discussing the interpretations of the Chipko movement, opposed the essentialist view of women being by biological imperative closer to nature than men, arguing that rural women were indeed concerned and knowledgeable about nature and its destruction because of socially constructed roles. For instance, they were attributed the caring for and the availability of health and safe shelter, water and food in the family, making them (particularly rural poor women) more knowledgeable about nature and the main defenders of the local environments against outside dispossession. The "materialist ecofeminist" Ariel Salleh (1997), likewise, brought forward the crucial observation that objectively women are indeed close to nature, as all human beings are, including men – unless they suffer from self-serving alienation as *maîtres et possesseurs de la nature*, to use Descartes' words. Humans are undoubtedly part of nature, they are not dematerialized angels.

The materialist environmental-feminist theories of Bina Agarwal and Ariel Salleh are quite similar to the current Indigenous and Afro-American movement of *feminismo comunitario*

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in defence of territories and human bodies. This is quite pertinent to interpret the cases of women environmental defenders killed. Women's environmental activism is nothing new. But, often, it remains invisible because of the subordination of women to male domination in all spheres of public life. The murders addressed in this chapter all have to do with protests regarding various commodities that provide inputs to the economy. These women fought against fossil fuels; metal mining; palm oil; wood taken by *talamontes* (illegal loggers); export-oriented shrimp farms destroying mangroves; livestock ruining the Amazon Forest, hydropower, nuclear risks, coal-fired power plants. They defended their communities' livelihood, access to land, water and clean air, peasant agriculture, conservation of communal ecosystems. They were killed because of such material causes to which, at another level, one must add the capitalist industrial system and patriarchy, coloniality and racism in many instances. Many of them were mothers and grandmothers; they were single, married, divorced or widows; some had very young children in their care or were pregnant when they were killed. Their motivation for defending nature, as far as we know, was not the direct caring for the family, although they most probably did this job in many cases, among other jobs. They defended nature because of the duty they felt for caring for the community or ethnic group, and for nature itself. In many cases there was a spiritual attachment to nature, like in Macarena Valdés' case, but without exhibiting a peculiarly feminine closeness to nature. In any case, there was not a unique pattern of motivation among them, and not a unique scale of activity (Gloria Capitan was active locally and on global climate change; Nicinha was active locally and a leader of MAB, a Brazil-wide organization). They were all "intersectional", not only environmental activists. They shared the defence of nature and human livelihoods. Many were to some extent independent from strict family obligations and socially able to engage in public activism, attracting the killers' attention or risking their lives in mass demonstrations.

These cases represent the many WED who have been active and who have been violently repressed. We know their names and circumstances because of the greater visibility that their violent deaths gave them. The repressive system is like a pyramid of terror or at least a pyramid of fear – it manages to dismantle activism, sometimes causing many to go into inactivity, killing only some, injuring more, displacing many, putting some in prison and frightening almost everybody. Local and international companies were almost always responsible for those deaths. The state usually collaborated openly with the companies or sometimes only through its inaction. In some few cases, assassins suffered punishment by the judiciary.

Some were young, others were already grandmothers. In most cases, the women victimized were above 45 years old and had a long trajectory of activism behind them. What did these women have in common beyond their violent deaths? These murders were often accompanied by others, not so visible: a son or stepson who accompanied them, other companions of the same organization, etc. In a few cases, the women faithfully accompanied the husband on trips or demonstrations that proved too dangerous. In other cases, husbands followed women or both walked by their side. Most of these women did not depend on husbands, they were single, separated, widowed, or they were married. But all this is perhaps irrelevant. As Dalena Tran has written, "discursive depictions of WED focus on kinship". We ask, were they single, married, grandmothers? Something that is not asked of men environmental defenders, "deflecting attention from other allegiances, their contributions to society, their efforts and long hours of work, their leadership, their own interests and values". Further work by Dalena Tran and others with the EJAtlas has advanced knowledge of this issue (WED killed) beyond that shown in the present chapter (Tran 2022, Tran 2023, Tran and Hanaček 2023).

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   Rampal Thermal Power Plant at Sundarbans, Bangladesh (Swapan Kumar Patra), EJAtlas.
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   Jiew Kang Jue Pattana oil palm company, Thailand (Sara Mingorría and Carros de Combate), EJAtlas.
8. Hidroeléctrica Tranguil, Chile (Joan Martinez-Alier and Daniela Del Bene), EJAtlas.
9. Proyecto Minero El Escobal, Guatemala (Fundación Neotrópica/Grettel Navas), EJAtlas.
10. Conflict and Harm at Pan American Silver´s Projects in Latin America, featured map, EJAtlas.
11. Oil palm and National Park Jeannette Kawas, Honduras (Grettel Navas and Sara Mingorria) EJAtlas.
    Proyecto Hidroeléctrico Agua Zarca, Honduras (Grettel Navas and Daniela Del Bene), EJAtlas.
12. The violent death of Betty Cariño, Oaxaca, Mexico (Joan Martinez-Alier), EJAtlas.
    Muelle de Pie de la Cuesta y muerte de Fabiola Osorio por defender el manglar, Guerrero, Mexico (Editorial team), EJAtlas.
    CESPCC de Guerrero lamenta la muerte de Juventina Villa, Mexico (Editorial team), EJAtlas.
    Bosques, agua y territorio en Cherán, Michoacán, Mexico (Deborah Lucero and Máster en Gestión Fluvial Sostenible y Gestión Integrada de Aguas), EJAtlas.
    Mayorga, P. (2019). Exigen seguridad en el Triángulo Dorado tras asesinato de activista y su hijo. *Proceso*, 3 May.
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    Rarámuri (Tarahumara) fight against deforestation, and Isidro Baldenegro's murder, Chihuahua, Mexico (EJAtlas Team), EJAtlas.
13. Jirau and Santo Antonio Dams on Madeira River, Brazil (Lucie Greyl and Joan Martinez-Alier), EJAtlas.
14. Illegal logging, land grabbing and deaths of Zé Claudio and Maria do Espírito Santo, Pará, Brazil (Joan Martinez-Alier and Felipe Milanez), EJAtlas.
15. Deforestation in Pará and the death of Sister Dorothy Stang, Brazil (Joan Martinez-Alier), EJAtlas.
16. Reserva Ecológica de Chaparri contra traficantes de tierras, Lambayeque, Peru (Raquel Neyra), EJAtlas.
    Mina Santa Ana belonging to Bear Creek company, and the death of María Choque, Puno, Peru (Raquel Neyra), EJAtlas.
17. Katni Power Station, Madhya Pradesh, India (Swapan Kumar Patra), EJAtlas.
    Panem Coal Mines, Jharkhand, India (Brototi Roy), EJAtlas.
18. *India Today* (2012). Man tries to end life over land acquisition in Madhya Pradesh, 15 November..

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5. Taiwan's environmental movement

BACKGROUND: REMARKABLY SUCCESSFUL ENVIRONMENTAL CONFLICTS[1]

Taiwan is an island with only about 23 million inhabitants and 36,000 km^2; therefore, it has a very high population density. It has experienced rapid economic growth over the last decades, with the concomitant increase in the social metabolism in terms of energy and material flows. New industrial equipment (nuclear power plants, petrochemical refineries and other infrastructures such as dams and highways) encounter opposition. This chapter describes and comments on environmental conflicts having to do with electricity production, industrial waste and pollution, and also land and water grabbing. I also include a harrowing case of "working-class" environmentalism involving many women who worked for the Radio Corporation of America and suffered cancer.

There has been an environmental movement in Taiwan in the context of a political system that has alternated long periods of strong authoritarianism (associated with the Kuomintang political party and its military traditions) with periods where the opposition to the Kuomintang has held the government. Martial law was not lifted until 1987. Early environmental conflicts since the 1980s are listed in Ming-sho Ho's outstanding study (2011) which covers the ebbs and flows of environmentalism in Taiwan until 2004 according to the changing political opportunities for grassroots opposition. His later article (2014) studies the anti-nuclear movement. The early conflicts mentioned by Ming-sho Ho are as follows.

Sunko Protest (1982–86)
Lukang Anti-DuPont Movement (1986–87)
Houchin Protest (1987–90)
Linyuan Incident (1988)
Meinung Anti-Dam Movement (1992–2000)
Tashe Incident (1993)
Makao National Park Controversy (2000–)
Anti-Binnan Movement (1994–)
Suao-Hualien Highway Controversy (2003–)
Anti-nuclear Movement (1988–)
Anti-Bayer Movement (1996–98)

Environmental groups have existed for 30 years, both with a conservationist orientation and with an environmental justice orientation. Some conflicts (such as the "Kuokang fiasco" and the "Anti-Meinung dam") combine both aspects. TEPU (Taiwan Environmental Protection Union), an active civil society body, was formed by a group of academics in 1987 within months of martial law being lifted (Hsiao et al. 1995). Outside events such as the Fukushima disaster of 2011 have also had much influence. Therefore, Taiwan's environmental movements

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should really be understood not only in terms of how internal political changes open up political opportunities for social mobilization but also as part of a world movement for environmental justice. Impressively, large investments involving billions of dollars have been contested and have sometimes been discarded, even after completion.

THE KUOKANG FIASCO: A PETROCHEMICAL PROJECT[2]

As reported by the Environmental Information Association, the Taiwanese state-owned Kuokuang petrochemical project met its end in 2011 due to objections from farmers, local residents and environmentalists. The Kuokuang project was first proposed in 2006 with the final site selected on a coastal wetland in southern Changhua County in 2008. It planned to build a 300,000 barrel-a-day refinery, plus factories that could produce 25 varieties of chemical products, and a 1.2-million-ton-a-year ethylene plant. According to the Ministry of Economic Affairs (MOEA), the project could boost Taiwan's economy by helping create many jobs, attract NT$933.6 billion in future investments, and generate NT$460 billion in annual output. MOEA pledged to ensure the public that the cracker project would have minimal impact on the environment.

However, civil groups warned that there could be significant environmental impacts, including air pollution, food security, human health risks, changes to coastal geography, and the area's water supply. The industrial complex planned to reclaim over 4,000 ha and build a harbour into an area which has long provided much of the country's fish and farm products. Besides, marine biodiversity conservation was also at risk. The proposed site, Dacheng Wetland, was Taiwan's greatest coastal wetland, rich in plant and animal life. Also, oil tankers and pollution might damage the habitat of the already endangered pink-hued Indo-Pacific humpback dolphins living in the waters of the wetland.[3]

The Kuokuang petrochemical development project probably saw the strongest public opposition to an industrial project in Taiwan in years (leaving aside the nuclear industry). On 22 April 2011 Taiwan's president, Ma Ying-jeou, denied the application for the US$ 24 billion offshore refinery. The Kuokuang case combined local opposition because of risks to human health from pollution with concern for the destruction of a large wetland providing many environmental functions and also the loss of habitat for a very visible endangered species. Bringing together conservationism and local livelihood concerns is often a winning recipe for success in environmental justice struggles (Hsiao et al. 1995).

LINYUAN INDUSTRIAL PARK INCIDENT, KAOHSIUNG[4]

The petrochemical industry had already produced a nasty incident in 1988, the Linyuan incident, that gave rise to a mass protest in which victims barricaded the industrial park for three weeks, practically shutting down Taiwan's petrochemical supply. Linyuan District is a seaside township near the estuary of the Kaoping River. Before the installation of a petrochemical zone in the 1970s, fishing and aquaculture were the main local sources of livelihood. Industrialization brought about a subsistence crisis, as petrochemical plants recklessly extracted underground water and discharged their wastewater into the river and sea. In November 1973, the proposal for "Ten Major Construction Projects" including the Linyuan

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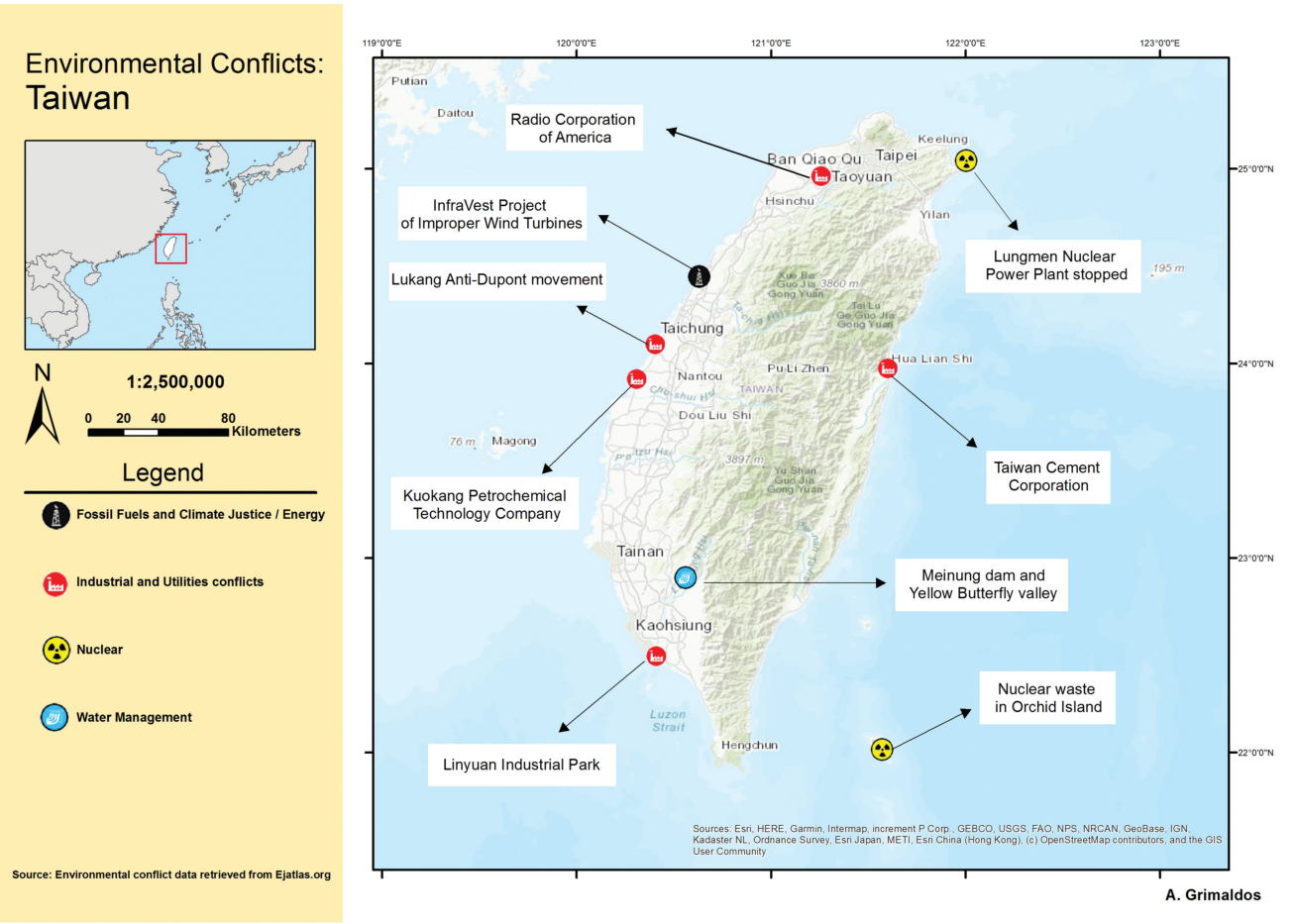

Source: A. Grimaldos

Figure 5.1 *Conflicts in Taiwan considered in this chapter*

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petrochemical industrial zone had been announced at the fourth plenary session of the 10th Central Committee of Kuomintang.

The construction of the Linyuan Industrial Park was completed in February 1976. An accident occurred in September 1988. Heavy rain caused contaminated water to leak from the reservoir tank at the water treatment plant. The tank had insufficient capacity to handle wastewater. As local fishermen found dead fish floating at Shanwei fishing port, residents and eel farmers in seven villages near the complex started a self-relief movement in October demanding NT$ 2.4 billion in compensation. Some of them stormed into the industrial zone and forcibly shut down the power of the sewage treatment plant, halting the production of 18 companies.

This conflict evolved into a crisis for Taiwan's petrochemical industry. Negotiations started between the residents and the central government's Ministry of Economic Affairs with the mediation of the member of the Legislative Yuan (parliament) elected from the district, and they were brought to a successful conclusion on 15 October 1988. The 18 enterprises operating in the complex agreed to pay a total of NT$ 1,305 million in compensation, the highest ever for such a case. During the three weeks of negotiation, economic officials constantly threatened to use police force to disperse the blockade. At the same time, local fishermen who were eager to secure compensation angrily rejected outside voluntary intervention, detaching outside environmentalists from local pollution disputes.

If we classify environmental conflicts into those "preventive", or affecting investments "in operation", and those which seek "reparations" after damage has been done, we would undoubtedly classify the Linyuan incident as "seeking for reparations". It was a successful one, considering the amount of money paid in compensation, and also because the local residents received exemptions from responsibility for the illegal acts they committed in their protests. But since then, Linyuan people have also been criticized as "green hooligans" by other Taiwan people, deeming that they lost the legitimacy of the original environmental protection claims after getting the compensation. All this is of course debatable (Terao 2002; Ho 2014; Ho and Su 2008).

COAL AND ELECTRICITY[5]

Taiwan's electricity still depends to a large extent on coal-fired power plants (CFPP) and nuclear energy, and increasingly on wind energy. The Taichung Power Plant is a CFPP in Longjing with a very large installed capacity of 5,500 MW. It is one of the world's largest emitters of carbon dioxide with approximately 40 million tons annually. In November 2017, the Taichung city government ordered that the Taichung Power Plant reduce its coal consumption by 24 per cent starting in January 2018.

Taiwan is moving slowly to an energy system based on gas and renewables, but it will be very difficult to discard coal and nuclear in absolute terms particularly if there is continuing economic growth. Perhaps local conflicts can help the transition. One conflictive CFPP is in Changhua located at the rather infamous Formosa Chemicals and Fibre Corporations' chemical plant complex. Formosa sells power to the national Taipower company. The plant was originally commissioned from 1986 to 1999. In September 2016 over 3,000 people rallied, urging the Changhua County government to refuse an extension of the operating permit for the plant. A petition launched on 10 September 2016 against the plant for its air pollution

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effects attracted 10,000 signatures. On 30 September 2016, Formosa Chemicals said it would shut down the plant but in March 2017 the Taiwan EPA allowed the power station's three newest units to continue operating. The two oldest units remain shut down since 2016.

THE FOURTH NUCLEAR PLANT STOPPED[6]

Another rather recent turning point and a success for environmentalists in Taiwan, was the closing down of the Lungmen nuclear power plant in 2014, with two BWR reactors and a total capacity of 2,600 MWe. Available nuclear power in Taiwan accounts for around 8 per cent of its national energy consumption, and 19 per cent of its electricity generation in 2015. A Fourth Plant (Lungmen) was built near Taipei but it stalled in 2014. There are vague plans to shut all nuclear reactors in Taiwan by 2025. Freschi (2018) recalled that organized action against nuclear power started in Taiwan as far back as Chornobyl in 1986, during a time when anti-nuclear and pro-democracy forces found common cause in opposing the Nationalist Party or Kuomintang (KMT). Taiwan, under KMT martial law for decades, had built three nuclear power plants with designs for a fourth underway. The Democratic Progressive Party (DPP) incorporated opposition to nuclear energy into their political platform, and as such, many activists were encouraged when the DPP's Chen Shui-bian won the 2000 election. Indeed, Chen's administration halted construction of Taiwan's Fourth Nuclear Power Plant immediately. However, months later, Chen walked back on his promise and allowed construction of the plant to resume. This slowed down the momentum of the anti-nuclear campaign. Boiling Water Reactors are supposed to be more dangerous than PWR (pressurized water reactors).

However, as reported by WISE, in May 2014 Taiwan's government finally halted construction of the country's Fourth Nuclear Power Plant as a result of sustained public opposition and protest. Premier Jiang Yi-huah from the governing Kuomintang Party (KMT) announced on 27 April 2014 that one of the two General Electric-Hitachi Advanced BWR at the Lungmen plant would be 'sealed' once safety checks were completed, and construction of the second unit would be halted immediately. There had been mass protests against nuclear power in Taiwan since the Fukushima disaster. In the days before the Premier's 27 April 2014 announcement, tens of thousands of protesters broke through a police cordon and staged a sit-in along a main street near the central train station in Taipei.

Five days before the 27 April 2014 announcement, former Taiwanese opposition leader Lin Yi-hsiung, who led the Democratic Progressive Party (DPP) from 1998–2000, began a hunger strike to protest against the Lungmen plant. On April 30th, Lin ended his fast and said: "the people of Taiwan's outstanding display has been unprecedented (…). Nuclear opponents should take a step forward to ensuring the No. 1, No. 2 and No. 3 nuclear power plants are closed on schedule" (WISE 2014).

The anti-nuclear protests followed other major mass campaigns. The greatest single reason for opposition to the Fourth Nuclear Plant was that Taiwan is located in the seismically active Pacific Ring of Fire. After several attempts at holding referendums on the fate of the Fourth Nuclear Plant and mass demonstrations, the decision was taken to stop the plant even though it was finished and the fuel rods had been uploaded. By 2018 the issue was degrading into farce as German "experts" proposed that the Fourth Nuclear Plant be converted into a theme park. But some voices are still in favour of putting the Fourth Nuclear Plant into operation. The main issue is what to do with the uranium fuel rods. Taiwan's state power company dodged questions about the fate of 1,700-plus fuel rods containing uranium pellets

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Source: Nisa yeh

Figure 5.2 A flag on a wall, Taiwan

after its No-4 nuclear plant was mothballed by public opposition and the government's plan. The island's national grid operator, Taipower, said it has a three-year plan to process the bundles of unused fuel rods. There have been reports that General Electric, the contractor for the plant's reactors, demanded that all rods be returned for disposal. The Taipei-based *United Daily News* revealed that Taipower had already shipped 80 such rods from Keelung port and a second batch of 120 rods was expected to be sent in September 2014. A US subcontractor, the North Carolina-based Global Nuclear Fuel Americas LLC, had been appointed and would be responsible for dismantling and storing the rods.

Figure 5.2 is a banner "No Nukes. No more Fukushima (nuclear accident)" in a citizen-led campaign in 2013, when the anti-nuclear movement resurged after the Fukushima accident initiated by a café owner who hung up the flag becoming an anti-nuclear symbol. On 18 December 2021, a referendum was held on the continuation of the stalled NPP. Voters decided that Taiwan should not activate the Lungmen Nuclear Plant that was almost completed but stopped in 2014 due to the alarm raised by the Fukushima disaster.

ORCHID ISLAND, A NUCLEAR WASTE DEPOSITORY IN INDIGENOUS TERRITORY[7]

How do issues of environmental justice play out in conditions of cultural diversity, unequal power, coloniality and racism? This "coloniality" question (coloniality of power and of knowledge) can be explored for the case of nuclear waste storage on Orchid Island (known locally

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as Lanyu, 蘭嶼), homeland of the Yami aborigines. The case dates from the 1980s and the protests have been muted by economic compensation and by the passing of time, although in 2018 there was still news on the "repackaging" of the waste because the first barrels were corroded. Orchid Island houses nearly 100,000 barrels of nuclear waste. A report by WISE in 1993 explained that Orchid Island is the homeland of the Yami people, one of Taiwan's nine aboriginal tribes. The Yami have traditionally supported themselves with agriculture (primarily taro) and fishing, although tourism is also a big part of the economy. There are some 2,900 Yami people. For geographical and political reasons, the Yami have historically been the most isolated of Taiwan's aboriginal tribes.

According to WISE, in a case of extreme environmental injustice and racism, in the early 1970s Taiwan's Atomic Energy Commission (AEC) convened a group of experts to examine various sites for a temporary storage facility for mid- and low-level nuclear waste. In 1974, this committee chose the *Long Men* (Dragon Gate) area on Orchid Island. A harbour was built in 1978 and shipments began arriving in May 1982. The site became the depository for nuclear waste from Taiwan's three nuclear plants as well as nuclear medical and research centres. By 1992, over 90,000 containers, each weighing 50 kg, were stored there. The Tao (or Yami) people have been fighting to remove nuclear waste for 30 years, but the waste still remains.

In 1991, the Yami people rose up in protests. Led by Kuo JIan-ping, a Yami Presbyterian missionary, and with the support of the Taiwan Environmental Protection Union (TAPU) and the Green Association, the Yami anti-nuclear group held demonstrations on Orchid Island and in Taipei, where they carried a protest letter that contained three requests: (1) stop the expansion of the construction on the waste site; (2) stoppage of transport of nuclear waste to the Orchid Island; (3) the shutdown of the storage site. Their first request was met. But the operation of the storage site continued. Still in 2002, almost 2,000 protesters staged a sit-in in front of the storage plant, calling on Taipower to remove nuclear waste from the island and against the government's failure to keep its pledge to withdraw the 100,000 barrels of low-level nuclear waste from their isle. Again in 2017, the Tao youth Young Aborigines on Orchid Island protested for a clear deadline for the removal of nuclear waste from the island (Fan 2006; Huang 2014).

CULTURAL MOVEMENT AGAINST THE MEINUNG DAM DEFENDING THE YELLOW BUTTERFLY VALLEY[8]

Located in the mountainous region of Southern Taiwan, Meinung is a community where the majority of local residents are of Hakka descent (people who migrated from Guangdong). The controversy concerning the proposed Meinung dam began in 1992 when rumours began to circulate in this tobacco-growing rural community. It was to be built in the upstream of Meinung Creek, would be an earth dam 147 m high and 220 m wide with a full storage capacity of 32.8 million m^3, and it would have flooded 6.4 km^2 of forest in the Yellow Butterfly Valley. Planning began in the 1980s; however, it was not known to the local residents until 1992. The dam raised fear among the local residents, since the area is prone to earthquakes. The dam would be only 1.5 km upstream from the nearest village and 4 km away from the centre of the township with a population of 55,000, posing a threat to the safety of the region and its residents (Hou 2000).

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Upon completion, the dam would have supplied water to the region's growing heavy industries. The government's failure to disclose the project angered the communities and their leaders. A small group of local people, including teachers and scholars, initiated a movement that expanded into a broad coalition of residents and organizations. Between 1993 and 1994, the movement organized a series of protests in Taipei, persuading the Economic and Budget Committee at the National Legislature to eliminate the dam project. Meinung has long had a strong and distinct cultural identity as an agrarian Hakka community. This strong cultural identity – researched by Jeffrey Hou – became an important component in mobilizing the community and constructing an argument against the proposed dam. The book *Return to Meinung* (1994) represented a manifesto for the movement. In addition, the creation of an annual Yellow Butterfly Festival is one of the most direct expressions of the anti-dam movement.

The Meinung Anti-dam Movement was arguably the most successful example of a grassroots environmental movement in Taiwan. Not only did it successfully stop the government from implementing the project, but it also brought many members of the community together and articulated a vision of a sustainable community with cultural and ecological characteristics.

The Meinung People's Association (MPA) secretary-general, Chiu Jing-hui (邱靜慧) remembered that the organization was founded in 1994 to protest the government's plan to construct a dam in the Twin Creeks catchment area. The MPA successfully mobilized locals and organized petitions against the dam, leading to the project's suspension in 2000. The dam would have destroyed a tropical forest as well as Yellow Butterfly Valley, home to more than 110 butterfly species and 90 kinds of birds. After authorities resolved in 2000 not to build the dam, the MPA shifted its attention to other issues such as promoting conservation and awareness of the need for coexistence between humans and nature, providing environmental education and pushing for the restoration of damaged areas.

Hakka singer Lin Sheng-xiang's music took him to perform throughout Asia, Europe and America with the band *Labor Exchange* (交工樂隊), which was formed by Zhong Yong-Feng (鍾永豐) and Lin Sheng-xiang (林生祥) during protests against the building of the Meinung Dam (美濃水庫) in 1992 (Agoramoorthy and Hsu 2007; Liang 1993; Chung 2006).

MOVEMENT AGAINST WINDMILLS IN YUANLI TOWNSHIP[9]

A relatively small-scale movement against "Crazy" Windmills by the company InfraVest forced demolition of controversial infrastructure and cooperated with conflicts in other areas. This is a case of a limited but significant success against encroachment by a foreign company on the rights of local people. Conflicts around wind energy arise for several reasons: from damage to birds, to aesthetic objections, to "loss of livelihood" because of land grabbing by the wind energy companies (Avila 2018).

As reported in the EJAtlas, in September 2012 residents of Yuanli Township launched protests against a wind turbine construction project to build 14 wind turbines, each capable of generating 2,300 KW of energy, along the pristine coastline. Residents formed the Yuanli Self-Help Group（苑里反疯车自救会，AntiCrazyWindmills) as they were concerned about the density and close proximity of turbines to their homes (Note: "crazy" in Chinese pinyin is "feng" which is the same as "wind"). Until January 2013, of the 7,682 residents of Yuanli

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4,281 signed the petition opposing the construction of turbines in their neighbourhood; scientific reports indicated there could be health problems due to exposure to the low-frequency noise generated. After Yuanli residents began to physically block InfraVest trucks from accessing the construction site, many students joined. Since September 2012, members of the Yuanli Self-Help Organization against Wind Turbines protested at the Bureau of Energy, the Environmental Protection Agency (EPA), the Executive Yuan, the Control Yuan and in front of the InfraVest office in Taipei. In May 2013, the organization appealed to the company and related governmental agencies. Members are against any energy development that sacrifices rural residents' right to their chosen livelihood.

Skirmishes involving police and protesters forced the central government to intervene after police used disproportionate means. Meanwhile, InfraVest filed a NT$ 10 million (US$335,000) "slap" lawsuit against seven members of the Yuanli Self-Help Organization. The lawsuit prompted 12 civic organizations to issue a joint public statement condemning the company for using the law as intimidation. InfraVest also stepped-up security by having dozens of security guards filming and preventing anyone from approaching the construction site. Fourteen college students and 6 residents were charged for coercion.

In October 2013, after a three-month halt, InfraVest tried to restart the wind turbine construction one night. Local residents who tried to stop them said construction workers and security guards used violence against them. Yuanli Self-Help Group criticized InfraVest and Hi Tan Security for the use of violence, as well as Fei-ling Electronic Engineering and Taimon – as the subcontractors for the wind turbine pipeline constructions – for being complicit in the incident. During the trials, duty lawyers, students and residents all advocated for "safeguarding our hometown and freedom of speech". After the Taiwan Miaoli District Court acquitted them of the offence in 2015, the prosecutor appealed to the High Court. On 25 February 2016, the court gave a final verdict of acquittal.

Chen Hui-ming, a demonstrator as well as a village chief, said: "After the demonstration, InfraVest demolished the wind turbine by themselves, indicating that they knew they were wrong. We knew that justice was on our side and we would be acquitted eventually". Yuanli Self-Help Group said that renewable energy development is an essential part of the energy structure of Taiwan but it cannot be "violently achieved".

After two years of negotiation, Yuanli Self-Help Group reached an agreement with the wind energy company. They agreed to demolish the two controversial wind turbines and keep the other two. Local residents, students and lawyers played their unique roles during the process, while women were a special force in resistance. In this case, the environmental justice movement was clearly connected to the agrarian justice movement. The Farmer's Market called "Bow to Land", which promotes peasant farming, green consumption, food sovereignty and local economy, was one of the key supporters of the protests.

ANTI-WATER GRABBING MOVEMENT IN HSICHOU AGAINST THE 4TH CENTRAL TAIWAN SCIENCE PARK PROJECT[10]

The Zhoushui Alluvial Plain has been an important rice production area in Taiwan since the early eighteenth century after the development of an irrigation system. Taiwan was under Japanese rule between 1895 and 1945. With the nationalization of irrigation water under the colonial rule, Cizaipijun became the first state-built irrigation system in 1910, watering over

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3,900 ha of farmland (now around 18,765 ha) in south Changhua County, including Hsichou Township (Chen 2009). With the industrialization of the island since the mid-twentieth century, Zhoushui River became a river of/for industry as well as of agriculture. In the late 1990s, the Jiji Weir was constructed by the central government to intercept the river's water from the midstream for more 'effective' water management. The industrial water demand was prioritized (Tien 2002; Su 2002) over agricultural use. Consequently, more than 340,000 tons/day of water were directly transported to a mega petrochemical complex located by the estuary, which led to a 'four-day-irrigation-with-six-day-cutting-off' rotation scheme by the Changhua Irrigation Association (CIA) in Cizaipijun. This intensified farmers' reliance on groundwater and the problem of land subsidence in the downstream area since the 1970s (Chang 2014; Chou 2017). This conflict (like the previous one) combines environmental and agrarian injustices. Despite various signs of water shortage, the state-led 4th expansion project of Central Taiwan Science Park Project (CTSP4) was sited in Changhua in 2008, to which the CIA agreed to sell 66,500 tons/day of water from Cizaipijun.

It was not until May 2011 that the local farmers and activists associated with Taiwan Rural Front (TRF) learned of the deal by surprise. A self-help group of more than one hundred farmers was soon established with the help of college students, environmental NGOs, and famous writers and local activists, carrying out protests and press conferences in front of the local office of CIA, the Executive Yuan, the parliament, and the Environmental Protection Administration in Taipei. These farmers also attended the mass demonstration of the land justice movement in front of the Presidential Hall in Taipei in July 2011, and brought a lawsuit against the CIA and the CTSP Bureau in February 2012. The National Science Council (NSC) agreed in March 2012 to temporarily halt the water diversion project. However, within a week the construction was restarted. This ignited another series of resistance, including more protests in Taipei and a 98-day sit-in by the water intake in Hsichou to stop the water diversion project. Their resistance resulted in the NSC's decision to change the water intake downstream with a great reduction in water demand, which marked a half-victory to the water struggle.

LUKANG TOWN MOVEMENT AGAINST DUPONT'S TITANIUM DIOXIDE PLANT[11]

In March 1986, residents of Lukang Town launched an environmental movement against a titanium dioxide plant and its success became a milestone in Taiwan's environmental protection history. In 1976, Changhua coastal region was chosen by the Industrial Development Bureau to develop the industry. In 1977, the region was divided into Shenkang, Xianxi, Lunwei and Lukang, four parts to construct industrial factories. Due to the crash of the second oil shock to the global economy, the development process was suspended temporarily in 1981. In 1985, the Industrial Development Bureau announced that they intended to concentrate Taiwanese production factories in the industrial park. Besides, the American DuPont Company's application of constructing a titanium dioxide factory in Lukang was also approved in August 1985. The construction was opposed by Lukang residents.

Fishermen and mariculturists in Lukang, worried that the treatment of wastewater from titanium dioxide plants would increase seawater pollution. Religious and cultural people also worried that the new factory would be detrimental to the preservation of local cultural

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relics and traditional customs. The administrator of Taiwan Environment Protection Bureau rejected citizens' requirement for cancelling the DuPont construction but promised that he would negotiate with the Industrial Development Bureau to approve the construction after the EIA. However, this decision failed to calm citizens down. Li Dongliang, the previous councillor of Changhua County, called on citizens to sign the petition for preventing the DuPont factory construction in February 1986. In March he went to Taipei to deliver the petition to the Executive Yuan, the Industrial Development Bureau and the environment protection bureau.

This petition led to protests across Taiwan against DuPont's construction in Changhua. Some officers said that only under the premise of "zero pollution" of the titanium dioxide factory would they agree to set up a factory. But others announced that "zero pollution" would make it impossible for Taiwan to develop any industry. On June 1986, DuPont organized a group of more than 20 people from Taiwan to visit the United States to study DuPont's prevention measures for potential pollution. This visit changed a few visitors' fierce oppositions to DuPont.

However, this intensified the opposite attitude of citizens in Lukang. On 23 June 1986, the residents who were anti-DuPont wearing T-shirts with the words "Love Lukang, No DuPont", organized a parade around 1.2 km long, led by Li Dongliang, the previous councillor, perhaps the first demonstration in the history of the Taiwan environmental justice movement. People who joined the protest didn't get punished, which was a signal of loosening political power and gaining a political opportunity.

On 17 July, Li Dongliang organized an "Anti-Pollution Tour" which led more than 300 local people to Taipei. By this time, the slogan on their T-shirts had become "Love Taiwan, Not DuPont". Due to the high visibility of the DuPont project, the embryonic student movement broke loose from the confines of the college campus. Previously, Taiwan's environmentalism was mainly restricted to middle-class professionals. Afterwards, journalists and professors were emboldened to work with the grassroots. The Taiwan Environmental Protection Union（TEPU，台湾环境保护联盟）, organized at the end of 1987, was the product of this cross-class collaboration.

A symposium was held by DuPont on 1 September 1986, but Lukang residents resisted it and the symposium ended unsuccessfully. In October, "Changhua County Pollution Control Association" was established to boycott DuPont's factory in Changbin Industrial Park by means of extensive mobilization and diversified protest methods. The peak of "Anti-DuPont" happened on 23 December 1986. Li Dongliang led hundreds of people to parade in front of the Office of the President. After further demonstrations, on 12 March 1987, Ke Silu, the manager of Dupont Taiwan, officially announced the cancellation of the Lukang factory. DuPont changed the site and started to construct the titanium dioxide factory in Guanyin District, Tao Yuan city, in 1989. The unexpected victory of a small town over an American chemical giant enhanced the morale of Taiwan's nascent environmentalism. Many Lukang activists participated later in a number of environmental protests all over Taiwan (Ho 2013).

RADIO CORPORATION OF AMERICA: WORKING-CLASS ENVIRONMENTALISM[12]

RCA came to Taiwan in 1969 to produce electronic parts for televisions, employing more than 30,000 people at its peak production, most of them women from poor families. The US

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company was found to have dumped toxic waste at its Taoyuan factory in northern Taiwan polluting the soil and underground water, leading to alarmingly high reports of cancer among its workers.

Workers were required to use organic solvents including trichloroethylene and tetrachloroethylene to clean printed circuit boards. Both are classified as Group 2A carcinogens by the International Agency for Research on Cancer. These agents enter the body through inhalation, skin contact, and ingestion. Without any warning or training from RCA, the workers breathed the volatile solvents in the air of the factory. This was a movement for reparations once the damage had been grievously held. It is common for "working-class environmentalism" conflicts to be related to loss of health. It appears that health related issues are key concerns in working-class environmentalism (Chapter 20; Navas et al. 2022).

On 17 April 2015, the Taipei District Court rendered a verdict in favour of former assembly line workers at the now-defunct electronics company, Radio Corporation of America. Yet, it is possible that the compensation would be unattainable. When the team of Taiwanese attorneys applied to the courts to provisionally seize RCA's assets for investigation, they found out RCA had already transferred its assets out of Taiwan roughly around the same time when it was held accountable for the clean-up between 1996 and 1997. It was difficult for the Taiwanese workers to file a lawsuit in the United States because the allegations stem from abroad. Court rulings in 2017 gave larger compensations. But there is a feeling that this is too little and too late. A full account is given by Paul Jobin (2021; also Jobin et al. 2021).

CONCLUSION: MATERIAL CAUSES AND POLITICAL OPPORTUNITIES

The evolution of the environmental movement in Taiwan in the last 40 years is explained in part by changes in the internal politics of the island and the competition between two parties: the Kuomintang party, KMT, the remains of the party that lost the Chinese civil war of the late 1940s and migrated to Taiwan, and the DPP, a more democratic political party and also more favourable towards the environment. But the strength of the environmental movement is also explained, perhaps mainly, as a response to the challenges faced by Taiwanese society because of new polluting industries that damage the natural environment and the people. The growth of the economy means increases and changes in the social metabolism (the flows of energy and materials), and therefore environmental impacts of different sorts threaten or are already experienced by people, giving rise to grievances and claims.

According to the profiles of the social metabolism, different perceived impacts arise: in Taiwan there are no complaints about open-cast metal mining, at least not with the intensity of the Philippines. Some differences are explained biologically or geologically. There are no oil palm plantations conflicts in Taiwan. Industrial conflicts predominate in Taiwan, which in this regard makes it similar to Japan. The main commodities in question in this brief survey are petrochemical products, electricity from CFPP, nuclear PP and nuclear waste, hydropower, water and agricultural products, windmills' energy, titanium and electronic parts.

In some of Taiwan's cases, the cult of wilderness and multispecies justice joins hands with the environmentalism of the people and the Indigenous, and also with agrarian justice movements. As elsewhere, conservationists sometimes join hands with the stronger civic or peasant movements for environmental justice. The rate of success in stopping actually or potentially

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damaging investment projects is higher in Taiwan than in many other countries. There is also an element of nationalism.

Also, profiting from external events such as the Fukushima disaster, local environmental movements in Taiwan have succeeded in slowing down or halting a number of large industrial projects. This chapter has followed the vicissitudes of one large dam project in south Taiwan which was stopped (the Meinung dam and the defence of the Yellow Butterfly Park), as well as the protests from Indigenous people of Orchid Island (Lanyu) against the dumping of nuclear waste. The petrochemical industry has been contested in large projects such as Kuokang and Linyuan, sometimes successfully. The petrochemical industry is one main consumer of oil and one large source of plastics which in themselves become a major pollutant when discarded. (Mah 2022). Environmentalists have also protested against land grabbing and water grabbing in the construction or expansion of so-called science parks in the central counties (the Hsichou case), and against very large coal-fired power plants as in Changhua. In some cases, the companies involved are Taiwanese (private or public), in others they are foreign.

Environmentalists have managed to use the ebbs and flows of electoral politics to win some of their conflicts with the help of the DPP and even sometimes of the KMT. The protagonists of the conflicts are various: sometimes farmers but also citizens, in a few cases also Indigenous minorities, and working-class women. Sometimes the activists "stormed into industrial zones", "blocked trucks", "sat in" in public buildings, or went into hunger strikes and of course marched in street protests. They also wrote petitions and litigated. TEPU, Taiwan Environmental Protection Union, appears in several cases. Most of the conflicts turn around the infringements of rights to land and water, and also the risks to human health and safety. Sometimes the risks become fully known (as in the case of RCA), sometimes they are uncertain but threatening nonetheless (as in the fights against petrochemical complexes or nuclear waste). In cases where the damage has already been done, reparations in the form of monetary compensation are demanded, but in other cases preventive cancellation of the project before it starts is asked for.

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11. Lukang Anti-Dupont Movement, Changhua County, Taiwan (EnvJustice, ICTA-UAB/2020 interns, ZH), EJAtlas.
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6. China: political ecology with Chinese characteristics – limits to eco-compensation

with Dr Juan Liu

A SAMPLE WITHIN A SAMPLE

As an improvised political discourse, the idea of an anti-entropic "circular economy" was launched in China in 2008 in the form of a *Law for the Promotion of the Circular Economy.* It was unthinkingly accepted because it was a political orientation from the top political levels. The "circular economy" has also been proposed in Europe, but at the same time has been the object of empirical analysis and indeed of derision (Strand, Kovacic et al. 2021; Martinez-Alier 2021). In 2007, I was invited to the centennial anniversary of Tongji University in Shanghai on behalf of the International Society for Ecological Economics, with Peter May and Robert U. Ayres, to discuss in small meetings the "circular economy". We dismissed it, gaining polite smiles in return. In 1969, Ayres had authored a famous article with Kneese in the *American Economic Review* arguing that "the economic process irremediably causes uncompensated externalities unless all inputs would be fully converted into outputs, with no unwanted material residuals along the way". In Shanghai, we did not present calculations such as those of Haas et al. (2015) showing that the degree of circularity of the world economy is less than 10 per cent – there is a great "circularity gap", a breach, a rift, a chasm, an abyss, a very large ravine or crevasse. As ecological economists, we remain very sceptical regarding the official slogan of the "circular economy". The four billion tons of coal mined and processed in China every year leave indeed some "unwanted material residuals along the way" once they are burned: ashes in the soil, particles in the air, carbon dioxide in the atmosphere. China's economy is very far from being circular, it is entropic, requiring supplies of energy and materials from the "commodity frontiers", producing also more waste. Therefore, new ecological distribution conflicts arise all the time. Acknowledging the reality of Chinese economics and politics, the main question we would like to answer is whether in practice (and not in the slogans) the political ecology of China is different from the political ecology of other subcontinents. It has Chinese characteristics to be further researched: for example, the differences in the environmental conflicts inside the various regions of this immense country, but also China's involvement in cases outside China, and the relations between internal and external investments and events. How is China learning to be an imperialist country (flag follows trade) in South and SE Asia, Latin America and Africa? Conflicts inside and outside China are not disconnected: China will reduce coal consumption at home (says its government) but finances coal-fired power plants (CFPPs) elsewhere. We must take into account the political ecology of the Chinese Belt and Road initiative in the same way as the political ecology of France must include the doings of Areva and Total in the Françafrique and elsewhere, and the political ecology of the United States must include the *de facto* absence overseas of environmental liability of its corporations. Similar observations apply

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Figure 6.1 *The cover of the journal* Ecologia Politica *56, 2018: Political ecologies of China. Environmental conflicts and activism in the People's Republic of China, Environmental impacts of Chinese investments in Latin America, Resistance and alternatives to development projects driven by Chinese capital. The poem is by Dr Juan Liu*

to China, as its civil society becomes more knowledgeable about the world and China's impacts on it. A new activism might arise focusing on Chinese extractivist firms abroad (Figure 6.1).

The Chinese poem on the cover of the Ecologia Politica journal was written by Dr Juan Liu. It can be translated as follows:

> Everyone seems to love you.
> A symbol of luxury, wealth and glory.
> How many are there who know how much blood and tears of nature and humans permeate you?
> The wounded hills with ravines, the devastated mother earth, the rivers that frighten animals and people and those lives that are consumed after suffering so many pains?
> With your shining mask you have committed so many crimes: cancers on the one hand, pneumoconiosis on the other.

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In China, two top political ecology slogans are the circular economy and ecological civilization. A third one is eco-compensation (while waiting for the "circular economy"), which both the government and the academic establishment insist upon. One doubts whether this is an innocent application of environmental neoclassical economics (the fetishism of internalization of the externalities in the price system) or rather a great show of cynicism to disguise the lack of voice of the victims. How can a political system inspired remotely by Marxism impose commensuration of environmental damages in monetary terms? The production of commodities perhaps hides the exploitation of surplus labour, and below this (in the "hidden abodes" of capitalism), the supply of domestic labour in families and the abuse of nature are concealed.

If China is really going to go green (in practice, not in rhetoric) it will be in part thanks to grassroots resistance against the socio-environmental effects of industries, together with changes in public policies. Indeed, the population policy (that has not relied on bottom-up feminist movements but on state directives) has certainly been effective in stopping population growth already many years ago. This is an argument in favour of a coercive state even at the cost of much individual pain. It is better when fertility rates go down by voluntary decisions, as in many other countries in the last one hundred years (Chapter 29).

Perhaps the trust in the grassroots for environmental protection is misguided because citizen activism is curtailed by fear of the state, particularly in some regions and in minority populations. The state defines itself officially as multi-ethnic but Convention 169 of the ILO and similar norms reinforcing Indigenous positions do not apply. The very nature of the state stops activism among ethnic minorities as well as among the common people, the *lao baixing*. It is well known that in other countries the exit from authoritarian or dictatorial regimes opened up political opportunities for short-lived "green springs". There is no chance of a breakdown of the Chinese political system that would release such pent-up forces. Unless the state approves of it, it is risky to introduce new topics – e.g. "the entropy law and the economic process" as an argument against the litany of the "circular economy". On a lower key, the film *Under the Dome* on urban pollution was a success in 2015 on the web in China but was forbidden after a short time.

The similarities to the political ecology of other countries are clear when you look at the commodities in question, the protagonists of the conflicts, the forms of mobilization and the outcomes. Some environmental activists are killed (12 cases out of 160 conflicts from China in the EJAtlas). The rate of success in environmental justice is similar to that of the EJAtlas as a whole (30 out of 160). But the role of private corporations is somewhat different: they seem to be subject to state power to a greater degree than in other countries. A Latin American perspective is useful in this regard – e.g. how are extractivist Chinese companies behaving in Marcona or Las Bambas in Peru, compared to their behaviour in China?

Many of the Chinese cases in the EJAtlas have been entered by Dr Juan Liu (ICTA-UAB) and her research team at CAU Beijing or earlier at the Northwest A&F University in Yangling (Shaanxi), others by interns at ICTA-UAB. Lora-Wainwright and her students from Oxford also entered some cases. Her first book on China was about "cancer villages" and her second book introduced the concept of "resigned environmentalism" (Lora-Wainwright 2013, 2017; Navas 2018). But there are vigorous protests in some environmental conflicts in China, not only "resignation" despite a severe policy of public order and what one senses as general acquiescence to the government. Other "transversal" chapters (10, 11) include more Chinese cases.

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Source: A. Grimaldos

Figure 6.2 *Regions of China*

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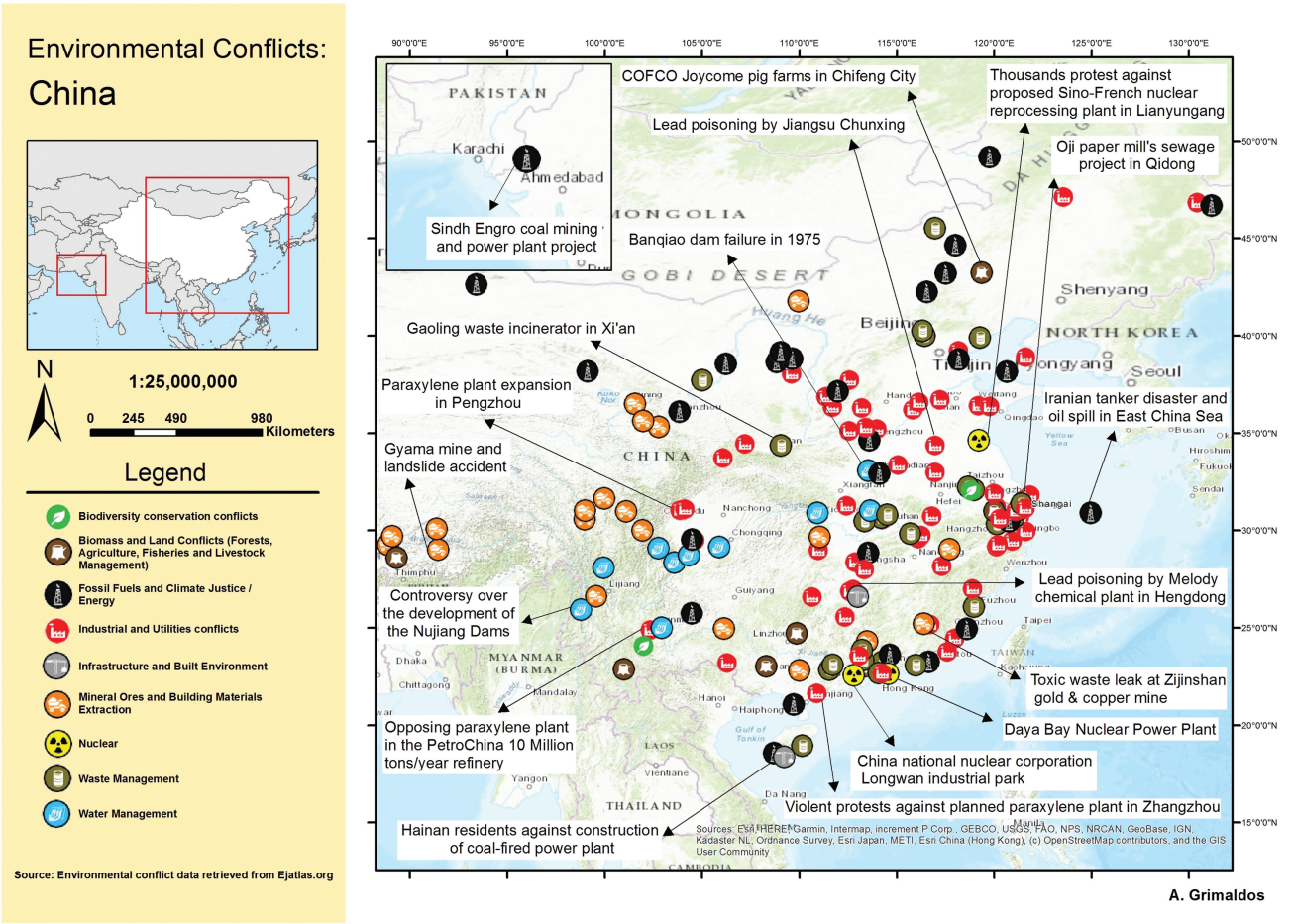

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Figure 6.3 *Selected EJAtlas cases in China*

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OPPOSITION TO PARAXYLENE PLANT IN ZHANGZHOU AND EXPLOSION ACCIDENTS, FUJIAN[1]

In the EJAtlas, conflicts around paraxylene (PX) in China stand out. We include only two here. Despite government restrictions, China has witnessed large mobilizations against PX, a highly flammable petrochemical used to produce plastic and polyester. Protests in Xiamen in 2007 succeeded in stopping the construction of a PX plant. The protests spread to Dalian, Chengdu, Shanghai and other locations. Coal-fired power plants, PX conflicts and incinerators triggered new forms of mobilization in China, the so-called "collective walks" (*jítǐ sànbù*).

The Zhangzhou PX project was originally to be located in Xiamen but the site of the plant was moved in 2008 after Xiamen residents protested the 10.8-billion-yuan development on environmental grounds. In 2008, the Fujian provincial government opted to relocate the Xiamen project to Gulei. To avoid upsetting the public, there was no mention of 'PX' and the government referred to it as the 'Gulei Major Chemical Project'. According to media reports, the Zhangzhou city government did everything in its power to find a home for the unpopular project, calling upon other local officials, the courts, and even the Communist Party's disciplinary committee to ensure the plans went ahead.

On 29 February 2008, thousands of Dongshan people (an ethnic minority) who were living in the neighbouring area of Gulei went to the streets to express their concern and protest the relocation of the PX project rejected by Xiamen to Gulei peninsula. Several police vehicles were smashed, one protester died and several were injured. In January 2009, after the initial EIA of the project was issued by the Ministry of Environmental Protection (MEP), the plant was situated in the Gulei Economic Development Zone, on a natural deep-water harbour about 100 km south of Xiamen. Other petrochemical projects were developed: a 100-billion-yuan petrochemical complex, a 38-billion-yuan ethylene cracker and a $950-million oil storage site. In June 2012, local peasants and fishermen started to protest again on the injustice in land expropriation and unfair compensation for their land and their loss of livelihoods.

There are many conflicts related to the PX projects; complaints about the unfair compensations were reported through different online platforms. In January 2013, construction at the Zhangzhou plant was halted and the Xianglu Tenglong Group was fined 200,000 yuan by the MEP. The major investor in the project, Dragon Aromatics (Zhangzhou) Co., Ltd, a subsidiary of Taiwan's Xianglu Tenglong Group, put in an application to alter the raw materials used in the plant. However, work on this section of the plant began before final approval had been given. Another subsidiary of the group, Xianglu Petrochemicals, also ran into problems at its purified terephthalic acid (PTA) plant in Xiamen. Residents who lived close to the plant frequently complained about a disturbing smell from the factory. The plant was reported to have been fined by the MEP when it first began production, but little has changed.

In fact, accidents in PX plants are frequent. A massive blast occurred at a PX plant in Zhangzhou City on 6 April 2015. Some 29,100 people were evacuated due to chemical plant fire. Firefighters extinguished fire at the chemical plant on the Gulei Peninsula in Zhangzhou on 8 April 2015, leaving 14 injured. Two years before, in 2013, a similar accident at the plant prompted a local official to promise that it would never happen again. The first explosion had ripped through this PX plant in Zhangzhou on 30 July 2013. It occurred after hydrogen leaked from a pipeline's welding seam during a pressure test at the plant. On 29 June 2014, authorities in Fujian held nearly 30 people following clashes with angry local residents who blockaded

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a chemical plant. The clashes came after riot police moved in to disperse thousands of residents of Xingzai village near Zhangzhou's Gulei township, who had been sitting outside the PX plant for several days. Photos of the scene posted online showed rows of riot police with shields, batons and helmets facing off with a crowd of local people. After the second explosion in April 2015, Dragon Aromatics (Zhangzhou) Co. took a second EIA for their production capacity change. Most of the local residents were displaced and repressed due to the development of the industry in Gulei Peninsula.

PX PLANT EXPANSION IN PENGZHOU, SICHUAN[2]

PX production in Pengzhou, Sichuan, started in 2005. But the Chengdu residents didn't begin to express their concern until the company started to choose an appropriate place in 2007. On 4 April 2013, because of the protest, the local government of Chengdu announced that the enterprise would not be allowed to produce anything until legal authorization, and the whole process would include public participation. Some people called for "taking a collective walk" (a silent protest) on 4 May, in Tianfu square, and the police warned they would watch the protests. To silence the protest in Chengdu, the local government moved the weekend dates to Monday and Tuesday to prevent participation in the "silent march".

The petrochemical enterprise posted statements arguing it was "scientific" rather than "harmful" to choose Pengzhou as location. The schools of Chengdu required the students to have class and forbade students to join the demonstration. The government closed the Tianfu square and all rooftops had police forces watching over the streets. Consequently, the protests didn't appear in public places. Hundreds of protesters expressed their anger and protested on the internet. And thousands of net-citizens left messages on Weibo (Figure 6.4).

According to internet public opinion, there were six main reasons for the protest. First, air and water pollution. Second, lack of transparency on production. Third, harmful impacts on crops. Fourth, Pengzhou is located in a seismic zone. Fifth, the period for the notice was too short. Last but not least, the project would negatively influence the cultural environment of Chengdu.

BANQIAO: A BURSTING DAM IN HENAN[3]

In China, there have been major conflicts over hydroelectric dams, like the Three Gorges Dam on the Yangtze or the Pubugou dam on the Dadu River, which even led to deaths of activists. Another one was Banqiao, with which we continue this chapter. It is an old case, shortly after the triumph of the Maoist revolution. The Banqiao dam in Henan province on the Huai River was built in response to the continuous flooding and the need to generate electricity. It was completed in 1952. However, no precautions were taken for the dangers that were to come. The dam suffered from some engineering and construction errors, and cracks soon appeared, which were repaired by Soviet engineers. Chen Xing, one of China's leading hydrologists, recommended 12 spillway gates, but only five were installed. He was eventually excluded because of his criticism and safety concerns.

In August 1975, Typhoon Nina hit the region with the heaviest rainfall ever recorded. The previous record was 800 mm, and Typhoon Nina dumped 1060 mm in one day. This storm caused flooding downstream of the dam and, as a result, a request to open the gates of the

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Source: Weibo/djtclm

Figure 6.4 *A little girl wears a mask with the word "Pengzhou", another girl carries a poster: "Uncles and aunties, please give me clean air"*

almost full dam was rejected on 6 August. The same request, repeated on 7 August, did not reach the decision-makers because the storm had knocked down the telegraph poles. The spillway gates could not absorb the amount of water stored and, on 8 August, the water overtopped the wall and the dam collapsed.

The Shimantan dam and 62 smaller dams on the Huai River also collapsed. The fall of the Banqiao dam caused a huge wave 10 km wide and between 3 and 7 metres high, which surged downstream at 50 km per hour, flooding the entire basin. An estimated 26,000 people died from the flooding and another 145,000 from epidemics and starvation. Nearly six million buildings collapsed and 11 million residents were affected. In 1993, the dam was rebuilt a few metres higher.

A government-sponsored book, *The Henan Flood Disaster of August 1975*, states:

> The cascade of dams that had been built on the Huai River and its tributaries to reduce flood risks made the disaster greater and rescue more difficult. Two large dams, Banqiao and Shimantan, plus two medium-sized and 58 small dams were breached… More than four million people in thirty districts were trapped by the water, with five million houses and one million animals washed away.

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Seven district capitals were flooded: Suiping, Xiping, Ru'nan, Pingyu, Xincai, Luohe and Linquan. Evacuation orders were not followed, because the telegraph failed and there were few telephones.

IRANIAN TANKER SANCHI SINKS IN THE EAST CHINA SEA[4]

Oil tankers of different nationalities sink with some regularity all over the world. The International Tanker Owners Pollution Federation (ITOPF) was established in 1968 in the wake of the Torrey Canyon oil spill to assess the damage, technically prevent accidents, and try to lower the payment of liabilities. The EJAtlas contains descriptions of about ten such disasters, with oil spills above 100,000 tonnes. On 6 January 2018, the tanker Sanchi collided with the Hong Kong freighter CF Crystal in the East China Sea, caught fire and sank, with 32 people dead or missing and a spill of some 130,000 tonnes of oil. Sanchi was travelling from Asaluyeh, Iran, to Daesan, South Korea. It was carrying natural-gas condensate (136,000 tonnes) for the South Korean petrochemical company Hanwha Total. Although oil spills happen all the time, they are not usually of this size, and natural gas condensate is more volatile than crude oil. It is estimated that 500,000 tonnes enter the sea each year as a result of shipwrecks. As a reference, the Prestige, sunk off the Galician coast in 2002, was carrying 77,000 tonnes of fuel oil.

The effects of oil spills depend on the distance from the coast. For example, when the Atlantic Empress sank after a collision in 1979 off Tobago in the Caribbean, it spilled 280,000 tonnes of oil that did not reach the coast. By contrast, when the Exxon Valdez sank in 1989 in Alaska, the spill was smaller, but it polluted 1,300 miles of coastline in Prince William Sound, wiping out much of the aquatic wildlife. The Iranian tanker Sanchi disaster in the East China Sea occurred about 100 miles offshore, and weeks later questions about the exact size of the spill, its chemical composition and the direction in which the spilled oil was moving – critical to understanding the short and long-term ecological consequences – could not be answered. The associated impacts on marine ecology, fisheries and human health led to a ban on fishing in a wide circle of many miles around the wreck.

COFCO, A ONE MILLION PIG FARM IN INNER MONGOLIA[5]

Concentrated animal feeding operations (CAFOs) and the livestock economy have expanded rapidly in China as incomes and demand for meat have risen. Many CAFOs are located near major cities on the east coast – closer to the market – rather than in rural areas where manure could be spread on land. However, the case under analysis was far from large cities and became conflictive because the land was being used by pastoralists. Local herders occupying a large part of this sparsely populated territory have protested at different times with low-intensity social movements against metal and coal mining. Regarding pig farming, their main arguments are the contamination of pastures by excrement, urine and carcasses.

Due to Inner Mongolia's broad horizons and the possibilities of growing pig feed, China's Ministry of Agriculture and Rural Affairs encourages new investment in pig farming. State-owned feed company COFCO Joycome and the Ongniud People's Government in Chifeng

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City signed an agreement for the technologically advanced Million Pig Project to be completed in three phases by 2016. On 7 March 2014, COFCO Joycome was established with a registered capital of US$71 million. Their main businesses include feed and hog production, slaughtering and cutting, distribution, imports and sales of fresh pork and processed meat products.

Throughout the phases of the project, there were waves of protests. In 2014, COFCO obtained land from the local government without the prior informed consent of local herders. The latter organized to defend themselves against the illegal appropriation of their land but they did not succeed. Two years later, in October 2016, some 200 herders marched to the COFCO pig farm under construction and blocked the road, as, for them, this supposedly "technologically model area for raising a million pigs" not only expelled them from their pastoral way of life, but involved destruction of the natural environment, already badly damaged in that area. The herders carried banners that read, "Our land, our territory, inherited from our ancestors, must be inherited by our children and grandchildren", "We Mongolians are stronger when we unite" and "We will never give an inch of our land even if God asks us to". The herders protested for four days until local authorities sent a dozen police vehicles to quell the protests. At least three herders were arrested.

The local environmental protection agency of Ongniud Banner (district in Mongolia) was continuously receiving complaints about pollution from COFCO Joycome Farms, and in July 2016, inspection found that requirements were missing. As a result, the Environmental Protection Agency ordered that pig production be suspended until all requirements were met by the end of the year, but that order was not complied with by the company. Another inspection in March 2017 found the absence of a biogas plant and other environmental facilities foreseen in the EIA of the second construction phase, so that liquid waste was discharged untreated to pasture land. In April 2017, COFCO Joycome Company was subjected to administrative punishment by the Ongniud Banner Environmental Protection Agency and had to pay a fine of 60,000 yuan for defects in each of the two phases of the project.

On 24 April 2017, hundreds of herders declared that they could no longer put up with pig farms. They displayed banners against the polluting companies and for the protection of life. The contamination affected the groundwater sources and not only the pastures. In May 2017, they blocked roads for several days; some were arrested. COFCO responded to the pollution allegations in June 2017, acknowledging that it failed to implement environmental protection measures. The company had already invested 500 million yuan in Chifeng to mitigate odours and protect the environment, and it would soon invest another 500 million yuan in environmental protection.

In December 2017, the People's Government of Ongniud Banner brought out a conclusion:

> after five months of rectification, the problems of prevention and control of water, soil and gas pollution have been basically rectified by COFCO Joycome Company […]; sick and dead pigs will be treated in appropriate places set up for this purpose […]; the company has paid another fine of 640. 000 yuan […]; the deputy director of COFCO Meat and the manager of COFCO Joycome have been replaced […]; persons suspected of destroying property, starting agitation, obstructing official actions and investigations by voicing their own protests have been transferred for further investigation and prosecution to the prosecutorial apparatus.

In May 2018, the EIAs of the first and second construction phases of the project were officially cleared.

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MELODY CHEMICALS, CONTAMINATING CHILDREN WITH LEAD IN HUNAN[6]

In 2014, a blood test of 315 children from around the Melody Chemical plant showed that 82 had excessive lead levels and another 10 had high levels, qualifying the situation as a serious contamination incident. In children, exposure to high levels of lead leads to delayed cognitive skills and behavioural problems. It can mean death if levels are extremely high. The effects are permanent and irreversible. This is a relatively small case, which is related to the Chinese "cancer villages" (Lora-Wainwright 2013) by contamination from heavy metals. When the news broke, attempts were made to deny the relevance of the case, insisting that the plant met emissions standards, or that it was impossible to confirm that the Melody Chemical factory was the sole source of lead emissions. In a CCTV broadcast, the mayor of Dapu claimed that perhaps the excess lead in blood came from children eating their pencils, which sparked strong discussions on Weibo.

On 15 June 2014, the party committee and the Hengdong District Government launched an investigation. The district Environmental Protection Agency ordered the polluting enterprises to shut down, and public security departments investigated them. The government appointed a special group to go to Dapu to inspect other industries and find out the number of children with excessive blood lead levels, distribute milk and other medicines, and deal with complaints from families. The next day, 16 June, on the instructions of the Hengdong District Party Committee, the deputy director of the district Environmental Protection Agency, Zhang Zhengguo, was investigated. The police detained the person in charge of Melody Chemical's pollution affairs.

Almost a year later, a class-action lawsuit was filed in the Hengdong District People's Court. More than 50 families were willing to participate in the lawsuit, but several were forced to withdraw due to pressure from local authorities: their minimum subsistence income could be suspended or their relatives working in government offices could lose their jobs. If they promised to withdraw, they could get compensation of 1,000 to 10,000 yuan. Hence, 42 families submitted written submissions to the court to withdraw the lawsuit.

In June 2015, this landmark trial began: 13 families from Dapu or nearby places accused Melody Chemical of causing the pollution that had produced high levels of lead in the blood of their children and grandchildren and demanded monetary compensation. Only two of the 13 plaintiffs obtained compensation. Seven plaintiffs refused to accept this decision and requested a retrial in the Hunan Provincial Higher People's Court, which on 28 December 2016 determined that the evidence collected on the facts in the first trial was flawed and that the law had been misapplied. Another trial had to be held. In the meantime, the Melody Chemicals factory was permanently shut down; 117 factories using heavy metals had been shut down or converted, and 71 pollution control projects had been implemented in Hengdong. The water quality of the Xiangjiang River had improved significantly.

In September 2018, the lawsuit reached the Intermediate People's Court of Hengdong District. After years of litigation, seven families signed a mediation agreement at the court in Hengyang, with each family receiving compensation of between 40,000 yuan (€5,000) and 90,000 yuan (€12,000) to end the case. Such compensation is less than what would be needed to provide practical solutions to the health damage to these children. The environmental protection law places the burden of proof on the plaintiffs, who must demonstrate that there has been damage, and this is beyond the social and economic capacity of peasant families. In

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addition, the law states that a lawsuit must be filed within a maximum period of three years from the discovery of the health damage, but it may take them longer to realize that children are suffering from lead poisoning. These are typical cases of "slow violence" (Navas et al. 2018, 2022). Dai Renhui, a Beijing lawyer who represented the families, thought that this case would serve as a landmark reference for other families affected by industrial pollution and give them the confidence and courage to use the law to defend their rights. Pan Qing'an, an environmentalist concerned about heavy metal pollution, released a documentary on the case.

LEAD POISONING IN A BATTERY RECYCLING ENTERPRISE IN PIZHOU, NORTHERN JIANGSU[7]

In 1984, the Xuzhou Nonferrous Alloy Factory was established in Pizhou City. Its main activity was to recycle lead-acid batteries. In addition to providing local jobs, the enterprise paid substantial taxes to the Pizhou government. In 1997, it was restructured into a limited liability company and renamed Jiangsu Chunxing Alloy (Group) Co., Ltd. It continued to expand, and in 2006 it built extensive new facilities near Xinsanhe Village. Besides the expansion-related land disputes, these facilities have generated large amounts of dust. The wastewater containing lead and other toxic heavy metal elements flowed into the river running past Xinsanhe and into the groundwater, contaminating the villagers' crops.

In 2008, in Xinshanhe Village, 41 children were diagnosed with lead poisoning, or plumbism and 65 were tested out with excessive blood lead levels. Villagers believed that Chunxing, located just 100 metres away from the village, was the polluter to be blamed. They had been asking for health compensations since 2006. No matter the medical proof, Chunxing kept on refusing, saying they had met the environmental standards.

Starting in August 2008, villagers of Xinsanhe embarked on a series of environmental protests against the Chunxing plant. They turned to the Internet for assistance; reports about the pollution in Xinshanhe Village began to appear online in October 2008. Jiangsu Chunxing Co. Ltd. and the Pizhou government reacted to the villagers' protests by attempting to cover up the effects of pollution generated by the recycling of batteries. The enterprise allegedly bribed local hospitals, which falsified medical reports to state that the children of Xinshanhe were healthy. This motivated the villagers to continue mobilizing. On 10 November 2008, the villagers collectively complained about the pollution issues to the local government, and to the Petition Bureau of Pizhou City. Although the government conducted investigations for three days, it did not order the plant to shut down during the investigation. This oversight infuriated the villagers, who partially demolished walls of the plant on 13 November in an effort to prevent further manufacturing.

The villagers were unaware of any responses from the local government to address the environmental and health issue. They continued to complain to the Petition Bureau of the State. However, the Pizhou Government threatened the villagers and interfered with their attempts to seek medical treatment in Beijing. As a result, the fiercest confrontation occurred on 13 December 2008, when black smoke poured from the factory and more than a hundred furious villagers marched to the building and attempted to demolish the production lines. Finally, with mounting pressure and increasing reports from the media about this scandal, the Pizhou Government was forced to relocate the enterprise and to offer free medical treatments to children diagnosed with lead poisoning. In the end, the enterprise was simply relocated to

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the Pizhou Renewable Economy Industrial Park, and it resumed its manufacturing practices under the new name, Jiangsu New Chunxing Resource Recycling Co., Ltd.

In February 2009, 18 children received professional lead expulsion treatments at the Shanghai Jiaotong University attached Xinhua Hospital. More and more people started to move out of the village to seek a safer place for their children.

ZIJINSHAN, COPPER AND GOLD MINING IN FUJIAN[8]

Toxic tailings from a mine owned by China's largest copper and gold producer contaminated the Tingjiang River, threatening the river's drinking water and fishing industry. The Zijin Mining Group produces and refines gold, copper and non-ferrous metals. The Zijinshan mine is their most important, covering an area of 30 km2 and employing 1,900 people. It was discovered in 1980 containing two types of ore, with gold above and copper below.

This case presents a usual circumstance: a politically powerful and transnational company secures some local complicity by providing jobs and handing out some money as shareholders to some sectors of the population, but then a sudden and massive pollution accident turns the local population against it and leads to intervention of regulatory agencies and the government itself. Fines are imposed, technical measures are demanded and some monetary compensation is offered. In the meantime, the next "accident" in some other gold and copper mine in China or elsewhere in the world is expected.

The rapid growth of the company and its share price when floated on the Shanghai Stock Exchange enriched the major shareholders, including the Shanghang District Government and some officials. To the extent that everything was legal, that new wealth was welcome, except that it came at a high ecological cost. Many benefited economically, including the local resident population of Shanghang, but their fellow citizens paid the price of pollution. On 3 July 2010, a leak from a leachate dam dumped some 9,100 m^3 of acidic water containing copper waste into the Ting River, killing at least two thousand tons of fish. The district government advanced some money to buy all the dead fish to compensate the losses to the farmer-fishermen. Nine days later, neither the Zijin company nor the Shanghang District Government had publicly announced the accident.

On 20 July, the Environmental Protection Department of Guangdong Province urgently warned its colleagues in Fujian that toxic water from the Zijinshan copper mine had reached the mouth of the Tingjiang River in Guangdong and that the copper content had risen dramatically, posing a great danger to fishermen and fish farmers. There was thus a trans-provincial conflict between Fujian and Guangdong. The Guangdong authorities were asking for coordination in order to have information and to monitor the elimination of pollution.

This was not the first Zijin accident. A report by the Institute of Public and Environmental Affairs identified Zijin as one of the 175 companies listed on the Hong Kong Stock Exchange that had the most records of environmental violations in China. Since 2005, Zijin had committed a series of violations and had caused environmental accidents in Hebei, Xinjiang, Guizhou and other provinces.

After the accident, the local villages had no water to drink for a while. Some who had money bought water; others had to walk a long way to fetch water from the mountain. They were afraid to eat fish and suffered from mineral dust when it was windy. Apart from the pollution, the people in the villages had gained little from the presence of the company: it

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was difficult to get a job. Those who had obtained Zijin shares in the early 1980s made some money and moved elsewhere. Those who remained suffered from a high incidence of oesophageal, lung and stomach cancer, that drove families into debt. Although there were complaints about pollution, nothing was done until the 2010 accident took place.

Media scrutiny finally brought the Zijin company's pollution story to light, and the State Council sent a task force to investigate. The company first blamed what happened in 2010 on heavy rains, but then it became known that a government investigation had said the flow of water discharged from the mine was excessive. The company had also ignored the government's warning in September 2009 about the need to repair the automatic water quality monitoring system. Following the accident, in July 2010, Zijin's vice president and director of the copper mine were detained by the police.

According to China Mining News, by 2014, Zijin Mining had invested more than 1 billion yuan in "rectifying" its environmental facilities. As a reminder, 3 July was declared Environment and Safety Day, and the entire month of July is Safety Month at Zijin Company.

HAINAN CITIZENS AGAINST THE CONSTRUCTION OF A COAL-FIRED POWER PLANT[9]

Hundreds of CFPPs are built in and outside China by Chinese investors. They are often accepted without protest, but this is a case of resistance. In some coal conflicts, local resistance is complemented by an appeal to decrease coal burning to avoid climate change and this fits within the international Blockadia or LFFU movements (Chapter 16). The question arises in China whether local coal-related conflicts become "glocal". The answer seems to be "not yet". Coal has given rise to conflicts for many decades all over the world, much before climate change became a political issue.

A US$ 300 million CFPP on Hainan Island was planned in 2007 and approved in Beijing in 2011. There was opposition from eight thousand residents who spoke out through a consultation organized in January 2012 by the regional division of state-owned China Power. It did not stop the project. There was an attempt to move the power plant to Fuluo and Huanliu, within the same district, but there too there was resistance, and it was returned to the initially designated site of Yinggehai. In March 2012, some ten thousand residents organized a protest in Ledong district, arrived at the construction ground-breaking event and closed stores and businesses to protest. They expressed their concerns about possible pollution caused by the plant, which would affect agriculture and fisheries. In April 2012, during protests in Foluo, news spread that some citizens had invaded a government building and destroyed offices. In both demonstrations, there were clashes between riot police and protesters.

In October 2012, CFPP construction continued in Yinggehai, and a thousand people gathered in protest for several days. The Hong Kong group Information Centre for Human Rights and Democracy reported that 50 people had been arrested and one hundred injured in the protests. Liu Futang, a former Chinese state official and environmental activist from Hainan, was one of those arrested, after he wrote and self-published a book about the protests. When he was released in December 2012, it was confirmed that the construction of the CFPP had indeed already started. The violence of repression does not always succeed in silencing protests, but it did in this case.

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THE DISCHARGE PIPE OF POLLUTED WATER FROM OJI PAPER MILL FROM NANTONG TO QIDONG, JIANGSU[10]

In contrast to the Hainan CFPP, after mass protests in the city of Qidong, the project to discharge polluted water from the Japanese-owned paper mill Oji Paper Nantong into the sea was successfully stopped in 2012. This case will remind the reader of the Kochi paper mill conflict in Japan (Chapter 2).

The coastal city of Qidong is located at the mouth of the Yangtze River, about 100 km north of Shanghai. Its economy has been largely based on fishing and aquaculture, with production for export of lobsters and shrimp. The local authorities attracted other industries through tax incentives: pharmaceutical companies, chemical fertilizers and computer parts factories. In June 2003, the Japanese company Oji Paper announced that it would build a paper mill in Nantong, 100 km from the sea. It would be China's largest pulp project. To attract Oji's investment, Nantong municipal government offered to build a contaminated water pipeline to the sea. In 2007, the Oji company began the construction. The 104 km-long pipe would have a 6 km section in marine area with 2.2 km through wetlands rich in marine life and another 3.8 km to reach the sea. The outlet would be installed in Qidong city waters, and the capacity would be 150,000 tons of polluted water per day. With a large coastline and wetlands, the Qidong fishermen and fish farmers felt that the contaminated water pipeline was to harm them. There were also fears of a negative impact on the Qingcaosha Dam on the Yangtze, which supplies water to a large part of Shanghai.

Several Qidong People's Congress deputies spoke out against the project in 2005 and filed motions, questioning its legality and emphasizing the environmental risks to marine life. They failed to stop the project. At the end of 2008, the Jiangsu Environmental Protection Agency and the Oceanic and Fisheries Agency approved the EIAs of both the onshore and offshore parts. In February 2009, the Jiangsu Development and Reform Commission approved the feasibility study. Beginning in 2007, some Qidong citizens began posting reports and news to an online forum, Qi Wu Dong Jiang, expressing their opposition to the project, but their actions did not gain much attention. It was not until mid-2009 that concern really grew and moved from the online sphere to printed paper through leaflets, green bags with slogans and local press. The activists drew attention to the marine environmental and human health risks with petitions to the government and in the local press and initiated an administrative appeal to the Nanjing Intermediate People's Court and the Jiangsu Provincial High Court. These citizen class actions were successful and the project was suspended.

However, in May 2012, it was reported that the project was going to be built, so the activists decided to continue their actions in defence of their territory. There was a shift from the phase of intervention by administrative officials, political representatives and judges, to direct action by a social movement. Some Nantong officials went to Qidong to engage in dialogue with local citizens, including activists, deputies of the municipal people's congress, fishermen and retired Qidong political cadres. But no consensus was reached. Meanwhile, mass mobilization increased. In July, two activists sent a request to hold a demonstration. This request was rejected by the local government, which also sent messages to citizens and shopkeepers asking them not to participate. However, thousands continued spreading the call with flyers and on the Internet.

Despite the efforts of the local government to prevent it, the demonstration took place on 28 July 2012, and Sina Weibo gave the figure of 100,000 demonstrators, even though the

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government stopped public transportation, sent letters announcing punishments and deployed many police. Demonstrators invaded the municipal government premises and some entered the main building, where they broke computers, turned tables upside down, threw documents out of windows amidst cheers from the crowd and at least one police car was turned upside down. The mayhem was halted in the afternoon, when the Nantong city party secretary announced over a loudspeaker that the project was "permanently suspended". Sina Weibo showed some reactions expressed as Chinese nationalist comments mixed with calls for even more protests. Some Weibo users expressed sentiments like, "How is it possible for a Japanese paper mill to come to China to harm the health and natural environment of Chinese people? How can we 1.3 billion Chinese people be scared by tiny Japan? Our whole nation should boycott Japanese products". "That doesn't mean we hate Japan. We are alarmed by its blind economic development that is based on damaging our environment".

After the Nantong government banned the pipeline project, the Jiangsu Oji Paper mill had no choice but to dump contaminated water into the Yangtze River, a practice that had been going on since it opened in 2011. The Yangtze already has a notorious pollution belt in its coastal waters, where there are numerous chemical factories on both banks. After receiving approval from local authorities to use a membrane method to clean contaminated wastewater, and reuse the water, Oji Paper restarted its large-scale manufacturing in 2014 in Nantong. In conclusion, this successful conflict shows a combination of citizen and popular environmentalism resorting to leaflets, Weibo, street marches, occupation of government offices through direct action, with technological improvements from "green modernization" that the company finally introduced despite its cost.

THE URBAN GARBAGE CRISIS AND THE GAOLING INCINERATOR, XI'AN, SHAANXI[11]

Thousands of Gaoling citizens took to the streets for a week in October 2016 to protest against a garbage incinerator and, despite promises from local authorities, continued their protest at the risk of police repression and arrest. Gaoling is a district or neighbourhood of Xi'an, a great city, the cradle of China both geographically and historically because it was the ancient capital of the empire and the starting point of the Silk Road. Today it is a city of ten million people, one of China's dozens of megacities. And, like other metropolises, it is facing a garbage crisis and protests on incinerators. In 2012, Xi'an was generating some 10,000 tons of garbage a day, and the Jiangcungou landfill was nearly full. In response, in 2015, the city government decided to build five incinerators in Hu, Lantian, Baqiao, Gaoling and Fengd Ong New Town districts.

Since 1998, there had been failed attempts to build an incinerator in the area. The first one was planned in Gaoling, a densely populated district more than 20 km from the centre of Xi'an. The project met strong resistance because of fears that incineration would produce carcinogenic dioxins. The neighbouring town of Liangcungou has a medical waste disposal centre and a growing number of cancers. It has been listed as one of China's "cancer towns". As a result, the citizens of Gaoling mobilized in order to defend their own interests and the environment.

The local press was unable to report the events and Hong Kong's Apple Daily received a call from Gaoling asking them to cover the news. State authorities deleted the shared

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information; however, more than enough remained to know what happened. The protests began on 11 October 2016, and culminated in clashes with police the following Sunday. Citizens made it known that many had been arrested and that police had beaten many people, including women and children.

A resident surnamed Zhang was arrested for claiming at Radio Free Asia that 300,000 local residents had blocked a government building in protest against the incinerator. Police and an official website accused her of manipulating photos and spreading rumours online that undermined public order. Another local citizen, Lu, told RFA that the streets were "full of riot police and armed police […]; some people got overexcited during the protests and the police took them away in their vehicles or dragged them away". Another resident said that people fear that the incinerator would cause deaths, "the smoke from those plants is toxic and there will certainly be cases of cancer […]; many people cannot afford medical treatment […] they just wait until they die". Videos of the demonstrations on 16 October 2016 showed a march led by bicycle cabs carrying banners reading "Long Live the Communist Party, Long Live President Xi Jinping!" Other banners read "No to the garbage incinerator!". Slogans chanted were "Defend Gaoling! Defend the blue sky and pure land!". After the arrests, they shouted, "Let them go, let them go".

The authorities' strong response proved effective, at least temporarily. Most of the population stayed indoors on 17 October, and the authorities managed to curb information traffic on social media. They declined to comment on the protests and promised that the project would not start unless residents agreed to it. Local residents argued that it was the government's lack of dialogue that led to the protests and, as Ma Xiaoming (human rights activist) said, "For ten thousand people to mobilize in a single district indicates the deep popular anger over this issue […] the government does not allow information about this kind of situation to be disseminated because […] water pollution would be a very serious issue".

THOUSANDS PROTEST AGAINST THE CHINESE-FRENCH NUCLEAR REPROCESSING PLANT IN LIANYUNGANG, JIANGSU[12]

As elsewhere in the world (Chapter 10), nuclear energy has caused protests in China. One successful one was that of thousands against the proposed reprocessing plant in Lianyungang, Jiangsu. The French nuclear fuel group Areva agreed in 2012 to cooperate with the state-run China National Nuclear Corp (CNNC) to build a reprocessing facility in China. Locals say that Lianyungang, a port city in Jiangsu province, was a prime candidate because it hosts the Tianwan nuclear plant. A 2010 survey of 1,616 local residents showed widespread apprehension about the Russian-built Tianwan plant: 83.5 per cent of respondents said they "worried about improper handling of nuclear waste".[13] The French-built plant would be added to it, and when China's premier, Li Keqiang, visited France in June 2015, there was an agreement "to finalize the negotiations in the shortest possible time frame". The plant was to be built by China National Nuclear Corp., based on Areva technology. China wanted a plant to process 800 tonnes of spent fuel per year, as well as a MOX fuel fabrication plant modelled on Areva's Melox plant in Marcoule, in southern France.

Thousands participated in protests. According to the *New York Times*, "the biggest protest in Lianyungang took place on Saturday [6 August 2016], when many thousands of people, including families with children, marched through the downtown area. Despite warnings

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Source: EJAtlas

Figure 6.5 *Banner: "For the next generation, refuse construction of the nuclear waste plant"*

from the government, protests continued on a smaller scale this week, as residents defied ranks of riot officers with shields".[14] Meanwhile, citizens used social media platforms to denounce the proposed reprocessing plant while government censors did their best to remove critical comments.

On Sina Weibo, messages sprang up with an iconic picture of a face in a heavy protective mask holding up a nuclear radiation sign with a red X across it. "The people of Lianyungang don't want radiation", the picture read. Residents also used WeChat to share video footage showing downtown Lianyungang at night crowded with hundreds of people chanting loudly, "Oppose nuclear waste, defend our home" and "for the next generation, refuse construction of the nuclear waste plant".

On Monday night [8 August], thousands of residents gathered in front of a primary school near Suning Plaza and yelled "Protest, protest!" at police wearing heavy riot gear and carrying riot shields. "We don't want this project", said a local citizen. Another local citizen said: "It is very important to choose a safe location to deal with nuclear waste since it is radioactive. Lianyungang is located in a seismically active area, and there is already a nuclear waste plant here". The government decided to stop the project although this did not mean that the nuclear fuel-reprocessing proposal was dead.

PROTEST IN TONGPO, QINGHAI PROVINCE[15]

In November 2005, Qinghua Mining and Smelting Ltd. (QMS) began constructing a coking mill within the Tongpo district of Ulaan County in Qinghai province, a township home to nearly four hundred Mongol herding families. This project caused anxiety among locals, who

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became concerned that it would contaminate their sacred mountain, Mount Tongpo, which is 4,633 m high, because the construction site was located at the mountain's foot.

More than 1,600 Mongols lived in Tongpo district in 2006. They constituted a majority of residents in the district's two pastoral villages, Chagaangol (White River) and Chagaannuur (White Lake). The lamas at the Dulaan Temple pray regularly. In addition, the Tongpo Ovoo is worshipped annually and local people pray to the deity for rainfall during times of drought. Ovoo, numerous stone heaps (cairns) decorated with colourful flags on mountains and hills, is a Mongol custom. Each year, Mongols gather to worship there on the fifteenth day of the sixth month of the lunar calendar. At this annual gathering, the *ovoon jangjun* declares that people should stop outsiders from hunting, logging and mining within the mountain area. For example, in 2000 local residents stopped a mining project on Mount Tongpo, even though the two Han Chinese businessmen who had funded the project had been given permission by the county government. Similar prohibitions applied in theory to the QMS company. They failed to stop the project.

Four protests were carried out by local Mongol herders against the construction of the coking mill at the end of 2005. Protestors were sentenced to short periods in jail. While QMS was constructing the coking mill, other companies started to mine on the mountain. In response, residents sent six representatives to the county government to ask authorities to prohibit mining on the mountain itself. The head of the county government, an ethnic Mongol, promised that they would stop all mining activities on Mount Tongpo. However, they did not keep their promise. Some residents then went directly to the mining companies and demanded they stop mining. Three small peaceful protests, in which the chairman of the Chagaangol village committee participated, took place in defence of the territory at the mining sites between February and June 2006. None of these protests succeeded.

Academic research on the case concluded that "the indigenous institutions of the Tongpo community have contributed to the daily conservation and protection of Mount Tongpo and the areas surrounding it. QMS and local authorities' erasure of these indigenous institutions caused environmental injustice". "The sacred mountain (Mount Tongpo with supernatural rules), the deity-worship institutions (with an executive body and associated rules), and the homeland tradition (with notions of protecting community land and restricting those who cause harm to it)" are "central religious and social institutions of the small, local Tongpo community. Notably, these institutions are not state or party-oriented institutions but the indigenous institutions of local Mongols" (Chuluu 2020).

TIBET: GYAMA COPPER MINE AND LANDSLIDE[16]

Due to its tectonic formation, Tibet has many different types of mineral resources like copper, gold, coal, crude oil, natural gas, lithium etc. Following China's occupation of Tibet in the 1950s, big mining companies have shown great interest in investing there. According to Article 9 of the Constitution of the People's Republic of China, Tibet's resources are state assets available to be exploited to meet the needs of national development. Other mining conflicts in the wide Tibet region are included in the EJAtlas, and some of them are analyzed in Chapter 22 on Religious Groups as Environmental Activists because their main protagonists are Buddhist monks.

Over the past 60 years, mineral exploitation has evolved from a marginal endeavour to a major phenomenon in China's economic growth driven by industrialization and urbanization.

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As early as 1951, geological surveys were conducted and by 1991, a 3,600-m-long zone of copper-lead-zinc mineralization had been delineated. Between 1991 and 1999, Geological Brigade number 6 of the Tibet Geology and Mineral Resource Bureau conducted detailed exploration work. Based on this work, four mining licences were issued to Gyama Township, Lhasa Mining Company, Brigade 6 and Tibet Huatailong Mining Development between 2003 and 2005.

In 2005, there were local complaints about cattle dying after drinking wastewater released into community streams. The company acknowledged that cattle deaths were caused by chemical waste released by themselves but some other investigators denied the link and many farmers did not get compensation. In April 2007, mining activities by the previous operators in the four mining licence areas were stopped by the TAR (Tibet Autonomous Region) government. In accordance with an agreement between the TAR government and China National Gold Group Corporation, the four mining licences were consolidated under the Chinese government's policy for mining properties. Since then, there has been rapid expansion of the mining operations. The Gyama mine, located near Lhasa, is a large-scale polymetallic deposit consisting of copper, molybdenum, gold, silver, lead and zinc with the potential to become one of China's biggest copper producers.

In 2010, severe heavy metal contamination was documented in the stream water of Gyamaxung-chu and wastewater treatment facilities in the Gyama valley. The levels of metals represented high risks for the environment, human populations and their livestock. In March 2013, 83 miners were killed in a mine-induced landslide due to mismanagement or over-pilling of waste at the Gyama Copper Polymetallic Mine. The official statement about the mine landslide was published by *Xinhua News*. By August 2015, Radio Free Asia warned of possible new projects coming up in the region. On 23 September 2014, more than 1,000 local Tibetans of Dokar and Zibuk villages near the Tibetan capital city Lhasa protested against poisoning of their rivers by Gyama Copper Polymetallic Mine. But, as usual, the local officials conveniently declared that the water pollution in the rivers was caused by natural factors and not by the mine.

A BELT AND ROAD INVESTMENT IN PAKISTAN[17]

Here we turn to conflicts related to Chinese investments abroad. There are LFFU conflicts inside China but also in its economic area of influence. One great example in Pakistan is the Sindh Engro Coal Mining and Power Plant Project (SECMC) in the thirsty Thar Desert. It implies digging up one of the world's largest deposits of brown coal to fuel new power stations, with Chinese finance and engineering. While the rest of the world claims optimistically to be clamping down on coal, including China in theory, Pakistan is planning to increase lignite mining with five new power plants scheduled to start producing electricity soon and many more in the pipeline. These plants will spew 7 million tons of CO_2 per year per thousand MW of power, further jeopardizing the future. The China-Pakistan Economic Corridor (CPEC) is a bilateral deal under which the Chinese government and banks will financially support Chinese companies to build energy and infrastructure projects in Pakistan. China has often asked Pakistan to increase military presence to secure the CPEC.

The coal (lignite) reserves in Pakistan's Thar Desert spread over more than 9,000 km^2 of land, are estimated to be 175 billion tonnes in quantity and can produce 100,000 MW of electricity for three centuries. As Bloomberg news put it:

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Source: Amar Guriro, Scroll-in

Figure 6.6 Operations in the Thar desert

In the dusty scrub of the Thar desert, Pakistan has begun to dig up one of the world's largest deposits of low-grade, brown, dirty coal to fuel new power stations that could revolutionize the country's economy. The project is one of the most expensive among an array of ambitious energy developments that China is helping the country to build as part of a $55 billion economic partnership.[18]

Work on the Thar coal project has begun, but SECMC is facing criticism as there are concerns regarding land rights of the people of Thar, groundwater depletion and environmental deterioration.

In order to begin coal extraction, SECMC has started to dry the mine by extracting water from the area. The water will be transferred and stored in a large reservoir which spreads across 1,500 acres. Locals from Gorano village have their reservations: they have lost space for livestock grazing due to the construction of the reservoir and fear seepage from it will pollute groundwater which they are dependent on. "The entire village… our homes, utensils, clothes, trees, you name it … everything is covered with a thick sheet of dust due to the digging and the dumping of soil". The 12 villages around Gorano feel cheated. They held a sit-in outside the press club in Islamkot in protest at the construction of the reservoir in Gorano. Women left their homes to join the protest.

An Indigenous Hindu minority of the area is also protesting. As reported in the *Guardian*,[19] "as Pakistan seeks to address its power crisis by mining coal, villagers in the Thar desert are fighting to prevent state acquisition of their ancestral land. […] Nabi Bux, a resident of Sehnri Dars in the province's Thar desert, can attest as much. His village, roughly 400 km from the port city of Karachi, has been acquired by the SECMC and, as a result, he and about 1,800 fellow residents are to be relocated 25 km away. 'Engro is making brand new homes for us, but the spiritual attachment we have to our ancestral land is lost to them', he says".

The Sindh government is backing the project, under which the villagers were coerced into selling their land in the "greater national interest". The CEO of the company dismisses concerns about climate change because "Pakistan's emissions are less than 0.5% of the world total carbon emissions. In contrast, our neighbour India's carbon emissions contribute over

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9%". Many are alarmed. Among them is Dr Abid Suleri, executive director of the Islamabad-based Sustainable Development Policy Institute, who likens the approach to "investing in an old gramophone". Suleri believes coal cannot be exploited if the global temperature rise is to remain below 2ºC.

In June 2016, the villagers filed a complaint in the high court invoking certain sections of the Land Acquisition Act of 1894, which allows the mining authority to acquire land only after seeking permission from the landowner. "But we never granted them permission", says Leela Ram Manjiani, a local resident who is a lawyer and is representing the villagers. The villagers do not have papers to prove it's their land. "And those who do still have it in the names of their forefathers. To get the land transferred to their name requires a lot of money which they don't have", says Manjiani, who fears that the infractions of the mining company will be ignored by the state – which is fully supporting the project – and marginalize the Indigenous people.

A 2016 report in *China Dialogue* explains that around 300 Chinese, including engineers, miners and experts were working on the site.[20] The Chinese team started excavating the first pit. In the first phase, SECMC was to relocate five villages. SECMC started paying villagers for their homes and agricultural land. SECMC's chief executive officer, Shamsuddin Ahmed Shaikh, said that the company was paying villagers above market prices for their land. However, locals said they do not want to be relocated to the new towns, the exact location of which is yet to be decided. "We lived in this village for centuries, we spent our childhood here and our forefathers are buried here; to leave all this is very difficult", said Muhammad Hassan Halepoto, a resident of the Thario Halepoto. "We have dozens of trees on each acre of land. We feed our livestock from these trees […]. These lands are our permanent source of livelihood", said one villager. The Thar Desert is home to 7 million cows, goats, sheep and camels. Villagers fear that the project, which will cut thousands of trees, will be an environmental disaster for the desert.

CHINESE BUILT CFPP IN CILACAP IN CENTRAL JAVA[21]

In another Belt and Road investment, the operation and expansion of the CFPP in Cilacap *is* met by protests from local communities as a response to perceived negative health impacts and livelihood losses. In 2003, a Chinese-Indonesian consortium of companies was granted a construction permit for a 600 MW coal power station. The construction of the first two units was financed through a loan from the Bank of China, and the plant was inaugurated in 2006. The power station is owned and operated by PT Sumber Segara Primadya (S2P). In 2013, S2P was officially granted a loan from China Development Bank to expand the current power plant with an additional 660 MW unit. Moreover, PT S2P started a second phase of the expansion including a fourth unit with a capacity of 1000 MW, which was expected to commence commercial operations in 2020. This is one of several CFPP in Indonesia financed by China (as researched by Bowen Gu).

Residents of the surrounding villages have suffered severe adverse impacts since the plant was put into use. Due to soil excavation and drilling, the water table has been depleted and villagers find it increasingly difficult to access clean drinking water, especially since many wells have dried out. Families have been forced to divert money from other uses – such as education for their children – in order to afford to drill deeper. Furthermore, air pollution and ash rains

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caused health impacts such as skin rashes, bronchitis, coughs, and other respiratory diseases. The dust pollution worsens during the dry season, but throughout the year villagers are forced to sweep and clean their houses and terraces several times a day. In addition, the noise from the facility – which operates 24 hours a day – impacts life in the surrounding communities.

Before, local residents used to support their livelihoods mainly through farming and fishing. Since the construction of the power plant, these activities have become increasingly difficult to pursue. The coast is more complicated to access, and widespread water pollution has effects on catches. Further, productive agricultural land has been acquisitioned by the company. In the adjacent Winong village, the total amount of viable agricultural land has decreased by as much as 75 per cent.

Mobilization has taken place in the form of rallies and protests in villages affected by the operations of the plant. Posters have also been put up at the Cilacap Regent's office. A group of residents supported by Walhi Central Java and LBH Yogakarta met with the Cilacap Regent to voice their complaints. The communities also claim public consultation to have been inadequate throughout the process. In 2018, in response to the claims made by citizens and supporting organizations, the Cilacap Regent promised to conduct an investigation of the circumstances around the construction and operation of the plant, as well as an evaluation of the company practices. However, the results of the investigation were never made public, and the evaluation was not conducted. In 2019, people marched outside PT S2P's office and hundreds gathered outside the district environment agency's office demanding sanctions on the company. However, the plant is in operation and its expansion is underway.

There is also the issue of climate change. Indonesia's per capita emissions are low compared to rich industrial countries, but deforestation and land use change, particularly the burning of carbon-rich peatlands to make way for plantations, has meant carbon dioxide emissions. Now, electricity generation for Indonesia´s demand is increasing and the government is relying mostly on CFPP. In 2019, there were 39 CFPP under construction in Indonesia, and 68 have been announced, which will maintain coal's dominance of the energy mix at nearly 55 per cent by 2025. How many of them will be financed by China is under debate (Custer et al. 2021).

CONCLUSION

Yifei Li and Judith Shapiro's subtitle for their book on China is "Coercive environmentalism for a troubled planet" (2020). They focus on whether this state will make "China go green". As sources of eventual green policies, they look mainly at the state and the Communist Party (which admittedly is not monolithic). Nobody can doubt the great power of the state and its considerable legitimacy gained not only by spectacular economic growth but also because of the degree of redistribution of incomes and land. It is crucial, nevertheless, to look at resistance to evictions caused by economic growth, to uncompensated damages from coal mining and burning, to unsolved complaints about pollution and respiratory illnesses, and to debates on pneumoconiosis (Juan Liu 2021). There is alarm about toxic waste from lead in battery factories. There was, and perhaps still is, a particular obsession with PX in petrochemical industries and with the threat of dioxin from urban incinerators. Otherwise, the alarm at the effects of big hydropower structures, at nuclear power, metal mining and polluting industries, of biomass production through uniform tree plantations and intensive farming and livestock raising, are not different in kind of those of other countries, although larger in scale.

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A theory on China's political ecology must be based on the comparative study of many environmental conflicts and not on homespun cultural history. It is misleading to discuss environmentalism in China today in the light of an assumed "ecological civilization" of the past. One objective of the present book is to help to place political ecology at the centre of politics (Charbonnier 2020). This is a moot point in China, for two reasons: political debate is rather restricted to the limits set by the Communist Party and the Marxist-Leninist tradition in the Communist Party does not help the ecological views. On the contrary, it rather helps the idea of the "development of the productive forces", even when they are destructive. Attempts to build up an eco-Marxism might be relevant in China (Saito 2020) as political discourses will hopefully have some impact on reality, as is discussed elsewhere in this book (Chapter 30).

One can conclude from this chapter that the causes of the environmental conflicts in China are not very different from other countries. But there are Chinese characteristics: the predominance of coal as a source of energy, the large size of the country and its internal diversity combined with the rule of a single political party. Also, the economic and political stability of its government in the last decades and the foreseeable future, the end of population growth together with rapid urbanization, the disrespect for ethnic minorities, the investments along the Belt and Road initiative that make China so conspicuous in Africa and Latin America, the difficult life of Chinese environmental organizations and the growing international academic exchanges that inevitably will produce environmental social scientists specialized in ecological economics, political ecology and possibly ecological Marxism.

Grassroots environmental movements of protest operate with short-lived ad-hoc organizations born from the concrete grievances in each conflict. No need for permanent, conspicuous national organizations, liable to be co-opted or disbanded. However, national environmental organizations have made appearances in the cases here described, like Friends of Nature, Global Village Beijing or Green Earth Volunteers. Among the participants in conflicts, net-citizens (using Weibo and other networks), journalists, college students, have appeared together with farmers, peasants, neighbours and citizens, local EJOs, pastoralists, fisherfolk, and sometimes children. They display a usual variety of social instruments of contention, from letter writing, disputing the EIAs and litigation in courts to street marches (with their own camouflage terminology: collective walks, or marching as turtles), invading government offices and blockading roads.

China's economic growth is happening at the same time as the use of energy and materials is growing. There are conflicts on the extraction, transport (pipelines, oil spills) and final use of the materials. Coal still dominates the production of energy. Not all energy sources are equally harmful or dangerous, but there are sometimes local protests against all of them. All the materials that enter the economy become waste or are accumulated as stocks that quickly or slowly partially become waste and, as we have seen, conflicts arise over the use of such materials and over the management of such waste. China has a great problem of pneumoconiosis (Juan Liu 2021). It has also witnessed many conflicts over urban incinerators.

The cases considered in this chapter are grouped in the years 2010–18 (with the exception of the Banqiao dam disaster). We could classify them between those that are solved, after the protests, with technological improvements in a pattern of "ecological modernization", and those that have no other "solution" than to charge the damages to the poor population and the natural environment after repressing the protests, perhaps offering a modicum of "economic compensation" with a big dose of "coercive environmentalism".

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We also see that, as elsewhere, sometimes protests occur before investment projects are installed; at other times, protests are for damage that accumulates from the regular operation of projects, calling for repairs; and, in some cases, protests arise from sporadic accidents that often occur at mining operations or dams. Then there is a call for reparations. The data we collect in the EJAtlas is already being used by other researchers. We recommend the master's thesis by Porter Lyons,[22] which compared 41 environmental "incidents". An interesting hypothesis is that there is a clear divide between eastern and western China in terms of the type of conflicts and of conflict outcomes ("successes" or "failures"). The west is more extractivist, whereas the east suffers more from industrial pollution (e.g. lead contamination, urban production of dioxine). The case of Tongpo in Qinghai province is very much a "western" case. In this chapter we have tentatively traced a distinctive geography of Chinese environmental conflicts: inside China, in the coastal industrial areas; in the "extractive peripheries"; and outside China, because of extractivist investments but also urban CFPP under the Belt and Road scheme.

Eco-compensation in China, an Infantile Neoclassical Malady?

Despite the criticism of "commensurability of values" in ecological economics since its beginnings in the 1980s, and the application to many real-world situations of multicriteria methods (Martinez-Alier et al. 1998), there is a fashion in China for deciding environmental conflicts by Government power to which so-called eco-compensation is added. For instance, the article by Liu et al. (2018) announced that eco-compensation "offers an effective means to alleviate current ecological problems and a way to coordinate sustainable economic and social development with protection of the environment". The examples could be scrutinized one by one as cases to be included in the EJAtlas, and the application of eco-compensation to them (crowding out of non-economic values) could be discussed. I find it interesting that the neoclassical economic language of environmental externalities and circular economy seems to become respectable to the point that research projects are funded under the call "Formation of a circular economy and resolution of environmental conflicts". The intention is plain, the environmental externalities are recognized and compensated for, and the circular economy can continue its growth.

Without denying that eco-compensation can be appropriate – for instance, in court cases after damage has been done –, the fact is that economic valuation and compensation in practice excludes social values which cannot be expressed in money terms, or which the protagonists prefer to express in other terms. For instance, damage to health from the coal industry can certainly be expressed in years of labour lost or years of taking care of respiratory illness in children and old people. However, some people might much prefer to count the damage directly, without money translation, in units of human health and life. Not least because we know that "the poor sell cheap".

NOTES

1. Opposition to PX plant in Zhangzhou and explosion accidents, Fujian, China, EJAtlas.
2. Paraxylene (PX) plant expansion in Pengzhou, Sichuan, China, EJAtlas.
   Opposing paraxylene (PX) plant in the PetroChina 10 Million tons/year Refinery, Kunming, Yunnan, China, EJAtlas.

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3. Banqiao dam failure in 1975, Henan, China (Joan Martinez-Alier), EJAtlas.
   Three Gorges Dam on the Yangtze River, China (EJOLT team at School of Geography and China Centre, University of Oxford), EJAtlas.
   Violent protests over development of the Pubugou Dam, China (EJOLT team at School of Geography and China Centre, University of Oxford), EJAtlas.
4. Iranian tanker disaster and oil spill in East China Sea, China (EnvJustice, ICTA-UAB/NWAFU master students), EJAtlas.
   Prestige Oil Spill in Galician coast, Spain (Amaranta Herrero), EJAtlas.
5. COFCO Joycome pig farms in Chifeng City, Inner Mongolia, China (EnvJustice, ICTA-UAB/NWAFU master students), EJAtlas.
6. Lead poisoning by Melody Chemical plant in Hengdong, Hunan, China (EnvJustice, ICTA-UAB/NWAFU master students), EJAtlas.
7. Lead poisoning by Jiangsu Chunxing, Pizhou, China (EnvJustice, ICTA-UAB/NWAFU master students), EJAtlas.
8. Toxic waste leak at Zijinshan Gold & Copper Mine, Fujian, China, EJAtlas.
   Yang, C. (2011). Zijin's poisoned legacy, *China Dialogue*, 14 April.
9. Hainan residents against construction of coal-fired power plant, China, EJAtlas.
10. Oji paper mill's sewage project in Qidong, Jiangsu, China, EJAtlas.
    Water Management in Flint, Michigan, USA (Grettel Navas), EJAtlas.
11. Gaoling waste incinerator in Xi'an, Shaanxi, China (Federico Demaria), EJAtlas.
12. Thousands protest against the proposed Sino-French nuclear reprocessing plant in Lianyungang, Jiangsu, China, EJAtlas.
    Daya Bay nuclear power plant, Guangdong, China, EJAtlas.
    China National Nuclear Corporation Longwan industrial park, Jiangmen, Guangdong, China, EJAtlas.
13. Buckley, C. (2016). Chinese city backs down on proposed nuclear fuel plant after protests, *New York Times*, 10 August.
14. Buckley, C. (2016). Thousands in Eastern Chinese city protest nuclear waste project, *New York Times*, 8 August.
15. Protecting Tongpo sacred mountain from coal coking mill, Qinghai province, China, EJAtlas.
16. Gyama mine and landslide accident, Tibet, China (Environment & Development Desk, Tibet Policy Institute), EJAtlas.
17. Sindh Engro coal mining and power plant project, Thar Desert, Pakistan, EJAtlas.
    Qasim, M. (2016). The dangers of Pakistan's coal revival, *The Third Pole*, 26 February.
    Kunbhar, Z. (2016). The water this desert doesn't want. *The Friday Times*, 30 December.
    Ebrahim, Z.T. (2017). Gwadar fisherfolk worry about One Belt One Road, *Dawn*, 19 May.
18. Mangi, F. (2017). This mile-wide hole could revolutionize Pakistan's economy, *Bloomberg*, 21 March.
19. Zofeen, E. (2017). Locals accuse Pakistan of doing the dirty by turning to coal to meet energy needs, *The Guardian*, 27 February.
20. Amar Guriro, A. (2016). Pakistan's coal expansion brings misery to villagers in Thar desert, *China Dialogue*, 12 September.
21. Protest against pollution from coal power plant, Cilacap, Central Java Indonesia (Emmy Iwarsson), EJAtlas.
22. Lyons, P. (2018). Red skies: The impact of environmental protests in the People's Republic of China, 2004–2016, M.A., Department of Political Science, Wright State University.

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7. The Arctic, a growing commodity extraction frontier

with Ksenija Hanaček

BACKGROUND

The northernmost territories (above the Polar Circle, 66º latitude) comprise an area that goes from the melting icecap and polar desert to the boreal forest through the tundra. These Arctic territories and the adjoining ocean extend from Norway, Sweden, Finland, to Siberia in Russia, Alaska in the US, Yukon, Northwest Territories, and Nunavut in Canada, Greenland and Iceland. There are only about four million people living at such high latitude, and perhaps fifteen per cent of them are Indigenous peoples surviving centuries of colonization. The environment of the Arctic is changing because of climate change (ice melting, methane released from the tundra) and, related to this, increasing controversial investments in oil and gas extraction, copper, nickel, iron ore and coal mining, aquaculture and hydroelectricity, and even wind energy. One main terrestrial resource are the reindeer or caribou flocks belonging to Indigenous people.

Pastoralists and other Indigenous peoples try to use international legislation (such as Convention 169 of ILO, ratified by only some states) to protect their livelihoods. They are part of a global renaissance of Indigenous peoples (Chapter 25) often linked to defence of their own cultures at the extractive commodity frontiers. The Arctic shows then a situation where there is clearly a growing pressure of extraction on resources, and not so much pressure from excessive population (Blaikie and Brookfield 1987). It is becoming more than ever a commodity extraction frontier. In this chapter about 20 cases of environmental conflict taken from the EJAtlas are analyzed. Further articles have been published by the EJAtlas team (Hanaček et al. 2022, Tran and Hanaček 2023). We do not start from the potential supply of extractive resources in the Arctic, i.e. the availability of proven and estimated resources in the region. On the contrary, we take a bottom-up perspective on the actual conflictive attempts at extraction of hydrocarbons and metals (as also hydropower and wind-power), and the resistance to such attempts. The region is, from the perspective of contemporary world socio-environmental history, one more growing commodity extraction frontier, no doubt with Arctic characteristics.

LOFOTEN ISLANDS: KEEP THE OIL UNDER THE SEA[1]

The following cases in Norway illustrate the battle between short-term economic cupidity and environmental values, and perhaps between hypocrisy and honesty. Norway is not a "green" country, neither internally nor internationally, as we will see in Norsk Hydro's actions in Odisha, India (Chapter 8).

Lofoten is an archipelago in northwestern Norway at 69º latitude. It is a highly biodiverse area that holds cold-water reefs, pods of sperm whales and killer whales. It has some of the

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largest colonies of seabirds in Europe and it is the spawning grounds of the largest remaining cod stock in the world. Every winter, huge numbers of cod, or skrei, migrate to Lofoten from the Barents Sea in order to spawn. In 1994, the Norwegian government gave permission to state enterprises Statoil and Hydro for oil exploration around Lofoten. Ever since then, environmental and fishery organizations have protested against proposals to drill for oil in this highly sensitive ecosystem. The government has, several times, put the exploration for oil in the area on hold thanks to continuing strong protests. The last time started in 2013, for four years. In 2017, the topic was brought up for discussion once more, while the resistance against the exploration continued. The oil to be extracted is worth around US$ 15 billion. Leaving oil unexploited because of local biodiversity conservation and to avoid carbon dioxide emissions is a parallel initiative to that of the Yasuni ITT in Ecuador (which Norway failed to support with money from its Oil Fund, whose aim is to ensure through investments in Norway and abroad future revenue from Norway's oil and gas resources so that this wealth benefits both current and future generations). I shall come back to the Lofoten island case in Chapter 16 about LFFU movements.

I add something here on the crucial issue for this book of the meaning of "success in environmental justice". Sometimes users and younger colleagues working on the EJAtlas complain that the question included at the end of the data sheets: "Is this case a success in environmental justice: Yes, No, Not Sure", is too subjective. For the EJAtlas as a whole, "No" wins with about 50 per cent of cases, followed by "Not sure" with about 30 per cent, and "Yes" with almost 20 per cent. These are important results because one cannot imagine a growing and persistent global social movement unless there are some "successes". In this book I want to show that there is a global movement for environmental justice, including in the Arctic. If we add only a few "Not sure" cases to the "Yes" basket, we can say that one-fourth of all conflicts end with success for environmental justice. Often, this means that the project is cancelled. I think it is fair to classify Lofoten as a success: no "subjectivity" is involved, only the reported facts. One cannot be certain that Lofoten will not one day drill for oil. Let's call it a temporary success if you prefer.

LITIGATION ON OIL IN THE ARCTIC: CLIMATE JUSTICE IN NORWAY[2]

There are more and more oil and gas drilling, extraction and transport conflicts in the Arctic. In May 2016, the Norwegian government issued ten licences to 13 companies for the exploration of oil and gas in the Barents Sea, above the Arctic Circle. A continued pursuit of the extraction and combustion of fossil fuels implies continued emissions of greenhouse gases, which contribute to climate change. Drilling in the Arctic Sea would also pose a serious risk to the marine environment in the case of an oil spill, and the extreme conditions would make a clean-up operation difficult to manage.

In 2017, Greenpeace, the Norwegian group Nature and Youth (Natur og Ungdom) and Grandparents Climate Campaign sued the Norwegian government for granting the licences. Their effort is one of a handful of cases in the EJAtlas of young people suing governments and fossil fuel companies because of climate change. They are basing their legal claims on Section 112 of the Norwegian constitution which gives the right to a healthy environment, as well as the country's commitment to the Paris Agreement of 2015, signed by Norway a few

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months before. There are large amounts of fossil fuels that cannot be burned in the next decades to keep within the carbon budget, hence exploring for Arctic oil is not in keeping with Norway's commitment. But if the oil is not extracted all this potential chrematistic wealth will become "stranded assets", which is a financial headache for the Norwegian Oil fund for the next generations.

As the plaintiffs claim, this commitment to contributing to climate change and risking the environment is a violation of Section 112 of the Norwegian constitution and it implies climate injustice as further contributions of greenhouse gases from oil combustion will exacerbate climate change and put communities around the world at greater risk. It is the first time this high-level law has been tested in court. The law states: "Everyone has the right to an environment that safeguards their health and to nature where production ability and diversity are preserved. Natural resources must be managed from a long-term and versatile consideration which also upholds this right for future generations". The number "112" was carved into a five-tonne block of ice which was placed outside the court by Greenpeace on the first day of the trial.

Pacific Islanders, already affected by climate change, were amongst those testifying at the court case in Oslo. It also received support from scientists, lawyers and activists, and an online petition of over 522,200 signatures was presented as evidence in court. Arctic drilling was framed as a human rights issue, and a UN Committee called upon Norway to revise its policy on oil drilling on the basis that climate change disproportionately affects women. While the trial was underway, the Norwegian Oil Fund and the Norwegian Central Bank – the largest sovereign wealth fund in the world – asked the Government for permission to divest more than US$ 35 billion from oil and gas to "make the government's wealth less vulnerable", signalling expert support for the economic uncertainty of yields from fossil fuels.

Ingrid Skjoldvær, head of Nature and Youth, commented: "Our hope is that the court will both cancel the oil licenses awarded in the 23rd licensing round and ensure that the Norwegian government starts assessing the climate change consequences of distributing new oil licenses". However, on 4 January 2018, the Court found the Norwegian government not responsible for breaching the Constitution, although the Court also found that the right to a healthy environment is protected by the Constitution and the government must uphold those rights.

A contemporary Henrik Ibsen could write a theatre piece like *En folkefiende* with dialogues between a child who is growing up and her grandfather who is a judge. In her room, she has one Christmas calendar with little windows that open up. In secret, she calls it her Keeling calendar. There is a little window for each half year, marking 421 ppm, 422 ppm, 423 ppm, 424 ppm. Grandfather comes into her room and asks, "What is this, dear?" Then they discuss climate change, the electrical transition, hydropower, windmills and materials such as copper, nickel, iron ores and cobalt, while reading the Repparfjord case and other cases in the EJAtlas as bedtime stories in a tour around the North Pole.

COPPER MINING IN REPPARFJORD, NORWAY: INCOMMENSURABLE VALUES[3]

Kvalsund, a village of painted wooden houses on the Repparfjord, at 70º latitude, east of Tromso at the northern tip of Norway, will be the scene for large-scale copper mining. By 2019, resistance to the exploitation has been defeated. Sámi populations are low in numbers

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and almost powerless. As reported by Reuters, Norway's decision on the copper mine was viewed as a litmus test for the Arctic, where climate change and technology are enabling additional mineral and energy extraction, shipping and tourism, but threatening traditional ways of life. The paradox is that destruction of the environment is justified by the need for a "green economy". According to the Norwegian government, its decision to allow mining company Nussir to extract copper will help the world to obtain the minerals for the electricity transition. Driven by economic growth and by so-called green economy, extraction of copper continues to grow in the world. Even a non-growing economy would need "fresh" supplies because recycling only reaches a relatively small percentage. Kvalsund is part of the extractive periphery of Europe hit by the electrical transition, from Portugal and Andalusia to the Balkans and Scandinavia.

The company Nussir ASA plans a large copper mine in the inner part of the Reppardfjord, a rich fishing fjord hosting Norwegian and Sámi fishers. The company seeks to extract copper ore through subsurface mining, providing the largest known copper deposits in Norway at 74 million tonnes of copper ore. Prior mining took place at Ulveryggen which the company seeks to reactivate, as well as opening a new shaft at Nussir. Both shafts, as well as all buildings, roads, equipment and activities, will take place on Sámi reindeer herding land, blocking the migration path between summer and winter pastures.

The tailings from the mine will be deposited in the fjord, a total of 30 million tonnes of toxic mining tailings over a period of 20 years. Norway is one of the few countries which will legally allow dumping of mining wastes at sea. Nussir's plans are said to be like a new Alta controversy: in 1968, the Norwegian government produced plans for the construction of a hydropower station in Altaälven, which included building a 110 m-high dam that would put the entire Sámi village Masi underwater. Massive protests broke out and marked the beginning of a long conflict.[4]

Nussir currently has permission to deposit up to two million tonnes of waste (mostly excess rock with traces of copper and nickel) into the Reppardfjord annually. Copper is worthwhile mining with a grade of one per cent; therefore, waste can be up to 99 per cent of the materials extracted. The Reppardfjord is a rich fishing fjord. The project received major criticism for the potential destruction of marine and terrestrial habitat inflicting socio-environmental costs for the local community and disruption of the traditional Indigenous livelihoods.

In Anders V. Rør's terms, the conflict reveals incommensurate industrial economic values vs. environmental and Indigenous values. There is no common unit to measure the benefits and costs. There was a power asymmetry in the decision-making process, shortcomings of consultation as a participatory method, potential violation of laws and rights, disputes over mining impacts on development, the environment and stakeholders. The power asymmetry determined the outcome of the valuation contest. The process to establish the Nussir mine is then a procedural injustice and also leads to distributional injustice, since the social costs can be shifted upon impacted local stakeholders at a cheap or zero price, as also on future generations and on non-human species.

LARGE-SCALE WIND FARM IN SAMI REINDEER LAND, SWEDEN[5]

Wind power is usually regarded as beneficial compared to coal, oil and gas. However, it often implies dispossession of land from Indigenous groups and new requirements of materials.

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This happens in Mexico, India, Kenya and Scandinavia (Avila 2018). Complaints are rarely on the property rights on the wind which are appropriated by the state and companies, but over the land occupied by windmills, roads and electricity towers to send the power to richer areas. An extraction frontier for a new commodity.

In May 2008, the Swedish Company Svevind applied for a permit to build and operate the Markbygden Wind Farm. The project consists of over 1,000 wind turbines, and an extensive road infrastructure to be deployed in the region of Piteå. It is expected to achieve an installed capacity of over 4,000 MW with total production of around 8–12 TWh per year, supplying electricity for about 400,000 households in Sweden. According to Svevind, the project is located in a region with "very good wind conditions" and "relatively small degree of conflicting interests" since the area is "sparsely populated". However, the project covers a total of 450 km^2 of Sámi reindeer herding areas. Sweden is a country committed to human rights and international treaties except that it has not ratified ILO 169.

The Sámi people are an Indigenous people inhabiting the Arctic area of Sápmi, which today encompasses parts of far northern Norway, Sweden, Finland and the Kola Peninsula of Russia. They are the only Indigenous people of Scandinavia. Their best-known means of livelihood is semi-nomadic reindeer herding and currently about 10 per cent of the Sámi are connected to this activity, providing them with meat, fur, and transportation. For traditional, environmental, cultural and political reasons, reindeer herding is legally reserved only for Sámi people in certain regions of the Nordic countries.

Sámi herders in Piteå say that the deployment of the Markbygden Wind Farm through the reindeer herding lands will limit their movements and endanger their animals. If the Sámi lose the reindeer, they lose their language, culture, traditions, and ability to move in nature. Ingrid Inger, president of the Sámi Parliament, explains that reindeer herders need to move their herds between seasonal grazing lands – often across long distances – during the year. But increasing demands on the land from other economic interests are making that more difficult, and it is leading to the closure of traditional Sámi businesses. The Sámi are protected by a law which gives them the right to grazing lands across vast stretches of the north of Sweden. However, this does not add up to much in practice as it is almost impossible for herders to prove they have been using the land, which is 95 per cent owned by two forestry companies. Despite recent court rulings in the Sámi's favour, the Swedish government decided to accept the admissibility of the project in March 2010, placing wind power as a high priority for the national interest.

After the government's decision, the Saami Council (NGO representing the Sámi people in all four countries in which they live) published a press release criticizing the German bank KfW IPEX for their funding in alleged contravention of the OECD Convention on Multilateral Enterprises. The Sweden government also received strong international criticism from the UN Racial Discrimination Committee and the Human Rights Committee, calling it to end human rights violations against Sámi people in several cases across the country.

The wind power company argued they consulted the Sámi and that they are willing to pay appropriate compensation while the Sámi state that they never were properly consulted. Ingrid Inger said: "We're not against wind power – but we are against big wind farms like Markbydgen because they affect the reindeer business – the local Sámi herders will lose about a quarter of their winter grazing land". According to the company's information, by April 2016, the pilot, first and second phases of the project had already been approved and under construction, while the third and last phase of Markbygden were still being investigated.

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A VALUATION CONTEST ON NICKEL MINING IN RÖNNBÄCKEN, VÄSTERBOTTEN, SWEDEN[6]

In November 2013 the UN Committee on the Elimination of Racial Discrimination called on the Swedish government to stop all activities at the proposed nickel mine in Rönnbäcken south of Tärnaby. Representatives said that the Sámi herd their reindeer in the area and a mine would severely harm their ancient traditions. This was the first time the Committee on the Elimination of Racial Discrimination received a complaint relating to a specific mining project. Earlier in 2013, the Swedish government decided that mining interests should take precedence over the interests of reindeer herding.

As explained by Linda Dubec, in the valley Björkvattsdalen, there was an ongoing conflict between reindeer herding and a nickel mine. This was one of the first times in Swedish history that explicitly and officially two "national interests" were put against one another. In May 2012, the Swedish Supreme Court came to the conclusion that they were incompatible and incomparable. It was a case, we would say in ecological economics, of "strong sustainability" pitted against the "weak sustainability" logic of monetary cost-benefit accounting. According to the Swedish environmental law, to choose between two national interests, the government should choose the one that "in the most appropriate way promotes a long-term management of the ground, the water and the physical environment in general" (1998, Ch. 3, 10§). The government instead based the decision on the economic benefits that the mine would bring.

Many local Sámi organizations and EJO Nätverket Stoppa Gruvan i Rönnbäck protested and appealed to the decision to give Nickel Mountain AB permission to mine. A mine would completely eliminate the possibilities for the Sámi people to have reindeer there since it is a narrow passage. A concern was also the risk of pollution for the nearby river Umeälven. "Leave the nickel and the cobalt in the ground", they concluded. A student's thesis at Lund University in 2017 on Swedish non-ratification of ILO Convention 169 states: "The Swedish–Sami relationship is part of the darker chapters of the Swedish history. This study aims to understand parts of this relation from a postcolonial perspective. The postcolonial approach is built on postcolonial theories and the concept of internal colonialism". I agree.[7]

IRON MINING IN KALLAK AND KIRUNA, SWEDEN[8]

In 2006, the British company Beowulf Mining Plc. and their Swedish affiliate, Jokkmokk Iron Mines AB, were given permission by the Swedish governmental agency Bergsstaten to explore possibilities for mining iron ore in Gállok (also known as Kallak), an area located 40 km northwest of Jokkmokk in the province of Lapland. Again, the area where the mine was to be located was used by the Sámi from the villages of Sirges and Jåhkågasska as winter pasture land for reindeer.

Further to the north, in Kiruna, at 68º of latitude is perhaps the world's largest underground iron ore mine. Production is about 27 million tons per year. The company LKAB (Luossavaara–Kiirunavaara AB) was established in 1890, which makes it one of Sweden's oldest industrial companies. The mine has been in operation for over a hundred years and has been most important for the Swedish economy both in metabolic and in monetary terms.

The iron ore is being extracted all year round from the mines in Kiruna and nearby mines, Malmberget and the surface mines of Gruvberget and Leveäniemi, in the town of

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Svappavaara. Every time the ore is removed it causes a collapse of rock underground, which automatically fills the cavity and creates clogging. The more ore that is extracted, the more the ground above sinks. In 2004, the mining company LKAB publicly announced that the mine was caving in, destabilizing the ground that the town is built upon, creating one of the most spectacular side effects of underground iron mining. Since then, there has been an ongoing project funded by LKAB and the Swedish government to relocate the town centre roughly 3 km east. The affected population is over 15,000; 4,000 households must be moved. The completion of the relocation of Kiruna was officially set to take place within 2019, but it was postponed. One large part of the company's liability goes uncompensated. As in other similar cases (Morococha and Cerro de Pasco in Peru or Berezniki in Russia), the cost is paid by nobody or by the government (and Swedish tax-paying citizens).

The data sheet in the EJAtlas classified the conflict as "latent", which implies that there is no open conflict or that we would expect complaints but they are not visible. Most of the media coverage of the moving of Kiruna presents the situation as uncontroversial, emphasizing the technical and architectural interesting perspectives and the co-dependence of the mine and the city of Kiruna. Some criticism has emerged from researchers and journalists, but there has been little organized opposition. Residents have reported they are unhappy with the new location of the city and the prospect of relocating is a cause for sadness and the stresses of uncertainty. The new site has been criticized for being even colder, windier, lacking a view of the mountains and unfavourably located in an industrial area, sometimes referred to as the "valley of death". The choice of the new site was also regarded by some as undemocratic and unclear. It was alleged that the price offered by LKAB for old housing was lower than what the price will be in new Kiruna. Some people contemplate migrating for good. The reaction has however been muted.

The Circumpolar North has been a commodity extraction frontier for some time – the point of this chapter, however, is that it is becoming more so than ever, particularly since fossil fuels and new metals are added to old metals and biomass.

IN FINLAND: SAKATTI MULTI-METAL MINE[9]

As this book was written over the years, the commodity extraction frontiers continuously advance. Finland's environmental conflicts have to do with a new large nuclear power plant, conservation of forests and of course mining of metals (as in Sakatti) such as copper, nickel, cobalt, platinum, palladium, gold and silver. Cobalt is a mineral used for batteries of electric cars and renewable energy infrastructures, among others. As the electricity transition is gaining momentum due to climate change, its demand is expected to grow. About half of the cobalt production comes from the Democratic Republic of the Congo, under awful conditions, and there are also mines in Morocco and other countries. Nevertheless, the interest in carrying out mining in the periphery of Europe including the extreme north is continuously growing. In addition to important base metals such as copper, nickel and cobalt, the deposit also contains platinum, palladium, gold and silver. Finland has been ranked as one of the most attractive countries for mining. It offers low taxation, building infrastructure, and finance for mining companies. In Lapland, the northernmost area in Finland, one-third of its territory is reserved for mining activities.

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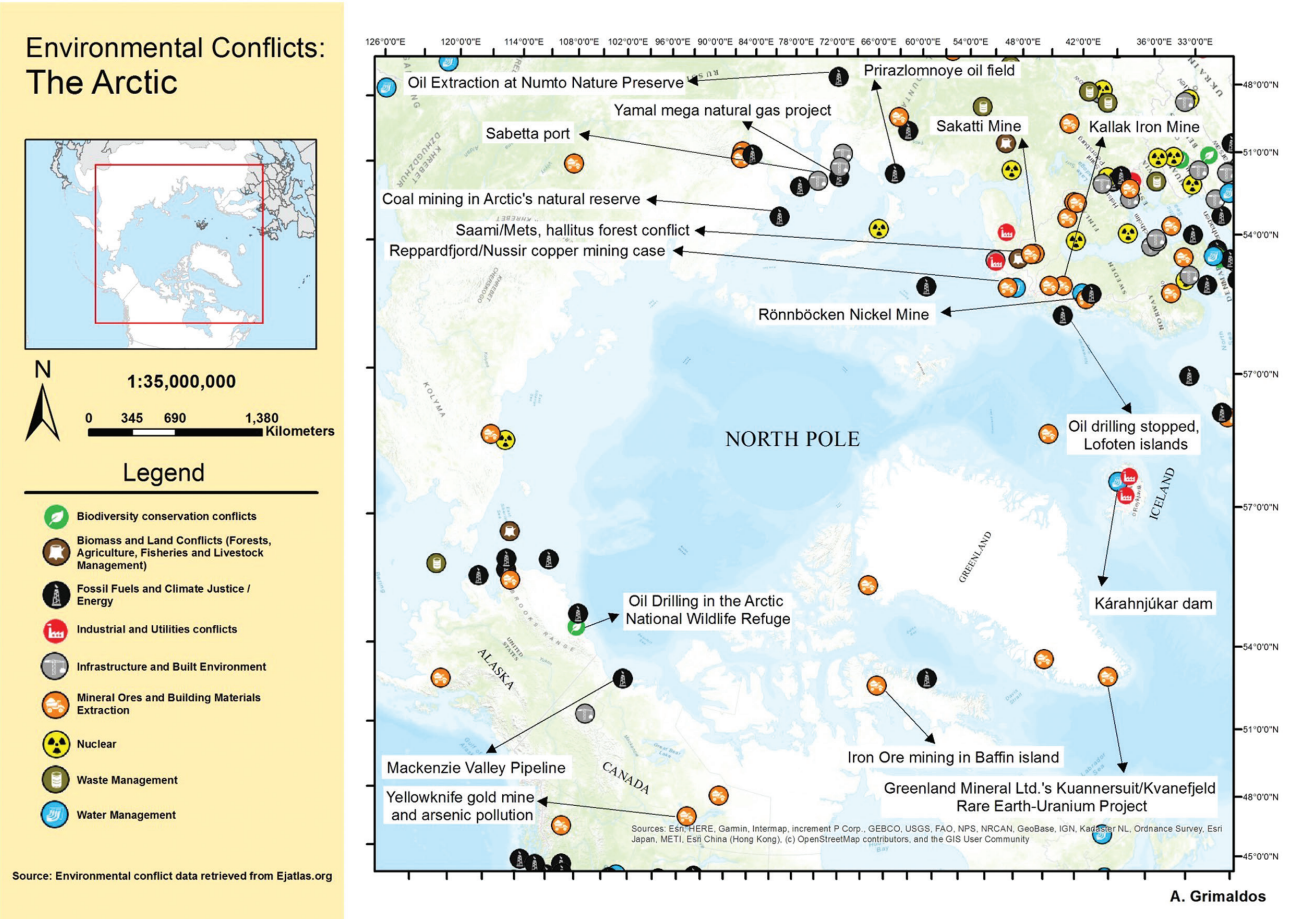

Source: A. Grimaldos

Figure 7.1 *Some of the environmental conflicts mentioned in the Arctic*

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In the municipality of Sodankylä, extraction has been increasing since 2005. The mining company Anglo America has one of the most controversial projects underway: the Sakatti mine. The exploitation of the minerals is going to be performed in the Viiankiaapa nature conservation area, where ten plant species and 21 bird species that are being listed as threatened have been located. The Sakatti mine is not on Sámi land but it threatens their rights and livelihood at some distance Those living in the northernmost Scandinavia and Russia are estimated to be over 75,000. Since 1996, they have constitutional self-governance in their homeland, managed by the Sámi Parliament. In Finland, approximately 10,000 Sámi people are living in northern Lapland. There are further possible social and environmental impacts caused by noise, dust, tremors from blasts and tailing ponds, etc. The animals also face higher risks due to the expected increase in traffic. Additionally, there are unpredictable effects on the water resources. The people who will be most affected by the Sakatti mine are Finnish speaking herders whose pasture lands are in the area. However, some of them have roots in Sámi culture, their grandmothers or ancestors might have been Sámi but due to the aggressive Finnish assimilation politics in the area during the nineteenth century, ties to the language and culture have been lost. Also, some of them might have ancestry among Finnish settlers who came to the area from the south.

Many of these herders self-identify as "forest Lapp" or "forest Sámi" people, a category that the autonomous Sámi parliament of Finland does not recognize as Indigenous. This is a highly conflictual debate in Finland's North in general, about the category of who is Sámi. The consequences are not considered relevant enough compared to the amount of metals, employment and income the project will generate. Furthermore, Finland has not yet ratified the ILO 169 Convention which ensures Indigenous rights.

For the endorsement of the Sakatti mine, different workshops were organized in order to discuss the advantages and disadvantages of the project. The Sámi Parliament directly declined the invitation since they considered that the whole project would only be harmful to them. Anglo American promises respect for all "stakeholders" and that they are in contact with them in order to understand and fulfil everyone's needs, to make sure the project will improve everyone's lives in the future. The Sakatti mine might still become a huge international environmental conflict (Kröger 2019).

PRIRAZLOMNOYE OIL FIELD IN THE RUSSIAN ARCTIC: OPPOSITION BY GREENPEACE[10]

After a short trip in Scandinavia, we now move East to Russia, to an Arctic offshore oil field located in the Pechora Sea, west of the Yamal peninsula. The field development is based on the single stationary Prirazlomnoya platform, the first Arctic-class ice-resistant oil platform in the world. The field was discovered in 1989. In 1993, the development licence was issued to Rosshelf, a subsidiary of Gazprom. In June 2000, Gazprom and German energy company Wintershall signed a memorandum of cooperation for developing the field. In 2002, the licence was transferred to Sevmorneftegaz, which later became a wholly owned subsidiary of Gazprom.

In September 2011, a joint statement was published by Greenpeace Russia, Russian Bird Conservation Union, WWF Russia, Bellona Russia and Socio-Ecological Union. Ecologists asked to suspend further work on the installation platform, to hold an open and comprehensive

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discussion of environmental security and to ensure information transparency of the project documentation. Environmentalists drew attention to the difficult environmental conditions: air temperature down to -40ºC, winds at a speed of 30 m/s, etc. The project did not take into account the consequences of a possible accident and was not prepared to deal adequately with a spill. There was a danger to biodiversity and the proximity to a nature reserve. Environmentalists also pointed to the flaring of associated gas.

On 15 November 2011, a meeting dedicated to the issue of oil spill was planned between environmental organizations and "Gazprom Neft Shelf", which refused to participate at the last moment. Almost a year later, in August 2012, a group of Greenpeace activists under Kumi Naidoo intruded into the platform and put up a banner saying "Don't kill the Arctic". In September 2013, Greenpeace's ship Arctic Sunrise circled the Prirazlomnoya oil rig while three members attempted to board the platform. In response, the Russian Coast Guard seized control of the ship and detained the activists. On 18 April 2014, the tanker "Mikhail Ulyanov" shipped the first batch of oil. On 1 May, the Greenpeace "Rainbow Warrior III" tried to prevent this tanker from entering Rotterdam; 30 activists were arrested and the operations went ahead.

Five years later, Gazprom Neft Shelf reported that this platform had extracted a total of 2.6 million tons in 2017. In 2018, production was to increase to 3.6 million tons and in 2020, Prirazlomnoya would reach its target production of about five million tons, meaning 100,000 barrels per day. Gazprom Neft Shelf drilled another four production wells in the course of 2017. The Prirazlomnoye field holds a total of 70 million tons of oil. Extracted oil is shipped by ice-class tankers to the "Umba", a 300,000-ton tanker in the Kola Bay, near the city centre of Múrmansk.

Slightly to the south, in the Komi Republic, there are regular oil spills. In 1994, between one hundred thousand and two million barrels of heavy crude oil spilled out and polluted the area. The Komi region is located in a belt of taiga – coniferous forests – and inhabited by Indigenous people, which are mainly fishermen, hunters and reindeer herders. The Save Pechora movement is also active here. At one point, Lukoil lost a legal battle and was ordered to pay a US$ 20 million fine to the Indigenous peoples of Komi for the destruction and pollution that their spills caused. This was due to a successful legal campaign by Greenpeace Russia, together with local communities.

REZONING OF NUMTO RESERVE AREA, INDIGENOUS PEOPLES AND OIL DRILLING IN RUSSIA[11]

Oil extraction by the company Surgutneftegas threatens Numto Nature Preserve's Wetland Areas in the region of Khanty-Mansi, a federated territory of Russia located at 63.51º of latitude, where the tundra ends and the boreal forests start. Again, Indigenous minorities are involved. The company already extracts oil there but they want access to one of its most vulnerable areas: the wetlands, where industrial development is currently prohibited.

Lake Numto is one of the biggest in the district with an area of 62 km^2 and its territory mainly consists of wetland ecosystems. The Numto watershed is a potential wetland to be included on the Ramsar List of Wetlands of International Importance. It is renowned as a breeding site for different bird species and is positioned on the migratory routes. The plans for expansion of oil activities represent a danger for this fragile ecosystem and its human population through oil spills and habitat fragmentation by pipeline infrastructure.

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Numto is one of the most sacred places in the region. It is used for worship and rituals of two Indigenous peoples of the Russian North: Khanty and Forest Nentsy. Its territory is also used by the Indigenous Nenets population. "Num" is translated as "sky", and "To" as "the lake". According to mythology, the Supreme God descended to this heavenly lake. According to other legends, the lake itself is a Deity or an ancient epic hero. It is prohibited to cut down trees and to gather berries on the lake islands. "The hero's neck" (the narrow passage between the bay Uhlor and the main part of the lake) is prohibited from being blocked by fishing vessels or equipment. Forty families of Indigenous people live around, in their nomad camps, involved mainly in reindeer breeding, fishing and gathering.

In 1997, the specially protected natural territory "Numto" was established, not only to protect the environment, but also the Indigenous way of living. The Park's original zoning, approved by the regional government in 2001, established four functional zones and several protection areas to regulate and delineate different activities: natural ecosystems protection, subsistence economic activities, tourism and oil extraction. Oil extraction generally contradicts the idea of a nature park but is a current phenomenon in Russian oil-rich provinces.

The Russian oil company Surgutneftegas was not happy with the original zoning because it prohibited oil drilling in the valuable wetlands near lake Numto. The company persistently sought to amend it. In 2014–15, researchers, sent by the regional government but commissioned by the company, conducted a study to propose a rezoning of the Park in line with the 'wise use of wetlands' principle 4, as promoted by the Ramsar Convention. About 80 per cent of the park's area, including the zone of wetlands, are planned to be given for geological exploration, oil extraction and construction of infrastructure including roads and pipelines.

The main problem was ignoring cultural ecosystem services. Traditional production value of northern minority's lands was less in monetary terms but more valuable in other terms. There was a value system contest. Which should be the priorities in land use planning? Crucially, legislation does not acknowledge Indigenous peoples as owners of their ancestral lands. Based on their traditional occupancy, they are merely granted rights to hunt, fish, herd. Many observers report that the level of respect and protection of Indigenous peoples' human and ecological rights in Russia has declined significantly. In the mid-2000s, the government, with the aim of promoting economic development, removed administrative barriers, supported geological exploration and has been consistently applying the concept of "un-ecologization" to federal legislation since then.

Just before the public hearing in Beloyarsky in February 2016, protests arose in the electronic, social and conventional media. The Park's administration and civil Indigenous organizations informed Greenpeace, which collected more than 35,000 signatures against the rezoning of the Park. The Russian Association of Indigenous Peoples of the North, Siberia and Far East (RAIPON), 30 other organizations and these 35,000 Russians submitted their petitions to the state bodies. Together with Greenpeace, several prominent Russian scholars and organizations spoke out against rezoning and considered the EIA inadequate and biased. These efforts resulted in a high turnout by the public. Some 80 participants, including Indigenous people, came from Numto, Beloyarsky, Surgut and Nizhnevartovsk.

In the months that followed, Surgutneftegas deliberated its 'Compromise' scenario with regional authorities behind closed doors. Neither an appeal of Indigenous people, scientists and environmentalists to the regional Governor and the President, nor the request of the Presidential Council for Civil Society and Human Rights to the federal Ministry of Natural Resources and Environment could affect the KHMAO-Yugra Government's approval of the

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oil company-sponsored 'Compromise' rezoning scenario and its subsequent endorsement by the federal Ministry of Natural Resources and Environment in October 2016. These decisions did not manage to settle the protests by the Indigenous population.

YAMAL PENINSULA, GYDAN, TAYMYR: NATURAL GAS AND COAL FROM THE RUSSIAN ARCTIC[12]

East of the Prirazlomnoye oil field, there are large investment plans in a new commodity frontier where the Ob and Yenisei Rivers get to the Kara Sea. There is an important extractive frontier in the Yamal peninsula, Gydan, and the Taymyr in the Arctic coast of Siberia for natural gas and coal exports through the new routes opened up by ice melting. More information will be given in Chapter 27 on investments in this area by Total of France and Novatek, and their "corporate social irresponsibility". The issue has gained attention with the geopolitics of the Russian war in Ukraine in 2022 and the general awareness of Europe's dependence on imports of gas from Russia.

In Taymyr, Russia is to develop one of the largest domestic coal fields, Syradasay, to supply coking coal to India. The transport will be along the Northern Sea Route. The Syradasay field is located over 100 km from the Dikson settlement. There is a natural reserve called Bolshoi Arkticheskiy (The Great Arctic State Nature Reserve). Russia has been signing these energy cooperation deals with India on a mega open-cast anthracite coal mine project in Dikson with VostokCoal-Diskon as developer company. Environmentalists say that developing mega coal projects in such an ecologically sensitive area is a "madness" (Chapter 16).

Sabetta[13] is one of the largest Russian Arctic ports situated on the Yamal peninsula, on the bank of the Ob River. The US$ 2.5 billion project was initiated by the Russian Government for the development of the Yamal Gas Mega Project. The port's construction is being carried out in two phases. The piers for handling LNG (Liquefied natural gas) plant modules and construction materials are being constructed in phase one. Phase two includes the construction of berths for handling LNG and gas condensate. They build and sell cheap gas and oil, but in the meantime the Arctic continues to warm at twice the rate of the rest of the world, as the Barents Observer reports, since navigation is helped by climate change that melts the ice. While activists, journalists and scientists raise their concerns, the Russian government has a different perspective on the Arctic: the goal of the Sabetta port is an annual shipment of 80 million tons by 2024.

Russia's biggest gas field covers two-thirds of the Yamal peninsula which the Nenets Indigenous people need for nomadic reindeer-herding. Nenets activists are accused of preventing economic development. In the 1990s the Gazprom company under the name of Yamal LNG (Liquefied natural gas) initiated preparations for one of its biggest gas projects. Due to this project, Nenets' traditional lands have been transformed and environmental degradation started to take place. Activists from the Nenets community, especially the Forest Nenets, involved in Indigenous rights group alliances of Siberia, have publicly raised awareness about the environmental and cultural issues of gas and oil industries on their traditional territories. In 2019, a Moscow court ordered the closing down of the Indigenous rights group, saying that the organization has not provided the documentation which is needed to be recognized by the Russian law. "It's not a legal issue. It's a political one", said the director of the Centre for Support of Indigenous People of the North/Russian Indigenous Training Centre. "There's

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a big conflict of interest between corporations and indigenous people". Also, such huge gas fields have other issues with permafrost holes, that can explode easily, bringing a danger of large-scale accidents to the community as well.

Gazprom, on the other hand, argues that they provide the Yamal province with US $665 million a year. Herders and administration officials argue that compensations for pasture degradation and land are meant for local government but they do not reach Nenets people.

NORILSK, METAL MINING AND POLLUTION IN RUSSIA[14]

Norilsk is one of the largest cities located above the Arctic Circle at 69º latitude, east of the Yenisei River, in Krasnoyarsk Krai. This area is rich in nickel, copper, palladium and cobalt deposits that were discovered and started being exploited at the beginning of the twentieth century. Since the 1930s, the city has been the home to "Norilsk Nickel", one of the biggest mining and metallurgical complexes in the world. The citizens experience noxious gases emitted from the mining and industrial activities, while even more extreme conditions are experienced daily by the workers in the mining and metallurgical complex. The pollution consists of sulphur dioxide, nitrogen oxides, carbon monoxide, phenol, and chlorine that contaminates both air and water with negative impact on local lakes and the fragile tundra ecosystem. Norilsk is or has been one of the ten most polluted cities in the world, an industrial hell.

"Norilsk Nickel" employs over half of Norilsk's population and the citizens have apparently rarely protested environmental pollution. Instead, strong critiques came from Greenpeace Russia, and it is hard to say when the conflict started. President Vladimir Putin visited the city in 2010 and announced an increase in environmental fines if the companies did not cut out the amount of pollution, which resulted in an increase of environmental measures in production processes, including the shutdown of a 74-year-old nickel factory in 2013, which should reduce emission levels by 75 per cent. Although there are signs that Norilsk has embarked on "ecological modernization" and is making efforts to combat its high pollution by replacing old equipment, pollution still occurs. Thus, in September 2016, local people reported heavy pollution that turned the Daldykan River water red.

An accident on 29 May 2020 made many of these issues reappear. A fuel tank collapsed, leaking 20,000 tons of diesel in the nearby waters, up to 12 km away. It contaminated a 350-km^2 area, and Putin declared a state of emergency. The company stated that the spill was probably a combination of both climate change and infrastructure-related factors. Yet Greenpeace and World Wildlife Fund stated that the company emphasized the role of climate change to avoid sanctions for its ageing infrastructure and potential negligence. Russia will either have to decrease fossil fuel production to prevent infrastructure from collapsing or build more infrastructure to spread the weight, because most of Russia's oil network was built on permafrost – permanently frozen ground which is melting rapidly.

OIL IN ALASKA NATIONAL WILDLIFE REFUGE[15]

After these cases in Russia, we now turn to the North American Arctic in the USA and Canada. Again, the presence of Indigenous peoples makes itself felt.

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By 2019, the fate of the Arctic National Wildlife Refuge (ANWR) was in doubt because President Trump's administration was keen to start selling leases for oil extraction to companies such as Exxon.[16] A much-disputed Environmental Impact Statement (EIS) was issued, and "commenters raised concerns about oil and gas development's impacts to wildlife, including the destruction of polar bear dens and the nesting grounds of more than 200 migratory birds". Comments also took issue with the analysis of drilling's impacts on the Porcupine caribou, which some Alaska Native people depend on as a critical food and cultural resource. In addition, various comments expressed concerns about the greenhouse gas emissions.

From outside the US, the Inuvialuit Game Council – a Canadian council representing the Inuvialuit peoples' wildlife and habitat interests – and several Canadian committees commented that the draft EIS "fails to fulfill the United States' obligations under both US domestic law and under international law and fails to recognize the transboundary nature of the Arctic Coastal Plain". The group highlighted the potential impact that a lease sale would have on Canada and criticized the draft EIS for lacking quantitative data and analyses. In addition, the Gwich'in Steering Committee – formed in 1988 to represent the interests of the Gwich'in, including the protection of the Porcupine caribou herd and its habitat – along with 152 advocacy organizations across 33 states, submitted comments in opposition to the deficient draft EIS. This conflict, like other Biodiversity Conservation Conflicts in the EJAtlas, finds Indigenous people supported by conservationist organizations. This is not always the case: there are numerous examples of "military conservationism" (Büscher and Fletcher 2019, Chapter 11).

The conflict was more active in 2021 than ever. The US Geological Survey (USGS) estimated that ANWR 1002 could produce 75 million tons of oil per year, at 1.5 million barrels per day at full capacity after roughly a 10-year ramp-up. The ANWR comprises 19,000,000 acres of the north Alaskan coast. Although the 1002 Area is only 10 per cent of the total Refuge acreage, it includes most of the Refuge's coastal plain and arctic foothills ecological zones. It is the largest protected wilderness in the United States and was created by Congress under the Alaska National Interest Lands Conservation Act (ANILCA) of 1980. The Refuge is America's example of an intact, naturally functioning community of arctic/subarctic ecosystems. Such a broad spectrum of diverse habitats occurring within a single protected unit is unparalleled in North America, and perhaps in the entire Circumpolar North. It also provides a habitat for the Porcupine Caribou herd – one of the largest in the world, with over 150,000 animals. This herd, with calving grounds on the tundra of the Refuge, is an important means of subsistence for the region's Indigenous inhabitants. The Alaska Inter-Tribal Council, which represents 229 Native Alaskan tribes, officially opposed any development in ANWR.

MACKENZIE VALLEY PIPELINE IN CANADA[17]

This conflict is one of many in North America between local Indigenous peoples and the oil and gas industry (Chapter 16). However, this case in the Canadian north was different. Indigenous organizations were ambivalent. There was some opposition by them but the main social and political instrument to stop the project was an official inquiry, plus the economics of the oil and gas industry. The Mackenzie Valley Pipeline was a proposed project to transport natural gas from the Beaufort Sea through Canada's Northwest Territories to tie into gas pipelines in northern Alberta. After large quantities of fossil fuels were discovered in Alaska in 1968, discussion started around Canadian resource extraction and development in the Yukon

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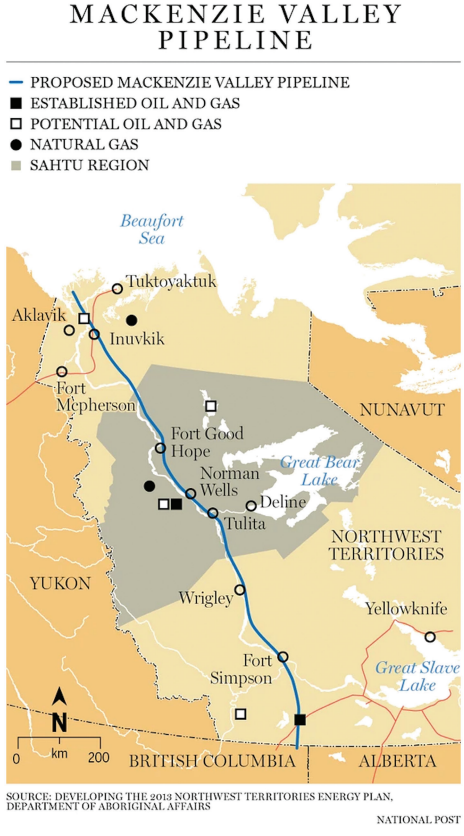
and the Northwest Territories. By 1970, Pierre Trudeau's government already had plans on pipeline development. The Canadian Arctic Gas Pipeline Ltd along with Foothills Pipe Lines Ltd planned to run natural gas from Alaska, across the Yukon, through the Mackenzie Valley south to Alberta and the US. At the time, it would have been the longest pipeline in the world and quite an engineering marvel building on permafrost. The potential economic benefits of the project as well as the ability to expand control into the Canadian north through resource development was an attractive proposal (Figure 7.2).

However, the local Aboriginal communities saw issue with the pipeline and potential changes to their physical, social, economic, and environmental well-being, resulting in a number of conflicts, land claims and disputes. It led to the appointment of Justice Thomas Berger to conduct an inquiry on the proposed pipelines and the potential impacts on Canada's north and its people. The 1977 report concluded that further study was necessary, especially with regard to Indigenous land claims, and that the pipeline should not be constructed given the vulnerable northern environment.



Source: National Post, Developing the 2015 Northwest territories energy plan, Department of Aboriginal Affairs. Material republished with the express permission of: National Post, a division of Postmedia Network Inc.

Figure 7.2 Mackenzie Valley pipeline in Canada

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Berger recommended a 10-year moratorium on construction to allow for more baseline studies. It was also intended to give the Aboriginal communities involved more time, and by 2000, the Inuvialuit, Gwich'in, and Sahtu peoples had their claims taken care of. These communities now had an interest in the pipelines, and Imperial Oil, ConocoPhillips, ExxonMobil and the Aboriginal Pipeline Group (local communities with pipeline interests) proposed the $16.2 billion Mackenzie Gas Project to carry 34.3 million m^3 of natural gas about 1,200 km from the Beaufort Sea to northern Alberta. The plan was submitted to the NEB in 2004 and approved in 2010, with December of 2015 set as the deadline to begin construction.

Changing economics and the falling price of natural gas resulted in Imperial wanting to delay construction further to ensure the economic feasibility of the project. The extension was granted by the NEB to the dismay of environmentalists, but by the end of 2017, Imperial Oil decided the Mackenzie Gas Project was no longer profitable enough and declared the end of the nearly 50-year deliberation and development process. The Deh Cho Dene of the Northwest Territories were important social actors. Primarily, the case was mobilized through Aboriginal involvement and not so much due to environmental organizations.

MINING IN CANADA'S MOST DISTANT FRONTIER: BAFFIN ISLAND AND IRON ORE[18]

A historic conflict in the North of Canada is the Yellowknife gold mine conflict on the pollution by arsenic (Chapter 20). Here we consider a current mining conflict in Baffin Island where the Inuit council approved the expansion of an iron mine to 6 million tons per year, against the recommendations of the Nunavut Impact Review Board.

Baffin Island, in the Canadian territory of Nunavut is the largest island in Canada and the fifth-largest worldwide. Its area is 507,451 km^2 and its population less than 15,000. Nunavut is the largest in area (1,750,000 km^2) and the second-least populous (36,000) of Canada's territories. It is becoming an extraction frontier, with uranium and iron ore resources. There is a story of defence of local and ethnic identity, a successful Indigenous land claim, as well as a story of mining in the area. There was resistance to uranium mining in Baker Island led by the NGO *Nunavummiut Makitagunarningit*. This is also one of the frontiers of climate change impacts, with the ice cover receding and melting.

Mining companies are attracted by the huge iron ore deposits underneath a frozen landscape. The Baffinland company shipped its first load from Mary River via Milne Inlet in August 2015. Global prices of iron ore had plummeted because of world production, since the NIRB (Nunavut Impact Review Board) first granted the company its certificate in 2012. For that reason, the company changed its plans for Mary River several times. The original proposal called for a $5-billion railway to be built.

Instead, the company began transporting iron ore along a 100-km tote road between the mine and Milne Inlet. This was done with enormous trucks that melted the ice, frightened the caribou and disrupted the hunting habits of the Inuits. Then, in late 2014, Baffinland proposed significant changes to its project certificate, including: more than tripling truckloads of iron ore, nearly tripling the output of iron ore (from 4.2 million tonnes to 12 million tonnes per year), increasing the shipping season from four months to ten months a year; and building a second dock at Milne Inlet and a tank farm.

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The NIRB decided in August 2015 that the proposed changes warranted a full public review, requiring Baffinland to submit a new EIA. The Inuit inhabitants agreed through their councils to get royalties from the mine; however, there are many latent conflicts, which also have to do with a trend among the Inuits to self-governance.

The NIRB decided that the increase in production wished for by Baffin should be denied, but Inuit pressure (for jobs and royalties) made it relent, and together with the government said yes to an increase request from Baffinland Iron Mines Corp. The NIRB said that Baffinland did not show how it would soften the impact of additional dust along the tote road and of marine shipping out of the Milne Inlet port. Meanwhile, the review board began to look at a much bigger request for the construction of a railway between Mary River and Milne Inlet. Jobs and royalties, together with the geographical isolation and low population, will make this area a "company town" for as long as the ores last. Several foreign companies, including ArcelorMittal and possibly Tata, have been trying to acquire these assets.

GREENLAND: KVANEFJELD/KUANNERSUIT[19]

Not far from Baffin Island, in Greenland, which is still part of the Kingdom of Denmark although an autonomous region, the controversial Kvanefjeld/Kuannersuit proposed by Australian Greenland Minerals Ltd., would be one of the world's largest open-pit uranium mines and sources of rare earth elements. With rising temperatures due to changes in the climate, new mining opportunities are emerging because the Arctic shipping season is extending.

Greenland counts only about 40,000 inhabitants. There are plans for iron ore extraction, also for ilmenite mining (Dundas project, Chapter 15). The country gained self-governance from Denmark in 2009 and then welcomed foreign investment. Rare earth elements or metals have unique physicochemical properties which make them indispensable in renewable energy, communication technologies or electric vehicles. China has a particular interest in Greenland's deposits. Interest in Greenland's uranium resources is also increasing following a decision by the parliament, Inatsisartut, to change the zero-tolerance policy on nuclear mining, one of Greenland's most divisive political issues. The discovery of uranium at Kuannersuit (Kvanefjeld) in Southern Greenland dates back to 1956 and Danish exploration took place up until the 1980s, when the government dropped their plans to develop nuclear energy plants.

The Kuannersuit/Kvanefjeld Rare Earth–Uranium Project was first proposed by Australian Greenland Minerals Ltd. (GML) in 2007, and the company was granted access to commercial mineral exploration. The project is still in the planning phase, but is predicted to be one of the world's largest open-pit uranium rare earths mines, and the first mining project of its kind in the Arctic.

Already in 2008, GML confirmed large sources of rare metals but stated that the commercial mining project would only be economically feasible if the uranium sources existing in the same deposit were also commercially mined. This consequently influenced the Greenlandic parliament to lift their zero-tolerance policy against radioactive minerals by a narrow vote of 15 to 14 in 2013, which remains controversial. Following this, an agreement was reached in 2016 between the Danish and Greenlandic governments on the joint regulation of future uranium export. Danish Friends of the Earth NOAH had opposed the diverse EIA submitted.

Given the open-pit construction, there will be pollution from mining water and spills from processing materials, as well as dust containing radioactive materials risks affecting nearby populated areas, including the town of Narsaq and local sheep farms. Social impact includes dramatic changes to everyday life, to farming and to tourism.

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The project is opposed by multiple environmental justice organizations in Greenland and Denmark, including Urani Naamik (No to Uranium, Greenland), Avataq, The Ecological Council ('Det Økologiske Råd'), Sustainable Energy ('Vedvarende Energi') and Nuup Kangerluata Ikinngutai ('Friends of Nuuk Fjord'). In 2009, the association for opposition against uranium mining at Kuannersuit was founded in Narsaq, with over 50 members. In 2015, environmental justice concerns were formally raised in the 'Ajorpoq' report by the Inuit Circumpolar Council criticizing the public consultation of the project. These worries were re-affirmed in a statement by the UN special rapporteur on human rights and hazardous substances and wastes. By April 2021, election results showed Inuit Ataqatigiit, a left-wing environmental party opposed to the project, winning with about 37 per cent of the vote.

ICELAND: HYDROELECTRICITY AND ALUMINIUM[20]

This Arctic chapter started in Norway, went east completing the circumpolar circuit and now comes back to Iceland, a country that was peopled by Norwegian migrants 800 years ago. Iceland is a fascinating country with a population of only 300,000 people. The fights against dams for aluminium smelting have produced the documentary *Woman at War* in 2019. The case narrated here is only one of several similar ones in Iceland. The construction of the dam at Kárahnjúkar was a pivotal moment in Iceland's growing reaction against environmental destruction. In this sense, it contributed to the environmental movement on the island, but the dam and the Alcoa smelter were built. Aluminium production involves mining of bauxite and then alumina (with "red mud" as a by-product), and finally the smelting. Transnational companies thought about Iceland in terms of its hydroelectric potential, and the foreseen investments reached tens of billions of USD. However, it was stopped by popular resistance and the economic crisis of 2008.

In Iceland, the production plans did not involve bauxite mining but only concerned the last stage, the electricity-intensive smelting. The Kárahnjúkar hydroelectric dam is part of a complex of dams of 690 MW, the largest hydroelectric power plant in Iceland. It is located to the north of the glacier Vatnajökull. Its purpose was to feed electricity to Alcoa's aluminium smelter Fjardaál, at Reyðarfjörður. The conflict was because of the project itself and also because it was seen as part of a wider push for enormous investments in hydropower at very high environmental cost for the benefits of aluminium multinationals. The project was built by Impregilo-Salini, the Italian building firm that appears often in the EJAtlas (cf. Chapter 27). Opponents pointed out that the sediment from glacier water will fill the dam quickly.

The rivers that feed the hydropower plant are fed by one of Europe's largest glaciers. Since the dam and power plant were built, the paths of these highland rivers have changed. Valleys have been flooded by artificial lakes. Árni Finnsson, head of the Icelandic Nature Conservation Association, foresaw extensive sediment build-up in reservoirs, with high winds blowing dust onto vegetation and into settled areas with lowering water levels. The surrounding areas are important habitats for geese and wild reindeer. The project, named after nearby Mount Kárahnjúkur, involved damming the Jökulsá á Dal River and the Jökulsá í Fljótsdal River with five dams, creating three reservoirs. Water from the reservoirs is then diverted through underground water tunnels and down towards an underground power station. The Kárahnjúkastífla Dam stands 193 metres tall with a length of 730 metres.

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The Fjardaál aluminium smelter reached full operation in April 2008. Construction began in 2004 by Bechtel (for Alcoa) and the facility contains a smelter, cast house, rod production and deep-water port. The smelter employs 450 people and produces 940 tons of aluminium a day, with a capacity of 346,000 metric tons of aluminium per year.

The dams have been the frequent object of protests by environmentalists for many reasons. The area is within the second largest (formerly) unspoiled wilderness in Europe and covers about 1000 km^2. The project as a whole has been criticized heavily in the book *Draumalandið* by Andri Snær Magnason and subsequent 2009 documentary *Dreamland*. In 2013, *International Rivers* reported: "The impact the highland dam at Kárahnjúkar has on the lake Lagarfljót by Egilsstaðir in East Iceland is considered to be more severe than earlier anticipated".

CONCLUSIONS: RESISTANCE AND NETWORKING ACROSS EIGHT COUNTRIES

The Arctic is a growing commodity extraction frontier in the international division of nature. Far from a distant and exotic space, the Arctic is one of the hottest spaces at the heart of expanding international social metabolism. It will appear again in Chapter 15 (ilmenite extraction in Greenland) and in Chapter 27 (with TotalEnergy in Yamal and Gydan peninsulas). This chapter has considered about 20 cases of environmental conflicts on oil, coal, gas, metal mining, hydroelectricity for aluminium smelting and windmills. Almost all involve Indigenous peoples, often pastoralists relying on large herds of reindeer or caribou for sustenance, and a variety of national and international protesters. Most of them ended in failure for environmental justice, but some of the projects were stopped, at least for now.

Altogether, the countries involved practise internal colonialism in Scandinavia, Russia, Alaska and Canada. There are some efforts in Norway and in the US to leave some of the oil under the soil or seabed. There are new lawsuits against climate change. There are threatened Indigenous peoples able to appeal to international solidarity. But on the whole, the march of the extractivist economy is stronger in the Arctic than almost anywhere else. No matter the environmental fragility or the raising temperatures, extractivism increases helped by the ice melting. As elsewhere in the world, it is supported by coloniality and racism. What was the fur trade and the wood trade from the Arctic and Subarctic is now the trade in fossil fuels and metals. New ports are built for shipping bulk commodities in the new sea routes.

If we remember some of the figures in this chapter (30 million tons of iron ore per year in Baffin Island, 40 million tons of anthracite coal from Yamal peninsula, so much copper and nickel, so many millions of barrels of oil and tons of LNG) we realize that the Arctic will support an export pressure per capita of several dozens of tons per year, a world record.

The so-called Arctic paradox appears clearly in many cases: transport is facilitated by global warming with new sea routes, but sometimes it is made more difficult (sinking pipelines, melting ice and permafrost under the wheels of trucks). As a whole, climate change is helping to open up the Arctic commodity extraction frontiers, which in turn contributes to climate change. A new paradox is added – the Europeans knew since before 1900 that the greenhouse effect would increase because of industrial coal burning, and did nothing for nearly one hundred years, until the IPCC was formed in the 1980s. Now, the Europeans' solution is to intensify metal mining in its periphery, even to the point of sponsoring "research" projects on

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how to achieve a Social Licence to Operate to keep the natives quiet, as transnational mining firms look for metals for the electricity transition. A third possible paradox arises from the threat to the Gulf Stream (and temperate climates) in some Northern countries.

We see some networks being formed among Indigenous peoples (despite the government's resistance in Russia), such as RAIPON and the Inuit Circumpolar Council, and also intervention from national and international EJOs such as the groups of the confederation Friends of the Earth, Bellona and Greenpeace (which was founded in Canada in 1971 against nuclear bombs testing, and also in defence of whales). Commodity frontiers do not respect strict political frontiers. Those who resist extraction do not always know to which instances of governance to appeal: the UN with its various departments? The banks or corporations financing and running the projects? Or the provincial or national capitals of which countries? As a hypothesis, even in such a difficult geography as the Arctic the tenuous networks of resistance across borders mentioned in the EJAtlas confirm the existence of world movements for environmental justice. Research has been published by the EJAtlas team and collaborators in favour of this hypothesis of cross-national Indigenous-environmental resistance in the Arctic. (Hanaček et al. 2022).

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15. Oil Drilling in the Arctic National Wildlife Refuge, Alaska, USA (Bernadette Grafton), EJAtlas.
16. The oil threat to the ANWR was one of the 40 initially selected in 2015 by University of Michigan's Professor Paul Mohai and his students as the top conflicts most relevant of the US EJ movement since the early 1980s.
17. Mackenzie Valley Pipeline, Canada (Lauren Nelis), EJAtlas.
18. Iron Ore mining in Baffin Island, Nunavut territory, Canada (Joan Martinez-Alier), EJAtlas.
    Bell, J. (2018). Inuit org helps Baffinland overturn Nunavut review board's advice, *Nunatsiaq News*, 2 .
19. Greenland Mineral Ltd.'s Kuannersuit/Kvanefjeld Rare Earth-Uranium Project, Greenland (Louisa Mathies), EJAtlas.
20. Kárahnjúkar dam, Iceland (Joan Martinez-Alier), EJAtlas.

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8. India: Odisha, one of the states which are victims of "extractivism"

BACKGROUND: BAUXITE AND IRON MINING

We now move to South Asia, and later to East and West Africa, and America. To do research on the environmentalism of the poor, a South–South comparative approach is essential. Culturally, India and South America don't have much in common. They have a colonial past but their history and their religions are quite different. However, both subcontinents show hundreds of similar struggles of the environmentalism of the poor and the Indigenous, some of them with successful outcomes. India is the most populated country in the world (1.3 billion), while Latin America and the Caribbean have half that population. India has a vibrant environmental justice movement that has much to teach overseas.

Internally, the Indian economy exploits some states (such as Odisha, Jharkhand and Chhattisgarh) as providers of raw materials in a pattern of ecological internal colonialism, but internationally India is not subject to 'ecologically unequal exchange', contrary to South America and Africa. India's economy is not geared to cheap exports of raw materials, with some limited exceptions like iron ores. India is a net importer of fossil fuels. This is one difference. Another one is the population density, very high in India and not so high in South America. But there are many commonalities in the political ecology of India, South America and Africa (Figure 8.1).

India is the country where after the Chipko movement of the 1970s the notion of an "environmentalism of the poor" was born, in opposition to the "cult of wilderness" and the "gospel of eco-efficiency and ecological modernization" (Martinez-Alier 2002). Ramachandra Guha and I published *Varieties of Environmentalism. Essays North-South* in 1997, and in 1999 an article in the Austrian journal *Kurswechsel* with a title novel at the time: "Political ecology, the environmentalism of the poor and the global movement for environmental justice". This book as well as the EJAtlas itself intend to show that this movement for environmental justice exists through cross-national, cross-cultural similarities and differences. Environmental conflicts have common causes: the growth and changes in the social metabolism – whether the metabolism consists of sand and gravel mining, fossil fuel extraction, metal mining or biomass extraction, whether it furthers hydropower or nuclear power or windmills, whether it is for domestic consumption or for export.

I have lived two years in India since 1988: often in conjunction with conferences of the Indian Society for Ecological Economics. In this and the next chapter I tread familiar territory. The EJAtlas has 350 cases from India (by July 2021). I have revised many entries for India together with Daniela Del Bene and Leah Temper. Main collaborators have been Swapan Kumar Patra (at JNU in 2012–15), Brototi Roy and Eleonora Fanari (at ICTA UAB), Arpita Bisht (ISS, The Hague) and others like Arpita Lulla, Radhika Mulay (of Kalpavriksh)

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A. Grimaldos

Source: A. Grimaldos

Figure 8.1 *States of India*

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between 2016 and 2022. There is much information in the extraordinary CSE "green files" and the Land Conflict Watch database.

A long book on the practice of environmental conflicts and environmental justice in India as a whole with a focus on impoverished people as protagonists (Dalits and Adivasis, scheduled caste (SC) and scheduled tribe (ST), religious minorities and "low" caste) is waiting for an author. I choose here only three states: Kerala, Tamil Nadu and Odisha. Other regions appear in the thematic "transversal" chapters.

ODISHA: INTERNAL COLONIALISM

Odisha (formerly called Orissa), is an Indian state overlooking the Bay of Bengal, made up of rural and mountainous hinterland with relatively few urban centres and home to around 7 million Indigenous Adivasi people. The total population is almost 44 million (similar to that of Spain or Argentina). Population density is high.

Of the four big conflicts cases considered in the first pages of this chapter, two have succeeded in preventing the evictions of local populations and the extractivist investments and two have failed. Hence the suspicion that in Odisha, as in India in general, it is the national extractive industries (often private, sometimes state-owned) that more easily abuse the people, and not so much the transnational companies yet.

There were a series of conflicts on bauxite mining and aluminium smelting in Odisha that I followed from 2001 onwards with travel to Rayagada, Kucheipadar, Lanjigarh, drawing on help from B. P. Rath, Leah Temper, and Samarendra Das and Felix Padel (the authors of the book *Out of this Earth*). There is a moving documentary film, *Matiro Poko, Company Loko*, meaning 'Earthworm, Company man'. Political power was too asymmetrically distributed. However, some foreign companies had to leave, such as Alcan from Quebec and Norsk Hydro from Norway. One of the conflicts was won at least for the time being, that of the Dongria Kondh against the Vedanta company.

The Kashipur Struggle[1]

The state of Odisha is the largest producer of bauxite in India. After the economic liberalization in 1991, impulse was given for the "development" of the "backward states" with large forest covers and high concentration of minerals underneath, and tribal population inhabiting those forests. In March 1993 the new National Mineral Policy was announced opening the mining sector to private investments. The Utkal Aluminium Industrial Limited (UAIL) was formed as a consortium, originally as a joint venture between ALCAN (Canada), Hindalco of Birla Group (India), Tata of India and Norsk Hydro (Norway) to mine bauxite from the Baphlimali Hills of Kashipur block in Rayagada district and construct an alumina refinery for export. The open-cast mine was scheduled to produce 195 million tonnes of ore per year and the refinery was meant to have a capacity of 1 million tonne production capacity. The project, however, was resisted and delayed by the local Indigenous people in the area. Commonly known as the Kashipur anti-bauxite movement, it has a long and violent story, and is one of the historic environmental justice movements of India.

A paper by Patibandla Srikant (2009) from ISEC, Bangalore, traces the chronology of the Kashipur bauxite struggle. The multiple movements in Odisha were strengthened by the

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interactions between them. People of the Baliapal (anti-military rocket testing) and Chilika (anti-shrimp aquaculture) movements came to Kashipur and explained how they won their rights. When the people of Kashipur heard about the success of the protest against BALCO (Bharat Aluminium Company) and the leaders of Gandhamardan Suraksha Samiti explained the methods of protest against the BALCO, they were more motivated to keep the struggle alive. Many international and national solidarity groups were also crucial, like the ALCAN't movement in Montreal or the Adivasi-Dalit Ekta Abhiyan (ADEA).

In 1993 Utkal Alumina Industries Ltd. was established, and in 1996 UAIL visited the tribal village of Kucheipadar for a meeting during which 6000 villagers presented a memorandum to the District Collector, MLA of the constituency and to the management of UAIL. The PSSP, a political organization, organized a protest in front of the UAIL's office with 10,000 tribal people. In 1997, UAIL started construction of a resettlement colony near Dama Karola village. In August, the tribal people demonstrated against this, and in November people of Kashipur submitted a memorandum to the Chief Minister through the District Collector. The PSSP led a protest march with 5,000 people in Tikri demanding the withdrawal of UAIL.

In 1998, the PSSP conducted a referendum over UAIL across 40 villages. In November, tribal people armed with clubs, bows and arrows abducted three of Norsk Hydro's employees and one Indian official to Kucheipadar village. In 2000, a rally from Kucheipadar to Tikri was organized. In March, another rally was organized against UAIL, from Tolo Dhaska to Gorakpur. In December 2000, around 4,000 tribal activists blocked the All-Party Committee meeting and the BJD district president Bhaskar Rao from entering Maikanch village.

Opposition to the Kashipur bauxite mine was spearheaded by the Prakrutik Sampad Surakshya Parishad (PSSP) and several Adivasi-Dalit movement organizations in South Odisha (Kapoor 2006). PSSP had more than 1,000 members, many of them tribal, many of them women. Their protests were met with violent repression from the state – be it the police force or the goons employed by the mining companies. The PSSP (Council or Assembly for the Protection of Natural Resources) had given a call for Rasta Roko (a blockade) on 20 December. On 16 December 2000 the police fired upon Adivasis in Maikanch village of Kashipur block, killing three protestors, permanently disabling six and seriously injuring 30. The people had put up a barricade on the road at Maikanch, preventing a delegation of political leaders from attending a fake 'multi-stakeholder dialogue' organized by the company at Nuagaon village.

The firing resulted in mass uproar against the project, with the National Centre for Advocacy Studies (NCAS) sending an "Urgent Action Alert" to international human rights organizations. Four years later, in December 2004, the Rayagada District Collector P.K. Mehrda and the district Superintendent of Police Sanjaya Kumar led the police in a brutal attack on a people's demonstration near the proposed alumina plant of Utkal Alumina International Limited (UAIL) at Doraguda. Allegedly rape threats, tear gas shells and an aggressive lathi charge targeted more than 300 Adivasis and Dalits who were protesting. There were numerous such incidents over the years.

In October 2006, a panel of the Indian People's Tribunal headed by Justice S.N. Bhargava inquired into alleged human rights and environment violations by UAIL. The Panel members visited Kucheipadar which was the centre of the resistance. The panel recommended that the Government of Odisha should abandon the UAIL project. It was convinced that the bauxite-mining project by UAIL would have adverse environmental and health effects: water sources and agricultural land would be contaminated by toxic wastes, grasslands and forest

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land would be destroyed, and there would be pollution including the release of cancerous gases. The project would threaten local Adivasi communities by radically altering their livelihood options, agrarian lifestyles, cultures and identities.

After the firing at Maikanch in 2000, the Norwegian company Norsk Hydro ASA had withdrawn from the Utkal project due to the lack of progress on the construction of the refinery, which was soon followed by Tata. After the withdrawals, Hindalco and Alcan held 55 per cent and 45 per cent respectively of the UAIL shares, which Alcan finally sold off in 2007 due to many mobilizations in Canada. Currently, UAIL is a 100 per cent subsidiary of Hindalco, part of the Aditya Birla group.

The initial reason why the people resisted the project was because they were aware of the false promises of employment, basic amenities and infrastructure and development which NALCO had made in the early 1980s in the neighbouring regions for the creation of the biggest bauxite mine and refinery in the country. Although the protest delayed the project for 15 years, it was finally taken up in 2008. By December 2012, when 90 per cent of the construction was completed, the tribals still hadn't given up. They gathered again on the anniversary of the Maikanch killing to protest. The company had projected output of 1.5 million tonnes per year. "Utkal today is a world class asset and our captive alumina bagged by captive bauxite is proving to be a great strength. We believe that operational improvements ensure that better performance will be sustained in the coming quarters", said Satish Pai, Managing Director of Hindalco Industries in February 2017 (Menon 2005[2]).

Vedanta vs the Niyamgiri Hill[3]

This was a conflict of the Dongria Kondh against the Vedanta company on the preservation of the Niyamgiri Hill against bauxite mining. In 2003, Vedanta Resources, a UK-based mining company had signed an MoU with the Government of Odisha (GoO) to construct a 1 MTPA alumina refinery and a CFPP (75 MW – half a million tons of coal per year) at Lanjigarh in Kalahandi district to the north of Rayagada district. In September 2004, the Ministry of Environment and Forests (MoEF) gave environmental clearance to the company on the basis that it would not divert forestland. The alumina refinery project would require 3 million tonnes per annum of bauxite mined from the nearby Niyamgiri hills, sacred to the local Dongria Kondh.

Following this, in 2004 the clearances granted to the Lanjigarh alumina refinery were challenged by local activists and a special committee was sent to investigate and report back to the Supreme Court. The committee noted the lack of in-depth studies about impacts of the mine on the water regime, flora, fauna and on the Dongria Kondh. It also pointed out that the area came under Schedule V of the Indian Constitution, which prohibits the transfer of tribal land to a non-tribal group. While the arguments continued in the Supreme Court, the company started the construction of the refinery in 2006, causing the displacement of over a hundred tribal families, and the company then argued that the adjacent mine was essential to the refinery. In 2007, the Supreme Court granted permission to Vedanta subsidiary Sterlite to proceed with the mining, despite the mobilization of local communities, as long as they paid some compensation. However, forest clearance was still pending, following a report in 2010 by the Saxena Committee that argued that the local tribes should have the right to protect their rights under the Forest Rights Act. Finally, in 2013, the Supreme Court ruled that the local inhabitants should decide if mining in Niyamgiri hills would affect their religious and cultural rights.

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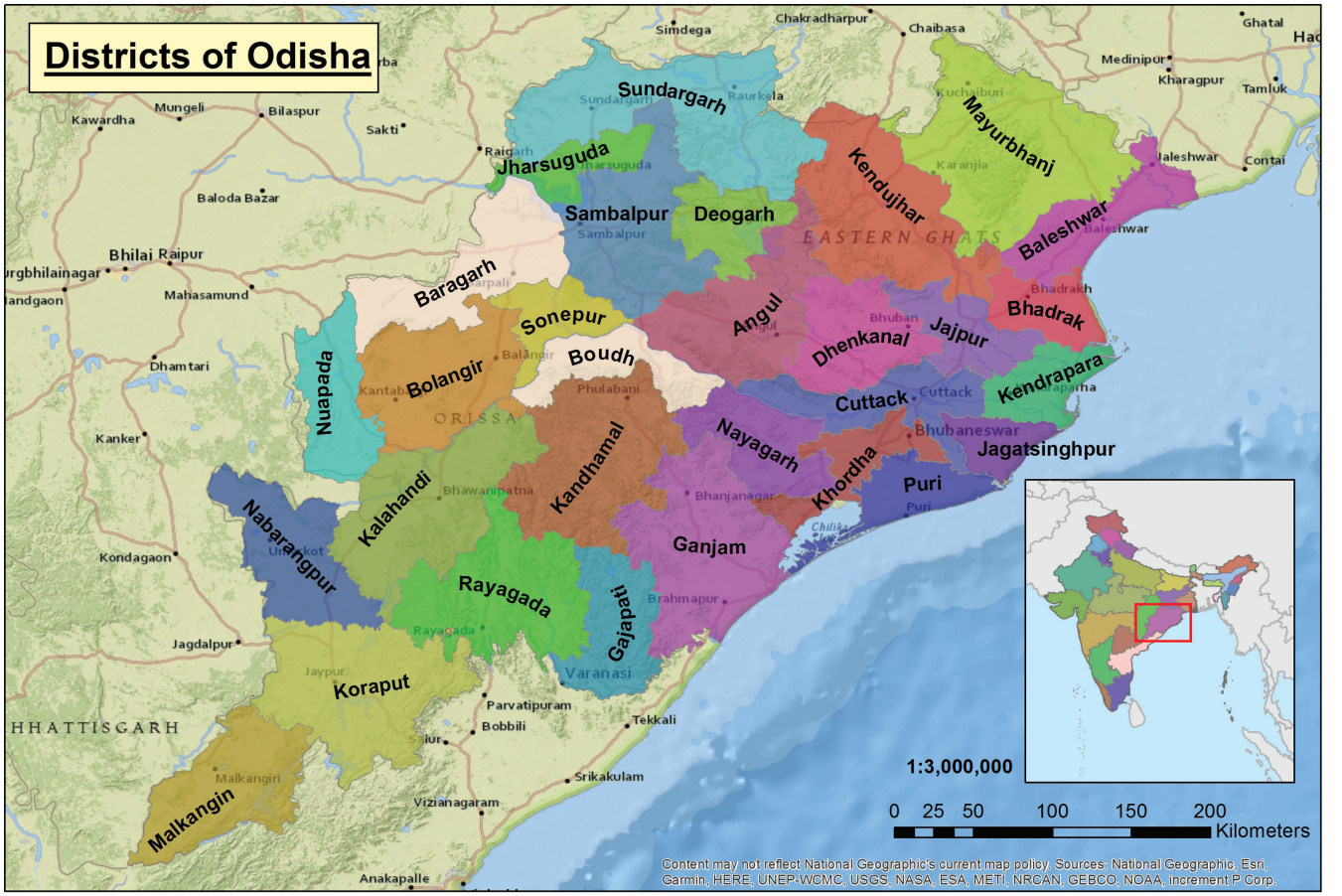

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Figure 8.2 *Districts of Odisha*

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The Odisha government drew a list of 12 affected villages in Rayagada and Kalahandi districts, to hold *palli sabha* (referenda in their local councils), which unanimously voted to reject the mining project. The rejection of mining in Niyamgiri meant Vedanta's gaze shifted to neighbouring districts that hold bauxite deposits of some 1.8 billion tonnes to feed the refinery. Whether the communities there will also be granted the same right to decide remains to be seen.

In 2017, Prafulla Samantara, activist in the area, was awarded the Goldman Environmental prize for his work against mining and dams. He is also a member of the Anti-POSCO Movement (PPSS) and of the National Alliance of People's Movements (NAPM). This award recognizes the defence of life that these communities are carrying out not only to preserve the environment, but also lives and livelihoods (Temper and Martinez-Alier 2013).

The Retreat of Steel Giant POSCO[4]

Near the coast, north of Puri, a ten-year struggle defending the territory against a steel plant project by South Korean Pohang Steel Company (POSCO) paid off in April 2016 when the company announced the end of the project. This was due to its long environmental litigation in the NGT (National Green Tribunal) and for the people's opposition over displacement, water and captive port issues composed of PPSS (POSCO Pratirodh Samgram Samiti) led by Abhay Sahu, with help from the Indian Supreme Court, one Communist Party of India and activists from all over India. Eleven years before (22 May 2005), POSCO signed a Memorandum of Understanding (MoU) with the Government of Odisha. The state authorities had committed that they would facilitate approvals for setting up a steel plant, a captive power plant, a port at Jatadhari and many other activities for the company. The enormous plant envisaged 12 million tons of steel upon reaching full capacity. The budget was Rs 50,000 crore, equivalent to US$ 10 billion.

However, POSCO's projects met with stiff on-the-ground resistance, legal tussles related to environmental approvals and grant of leases. Issues around land acquisition, forest rights, impact assessment, violence, compensations, conditions of rehabilitation of areas were of great concern. Attempts by the government to seize or buy peasants' land for the POSCO project provoked protests and led to increasingly bitter clashes with the police. Activists were arrested. Some people were killed in clashes with contractors. Finally, the government acquired 2,700 acres between 2012 and early 2015. A Black Day on 22 June 2015 was organized by the anti-POSCO people's movement (PPSS) asking for the withdrawal of the project and the annulment of the charges against more than 200 villagers. The cultivation of betel vines by the local population allowed them to survive and defend the land from POSCO and governmental appropriation.

The project construction was halted in 2006, but in 2012 it seemed it might start again. However, a UN Human Rights panel on 1 October 2013 asked it to immediately halt the project alleging possible displacement of 22,000 people in the Jagatsinghpur District and disruption in their livelihoods. Protests against land acquisition for the POSCO plant coupled with regulatory hurdles kept the proposed plant still, billed as the largest FDI in India.

Essar Pellet Plant, Paradip[5]

Paradip is a city also in Jagatsinghpur district. Near what was supposed to become the POSCO steel factory, the Essar factory was troubled by a combination of claims from

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environmental impacts and demands for employment. Hundreds of displaced villagers and workers asked for fulfilment of their demands, mainly on compensation, rehabilitation and employment.

Essar Steel is a steel manufacturer with a capacity at least of 10 million tonnes per annum (MTPA). Essar Steel's manufacturing facility comprises ore beneficiation, pellet making, iron making, steel making and downstream facilities including a cold rolling mill, galvanizing, pre-coated facility, steel processing facility, extra wide plate mill and a pipe mill. In April 2018, nearly 80 families who lost their homestead to Essar's steel project renewed their agitation for permanent employment. The protesting families squatted in *dharna* in front of the project gate, stopping raw materials from going in or finished products from coming out. In 2016, the company committed to provide employment to one member from each displaced family and gave a written undertaking to the district administration.

Dharanidhar Swain, who led the agitation, said: "As the company has ignored people's demand, we stopped production. The plant has been operational for seven years. But few of the affected families have jobs". In late August 2018 the protest continued and neither the local administration nor the company had taken any step to resolve the issue. Ratnakar Jena, a protestor, said, "We handed over our lands to Essar Steel at cheap prices. Whatever money we got from the sale, we bought trucks and engaged the vehicles in the company work. However, the company is now trying to engage vehicles from outside".

Apart from the 12 million tonne pellet plant in Paradip, the company had also planned to set up an Integrated Steel Plant (ISP) with 6 MTPA at Handia. The company is also setting up a 12 MTPA iron ore beneficiation plant at Dabuna and a 253 km slurry pipeline connecting Dabuna and Paradip.

Activists of Gramya Surakhya Samiti said the affected families of Handia are living in pathetic conditions. Claiming that Essar Steel was not providing employment opportunities, activists demanded rehabilitation of villagers and provision of permanent jobs. It was reported that if the government did not resolve the issue, the villagers would launch an agitation. The conflict therefore revolved around loss of land and housing by villagers, which was promised to be compensated for by secure employment in the factory. While the negative effects were certain, the compensation was uncertain.

Tata Built the Steel Plant Over the Dead Bodies of Tribal People in Kalinganagar[6]

Kalinganagar, north of Cuttack, is located under Sukinda and Danagadi blocks of Jajpur district of Odisha. It is rapidly becoming the new industrial hub of Odisha. The NH-200, connecting the iron ore/chromite belt of Jajpur and Keonjhar districts with the Paradip Port, runs through the area. Government planned to convert the area into a 13,000-acre industrial centre. Factories located in the area will produce about 25 million tonnes of steel a year. Along with the steel factories there will be an airport, a hospital, schools and new houses. Government of Odisha signed more than 40 MoUs with various private companies in the State. The Industrial Infrastructure Development Corporation of Orissa (IDCO) was responsible for developing infrastructure facilities for the proposed industrial complex. IDCO started acquiring land between 1992 and 1994.

The IDCO purchased land from people at a minimal rate while it sold the same land to the corporate beneficiary at much higher prices. Also, the compensation for land was given to only those who had *patta* on the land (legal document of ownership), leaving a huge section

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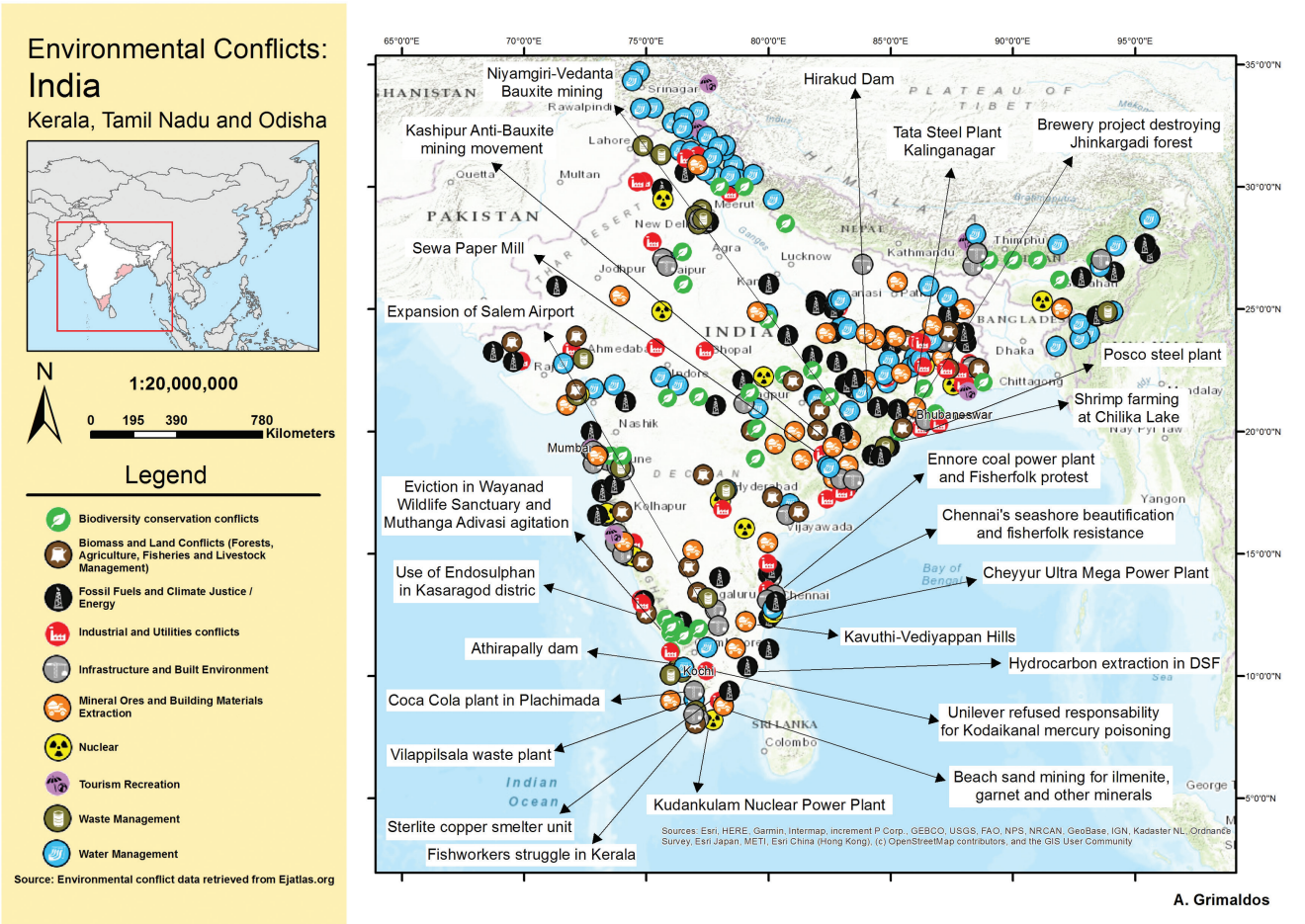

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Figure 8.3 *Conflicts in India from Chapters 8 and 9*

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of people uncompensated. Another section of people, who cultivated land as sharecroppers, didn't receive any compensation.

On 2 January 2006, the State police opened fire on a protest in Kalinganagar by local tribals against the takeover and seizure of their territory by a Tata Steel plant. Sixteen people died on the spot, four more died in the hospital and a police constable was also killed in the clash. The mining and building plans have made progress since then. Even 13 years later, in 2019, the deaths were still commemorated.

Hirakud Dam, a "Temple of Modern India" and a "Sacrifice Zone"[7]

The conflicts on metal mining and heavy industry arose in Odisha after some other older state-sponsored projects had come to life such as NALCO, and among them the most famous one is the Hirakud Dam, a composite structure of earth, concrete and stone. The reservoir was built on the Mahanadi River and located about 15 km upstream of Sambalpur. The project was the first multi-purpose river valley project in post independent India, to control floods, irrigation and power generation. On 13 January 1957, the prime minister of the Indian republic Pandit Jawaharlal Nehru inaugurated the dam, calling it 'a temple of modern India'. For this project, around 26,500 families from 369 villages were forcibly displaced. Among the total displaced 12,700 families were scheduled caste (SC) and scheduled tribe (ST). Many of them settled in parts of Sambalpur and the neighbouring districts and many migrated to Chhattisgarh and Jharkhand. Around 11, 000 families were settled in the fringe of the Hirakud Reservoir.

About 12,000 families got some form of compensation and about 9,000 families did not get rehabilitation and compensation packages. Affected families kept protesting about the delay. Although in the original plans there is no provision for water for industrial purposes, many companies got permission from the authorities to dig wells. Millions of farmers in Odisha who depend on Hirakud dam water to irrigate their agricultural land believe that diverting water for industry severely affected their livelihood.

In different stages, the Odisha Krushak Sangathan, a state-based organization, agitated on the issue of water distribution and priority to industries. They sent collective letters to the president of India, blocked roads, called for an open dialogue with the local political leaders and embraced "non-cooperation" protests. However, they got very little attention and were targeted with violence by police forces. Since the time of early construction, different traditions and cultures of the people of western Odisha were severely affected, and put the livelihoods of thousands of farmers and fishermen at stake. After 50 years, one might ask what people gained from the dam. Many families have never seen any form of compensation, and the ecology of the river has been put in great distress. Electricity is produced, the installed power is over 347 MW. The dam provides protection against flooding on the coast as far away as Puri.

TWO CONFLICTS ON BIOMASS

Ballarpur Industries in Jeypore, Koraput[8]

There are some conflicts on eucalyptus plantations in Odisha still unrecorded in the EJAtlas. Monocrop plantations of eucalyptus are not true forests. There are also conflicts on paper

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mills supplied with bamboo as raw materials. One conflict in Odisha related to a paper maker company, Ballarpur Industries Limited (BILT), India's largest manufacturer of writing and printing paper, took place at one of its manufacturing units: the 'Sewa Paper Mill', located in the village Gaganapur in Koraput.

It was reported in 2003 that people living in villages around the Sewa Paper Mill alleged that agricultural lands had been damaged by the toxic water released. Villagers claimed that they had to sustain heavy losses and they approached factory officials many times to demand they release their wastewater through a pipe, but no measures were taken. Then, over 10,000 people of Jeypore block in Koraput district decided to start a massive campaign against Sewa Paper Mill to protest air and water pollution. The factory closed down several times because of financial reasons. In late 2021 the Sewa Paper Mills, initially owned by Ballarpur Industries Ltd which had started in 1984, began operations again, now taken over by Mother Earth Resources Private Ltd.

Brewery Project Destroying Jhinkargadi Forest in Balarampur, Dhenkanal District[9]

This project was cancelled by the chief minister of the state, Naveen Patnaik, a day after the massive clash of villagers with the police and district administration, after more than 900 trees of the ancient Sal forest had been felled. This was due to massive media attention, involving political actors and social activists, and highlighting the role of the villagers in safeguarding the forest for decades. It was in practice an eco-feminist triumph by women using Chipko tactics. On 17 November 2018, hundreds of villagers of Balarampur village clashed with the police to prevent felling of trees in the old forest of Jhinkargadi, which has about 5,000 Sal trees. The trees were being cut down for a proposed liquor bottling plant by P & A Bottlers Pvt. Ltd. The ground-breaking ceremony of this brewery project worth Rs 102 crore was conducted by the chief minister Naveen Patnaik on 3 November 2018 through a video conference.

The trees of the Jhinkargadi forest have been nurtured for generations by the villagers of Balarampur (especially women). Everyone from the village is part of the traditional rotational routine, under which two men patrol 600 acres of forest each day to ensure smugglers and poachers aren't destroying it. Not only is the forest a source of livelihood to the villagers, it is also an important elephant corridor. According to Sushanta Kumar Dhala, secretary of the Balarampur Gramya Parichalana Parishad (BGPP): "Not only commercial plants are there; as many as 116 types of plants and medicinal trees are there". The forest has been a site of dispute since the state-run Odisha Industrial Infrastructure Development Corporation, the nodal agency for facilitating land for industries, showed interest in acquiring the land.

On 17 November 2018 three platoon police forces entered the forest at about 4 a.m. and cordoned off the entire area. Once the villagers were made aware, they immediately rushed to stop the cutting of the old trees. Women used the method of hugging the trees to stop them from being felled. "However, police pulled us away and cut the trees using electric saws", said Nibesini Biswal, one of the protesting women. Close to 1,000 trees were felled by the local administration, amidst protests, scuffles, arrests and live media coverage. Dhenkanal SP Santosh Kumar Nayak confirmed that the police arrested 13 people. The incident garnered a lot of media, activist and political attention. Environmental-social activists such as Prafulla Samantara, Debi Prusty and others addressed the villagers and expressed their solidarity. Many forest rights and tribal rights activists and advocacy groups such as Vasundhara also reported the incident on social media.

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Prafulla Samantara, known for his role in the Vedanta conflict, said, "The villagers had moved the National Green Tribunal for a directive to the state government against felling of trees on forest land. While the tribunal was scheduled to hear the case on November 20, the district administration decided to fell the trees". Due to all the protests and the visibility the brewery project was cancelled. Women from the village carried out the last rites by first performing a *puja* on the felled logs and then planting saplings of fruit bearing trees on the same patch of land vowing to protect the forests against industrial projects.

ONE COASTAL CONFLICT ON SHRIMP: CHILIKA LAKE[10]

The Chilika Lake, which is the largest brackish water and the most beautiful lagoon in India, had been a steady source of livelihood for decades for the scheduled caste people residing in fisher hamlets surrounding the lake in the districts of Puri, Khorda and Ganjam. During the late 1980s the worldwide rise in demand for shrimp exports to the United States of America, Japan and European countries was seen as a golden opportunity for Indian industrialists and politicians to increase their foreign exchange earnings. In 1986, the government of Odisha entered into an agreement with Tata to open a large aquaculture unit named Tata Aquatic Farm Ltd to lease 1,400 ha in Chilika for prawn cultivation. The government had a 10 per cent share in the deal which was opposed by the Janata Dal party. However, when the Janata Dal came into power in 1989, it merely changed the name to Chilika Aquatic Farms Ltd and increased the share to 49 per cent.

The local people mobilized with the initial help of Meet the Students (MTS), a group of radical youth from Utkal University at Bhubaneswar who regularly visited the fishing villages to make them more aware of the issues that the shrimp industry would bring. They also took steps to involve the Chilika Matsyajibi Mahasangha, a mass organization of 122 villages in Chilika, which works towards the protection of interests of the fishermen. The Chilika Bachao Andolan (CBA) was formally launched in January 1992 to work as an extension of Chilika Matsyajibi Mahasangha. Over the years, the conflict gained a broader spectrum and from just protests turned violent. The local people broke the embankment of the project and in return were beaten and jailed by the police. The movement did help to bring a Supreme Court verdict in its favour in 1996, when it was stated that all the shrimp farms within a 1,000 m of Chilika Lake must be destroyed. However, despite the verdict, the shrimp farming continues to flourish in the area. In 1999, four protesters, including a woman, were killed during the protest.

Another area of environmental injustice is the proposed Chilika (Regulation of Fisheries) Bill, 2011, following opposition from local fishermen. It was first proposed in 2001 and has provisions to make the illegal shrimp farming get legal status and thus promote non-traditional fishing in the lake. The issues are unresolved as the fishermen are still losing their livelihoods, the environment is being polluted and the protests continue. "Clashes over fishing rights in Chiilka Lake have been escalating both in number and intensity", says Biswapriya Kanungo, legal adviser to Chilika Traditional Fishers' Federation, whose membership runs into thousands. "Skirmishes or serious encounters occur once a month on average", he adds. Increasing population, overfishing, depleted fish stocks and environmental degradation have all taken their toll on the lake and its rich biodiversity. A related conflict is in Bhitarkanika, another coastal area in Odisha (Chapter 11).

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CONCLUSION: ECOLOGICALLY UNEQUAL EXCHANGE AND ENVIRONMENTAL CONFLICTS

From the conflict cases in Odisha collected in this chapter we find arguments to support the hypothesis of "internal colonialism" (also applicable to neighbouring states in India exporting to the rest of the country energy flows and a great tonnage of materials). This part of India is like northern Brazil, from the study of which Steve Bunker developed a theory of ecologically unequal exchange. When such extractive economies geared to raw material exports are established, with an essential role as providers of energy and materials together with a structure of local political power unable and unwilling to defend the local people and natural resources, then the social-environmental situation tends to deteriorate more and more. It is true that Odisha has a constellation of political parties of its own so that political submission to the central establishment of India is not so firm. Nevertheless, the metabolic structure of Odisha and neighbouring states is that of provisioners of raw materials and energy, and one consequence is the violence of some of the socio-environmental conflicts reported. Violent extractivism is not only motivated by profit-making and by social and political domination, it is also caused by the structure of social metabolism

A difference with northern Brazil is that in India we are dealing with heavily populated territories; in Odisha, with rich agricultural areas and coastal resources. The internal subordination to the Indian state implies that the plunder continues and grows in the absence of local power. The state and the local administration are more committed to so-called "development" than to the actual welfare of local peoples and the defence of the environment. Among the local people, there are many Adivasi. Odisha is a territory where strong Hindutva forces wish the cultural assimilation of Adivasis, to put it mildly. India has not ratified Convention 169 of ILO but has at least the Forest Rights Act. However, a village like Kucheipadar was simply eradicated by force. Norsk-Hydro and Alcan had to retreat but Birla came to the rescue.

The resistance to POSCO in Jagatsinghpur district, and to Vedanta in Kalahandi, has been so far successful, something truly remarkable, but the killings in Kalinganagar were done at zero cost to the Indian state and to the Tata company. Birla and Tata won (Indian companies) but Vedanta (from London) and POSCO (from South Korea) had to retreat. This supports the hypothesis of "internal colonialism". Dispossession of land and water also takes place in biomass conflicts, whether on eucalyptus plantations for paper mills or other investments. Opposed vision and interests on the use of coastal resources also give rise to conflicts, such as the Chilika lake and on the Bhitarkanika National Park. These are not at all remote areas from an Indian point of view: Chilika is featured in religious-tourist tours including the Puri temples and Konark.

In all the conflicts ad-hoc organizations appear, with names including Bachao Andolan, Parishad, Manch or Samiti, meaning collective or committee or "movement to save". The names are Indian, the inspiration often Gandhian, the *dharnas* and blockades are displayed in many other social movements in India and the mode of ad-hoc often ephemeral organizations is similar to that of other countries. In some more important conflicts, the National Alliance of Peoples' Movements also appears (which is supposed to cover a country of 1.3 billion people and thousands of local environmental and human rights movements). Exceptionally, the PSSP in Kashipur was a political party but also more than a political party. Many slogans, songs and documentaries testify to the strength of "subaltern environmentalism" in Odisha.

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Although Odisha grassroots environmentalism is similar in strength to that of other regions in India, perhaps it is handicapped compared to South India by a lower degree of democracy in the state administration and stronger repression. For instance, I was once recommended to meet Achyut Das of Agranamee, who had been active in Kashipur but who dared not come with me to Kashipur. He was threatened, and we only met in Bhubaneswar, he helped me. This was in 2002. There are places in Odisha where the system of governance is clearly not based on *panchayat* and *gram sabha raj* but on the power of the District Collector and SP *raj*. This is the case in other parts of India but not certainly everywhere. A District Collector (a colonial name) or district magistrate is a state officer who is in charge of a district. India has about 741 districts. A superintendent of police (SP) or deputy commissioner of police (DCP) heads the police force of a district. They take part in socio-environmental conflicts, often on the side of business. Their social distance to Adivasi populations is large. But some SPs in India, as we shall see, have been killed trying to stop sand mining businesses. "District collectors, SPs, and environmental conflicts – regional variations in India" – this would be a good theme for a thesis in political science.

NOTES

1. Kashipur Anti-Bauxite mining movement, India (Brototi Roy), EJ Atlas.
   Indo-Swiss NRM Programme Orissa, Police Firing in Kashipur (Orissa, India).
2. Menon, M. (2005). The battle for bauxite in Orissa, *The Hindu*, 20 April.
3. Niyamgiri-Vedanta Bauxite Mining, India (Leah Temper), EJ Atlas.
4. Posco steel plant in Odisha, India (Lucie Greyl, Daniela Del Bene and Joan Martinez-Alier), EJ Atlas.
5. Essar Pellet Plant, Paradeep, Odisha, India (Tapan Kumar), EJ Atlas.
6. Tata Steel Plant Kalinganagar, Orissa India (Swapan Kumar Patra), EJ Atlas.
7. Hirakud Dam, Orissa, India (Swapan Kumar Patra), EJ Atlas.
8. Sewa Paper Mill in Gangapur, Orissa, India (Swapan Kumar Patra), EJ Atlas.
9. Brewery project destroying Jhinkargadi forest in Balarampur village, Odisha, India (Brototi Roy), EJ Atlas.
10. Shrimp farming at Chilika Lake, Odisha, India (Brototi Roy), EJ Atlas.

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9. India: Kerala and Tamil Nadu

BACKGROUND

Kerala and Tamil Nadu are the two southernmost states of India, with higher incomes per capita than most of the country, a very ancient history and distinctive politics. In May 2019 these two states escaped the "saffron" landslide of Hindutva that engulfed the country's politics and gave Modi a second mandate as prime minister. These are two states which I have visited several times, consorting with activist-scholars such as John Kurien in Kerala and Nityanand Jayaraman in Tamil Nadu. The selection of environmental conflicts offered here attests to the strength of the environmental justice movement in Southern India and in India as a whole, beyond the old relevant short-list of the 1970s and 1980s, namely the Chipko movement, the Appiko movement, the Silent Valley controversy, the Narmada Bachao Andolan, the Bhopal struggle – important as they were. Just only in the "small" state of Kerala (population of 35 million) the EJAtlas gathers around 20 socio-environmental conflicts, some of them so significant internationally as the Fishworkers struggle. Some other cases in Kerala on biodiversity conservation are analyzed in Chapter 11.

KERALA

Fishworkers' Struggle in Kerala: against a Tragedy of Enclosures[1]

This was a protracted conflict (on marine biomass) between small-scale fishermen defending their commons and outside trawlers displaying more potent and economically more efficient engines and gear. A strong fishworkers movement, the Kerala Swathantra Malsya Thozhilali Federation, complained against mechanized trawlers, achieving some successes. A well-known leader was Thomas Kocherry (1940–2014) (Figure 9.1).

In the 1960s, there was an increasing international demand for prawns, leading the Indian government to promote export-oriented prawn fisheries. Prawns or shrimp can be obtained by fishing in the sea (endangering turtles and other species) or by aquaculture on the coast (often destroying mangrove forests). Mechanized boats were built and training programmes for fishermen on the use of "trawl nets" were introduced. The shift to export-oriented fisheries allowed the entry of capitalists into the fisheries sector, resulting in a gradual marginalization of the traditional fishing community. The new surge in mechanized fisheries had drastic repercussions for the coastal ecosystem. There was a double attack on the fishworkers: first, a reduction in the immediate catch, and second, a threat to the stability of future resources. As John Kurien wrote (1991), technical modernization was leading to a "tragedy of enclosures" because the artisanal fishing communities had been operating as sustainable commons and now the resources were being appropriated by outside trawlers. A movement started and

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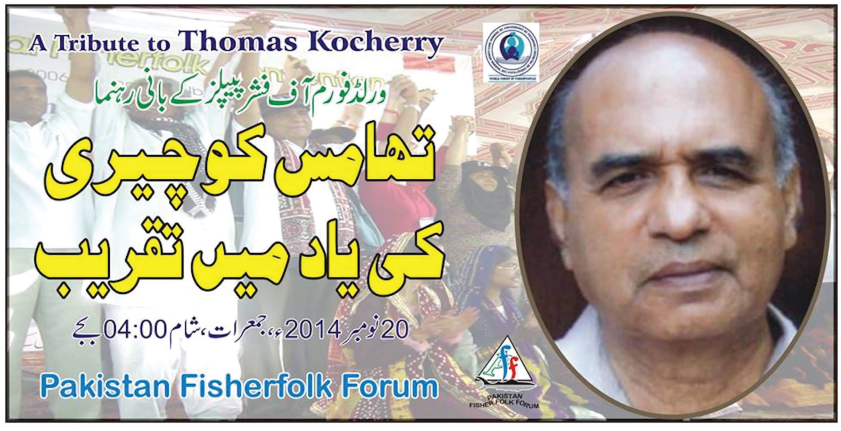

Figure 9.1 *Banner "An event in remembrance of Thomas Kocherry who fought for the cause of fishermen" (held on 20 November 2014 by the Pakistan Fisherfolk Forum in Karachi)*

clashes began. Between 1970 and 1985, more than 50 fishermen were killed due to attacks from mechanized boats.

Traditional fishworkers felt an acute need to organize themselves. There were already district-level organizations, which were controlled by local caste or religious organizations. In 1977, the Latin Catholic Fishermen's Federation (LCFF) formed a state-level organization and submitted a memorandum to the Chief Minister (CM) of Kerala, demanding that mechanized boats be allowed to operate only beyond 5 km from the coast. A second memorandum included a ban on monsoon trawling and the curbing of pollution of inland water resources. In November 1978, the LCFF called a relay hunger strike in Alappuzha, which continued for 59 days, in front of the collectorate (the office where the District Collector sits). The demand was for a comprehensive Marine Regulation Act. On 30 December 1978, a young fisherman called Babu was killed when a mechanized boat rammed into his boat. This shocked the fishing community, and a series of protest marches and retaliatory attacks began to take place. LCFF organized a jeep rally in Trivandrum, and Fr. Paul Arackal, the president, went on an indefinite fast. On 20 March 1980, the LCFF decided to change its name to Kerala Swathantra Malsya Thozhilali Federation (KSMTF), as it felt that fishworkers of all religions should unite under one banner. The term 'swathantra' (meaning 'independent') referred to its non-affiliation with any political party, and the term 'malsya thozhilali' ('fishworker') indicated the solidarity with workers in general. It was an intersectional movement, environmental and working-class at the same time. Fr. Albert Parasivala, a Catholic priest, was elected president.

On 24 May 1981, Kerala's government seemed to ban trawling during the monsoon season but an exception was made for the Neendakara area, which had the largest concentration of mechanized boats. This move was opposed by the KSMTF, and on 12 June 50 fishworkers entered the office of the Fisheries Director and were arrested. The next five days saw fishworkers picketing around the residence of the Fisheries Minister, and on 25 June Father Thomas Kocherry and Joychen Antony started an indefinite fast joined by many other fishworkers. On 4 July, the collectorate of Kollam district was surrounded.

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The KSMTF emerged as a strong secular trade union. The percentage of Hindu and Muslim fishworkers increased, and by the end of 1984 it had become the largest trade union among fishworkers. On 10 April 1984, KSMTF submitted a new memorandum to the CM. The government did not respond, and rallies, torchlight processions and door-to-door campaigns were organized at the grassroots level. On 2 May, a sit-in was organized in all districts, and on 15 May A. Joseph sat on an indefinite fast in front of the Kollam collectorate. More than 7,000 fishworkers courted arrest, and the national highway was picketed by over 1,000 women. After widespread media coverage, the CM finally agreed to meet the trade unions, assuring them of the ban on night trawling and a grant of 180 million rupees for welfare programmes.

Two Members of the state Legislative Assembly (MLAs) decided to join the hunger strike, and on 18 June 1984 all opposition parties staged a walkout from the assembly. This support for an independent fishworkers union was unprecedented. The CM met the assembly and announced a lump sum grant for education for fishworkers' children and a fishworkers' pension scheme. On 22 June 1984, KSMTF called off the 50-day agitation. In 1985, they continued the agitation, sending a new list of demands to the government. Between 25 May and 9 June 1985, they started the 'fill the jail' campaign (a *jail bharo andolan*), courting arrest, with almost 220 fishworkers serving prison terms. On 23 July, more than 10,000 marched to Neendakara and picketed the Fisheries Port Office, only to be arrested.

Again in 1988, marches were organized in seven districts demanding a ban on monsoon trawling and Fr. Thomas Kocherry began an indefinite fast. In Kerala's capital, the harbour was picketed, with 1,000 fishworkers in about 125 big country crafts surrounding the fishing harbour. On 23 June, the government proclaimed a ban on monsoon trawling, again exempting Neendakara. The agitation was called off. However, the government proclamation was never instituted as an official statute.

On 26 June 1989, an expert committee appointed to study marine fishery resource management in Kerala recommended a ban on monsoon trawling. The KSMTF organized indefinite hunger strikes and massive agitations. Finally, the CM announced the decision of the cabinet to ban monsoon trawling from 20 July to 31 August in the territorial waters of Kerala. The Kerala high court ruled in favour of the fishworkers. This was a huge victory for the movement. More recently, fishworkers opposed the growing push for FTAs, stating that such agreements work to the detriment of their interests. In 2009, a protest sit-in took place with the KSMTF openly opposing the free entry of imports into the Indian markets. Also, in 2009, the KSMTF and other fishworkers' trade unions formed the Kerala Fishworkers Coordination Committee to protest against the Indo-ASEAN FTA, which the government had signed (Menon 2001; Mathews 2011; Nayak and Vijayan 2006).

Conservation of Olive Ridley Turtles against the Sand Mafia in Northern Kerala[2]

This is a case of grassroots conservation of Olive Ridley turtles by local fishermen fighting against the sand mining industry in Kolavipalam beach. The "cult of wilderness" and the love for turtles came together with an environmentalism of the people based on livelihood interests but also on the changing social values of young fishermen. Kartik Shanker, an expert on turtles in India, and Roshni Kutty from Kalpavriksh, documented in 2001 the struggle by coastal villagers in northern Kerala. One of the major reasons in 2011 for the shrinking of the nesting ground was the ruthless sand mining taking place to develop a port by the Vadakara

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Municipality. All along the Kerala coast, construction of seawalls was preventing the landing of turtles returning to lay down eggs on the beaches where they were born.

In contrast with many other cases of "Conservation against the People" and even of militarized conservation (Chapter 11), this case brought the fishermen into alliance with conservationists. Initially, fishermen did not care about turtles and turtle eggs (except as food) but they became conservationists under the threat of sand mining and mangrove destruction. There is a documentary film, *The Turtle People* or *Aamakaar*, about this struggle of the people in Kolavipalam, in Iringal, near Payyoli. As Surendra Babu, leader of the turtle protection committee, puts it in the film: "If this beach is destroyed, they [the turtles] will find other shores, but if a village is destroyed, communities become extinct by becoming displaced".

Turtles ought to be protected during the nesting season from October to March. The fishermen allied themselves with conservationists and also found an alliance with the state Forest Department. Media publicity about their protection efforts spread awareness in neighbouring coastal villages. Most of the 8,000 villagers of Kolavipalam joined in the effort to save the turtles. Kartik Shanker explains that interest in turtle conservation in Kerala dates back to the early 1980s when the Calicut (now Kozhikode) branch of the Natural History Society recommended to the Forest Department that the stretch between Ponnani and Thalasserry in the North Kerala coast be protected. In the 1990s there was an organization called Marine Turtle Conservation Action that interacted with young fishermen in 1992, forming in Kolavipalam the Theeram Pakriti Samrakshana Samiti (Coastal Ecosystem Protection Committee). The committee was focused on turtle conservation but it was also involved in a campaign against sand mining in the nearby estuary, initiating legal action. Some support was obtained by officers in the Forest Department; the courts restricted sand mining but implementation was lacking despite some legal victories. The committee members received threats from the mining lobby but they became nationally known for their turtle conservation actions. Five acres of mangroves were restored in the estuary from 1998 onwards. Villagers first said: "we are protecting the turtles"; later they said, "it is the turtles that are protecting us".

Athirapally Dam in the Western Ghats: A Battle of Scientific Arguments[3]

Resistance has been going on for many years to the Kerala State Electricity Board (KSEB) proposal for the Athirapally 163 MW hydroelectric project, in the Chalakudy River at the Athirapally waterfalls situated 70 km from Kochi city. I visited this area in November 2017. Environmental groups, scientists and people's collectives opposed the project. The 80-ft-high falls are a part of the Chalakudy River and originate in the upper reaches of the Sholayar ranges in the Western Ghats. The region is deemed to be home to elephants, tigers, bison and sambar deer. Four species of hornbill are only seen here in the Western Ghats. It also has one of the highest levels of fish diversity with 85 different species of freshwater fish.

The Union Ministry of Environment and Forest sanctioned clearance for this project on 19 July 2007, but environmentalists have been against it because it will result in destruction of the riparian ecosystem. The proposed dam would affect 138 ha of forestland and the livelihood of tribal families who depend on the forest and river. Also, a stretch of 28.5 ha of riparian forest would fall under the submergence area, reducing or drying up the water-flow of Athirapally waterfall which preserves the ecology and attracts tourism in this area.

Opponents argued that before construction of any dam on the river, its EIA should be done in a scientific way, but there wasn't any. As happens so often in environmental conflicts, the EIA became a stumbling stone for the Kerala state electricity company. In 1998, the

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Athirapally hydro-power project got clearance from the Ministry of Environment and Forests (MoEF) without a public hearing. In October 2001, Kerala High Court directed the Kerala State Electricity Board and MoEF to follow all procedures for Environment Clearances. A public hearing was held in February 2002. But on the basis of a report prepared by the EIA agency – Water and Power Consultancy Services (India) Ltd., the MoEF sanctioned clearance to the project in February 2005. In March 2006, the Kerala High Court cancelled the clearance, and ordered the authority to publish the report and public hearing details. The Western Ghats Ecology Expert Panel (WGEEP), led by renowned ecologist Madhav Gadgil and constituted by the Union Ministry of Environment and Forests to suggest conservation measures for the Western Ghats, rejected the proposal. Biological values, tourism and Indigenous rights were altogether more valuable than 163 MW of electricity.

The project included a 23-metre-high and 311-metre-wide dam around 5 km upstream of the picturesque falls in the Vazhachal Forest division, in Thrissur. Water from this reservoir would be diverted 7 km downstream through a 4.5-km-long tunnel to a power house, located on the banks of a tributary of the main Chalakudy River. Another problem is that the project could displace Kadars, an Adivasi group of the area. They dwell in the forests near the Chalakudy River and their numbers are as low as 1,500 today given the forced displacement they have been subject to in the last 150 years owing to forest clearances.

The case of Athirapally is woven into the larger context of the Western Ghats. The Western Ghats stretches along the western edge of the Indian peninsula and spans across six states – Maharashtra, Goa, Gujarat, Karnataka, Kerala and Tamil Nadu. Gadgil, as Chairman of the WGEEP, had come up with a report in September 2011, which triggered a public debate on environment-development choices. Gadgil's report had demarcated areas to be notified as "ecologically sensitive" and had put key curbs on the mining industry. Listed by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) as one of the top eight biodiversity hotspots in the world, the Western Ghats area was in need of nuanced regulation of activities.

The MoEF roped in former Indian Space Research Organization chief Kasturirangan to head a High-Level Working Group to advise the government on how to conserve the Western Ghats. Gadgil pointed out the holes in Kasturirangan's report by saying that it would open the Western Ghats to economic exploitation. While specifically studying the Athirapally hydroelectric project, the Gadgil Panel found that 70 per cent of the EIA prepared for the project and the public hearings conducted were flawed; the High Court had repeatedly set them aside. The panel said that Athirapally fell in Ecologically Sensitive Zone 1, a zone where no new large dams should be permitted. Therefore, it should not be accorded environmental clearance. The people too were opposed to the project and nearly all 1,200 present at the second public hearing on the proposed dam had spoken against it. The River Research Centre (RRC)'s assessment pointed out a number of flaws. There was not enough water to generate the power as claimed. Power generation would also adversely impact the current irrigation capacity of the river and the scenic waterfall itself, and thereby the thriving tourism industry. The RRC was founded by Latha Anantha, an agricultural scientist who fought for the unhindered flow of rivers. She unfortunately died in 2017 at 51. The final decision is still pending.

Against the Dumping of Urban Waste in Vilappilsala Village: The Environmentalism of the People[4]

Vilappilsala village is located about 15 km away from Thiruvananthapuram (or Trivandrum), the state capital of Kerala. The village was selected for the dumping of urban waste generated

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from the city. The Left Democratic Front (LDF) government in 2000 established this centralized waste processing plant for the capital city, on about 12 acres of government land. The plan was given to a private company to install well equipped modern facilities to generate fertilizer from the biodegradable waste, and leachate treatment.

However, the city corporation generated about 300 tons per day, doubling the installed capacity. It was impossible for the plant to process such a huge amount of garbage. The dump site increased because of uncontrolled dumping, posing a heavy health hazard for the local residents. Meanwhile, the company responsible for the management of the dumping site stopped the operations and left the site due to the difference of opinion with the city corporation. People living in nearby areas alleged health damage like skin diseases and respiratory diseases. Seepage of waste materials and water from the site also polluted the nearby water sources. The local population joined hands to form a people's committee in January 2011, the Vilappil Janakeeya Samithi. However, the government did not pay attention to the people's complaints. In September 2011, the committee started a direct action blockade of the corporation's garbage trucks from entering into their village, and the city of Thiruvananthapuram faced lots of problems because residents started dumping their waste anywhere. In the meantime, the city corporation went to court and got court orders to open the site despite public protest.

Defying prohibitory orders, hundreds of local people of the Samithi gathered in front of the Sreekanda Sastha Temple to prevent the movement of garbage to the treatment plant. Women lined up to offer *pongala* (porridge made of rice, sweet brown molasses, coconut gratings, nuts and raisins) as in religious harvest festivals in Kerala and Tamil Nadu. The Samithi leaders held aloft a 31-day-old child, Mohammed Gulal, in front of press and TV cameras, announcing that the infant was the "leader" of the agitation. Due to protests the government was forced to close down the site despite the court's orders. This conflict on urban waste in landfills or incinerators, one of many in the EJAtlas, could be deemed as a half-victory for environmental justice in the sense that, first, the conflict became very visible and, second, the local opposition had a success although the problem itself was not solved.

Plachimada and Water Grabbing by Coca-Cola[5]

Plachimada is a little hamlet in Palakkad District. In 2000, Coca-Cola, under its Indian subsidiary Hindustan Coca-Cola Beverages Private Limited (HCCBPL), began operations at its bottling plant; HCCBPL acquired 34.4 acres of land (mostly paddy fields) for this purpose. On 25 January 2000, the Perumatty Panchayat (a local governing body whose constituency includes Plachimada) granted permission to build the plant. In March 2000, operations began. The Kerala State Pollution Control Board (KSPCB) granted the company a permit to produce 561,000 litres of beverage per day, with an average requirement of 3.8 litres of water for a litre of beverage. The source of water was primarily groundwater from about six bore wells and two open ponds, and about two million litres of water per day were extracted.

Within six months, the villagers complained that the water was unsuitable for drinking; it had turned milky white and was brackish. In the subsequent months, several villagers complained of unusual stomach aches, while farmers complained of wells emptying unusually fast, and crop yields decreasing. One well-known Adivasi activist was a member of the Eravalar tribe, whose biography is called *Mayilamma: The Life of a Tribal Eco-Warrior* (2019). The translator, R. Sreejith Varma, calls this conflict an example of "subaltern environmentalism"

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and quotes Mayilamma: "What is the point in saying that we are free if the land, water and air over which we have the right are not freely available to us? We are all slaves".

Corpwatch India, a public interest group, found high levels of calcium and magnesium in the water, caused by excessive extraction of water. On 22 April 2002, the "Coca-Cola Virudha Janakeeya Samara Samithy" (Anti-Coca-Cola Peoples' Struggle Committee) began its protest against the plant with over 1,500 people demanding its immediate shutdown. On 4 August 2002, the Samithy organized a rally and public meeting, with over 1,000 attendees starting their march from Palimukku. The Adivasi leader Veloor Swaminathan presided over the public meeting. He spoke about the experience of the struggle and the sacrifices and sufferings of the Adivasi, agricultural labourers and other affected people. After this rally, the pickets outside the plant continued unabated. In 2003, women from the Vijayanagaram Colony protested that their wells had dried up and complained that they now had to walk 5 km twice a day to fetch water. They also argued that the little which was left was undrinkable and when used for bathing it burned their eyes and led to skin complaints. It also affected their crops of rice and coconuts. Meanwhile, the struggle against the Coca-Cola giant took a decisive legal turn with a positive outcome. By 2005, new rules established by the Kerala Groundwater (Control and Regulation) Act took effect. In January 2006, the company began considering moving operations away from Plachimada, and no operations have taken place at the plant since.

Years later, under pressure from the National Commission for Scheduled Castes (NCSC), the Home Department registered a criminal case against Coca-Cola invoking provisions of the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989, for groundwater exploitation and pollution at Plachimada. Top executives of Coca-Cola in Kochi and Noida were summoned for questioning. The court could also impose a huge compensation package, if it found the company guilty. Finally, the company was accused of causing damage of Rs. 216 crore in the agrarian village. Over 200 SC community members signed the petition. There are other cases in India involving the Coca-Cola company.

The Plantation Corporation of Kerala and the Use of Endosulfan: Slow Death[6]

Kasargod District in Kerala is famous for its cashew plantations. Plantation Corporation of Kerala, a state government enterprise, cultivated cashew plant in the vast areas of this district. To protect this crop, since the mid-1970s the organochlorine pesticide Endosulfan was widely used and aerially sprayed on several villages in the district. The controversy emerged in the 1990s. People and animals residing in the villages near the plantations were affected by different kinds of illnesses. Rumours started that the aerial spraying of Endosulfan was the main cause of abnormal cases of cancer, skin disease, congenital deformities, sterility and other illnesses. The side-effects of pesticide spray in cashew plantations also spread into the neighbouring districts of Karnataka, adjacent to Kasaragod. This is a typical environmental human health conflict concerning human bodies more than their territorial rights (Navas et al. 2022).

As time passed, local activist groups became convinced that the illnesses were caused by Endosulfan. Environmentalists together with various groups formed the Anti-Endosulfan Committee to form a pressure group to ban the pesticide. According to an estimate by this Committee, about 9,000 people were affected in Kasaragod district. Over 700 lost their lives owing to various diseases triggered by the large-scale use of this pesticide, a persistent organic pollutant (POP). A global ban on Endosulfan was imposed, mainly promoted

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by the incidence in Kasargod. Environmental groups such as Pesticide Action Network and Thanal campaigned globally explaining the effects on human lives and the environment. The Pesticide Action Network (PAN) has been a coalition of around 600 NGOs, citizens' groups, and individuals in about 60 countries.

Sunita Narain, director of the Centre for Science and Environment (CSE), describes the development of the conflict in her biographical book *Conflict of Interest* of 2017. Sunita Narain had called this "slow death" referring to this and other cases of pollution in India, while Rob Nixon (2013) later called such cases "slow violence". On 31 January 2018, *The Hindu* reported that a leading social activist, Daya Bai, said that the Kerala government still ignored the suffering of mothers and children[7] (Figure 9.2). The victims of Endosulfan staged an agitation in January 2018, demanding that the State government implement the Supreme Court order issued in 2017 to disburse ₹5 lakh (less than US$ 10,000) as compensation to the families within three months. One year later (*The Hindu*, 30 Jan. 2019), Daya Bhai began an indefinite fast demanding speedy disbursal of compensation and rehabilitation. Mothers of several affected children took part in the agitation organized by the Endosulfan Peeditha Janakeeya Munnani.

Lakshadweep Islands Residents Complain against a "Political-Corporate" Nexus[8]

This is a conflict that reached its peak in mid-2021. Lakshadweep, also known as Laccadives, is a Union Territory of India. It is an archipelago of 36 islands in the Arabian sea, located 200 to 440 km off the Malabar Coast. Ethnically and linguistically similar to Kerala, Lakshadweep residents have strong links with this state. They are mostly Muslims. In 2021, there were several conflicts which had to do with the political party BJP plans in the islands (with 70,000 inhabitants). Some conflicts are linked to religion and food habits (Hindutva principles), and others to the impact on ecology and fisherfolk. On 8 June 2021, the following was reported:



Source: Monarama Online

Figure 9.2 Social worker Daya Bhai in hunger strike

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> Lakshadweep went on a 12-hour hunger strike protesting against the Union Territory administration for sanctioning "anti-people" policies. Residents held placards outside their homes, on charpoys and even underwater with slogans like "Revoke LDAR" (Lakshadweep Development Authority Regulation) and "Justice for Lakshadweep". People supporting the movement bombarded social media platforms with #SaveLakshadweep.

What was the protest about? New regulations were pushed by the Union Territory's controversial Administrator, Praful Khoda Patel. Residents were up in arms against the sweeping reforms to be imposed on them in the name of so-called development. First, Patel (a BJP militant from Gujarat) disregarded the threat from Covid and opened the island to tourists. This meant that Lakshadweep, which had been declared a Covid-free region, ended up with 6,847 cases until 24 May 2021. Moreover, Patel introduced the draft regulation for the creation of a Lakshadweep Development Authority Regulation (LDAR 2021), seen by the residents as an attempt to take over the small landholdings at the behest of real estate sharks. The islanders, 98 per cent of whom belong to the Scheduled Tribes, have been attempting to mobilize against these draft regulations, which state that any area in the island can be declared as an "area of bad layout or obsolete development" by the government, regardless whether it is inhabited or not. Over 3,000 responses were sent to the Administrator demanding that the draft regulations be withdrawn.

Members of the fishing community have held 'customary ownership' of land on the beachfront for centuries. The beachfront and lagoons, where the fishermen park their boats and dry fish, are linked to their survival and to the economic development of the islands. Naveen Namboothri, a marine biologist, stated: "These are the spaces where most of the tourism development activities will be concentrated, bringing them in direct conflict with livelihood needs of the local fishers". Large resorts and other facilities catering to tourists may pose a threat to the atolls' sensitive local ecology.

> Carrying capacities of these islands are very limited, particularly freshwater availability. So, the ecological cost of large developmental projects will be high on these fragile islands. […] Coral reefs play a very critical role in protecting these islands from adverse weather conditions. Damage to the coral reefs will leave islands extremely vulnerable to the impacts of climate change.

The government planning body (the Niti Ayog) and the Union Home Ministry made proposals to develop ten hotel projects under the garb of eco-tourism at Kadmat and Suheli islands since 2018, regardless of resistance by locals as well as environmentalists to such Maldivian type of tourism. The waters around the islands are home to a variety of threatened and endangered marine life, such as green turtles, sea cucumbers, giant clams and corals, which protect the shallow lagoons from the open sea, preventing beach erosion and protecting the islands' limited freshwater supply. One hundred and fourteen scientists from more than 30 universities and research institutes in India urged the stoppage of such tourism projects. Their petition points out that beaches and lagoons are where islanders fish for their daily consumption. Lagoon fish are the backbone of Lakshadweep's famous sustainable and Indigenous tuna fishery industry. The beaches are heavily used as the catch is processed and sundried on these sands. With tourism, locals fear that they will not be able to use the beaches or lagoons for their traditional livelihoods.

A "Save Lakshadweep Forum" (SLF) became active. For Alif Jaleel, a young sociologist from Lakshadweep, the administration's excuse of development is meaningless, as people in Lakshadweep are happy with their traditional lifestyle. "The only issue we have is the lack

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of sufficient healthcare facilities", he added. The region has an advanced literacy rate and the lowest crime rate in the country. Alif, who currently pursues his PhD at Pondicherry University, feels a harmful "political-corporate nexus" is at play in Lakshadweep. Besides, he said, Lakshadweep has a unique cultural and religious identity that does not fit well with the Hindutva idea of "monolithic Indian culture" advocated by the RSS and BJP. The actions of the Administrator seemed to be part of a three-pronged strategy – pave the way for big players in the tourism sector, restrict cultural-religious freedom, and cut off links with Kerala.

TAMIL NADU

I now start the description and analyses of some environmental conflicts in Tamil Nadu, a state whose capital is Chennai (formerly Madras) and with a population of over 80 million. The Tamils have a very ancient civilization. As for Kerala, other conflicts from Tamil Nadu will appear in some of the transversal chapters. Here, I have chosen mainly mining and industrial conflicts, including nuclear energy. Some private companies appear (Jindal, Vedanta) as Tata and Birla have appeared in the Odisha chapter, but also other powerful state companies.

Iron Ore Mining in the Kavuthi-Vediyappan Hills Stopped[9]

In March 2005, the state-owned Tamil Nadu Industrial Development Corporation (TIDCO) entered into a joint venture with Jindal Vijayanagar Steel Ltd. (JVSL) to form Tamil Nadu Iron Ore Mining Corporation Ltd (TIMCO) aimed at the extraction of 1 million tons of iron ore per year. The total iron ore reserves in the region are estimated at 75 million tons of low grade (47 per cent) ore at Kavuthimalai hills and 35 million tonnes at Vediappanmalai hills. By 2016, owing to social mobilization and the involvement of multiple actors, the project was suspended for over 11 years. The last verdict by the Madras High Court ruled against the initiation of mining operations. However, the final decision was still pending with the Supreme Court of India. TIMCO was formed with the agenda of mining low grade iron ore in Northern Tamil Nadu. The initial forest clearance applied for by TIMCO was for clearing 638 ha of forest land in Kanjamalai Reserved Forest in Salem district, and 325 ha in Kavuthimalai Reserved Forest in Tiruvannamalai district. Civil society organizations complained through objections to the EIA, litigation in the courts, hoisting of black flags and street marches – such as the Kanjamalai Padagap Iyyakam, the intervention of the activist Piyush Manush, the Nanadalala Seva Samithi Trust, and the Tamil Nadu Vivasayigal Sangam. There was also support from strong political parties: M.K. Stalin, the Dravida Munnetra Kazhagam (Dravidian Progressive Conference) (DMK) (*The Hindu*, 12 April 2014). The hills also hold religious significance, serve as the source of various springs and support local livelihoods of 51 villages. The tailings dams could become dangerous. There were therefore persuasive social and environmental values deployed against the economic short-term gain from iron ore mining, and the courts were responsive to such arguments.

Complaints against Oil and Gas Extraction and Pollution in the Cauvery Delta[10]

On 15 February 2017, the central government Cabinet committee on economic affairs had approved the award of contracts for exploration of 44 small oil fields across India. Neduvasal,

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a fertile village of the Cauvery delta in Tamil Nadu, is one of the 31 contract areas. These fields were offered under a new policy for small oil fields known as the Discovered Small Field (DSF) policy launched in 2015 to unlock the hydrocarbon potential of small fields. This project was part of Prime Minister Narendra Modi's plan to reduce oil imports by 10 per cent by 2022. The villagers of Neduvasal have a healthy multi-crop farm economy and they fear that the project will disturb the environment and their livelihoods. They are protesting the project fearing the oil spills, as already happened in that area. In 2019 Oil and Natural Gas Corporation (ONGC), India's state-owned hydrocarbon explorer and producer, was planning to drill around 104 wells in its "Cauvery asset". Depending on the local opposition's strength it might become a "stranded asset".

Agitations in the region began soon after the approval. Drought hit farmers, and college students and scientists protested this project claiming that it could lead to an ecological disaster. There was a fear of displacement of farmers, occupation of cultivable land, impact on agriculture, saline water intrusion, contamination of the groundwater system and of soil. Some believed this project was tapping into methane and shale reservoirs, which have larger impacts. A statutory environmental public hearing was to be held under the Environmental Impact Assessment Notification (EIA) of 2006. Nityanand Jayaraman, an environmentalist, filed a Right to Information petition. While the response showed that the company had not prepared an EIA report, it also refused to share copies of the environmental clearances secured for the project. Union minister Pon Radhakrishnan and state minister C. Vijayabaskar held talks with the villagers on 9 March 2017, assuring them that a meeting would be arranged with Petroleum Minister Dharmendra Pradhan. At the meeting, he assured them that the project would not be carried out against their will. Subsequently the first phase of the 22-day strident protest was called off. But in April the Union government signed an agreement with Gem Laboratories for the exploration in the Neduvasal DSF. The agitation stirred back.

Though the contract is with Gem Laboratories, the villagers have mainly been targeting ONGC as it remains the largest driller in the Cauvery basin. ONGC had started work in Neduvasal in 2007. These wells were now handed to Gem Laboratories. By 1 March 2019, the Madras High Court dismissed a petition regarding this case. According to the petitioner, the hydrocarbon excavation project in Neduvasal was wrongly awarded to Gem Laboratories. Wells dug by ONGC in the Cauvery region caused damage to farmers, and similar hydrocarbon projects had contaminated groundwater and surface water in other countries.

ONGC, a state company, has been exploring the Cauvery basin since 1958. It leases land to the tune of 5 acres for a well, paying Rs 63,000 for an acre of a paddy-field and Rs 72,000 for cane fields. In Kathiramangalam, a village in Tamil Nadu's Thanjavur district in the Cauvery delta, villagers and activists have been protesting ONGC's activities. The company has obtained 700 oil wells in Tamil Nadu and operates 183 of them. The well in Kathiramangalam has been in operation since 2002 and it pumps out 13,000 litres of oil and 38,000 m^3 of gas each day. According to the villagers, these wells have been contaminating and depleting the groundwater. Locals allege the probability of Coal Bed Methane mining occurring. The protest was intensified by an oil spill that occurred on 30 June 2017. Examination of soil, groundwater and surface water samples from Tamil Nadu's Thanjavur, Thiruvarur and Nagapattinam revealed that hydrocarbon operations were harming the environment. It added that the ONGC had not employed the best international practices while responding to the oil spill in Kathiramangalam on 30 June 2017.

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Villagers refused to allow ONGC officials to fix the leak. In return, the police lathi-charged protesters, arrested ten people and booked them for sedition under the "Goondas" act. A few protestors went on a hunger strike demanding the release of those arrested. Around 200 residents protested by setting up a community kitchen in the open yard of a temple and used firewood for the same instead of LPG supplied by ONGC. Over 3,000 shops were closed in Kumbakonam and adjacent towns in support of Kathiramangalam residents (Figure 9.3).

Villagers claim the contaminated groundwater is affecting their children and cattle causing skin diseases, fever and even cancer. Water pumped out from hand-pumps and bore-pipes is "muddy" and sometimes smells of rotten eggs, indicating that hydrocarbons from the drilling site could have mixed with groundwater. The oil spill has reportedly led to spread of contamination to public water courses and the Velloor irrigation canal.

By June 2021 a rumour over an invitation for extraction of hydrocarbons sparked protests once again at Neduvasal, in Pudukkottai district. Farmers staged protests and raised slogans against pipelines planted at Karukakuruchi village, 5 km from Neduvasal. It must be noted that Neduvasal falls under the Protected Special Agricultural Zone (PSAZ) which was passed by the state government in 2020, prohibiting industries from taking up non-agrarian projects in the delta region (*New Indian Express*, 13 June 2021). Pudukkottai is a dry region but the villagers toiled for around 30 years, used borewells extensively, and changed the landscape. Neduvasal's fertile soil now grows paddy, groundnut, pepper, cocoa and cucumber. And so, the villagers fear losing their land, crops and livelihood to the project.



Source: Dharani Thangavelu, MINT

Figure 9.3 *Translation: "Release all our 10 volunteer comrades without any condition. Until then we will continue our fast"*

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An Ultra-mega-coal-fired Power Plant between Pondicherry and Chennai, Stopped[11]

Since coal burning for electricity has grown so much in India and the world, it is not surprising that chapter after chapter give instances of conflicts related to Coal-Fired Power Plants (CFPPs). Here we focus on only one of them, in Cheyyur, located on the coast between Chennai and Pondicherry. This CFPP was to rely on imported coal (probably from Indonesia and Australia), in a pattern typical of India's "transition to coal" based both on domestic extraction and increased imports. The coal commodity chain starts at the mining extraction frontiers, it continues with transport and ends up burning in the CFPPs producing electricity, ashes and carbon dioxide.

The Ministry of Power of the Government of India launched an initiative in 2005 to facilitate the development of Ultra Mega Power Projects (UMPPs) of enormous capacity. The aim was to enhance the capacity at both the coal pitheads and coastal locations aimed at delivering power at competitive cost to consumers by achieving economies of scale. Central Electricity Authority (CEA) was the technical partner, and Power Finance Corporation (PFC) was the financial partner. The Government of India identified Cheyyur in Kanchipuram district as one of several sites for a 4,000-MW UMPP using imported coal and super-critical technology, increasing the efficiency of the conversion of thermal energy into electricity. The coal would be brought in through a captive jetty-cum-port located between the fishing villages of Panaiyur Periyakuppam and Panaiyur Chinnakuppam.

A coal stocking yard capable of storing 310,000 tonnes of coal would be constructed on 83 acres of coastal land. The project would destroy wetlands and mangrove forests. A 6.5 km conveyor belt running over dunes, fields, orchards, densely wooded areas and water bodies would carry the coal to the power plant. The land requirements of the power plant and its ash pond would be over 400 ha. The Ministry of Power aimed to develop the UMPPs on a Build Own Operate (BOO) basis, through the Power Finance Corporation Ltd (PFC). For the Cheyyur project, PFC set up a Special Purpose Vehicle (SPV) called the Coastal Tamil Nadu Power Limited, based in New Delhi. The SPV was solely meant to acquire land, perform the EIA, obtain the various clearances and hand over the project to a private party winning the bid for the project, thus saving it from different troubles.

Villagers alleged that a number of false representations had been made in trying to get clearance for the project. These included claims such as non-existence of any sensitive ecosystem and the stability of the shoreline. A public hearing for the Power Plant and Ash Dyke area was held in July 2010. The Expert Appraisal Committee recommended the project for clearance in May 2013. This expert recommendation was contested. The officials tried to allay the fears of farmers, stating that thorough EIA reports had been carried out and there would be no threat of massive displacement; fishermen would be able to continue with their fishing activity. But the ultra-mega CFPP was not built. According to Sourcewatch, in December 2018 the Power Finance Corporation submitted an online application to the India Ministry of Environment, Forests and Climate Change (MoEFCC) to change the source of coal for this planned CFPP from imported to domestic coal.

Massacre at Sterlite Copper Smelter in Tuticorin[12]

Near the southern tip of India, a very bad case of industrial pollution and violent repression culminated in a massacre by the police in May 2018. After 20 years of complaints, thousands

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gathered in Thoothukudi district asking for the copper smelter to be shut down. Police killed 13 demonstrators in May 2018, opening fire on a rally marking the hundredth day of demonstrations. The following day another person died from a rubber bullet. Dozens of people were wounded. The government of Tamil Nadu then asked for a definitive closure of the plant.

The background is as follows. The 'Anti-Sterlite People's Committee' had protested against the company Sterlite Industries (India) Ltd since March 2013. The factory belongs to the Vedanta Group. On 23 March 2013, many people from neighbourhood areas fell sick following a noxious gas leak. This led to protests in which over 5,000 people participated, a *bandh* (strike) was called and the town was shut down for several days. A sensor in the smelter's smokestack showed sulphur dioxide levels were more than double the permitted concentration. This resulted in temporary shutdown of operations of the plant. However, the Supreme Court of India eventually permitted the plant to restart operations under the condition of a payment of INR 100 crore (~15 million USD at the time), to compensate for polluting the surrounding land and water sources (Ruiz Leotaud 2018; *Foil Vedanta* 2018).

Following the protest, Tamil Nadu Pollution Control Board issued a notice directing the Vedanta group company to close the plant. Seventeen years before, in 1996, the copper smelter had begun operations in Tuticorin (*Newsclick* 2018; *Foil Vedanta* 2018). Protests against the plant began almost immediately, with hundreds of fishermen blockading the port to prevent unloading of copper ore. However, this did not prevent operations. In July 1997, 165 women fainted as a result of a toxic gas leak from the smelter, and some of them later had miscarriages.

Since then – over a period of more than two decades – villagers and local residents protested against noxious sulphur dioxide leaks and bad effluent management (*The News Minute* 2018). Fathima Babu was one of the leaders throughout this period. In September 2017, the National Green Tribunal found that the Sterlite plant was responsible for dumping copper slag in the Upper Odai River and causing the blockade of the river stream. The judgment also revealed that the plant had operated without authorization under the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008, between 2013 and 2017, and was ordered to compensate the affected villagers for the pollution.

There was occasional resistance until 2018, when the announcement of an expansion of the plant drew public anger. The plant was set to double the smelter's capacity from 400 kt to 800 kt per year within the next 24 months making it "one of the world's largest single-location copper smelting complexes" (Ruiz Leotaud 2018). Protests re-emerged after residents called for an indefinite *dharna* (protest) and hunger strike on 12 February 2018. Villagers had petitioned the district collector seeking closure of the unit, but no action had been taken. After top district officials failed to reach an understanding, around 250 people began an indefinite fast (*The Indian Express* 2018). Eventually, over 500 people, including many women and schoolchildren, blocked the company gates until they were arrested on 14 February. Since then, protests went on day and night in the villages surrounding the plant worst affected. On 24 March 2018, the movement escalated with over 15,000 participants not only demanding the halt of any further expansion of the project, but also calling for a shutdown of existing operations (*Newsclick* 2018; *Foil Vedanta* 2018; *Scroll.in*. 2018; *The Hindu* 2018). The plant is located beside the fragile Gulf of Mannar, where toxic waste has damaged fish populations and the livelihood of thousands of fishermen. "There are a lot of environmental dangers as well as health dangers, particularly cancer. Almost every house is affected by cancer. Children are the most affected", Fathima Babu of the Anti Killer Sterlite People's Movement said (*The News Minute* 2018).

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Black flags were put up in some houses, making their view of the copper smelter unit clear (*The Hindu* 2018). Meanwhile, a number of Tamil people held a protest outside the home of Vedanta Group chief Anil Agarwal in Mayfair, London, in solidarity with the protesters in Tamil Nadu. The protest in London was organized by Foil Vedanta, Tamil People in the UK and Parai – Voice of Freedom. British Tamils armed with traditional Parai drums shouted slogans, "*Kekudha Kekudha, Tamizhar kural kekudha?*" (Can you hear? Can you hear? The voice of the Tamils?) on the streets of London (*Foil Vedanta* 2018).

The Beaches of Chennai[13]

Urban conflicts have grown over access to the beach and the rights of fisherfolk who mobilize against gentrification. Among several conflicts on the use of beaches in Chennai, we can mention the removal of fisherfolk from Marina Beach in 1985, and later on the project for the Elevated Beach Expressway after 2008.

In Nityanand Jayaraman's words, in Chennai, "between a landward moving sea and a seaward moving city, we are crowding out fisherfolk and offering them up as a sacrifice to the next cyclone or tsunami". Historically, the Madras seashore was viewed as a dangerous place for housing. The fishing community lived on beaches. When the city was formally founded by the British, Chennai's beaches were empty except for small fishing hamlets. The British "developed" the northern beaches to serve the commercial needs of the port. In colonial times, the beaches to the south were left untouched, although boulevards and "garden" homes were built along the coast, as in Annie Besant Nagar. However, the growth of the metropolis has produced tension with resident fisherfolk, because of the grabbing of the coastal commons. Coastal properties became prime real estate. While the Elevated Beach Expressway was defeated, the encroachment on the beaches by private developers and urban infrastructure, and the displacement of fisherfolk, continues. Today (as we shall see next) while to the south there is gentrification, to the north there is an awful concentration of polluting industries and coal power stations at Ennore creek.

Ennore Creek – a Sacrifice Zone Destroying *Poromboke* Lands[14]

There is a sacrifice zone with coal power plants, chemical industries, a port and a landfill. It is situated on a peninsula and is bounded by Ennore creek and the Bay of Bengal. The north–south channels of the creek connect it with Pulicat Lake to the north and to the Kosasthalaiyar River in the south. Three state-owned coal-fired power plants (CFPP) are under operation. The site hosts several other polluting chemical industries, including painting, fertilizers, cement and pharmaceutical ones, as well as a landfill.

In the last decades fisherfolks, environmentalists and citizens have complained. Most recently, fishers are protesting both the destruction of mangroves due to encroachment and pollution by industries because fishing is severely affected. The industries are expanding; apart from the three operating CFPPs, another one has recently been approved. Within 10 km, there will be 6,000 MW of CFPPs. All have environmental clearances but environmentalists argue that there is a rainfall of ashes. Clearance by the Tamil Nadu Energy Company Limited (NTECL) proclaims that the "Boundary for the proposed power project shall be outside the CRZ [Coastal Regulation Zone]". But the plant boundary encloses mangroves. This industrial

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hell of fly ash and fumes is far from the eyes of the city dwellers, who benefit from the electricity. Instead, the people living here are polluted and displaced.

Workers who have at once been employed to construct one of the power plants, now live with their families in miserable huts next to toxic fly ash dumps, without any facilities (water, sewage or electricity). Environmentalist Nityanand Jayaraman reports that one Odiya worker from Keonjhar said: "We came here more than 15 years ago to build the power plant. We used to live there", he said, pointing inside the plant. Sivanpadai Veethi Kuppam, an inland fisherfolk village, has been devastated by pollution, ill-health and dwindling catches. There are hardly any fish in the creek now. Those with boats sail to less polluted waters to fish. Others who use hand-cast nets walk along to the river mouth more than 8 km away.

Years ago, this area was home to mangroves and fishing communities. Today, the whole site is highly contaminated. There are signs such as "This land belongs to NTECL" which are a lie, as this was never land but water and wetlands. These wetlands are categorized as "poromboke"– a Tamil word meaning "the commons" that has become pejorative, used to describe people or things that are totally worthless.

The Ennore wetlands were very valuable, a healthy ecosystem with water, life and livelihoods, and excellent flood mitigators to accommodate rain waters and tidal surges. Converting them into industrial paved real estate will exacerbate flooding and deflect the impact of storm surges to less resilient areas. Ennore does not have publicly available data on air pollution, "a potent amalgam of ammonia, coal, sewage and diesel, mingling with the salty sea breeze. The thermal ash spewed by power plants makes it unbreathable. Fly ash contains trace quantities of toxic heavy metals and silica that accumulate in the lungs" (Chandrasekhar 2018). Local groups appeal to the courts from time to time.

Already some years ago, on 31 December 2015, *The Hindu* reported that "Fishermen took to the streets protesting against the destruction of mangroves in the Athipattu area by a contractor engaged by Ennore Port (officially renamed Kamarajar Port Limited, KPL)". As severe floods had recently affected Chennai, the fishermen claimed that mangroves were crucial for limiting damage during cyclones. Also, this vegetation would attract prawns, a major source of livelihood in the area. According to A. Venkatesh, president of Mukadhwarakuppam Kadal Meenavar Cooperative Union, a sizable area of mangrove vegetation had already been levelled by dumping rubbish. The Port faced similar allegations when activists claimed about 400 acres of hydrologically sensitive wetland area was being dumped with the spoils of dredging as part of the Port's development activities. Venkatesh said to *The Hindu* that "This activity is also a violation of CRZ notifications".

The ongoing conflict produced a famous Carnatic song by TM Krishna to arouse people into preventing environmental degradation and reclaiming the word "poromboke".

Mercury Poisoning by Unilever in Kodaikanal: Working-class Environmentalism[15]

Another case of industrial pollution is that of Unilever's thermometer plant in Kodaikanal which exposed many workers to mercury poisoning, without giving them any protective equipment or information about its disastrous health effects. The workers cannot afford private healthcare and have been fighting since 2001. Similar cases of working-class environmentalism appear in Chapter 20.

Hindustan Unilever Ltd (HUL), the Indian subsidiary of the Anglo-Dutch giant Unilever, avoided its responsibilities to its workers and closed down in 2001. Kodaikanal is a hill station

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retreat at 2,200 m high in the flourishing forests of the Western Ghats of Tamil Nadu. The factory site and the surrounding area are contaminated by mercury, including soil, groundwater and surface water. Workers, local citizens and environmentalists have been fighting for the company to face its liability, also in the Madras High Court. Despite a partial decontamination of the factory site in 2003, the case is still pending and the conflict ongoing.

The factory produced nearly 10 million thermometers a year for export to the West. This mercury thermometer factory was relocated to India in the early 1980s because it was too dangerous to run it in New York and would not comply with US legislation. In early 2001, public interest groups unearthed a pile of broken glass thermometers with remains of mercury in the Shola Forest, which they knew could come from the company. In March, a public protest led by a local workers' union and the international organization Greenpeace forced the company to shut down the factory. Soon the company admitted that it did dispose of mercury contaminated waste but refused to face its liability. Five hundred and fifty men and women claim that their work at Hindustan Unilever's Kodaikanal factory caused irreparable damage to their health. They say that at least 23 of their colleagues have died young from complications resulting from mercury exposure: lung problems, heart problems, and kidney failure. Most of the ex-workers report varying symptoms, including headache, skin problems, eye problems, chest pain, dental problems, nose bleed, vomiting, blooded urine, breathing problems, impotency, irregular menstruation, miscarriage, giddiness, tremors, and inability to grip effectively.

The workers did not get any compensation, and they formed the Ex-Mercury Employees Welfare Association in the early 2000s. Their president, S.A. Mahindran, filed a Public Interest Litigation (PIL) suit in the Madras High Court. The association wants an economic rehabilitation scheme and a healthcare treatment at the company's expense for everyone who worked in the factory. It also wants the company prosecuted. On the contrary, Hindustan Unilever denied that any of the health problems of the workers was the result of mercury exposure in the factory. The factory is located next to the protected Shola Forest, considered to be an important biodiversity spot with over 30 endemic plant species. Part of the controversy has to do with the extent of pollution found on the thermometer factory site and on Shola Forest. In 2003, it partially got decontaminated, when over 28,000 kilos of partially treated mercury sludge from the site were hauled out and sent to the US. High levels of methylmercury were allegedly found in the nearby lakes.

Following the capitalist rule of systematic "cost-shifting", the company does not want to face its liability. It managed to persuade the authorities that its responsibility is limited to cleaning the factory site and no further. After a first wave of protest led by Greenpeace at the beginning of the 2000s that led to the closure of the plant and partial decontamination, 2015 was a landmark year. On July 30th a rap song on the case went viral. As a consequence, the petition asking Unilever to take responsibility for Kodaikanal mercury poisoning got signed by 100,000 people. After many years, on 9 March 2016 Hindustan Unilever Ltd (HUL) agreed to a financial settlement for an undisclosed sum with a group of 591 workers who had sued the company for health damage. The campaign organizations *The Other Media*, *Chennai Solidarity Group* and *Jhatkaa.org* called the settlement a "fitting culmination of the 15-year campaign".

However, Unilever still has to clean up Kodaikanal, as the mercury content in the soil does not match the international standard and is 250 times higher than naturally occurring background levels. The clean-up campaign is being spearheaded by the People's Union for

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Civil Liberties and Campaign to Cleanup Kodaikanal Mercury Pollution. In September 2016, they started an online petition for writing to the environment minister to not accept the HUL clean-up proposal. In December 2016, fish samples were collected and tested from the Kodaikanal lake and the surrounding Periyakulam pond by researchers from the Indian Institute of Technology, Hyderabad (IIT-H), the findings of which led to a letter being sent to Theni and Dindigul district collectors, urging the administration to advise pregnant women to limit their consumption of fish from these water bodies. In November 2017, a press release was organized to release the findings of these studies in Madurai. Further action from the state government and the Tamil Nadu Pollution Control Board is still awaiting. A new campaign song was released by T.M. Krishna and others in 2018.

The Expansion of Salem Airport and the Expressway Chennai-Salem[16]

Conflicts on transport infrastructures are very common in the world and even more in the growing economy of India, a heavily populated country where land is grabbed from relatively powerless citizens, farmers and sometimes fishermen for new "green field" industry, new motorways, high-speed railways, transport corridors and new or expanded ports and airports. At world level there is an awareness campaign, Stay Grounded, against building or expanding airports, with a special featured map in the EJAtlas. A first conference "Degrowth in Aviation" was held in Barcelona in July 2019.

Expansion of the Salem airport and also the Chennai-Salem Expressway resulted in mass mobilization by the communities, and arrests of activists. On 27 April 2018, hundreds of farmers and their family members laid siege to the Salem collectorate to protest against 567 acres of land acquisition for airport expansion in the city. The primary reason for the protest has been the safeguarding of the land and livelihoods. The land for the initial airport was acquired in 1989 from the parents and grandparents of those protesting now. Farmers and residents also urged the district administration and chief minister Edappadi K Palaniswami to drop land acquiring activity even as they were assured of huge amounts in compensation. "We are not struggling for money and we are protesting to save our livelihood", the farmers said (*The Times of India*, 28 April 2018).

In June 2018, activists including Piyush Manush and Mansoor Ali Khan were arrested for protesting against the airport expansion as well as the Chennai-Salem corridor. M. Shivakumar, a farmer and one of the protesters, said, "We don't have any option other than agriculture". He owns seven acres of land adjacent to the airport. Manasa Rao's article for the *News Minute* published on 18 June 2018 captures the fear and uncertainty and the will to save the community, fertile agricultural land, religious shrines and livelihoods. People from the four villages of Sikkanampatti, Thumbipadi, Pottiyapuram and Kamalapuram, engaged for the last three years in this battle, bearing the legal, physical and emotional costs for their rights over their land. In order to lend visibility to the issue, have brought politicians and actors to visit the area.

Meanwhile, the Salem-Chennai eight-lane expressway is also questioned because of its land requirements. This is an ongoing process, since the project came under the public eye in February 2018. There have been many forms of protests since documents revealed that the Rs. 10,000 crore project may have been officially conceived and cleared in just six days, and based on a recommendation by a doubtful World Bank consultant. Nityanand Jayaraman's

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article in *The News Minute*, dated 12 August 2018 traces the chain of events and raised questions on due process.

The protests, which started with the farmers, soon turned into a full-blown movement, with the involvement of political leaders and the arrest of farmers and activists. The DMK and the Communist Party of India slammed the government for not consulting the farmers who argue that the 37-km stretch from Ariyalur to Manjuwadi – a lush belt of coconut and areca nut farms, paddy and horticulture fields – will be adversely impacted once the project gets underway. The State government's view is that a small group of farmers is being instigated by social activists and opposition parties. Only 1,900 hectares would be required. However, according to S. Balaraman, deputy president of Tamil Nadu Vivasayigal Sangam, Tiruvannamalai district, "It is not as though the farmers will lose only their agricultural lands. These will be acquired along with their homes. A number of villages will be wiped out" (*The Hindu*, 23 June 2018).

The road will pass through 159 villages in 14 taluks of five districts – Kanchipuram, Tiruvannamalai, Krishnagiri, Dharmapuri and Salem. On 21 August 2018, the Madras High Court directed the state and central governments to not dispossess landowners of their property. However, this was not an order to stop the project. Many activists and locals have been threatened and harassed by the police and district administrations. One of the reasons why people have been so vehemently protesting is that there already exist two national highways connecting the two cities of Salem and Chennai. Constructing another highway will reduce travel time by three hours but the lives and livelihoods of the people being affected aren't being taken into any consideration. According to environmental activist G. Sundarrajan of *Poovulagin Nanbargal* the expressway would destroy many water bodies and preserve forests that are home to some endangered species (*Deccan Herald*, 7 October 2018). On 4 September 2018, the Madras High Court dismissed a petition challenging the constitutional validity of the land acquisition process. Many villages in the three districts of Salem, Dharmapuri and Tiruvannamalai passed unanimous resolutions to scrap the project on 15 August as well as 2 October 2018. The conflict includes court cases, attempted self-immolation and protests, harassment and violence.

Kudankulam and Kalpakkam – Nuclear Energy[17]

We focus here on the contentious construction of the Kudankulam nuclear plant in Tamil Nadu. The main protagonists have been the local fisherfolk. On 20 November 1989, a deal had been signed between the Soviet premier Mikhail Gorbachev and the then Indian Prime Minister Rajiv Gandhi, for the construction of two nuclear power plants at Kudankulam. It is notable that the deal was signed within just three years of the Chornobyl nuclear disaster.

Kudankulam Nuclear Power Plant (KNPP) turned into a site of massive public protest before and after the 2011 Fukushima disaster. The public dissent almost achieved the decommissioning of Phase I of the KNPP and caught the public imagination nationwide in no time. Also, the proposal of drawing water for nuclear plants from Pechiparai dam bothered locals. In 1989, more than 10,000 people gathered under the banner of the National Fishers workers union to register their anger against the proposed nuclear plant. Another protest started on 19 December 1989, under the leadership of Y. David from the *samathuva samudaya iyakkam* (i.e. social equality movement).

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The USA also raised concerns on the grounds that the agreement did not meet the 1992 terms of the Nuclear Suppliers Group (NSG). The project was in limbo for almost a decade, the death of Indian Prime Minister Rajiv Gandhi in 1991 was another jolt to the project. But in March 1997, the then Indian Prime Minister, H.D. Deve Gowda and Russian President Boris Yeltsin signed a supplement to the 1989 agreement. According to it, two Russian high standard pressure VVER –1000 (PWR) water cooled and water moderated reactors that would produce 1,000 MW per unit were to be delivered to India.

In 2001, when the government of India planned to further extend the plant by adding four more nuclear reactors at KKPP, a huge demonstration asked for a comprehensive EIA and staged public hearings under the banner of People's Movement Against Nuclear Energy (PMANE), headed by Dr S.P. Udaykumar. Between 2001 and 2011 various protests and demonstrations were organized by PMANE to mobilize the people against the risky nuclear technology. The social construction of reality is inextricably linked to asymmetries of power. After Fukushima, the opponents gathered support around the idea that nuclear energy is very risky. As a response, public authorities accused the protesters of being anti-national, foreign funded, Maoist guerrillas (so called Naxalites), also "Church-orchestrated" and even mentally disturbed. Later on, the opponents would claim that fraud and corruption were very much part of this project. In this case, the public authorities' dominant frame was that nuclear energy was cheap and safe.

Parallel to this framing struggle in the media, villagers went on a hunger strike in mid-2011. After local elections, for which the strike had been suspended, the police entered into the villages and started a blockade that would last for almost one year, stopping the inflow of milk, water and food. This led to solidarity groups emerging all over India. The villagers, mainly fisherfolk, resisted. Simplified, the men would keep on fishing while the women would be the protagonists of the struggle. On 10 September 2012, thousands of people from four villages went to the beaches of Idinthakarai, in the Tirunelveli district, to protest against the KNPP, located barely 2 km away. That day, uranium fuel was being filled in the plant – the final step before the nuclear reactors become functional. As the protestors – mostly women – marched towards the plant, the state responded with tear gas and subsequently opened fire on the crowd. The protestors fled to the sea to escape the police. One person was killed, and 66 people were arrested – several of them on charges of sedition.

The "Chennai Solidarity Group for Koodankulam Struggle" was among the most active. It published a pamphlet in November 2011 titled "Koodankulam and Nuclear Power" authored by Nityanand Jayaraman and G. Sundar Rajan. The pamphlet asserts that "India's chest-thumping 'nucleocracy' wants to play the death game with peasants and fisherfolk as the pawns in the gamble". It presents "some myths, realities and answers to frequently asked questions" about this case. A Public Interest Litigation (PIL) was filed in 2011 with the Supreme Court asking for nuclear power development to be delayed until safety concerns were assessed. In May 2013, the Supreme Court ruled in favour of the nuclear power plant because it was in the larger public interest.

In June 2013 the first reactor went critical, and production supposedly started in late 2013. However, this unit shut down in June 2015 for maintenance. "It is not just the safety, but the very viability of Units 1 and 2 to produce electricity consistently and sustainably that is being questioned" (*DiaNuke.org*, 1 October 2014). By June 2019 the environmental group *Poovulagin Nanbargal* reported that reactor 1 had tripped 11 times since March 2016 and

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reactor 2 had tripped 19 times since March 2016. Moreover, there is a controversy on what to do with the spent fuel.

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Kalpakkam is an even more dangerous installation than Kudankulam, a sodium-moderated breeder reactor. It is a Prototype Fast Breeder Reactor (PFBR) of 500 MW. Local and national protests have been muted so far. Back in 2006 India wanted to expand its nuclear power by 15 times (from 4,120 MW to 63,000 MW) by 2032. As a percentage of the total energy mix, the nuclear share would double from 3 per cent to 6 per cent. There was, however, a problem with uranium supplies. M.V. Ramana, a physicist who has followed closely the development of the nuclear industry in India, said that "the three-stage nuclear programme was an idea from the 1950s when no one knew that breeder reactors would be a technological failure, expensive and prone to accidents, and that reprocessing would be so costly" (*Down to Earth*, 15 Oct. 2009).

After the renewed nuclear agreement between the US and India in 2005, India's government identified a list of purely civilian nuclear facilities, with no military links. The US agreed to supply nuclear equipment to India, and France was to follow suit. Guarantees of no military use were sought (Glaser and Ramana 2007). However, one issue in the civil-military separation of nuclear facilities is the status of the fast breeder reactor programme. The Indian Department of Atomic Energy (DAE) declared that sites and facilities related to the breeder programme would not be put under safeguards. This includes the entire Kalpakkam nuclear complex. The PFBR may achieve criticality soon. The site also features a reprocessing plant and two operational heavy-water reactors. The construction of a second reprocessing plant is planned. Existing stockpiles of separated plutonium or spent fuel from some heavy water reactors would also remain outside safeguards under the US-India agreement, which was signed to allow nuclear equipment to reach India again, after some years stopped because of rumours of Pakistan-India nuclear war. Building of more breeder reactors is planned for India of which Kalpakkam would be the first one. They operate with plutonium and are cooled by sodium, and their link to military programmes is difficult to hide. In the future they might operate with thorium.

Opposition to the Kalpakkam PFBR is not vocal and it is diluted in the opposition to nuclear energy in general. However, some vigorous voices are heard. In 2011, Swaminathan S. Anklesaria Aiyar stated:

> Nuclear safety has become a top priority after the Fukushima nuclear disaster in Japan. Safety at all Indian plants is being reviewed, and coastal reactors may be built on higher ground for tsunami protection. Critics have objected to unproven French reactors for the Jaitapur (Maharashtra) nuclear power complex. Yet critics and agitators are ignoring the biggest nuclear risk of all: the inherently dangerous nature of fast breeder reactors… FBRs are cooled by liquid sodium, which is inherently dangerous. Liquid sodium reacts explosively with both air and water. Hence, even a tiny leak of sodium coolant can cause a fire.

In March 2013 there was a peaceful protest of about 1,000 people complaining against the nuclear complex at Kalpakkam. Nityanand Jayaraman reported (in *Dianuke*) that in a bid to intimidate fenceline communities living around the Kalpakkam nuclear reactors, the police jailed 129 of the 650 people who were detained while protesting to highlight that the nuclear

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complex in Kalpakkam was all threat and risk to the local community with no benefits either in jobs or electricity.

CONCLUSION: AN ENVIRONMENTAL MOVEMENT OF THE PEOPLE

This chapter on Kerala and Tamil Nadu plus the previous chapter on Odisha mention commodities that we would find also in other states in India and across the world such as wood and paper pulp from eucalyptus plantations, and the defence of "sal" forests; the defence of coastal areas and mangroves; the use and also the defence of marine biodiversity and the organized fishworkers movement; complaints against land grabbing for tourist development, urban and industrial infrastructures, and the dumping of urban waste; copper mining and smelting, iron ore and bauxite mining, coal mining and CFPP, pesticides and industrial pollution, oil, gas and hydropower, nuclear power. These are among the immediate causes of the environmental justice movements in rural, semi-urban and urban contexts.

These three states, Odisha, Kerala and Tamil Nadu, comprise about 12 per cent of India's population. Other "transversal" chapters (on militarized bioconservation conflicts, on beach and river sand mining, on Indigenous protagonists, on religious protagonists) contain more cases from India. What we have seen so far reveals the empirical richness of the Indian environmental movement and its similarities to world movements, and international connections with the Pesticides Action Network (PAN), with anti-nuclear movements, with Foil Vedanta (a network from London), with the international Fishworkers movement, with anti-coal and anti-hydropower movements. The Fisherworkers' movement in Kerala has indeed blossomed into a Blue Justice world movement (Ertör 2021).

The repertoires of contention are also similar: letter writing, petitions to the authorities, litigation (including PIL), questioning of the EIAs. But there are Indian institutional peculiarities, such as the use of the Forest Rights Act, and also the Coastal Zone Regulation. And indeed, the apex National Green Tribunal (NGT). There is also a specific vocabulary of social agitation with the deployment of typical actions of civil society movements in India sometimes with roots in the anti-colonial movement. The strikes (*bandh*), the hunger strikes (*bhook hartal*), the blockades, the surrounding of government offices (*gherao)* and the sit-ins (*dharna*), the hoisting of black flags and street marches, the *jail bharo andolan* (movement to voluntarily fill the jails with arrested protesters). These are all second nature to social agitations in India. On the side of the companies backed by the State there is corporate social irresponsibility from transnational or national firms, and sometimes blatant illegality. There are also activists arrested, booked for sedition, sometimes a few or many are killed as in the massacres in Kalinganagar and Tuticorin.

Again, as in the case of Odisha, while there is no single civil society organization which could be called the "green movement" of South India, there are instead numerous ad-hoc groups, etc. as also individual protagonists such as Thomas Kocherry, Latha Anantha, my friend Nityanand Jayaraman, the singer T.M. Krishna, including several women local leaders such as Mayilamma, Daya Bai, Fathima Babu. These are globally influential movements. The fishworkers movement in Kerala was a struggle for "fishing sovereignty" closely related to the "food sovereignty" claim of the global Via Campesina since the 1990s. Later there was a World Forum. One of its main roots is in Kerala.

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In her search "for social class in environmental movements in India", Amita Baviskar was influenced some years ago by the evidence of middle-class opposition in Delhi to pollution from motorized rickshaws and how, to clean the air, polluting factories were closed down at the cost of poor industrial workers. She accordingly criticized the theory of the environmentalism of the poor that Ramachandra Guha and myself had proposed since the early 1990s. The EJAtlas shows conclusively that the participants in environmental conflicts in India and elsewhere belong to different social groups and classes. Those protagonists who belong to the professional middle class are more visible because of access to social media. Scientists sometimes engage with activists (Chapter 28). However, the main victims are the poor (and often the Indigenous), and they are also the bulk of those who protest. They are Dalits and Adivasi and other lower caste citizens. But it depends on the type of conflict. Both in Kerala and in Tamil Nadu we have seen fisherfolk (of different religions but of lower caste) become active. We have also seen neighbours and citizens protest against urban waste dumping and against the Vedanta smelter. The theory of the environmentalism of the poor (and the Indigenous) remains robust. When there is an environmental conflict, ordinary people defend the environment because of their own cultural values and also, perhaps mainly, for survival.

There is a strong presence of Adivasi protagonists – not only in Odisha and central India, also in the South. Constitutional protection of the Adivasi (perhaps 100 million people in India as a whole) appears in these cases, although we know that the Hindutva political forces try to undermine it. Adivasi translates as "original population". Meanwhile, the BJP and the Hindutva forces want to relegate them by renaming them as Vanvasi, peoples of the forests, and expropriate and re-educate them (as is obvious in Odisha). Adivasi often live at the frontiers of commodity extraction and waste disposal. Although sometimes the new frontiers of extraction are on the contrary occupied by long settled farmers as happens with oil and gas in the Cauvery delta.

This chapter will serve as an introduction to the next transversal chapter on nuclear energy conflicts where other cases from India appear.

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10. The world anti-nuclear movement since the 1970s

BACKGROUND: FROM URANIUM MINING TO NUCLEAR WASTE DISPOSAL AND MILITARY TESTING

Chapter 9 ended with the conflicts on the nuclear reactors of Kudankulam and Kalpakkam in Tamil Nadu which can be seen as an introduction to this chapter. Nuclear power appeared in the chapters on Japan, Taiwan, the Philippines and China, in the case of China as part of a military-industrial complex.

The major accidents at Three Mile Island (1979), Chornobyl (1986) and Fukushima (2011) and some protest movements are milestones in the collective environmental conscience of the last 50 years. We read Robert Jungk (1977) and other books following the opposition in the United States, in Germany and the anti-nuclear referendums in Austria and Italy. In the early 1980s, I read all of Frederick Soddy's books (1922, 1926) on energy and economics, and some of his articles on radioactivity. Born in 1877 he died in 1956; following study at Merton College, Oxford, he received a Nobel Prize in Chemistry for his discovery of isotopes. After 1945, he criticized the military and industrial use of nuclear power as also Lewis Mumford (1961, 1970) did in the 1950s. We reasonably wait for the next accident – it might happen in one of the oldest nuclear power plants in France or elsewhere in Europe. Over the years we discovered little publicized accidents in Russia and elsewhere. With Ksenija Hanaček (2022) we added some conflicts such as Nova Zemlya "tsar bomb" of 1961, and the Nevada-Semipalatinsk movement of the late 1980s against nuclear testing in Kazakhstan.

By January 2022 there are about 150 nuclear energy conflicts in the EJAtlas, a good sample of those in the real world. This chapter summarizes and analyzes about 25 nuclear energy conflicts from uranium mining to the disposal of nuclear waste and military testing, along the commodity chain. Starting with Ignalina in Lithuania, a plant similar to Chornobyl, I include Three Mile Island in the USA and Fukushima (described already in Chapter 2). Uranium mining in Jharkhand and Telangana (India), Niger, Namibia, Bulgaria, Malawi is discussed in this or other chapters. The early successes achieved in Plogoff in France and Wyhl in Germany, also in California (Diablo Canyon and Rancho Seco), and the current conflicts against NPP in Haripur and Jaipur in India are included. Some victimized anti-nuclear women were mentioned in Chapter 4.

IN EUROPE

Building and Dismantling Ignalina (Lithuania) but a New NPP is Built in Belarus[1]

A referendum in 2012 ended plans for a new nuclear power plant after two large reactors at Ignalina were stopped in 2004 and 2009. The conflict was linked to the national independence

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of Lithuania after 1990 and to its incorporation into the European Union. This is a story of 20 years of production of electricity in two reactors at Ignalina starting in the 1980s, and a current dispute with Belarus regarding a nuclear power plant near the border. As described in various sources, in Lithuania in 1978 construction had begun on two RBMK reactors (1,380 MWe each) for the Ignalina Nuclear Power Plant, 50 km north-east of Vilnius. The light-water, graphite-moderated reactors were of similar design to those at Chornobyl. The nuclear power plant began operating in 1983. In the late 1980s, the birth of a Green Party, *Žaliųjų partija*, helped stop the building of the third NPP that had been criticized by the independence movement of Lithuania, Sąjūdis. In September 1988 some 10,000 people formed a human chain around the Ignalina nuclear power plant demanding safety inspections by international experts. There was a Green wave across Eastern and Central Europe after the fall of the Soviet regime.

WISE published reports in 1992 and 1994 explaining the risks from the Ignalina power plant. In 1994, Lithuania accepted US$36.8 million from the European Bank for Reconstruction and Development's Nuclear Safety Account (EBRD) to improve safety at the site. Under the grant, both RBMK reactors had to be closed within 15–20 years: Ignalina units were shut down in 2004 and 2009. The main risk of accident was associated with generic design flaws of the RBMK reactors. To assist Lithuania, the EU agreed to pay for decommissioning costs and some compensation. Such costs keep still growing.

After the end of the Soviet Union (partly caused by the Chornobyl disaster) there were reviews of the state of some nuclear power stations. In 1992, at a G7 summit, it was decided that Ignalina in Lithuania, four units of the Kozloduy nuclear power plant in Bulgaria, and Bohunice in Slovakia had to be closed down as they presented a high level of risk. The closing of the NPPs in less than 20 years was negotiated as part of the countries' EU accession treaties and the European Union was to provide financial support. The Radioactive Waste Management Agency of Lithuania, established in 2001, was responsible for disposal of all radioactive waste from Ignalina during operation and decommissioning. By 27 February 2018 Ignalina NPP announced the removal of the last used fuel assembly from the reactor of unit 2.

Option for Visaginas New NPP Defeated

This was a Baltic regional project intended to provide electricity for Lithuania. There were three regional partners: Lithuania, Latvia and Estonia, in addition to GE Hitachi Nuclear Energy. This would be an NPP jointly owned by Japanese company Hitachi and Japanese American company GE Hitachi Nuclear Energy (20 per cent shares), and state-owned companies Lietuvos Energija (Republic of Lithuania) (38 per cent), Latvenergo (Republic of Latvia) (20 per cent) and Eesti Energia (Republic of Estonia) (22 per cent). The estimated price was €4,9 billion. It was intended to replace the Ignalina NPP, scheduled to be shut down in 2009. On 14 October 2012 an advisory referendum on constructing the new NPP showed 62.7 per cent of the participating Lithuanian electorate against and 34.1 per cent favourable. "Visaginas nuclear power plant would be built on Lithuanian land, with increased danger, therefore we must ask the opinion of the Lithuanian people", said opposition Social Democrat Birute Vesaite while Lithuania's governing Conservatives had opposed the referendum. By 2016 the instigator of the Visaginas NPP, former energy minister Arvydas Sekmokas, recognized that the proposal was "dead".

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Opposition to NPP Astravets in Belarus and the Espoo Convention

Lithuania has no plans for further NPP and indeed it renewed its longstanding opposition to the NPP Russia was building in Belarus not far from Vilnius. As reported by WISE in 2011, after two years of fruitless negotiations, Lithuania had brought its complaint over Belarus's nuclear power plant to the authority that enforces the *Espoo Convention* – an international agreement covering industrial projects that may potentially bring environmental harm across state borders. Both Lithuania and Belarus are Espoo signatories, but Belarus denies any violations. In April 2017, Vilnius passed a law against buying energy from what its parliament termed "unsafe nuclear power plants in third countries". These boycotts against buying nuclear power have been effective in shutting down other unpopular nuclear projects in the region. However, Belarus eventually built a very large NPP, Astravets, a 2400-MW multi-reactor nuclear power plant less than 50 km from Lithuania's capital Vilnius. The Lithuanian government has long argued the plant does not meet Western safety standards. In a sign of the growing concern, the Lithuanian government ordered in January 2020 millions of iodine pills in case of a nuclear accident.

Moving to Western Europe, there are many old and dangerous NPPs. I chose to look at two of them (in Alsace – France – and in Belgium), one closed down and the other not yet, both near the border with Germany. To repeat, transnational conflicts are not uncommon in the nuclear energy field.

More Transborder Issues: Fessenheim and Bugey in France[2]

The Fessenheim nuclear power station, stopped in 2017, is very near the German border. Out of the 58 nuclear reactors that France has, 15 of them have passed the 35-year mark. In service since 1977, Fessenheim was the oldest of the lot. There is a grave problem about what to do with the nuclear power plants built in the 1970s and 1980s. The Fessenheim NPP was one of the first to be closed down after many protests by Greenpeace and others. In March 2017, environmental groups organized protests throughout the country to commemorate the sixth anniversary of the Fukushima nuclear disaster in Japan, and to demand the closure of NPPs. In Strasbourg, hundreds of people from France, Switzerland and Germany gathered to demand the closure of Fessenheim alleging that previous accidents were downplayed.

In April 2017 the French government issued a decree to cease power generation at the 1.800-MW Fessenheim reactor by April 2020. The cost of dismantling plus the cost of keeping the nuclear waste will easily reach €2000 million. In July 2017, for the first time, the French government declared the actual number of planned nuclear reactor closures: 17, an estimate offered by the then Environment Minister Nicolas Hulot, a former environmental campaigner who later resigned

A similar case is that of the NPP of Bugey. The Geneva authorities in 2016 outlined their legal complaint against the 43-year-old Bugey plant in neighbouring France, which they claim "endangers lives and pollutes water". By 2018, the Geneva authorities issued a second legal complaint lodged with a French court, arguing that the Bugey plant has design faults, leakage problems and is located in an earthquake and flood risk area. Geneva is situated about 70 km away.

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Tihange and Doel in Belgium[3]

Tihange has three large reactors, often malfunctioning. There are concerns about their safety expressed even by the official agency for nuclear security. There are also complaints from neighbouring countries. The plant is located on the bank of the Meuse River, in the Walloon province of Liège, which has borders with The Netherlands, Germany and Luxembourg. Tihange 1 (962 MW) came online in 1975, Tihange 2 (1008 MW) in 1983 and Tihange 3 (1015 MW) in 1985. The units were designed for an operational lifetime of 30 years. Laws were passed in Belgium in 2003 (with Olivier Deleuze as Secretary of Energy) to ensure that no additional nuclear plants will be built in Belgium, and to limit the lifespans of the existing plants to 40 years. On 4 July 2012, however, the Belgian government decided that Tihange 1 could operate for 50 years. However, like so many other NPP of their age in other countries, the reactors at Tihange are old and dangerous, as are those in Doel in Belgium, located very near the Dutch border.

The Belgian energy corporation ENGIE Electrabel is the plant's largest shareholder. The company belongs to a French company. Court cases are pending, including some from neighbouring countries and the city of Aachen. However, ENGIE Electrabel finds the old reactors profitable and makes small investments to prolong their lifespan up to 50 and even maybe 60 years.

Plogoff, Brittany: Fisherfolk Stop One of the First NPP in France[4]

Here we revive the memory of the struggle of several weeks in Pointe du Raz, Plogoff, Brittany, in 1974–80, against the attempt by Electricité de France (EDF) to build an NPP of 1500 MW. It would have been the first in Breton territory. An excellent documentary by Nicole Le Garrec commemorated the events in this small fishing village, one of the few successful anti-nuclear struggles In France.

As reported by WISE,[5] in June 1976 a first confrontation occurred when EDF engineers were prevented from entering the prospective site by local inhabitants blocking the access roads. After that, in 1978, the state opted for the Plogoff location. Meanwhile, in March of that year, the large Amoco Cadiz oil spill happened on the coast of Brittany and environmental awareness had risen. As soon as the decision to build the NPP was made public, people started to organize marches. In September 1978 5,000 people marched on the site, and 15,000 a week later in the nearby cities of Brest and Quimper. However, the authorities approved the site. In July 1979, the commune of Plogoff received the first papers regarding the inquiry into the public utility of the project, a sign that EDF was determined to proceed. The local council refused to cooperate with the inquiry.

In the morning of 30 January 1980, the official documents for the inquiry arrived at the town hall and were immediately burned ceremonially on the square in the presence of the mayor. This launched a new level of resistance. To fulfil the legal procedures, the public utility inquiry documents had to be displayed locally. Because civil servants and EDF were not allowed by the local politicians to use the town hall or any other place, they set up mobile "Mairies Annexes" in small vans for displaying the documents. The first barricades appeared. All access roads were blocked with tree trunks, old tractors and whatever was available, to stop the mobile "town hall annexes" from entering the town. Under heavy police protection the vans made their way and stayed for six weeks from 9 a.m. to 5 p.m. and withdrew again.

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The police guarding them came under constant harassment, including Molotov cocktails, arrests, trials, petitions asking for the removal of the intervention forces, marches gathering thousands of people, general strikes and even strikes in regional courts when cases against anti-nuclear activists were scheduled.

All this put a new rhythm into the daily life of Plogoff's inhabitants. Every day, the convoy had to get into place through the barricades; the location of the "town hall annexes" was usually fouled with manure and had to be cleaned up. During the day women kept up a constant psychological warfare with insults and taunts thrown at the police. On 14 March, the last day of the inquiry, a crowd of at least 7,000 "pilgrims" gathered and organized a symbolic burial with black coffins, wooden crosses, crowns of flowers and women wearing the traditional grieving headdress. A feast took place two days later attended by over 50,000 people. During the following months, people asked for support from other localities in the area, and organized lectures about the 1979 Three Mile Island accident at Harrisburg, US. In May 1980, at Pentecost (Whitsunday) 100,000 people demonstrated on the site.

By the autumn of 1980 the landing of helicopters was made impossible by kites and oil drums ready to be ignited. Barricades to block all access roads had been prepared. The land had been taken in common ownership by about 2,000 individuals to make expropriation more difficult. A sheep farm was installed on the site and supplied with additional sheep by Larzac farmers. The resistance of Plogoff drew upon support of environmental organizations such as "Eau et Rivières de Bretagne" and "Bretagne vivante", consumers' associations, political parties such as the PSU, the CFDT labour union and committees like the Groupement des Scientifiques pour l'Information sur l'Energie Nucléaire (GSIEN). The French state did not expect such resistance by a fisherfolk village mostly populated by old people who for six weeks confronted the riot police (CRS) and the military police (gendarmerie). In 1981 François Mitterrand was elected President of France. He carried out his campaign promise to cancel the project (Figure 10.1).

Creys-Malville and the Death of Vital Machelon in France[6]

Nuclear energy in France has found little opposition, despite cases such as Plogoff and Creys-Malville. Nuclear energy was pushed after the world increase in oil prices in 1973. It was linked to the military and led to colonial incursions for uranium mining in Niger and elsewhere, and to nuclear explosions in Mururoa. The political right liked nuclear power as everywhere else but in France the left did too; the French Communist Party was proud of members like Frédéric Joliot-Curie. This constellation of power (the right, the military, the Communist Party, the CGT) did not exist in Germany, with a differing trajectory of nuclear energy conflicts in both countries. The situation in India is favourable to nuclear energy because a similar political constellation existed to that in France, with a pro-nuclear left.

There have been a few memorable conflicts in France. Prevention of Plogoff was one. Dismantling of Fessenheim, much later, was another one. There are also conflicts on nuclear waste, as at present in Bure, Meuse. A special case was Creys-Malville, near the Swiss border. The reactor was arrogantly called Superphénix, from the mythical bird reborn from its own ashes, as electricity would be produced from the plutonium which is a waste product of uranium-fuelled nuclear reactors. In 1989, WISE asked the European Parliament to intervene. It explained that Superphénix was a prototype 1,250-MW fast-breeder reactor. In conventional Pressurized Water Reactors (PWR) and Boiling Water Reactors (BWR) the neutrons are

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Source: Le Télégramme/Eugène Le Droff

Figure 10.1 Plogoff villagers on a march in 1980

slowed down by the water. In a fast breeder the reactor is cooled with liquid sodium instead of water. Superphénix contained five tons of plutonium while a traditional plant contains only a few kilos. A few micrograms of inhaled plutonium are enough to cause lung cancer. The half-life of plutonium is 24,000 years. Superphénix needed 5,000 tons of sodium as a cooling agent. Sodium catches fire when it comes into contact with air and explodes when it comes into contact with water.

In the summer of 1976, the first major demonstration against the Superphénix took place. Protests increased, locally, nationally and internationally. The demonstrators were not defending a particular territory but attacking what in their view was a misguided public policy. There was a demonstration with over 60,000 people (from France, Switzerland, Germany…) on 31 July 1977 against the project. It met a disastrous end because of police violence. The police killed Vital Michalon, a young demonstrator, a physics teacher, by throwing a grenade at him. Another one hundred got wounded, including some policemen. Resistance remained active on different levels. And with final success. On 31 July 1997, a commemoration was held for Vital Michalon. At that commemoration there was something to celebrate; Superphénix would not be restarted. On 2 February 1998 the French Prime Minister Lionel Jospin reaffirmed its shutdown. Costs of dismantling are estimated at US$2.5 billion. Superphénix went into operation in 1986, was plagued by many accidents and only operated for an equivalent of 278 days at full power during those 11 years. Total costs (excluding closure costs): US$10 billion.

Kalkar's Sodium-cooled Fast Breeder Reactor Prototype, a Bad Joke[7]

Between 1957 and 1991, West Germany tried to build a fast breeder reactor, a 300-MW prototype near Kalkar on the Rhine. It was known as the SNR-300, the Schneller Natriumgekühlter

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Reaktor, to be cooled by sodium. Construction began in April 1973 as a project of West Germany (72 per cent), Netherlands and Belgium (both 14 per cent). The modernizing Zeitgeist is well captured in a chronicle by Alice Siegert. She wrote:

> People in this quaint, 750-year-old town in the lower Rhine still walk on cobblestone pavement … But north of the town limits, where black-and-white cattle graze in green pastures, the 21st Century has begun. On land bought from the Catholic Church, the concrete outer shells of a 1 billion, plutonium-based, fast breeder reactor were recently completed. The 300 MW prototype is being financed by the West German, Dutch and Belgian governments. Eventually it will serve as a model for a 1200 MW commercial reactor. European governments believe that the third-generation, sodium-cooled fast breeders, which reproduce their own fuel, will make Europeans less dependent on imported fuels.

There were at the time large anti-nuclear demonstrations at Whyl and Brokdorf, and Kalkar. Before the Greens first came to Parliament in Germany in 1980, militants were already active. Petra Kelly was a speaker at the first demonstration in 1975 against the reactor in Kalkar. In 1977, 50,000 people demonstrated against the project. Kalkar is near the Dutch border (Nijmegen), not far from Duisburg and Dusseldorf in Germany. As reported by WISE, in 1981 police violence stopped construction of a summer anti-nuclear village near the site at Kalkar. 800 activists participated and 12 protesters were injured by police attacks during those days.

Construction had advanced by 1985, but political opposition in the aftermath of the Chornobyl accident (in April 1986) caused the federal government to announce in 1991 that the reactor would not be put into operation. It seems that the original costs finally escalated to US$4 billion. Nuclear materials were sold or sent off for free to France and the United States. Showing a sense of humour, the nuclear plant has been turned into an amusement park, *Wunderland Kalkar.*

Wyhl am Kaiserstuhl, Germany[8]

The expression *Energiewende* (energy transition), so important in German and European energy policy, was born in this struggle. Wyhl is where the German anti-nuclear movement cut its teeth in the early 1970s, based on Bürgerinitiativen and university researchers. Wyhl is a small wine growing locality in Emmendingen in Baden-Württemberg very near the Alsace border in France. After South Baden, Alsace and the neighbouring region of Switzerland were chosen in 1971 as a site for a nuclear power plant, the local opposition in Wyhl steadily mounted. Permission was granted and work began on 17 February 1975. On the following day, local people spontaneously occupied the site and police removed them forcibly two days later. Television coverage of police dragging away common people through the mud helped to turn nuclear power into a major national issue. Wine-growers and clergy supported the movement together with members of the University of Freiburg (where the Öko-Institut was to be founded). On 23 February about 30,000 people re-occupied the Wyhl site and plans to remove them were abandoned in view of the large number involved and potential for more adverse publicity. On 21 March 1975, an administrative court withdrew the construction licence for the plant.

During the summer of 1975, the occupied site at Wyhl became a symbol. People from across Western Europe were drawn to the occupation and determined to recreate it elsewhere. It was not long before these visitors discovered the difficulty of simply exporting "Model

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Wyhl". Years of alliance building had preceded the Wyhl occupation. The police too had learned from Wyhl and were better prepared. Thus, the attempted occupations near the town of Brokdorf descended into pitched battles between protesters and police. Even so, concerns about nuclear energy became increasingly commonplace after Wyhl. In this sense, the grassroots movement against reactors that took place along the Upper Rhine played a major part in making nuclear energy a hotly contested issue throughout Western Europe, signalling an early success for the German anti-nuclear and Green movement.

According to Stephen Milder (2013) many of the Wyhl occupiers were conservative farmers and vineyard owners. Cooperation between these rural people and scientists from nearby University of Freiburg connected local knowledge of the region with technical expertise. Most importantly, collaboration between French and Germans in a transborder conflict allowed for the creation of a community that spanned the Rhine and positioned itself as an alternative to the governments in Bonn, Paris, and Stuttgart. In the end Wyhl was not constructed, and neither was an NPP in Switzerland, but – as we have seen – Fessenheim in Alsace was built. The European, international character of the protest was supported again by activists such as Petra Kelly in 1975 (then working at the EEC in Brussels). Thus, Jan-Henrik Meyer (2014) agrees that the site occupation at Wyhl in 1975 was the symbolic birthplace of the West German anti-nuclear movement but it may also serve as the starting point for a West European history of anti-nuclear protest.

IN NORTH AMERICA

In California: Diablo Canyon and Rancho Seco[9]

California, in contrast to Western Europe, is more advanced technologically in many aspects, and its energy supply is actually devoid of any inputs from nuclear energy. This is not how it looked in the 1970s, when the hopes of a source of energy "too cheap to meter" took over the USA's imaginary together with the lie (propagated under President Eisenhower in 1952–60) that there were "atoms for war" and "atoms for peace". There are still many nuclear power plants in the United States providing almost 20 per cent of electricity. Most of them are nearly 40 years old: the issue is now how to close them down, what to do with the nuclear waste, and who will cope with the environmental liabilities. Diablo Canyon and Rancho Seco in California teach something about these facts to the rest of the world.

Diablo Canyon in San Luis Obispo country was famous in the annals of environmental struggles since the 1960s, when in 1966 the Sierra Club Board amazingly voted to endorse the Diablo Canyon site. They discovered later that it was home to the largest Abalone site in California and that it was risky also to humans. A major campaign to reverse the Sierra Club's endorsement of the atomic plant was started by several board members including David Brower. All this led to a split in that conservationist organization and to the founding of Friends of the Earth.

There were many protests against Diablo Canyon. In 1977, about 500 "activists" staged civil disobedience at the gates of Diablo Canyon and 47 were arrested. In September 1981, the Abalone Alliance started a blockade of Diablo Canyon that lasted two weeks. Over 1,900 people were arrested, while tens of thousands showed up to support them. In any case Diablo Canyon was built although it was alleged that the site suffered the risk of an earthquake. On

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21 June 2016, Pacific Gas and Electric Company (PG&E) announced a proposal written with Labor and Environmental organizations to increase investment in energy efficiency, renewables and storage, while phasing out nuclear power. Specifically, the operating licences for Diablo Canyon Units 1 and 2 would not be renewed.

Political and environmental pressures lie behind this 2016 decision. In October 2010 a major controversy arose when California enacted a new policy banning by 2015 the use of antiquated "once-through cooling" systems, which allow coastal power plants to directly take in and discharge massive amounts of seawater – causing significant damage to marine creatures and the environment. Diablo Canyon caused some 80 per cent of the damage to the marine environment of all the coastal power plants combined

In June 2016, pro-nuclear analysts still lamented that Diablo Canyon would close down. They said that "the plant is safe, can withstand a large earthquake, tsunami and any other disaster, provides billions to the local economy, and produces more clean energy than all the wind turbines in California combined" (Conca 2016). For critics of nuclear power, the prospect of closing Diablo Canyon was welcome. Even the Sierra Club had already changed its views favourable to nuclear energy. PG&E estimated it would cost $3.779 billion to decommission Diablo Canyon (Nikolewski 2016). The nuclear waste will be kept on site because, as is the case with all nuclear facilities in the US – and elsewhere – companies are not liable for final disposal: it is the federal government's responsibility to ultimately find places to deposit nuclear waste. However, with the proposed repository at Yucca Mountain in Nevada apparently scrapped, nuclear facilities keep spent fuel at their respective sites.

Rancho Seco in Sacramento[10]

When residents of Sacramento, California, voted to shut down their utility's only NPP they were motivated by both economic and environmental reasons. The plant was closed by a public vote on 7 June 1989, a decade before its operating licence was to expire. The vote was 53.4 per cent to shut down the plant and 46.6 per cent to keep it open. This nuclear plant had a shorter lifespan than Diablo Canyon. The 913 MWe Babcock & Wilcox PWR had achieved criticality on 16 September 1974 and entered commercial operation on 17 April 1975. In 2005 the United States Nuclear Regulatory Commission concluded that an accident in Rancho Seco in 1986 was the third most serious occurrence in the United States (behind the Three Mile Island accident in 1979 and the cable tray fire at Browns Ferry in 1975).

In 1986 "Sacramentans for SAFE Energy" called for the SMUD (Sacramento Municipal Utility District) to study the safety and economic risks associated with Rancho Seco. Some years before, in 1981, the Abalone Alliance activists along with local opposition held an eight-day sit-in at the State Capitol in Sacramento, urging Governor Jerry Brown to use emergency powers to shut down Rancho Seco. The plant operated across these bumps from April 1975 to June 1989 but had a lifetime capacity utilisation average of only 39 per cent. Four hundred and ninety-three nuclear fuel assemblies remained stored in casks in concrete bunkers.

Three Mile Island, 1979[11]

This was a memorable nuclear accident. When the Three Mile Accident happened, I was at home near the Universitat Autonoma de Barcelona and we had a visitor, our friend Martha Acklesberg, who was researching archives for a book on *Mujeres Libres*, an anarchist

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Figure 10.2 A sign dedicated to the nuclear accident at Three Mile Island

organization of women from before the Spanish Civil War. She had relatives near Harrisburg in Pennsylvania. There was no Internet yet, so she was for a few days reaching for the line phone asking for information that we were all so keen to get. The Three Mile Island Unit 2 (TMI-2) reactor, near Middletown, Pa., on the Susquehanna River, partially melted down on 28 March 1979. The accident enhanced safety concerns among activists and the general public, resulted in new regulations for the nuclear industry, and contributed to the decline of reactor construction programmes in the US and other countries. It gave a great impulse to the anti-nuclear movement, and discredited previous risk assessments such as the notorious 1975 Rasmussen Report sponsored by the US Atomic Energy Commission statistically estimating extremely low risks of accidents in commercial nuclear power plants, carried out under the direction of Norman C. Rasmussen of the Massachusetts Institute of Technology.

On 30 March 1979, Gov. Richard Thornburgh recommended an evacuation for preschool children and pregnant women within five miles of Three Mile Island. Data collected since the meltdown demonstrate a nexus between radiation exposure and adverse health impacts to women and children. Three Mile Island-1 (TMI-1) had come on line in September 1974 at a cost of $400 million. Three Mile Island-2 (TMI-2) came on line in December 1978, 90 days before the accident. TMI-2's cost was close to $2 billion dollars in construction and clean-up bills. Units 1 and 2 were owned by Metropolitan Edison (50 per cent), Jersey Central Power & Light (25 per cent) and Pennsylvania Electric (25 per cent). Regarding liability for damage to health, a federal appeals court in December 2003 dismissed the consolidated cases of 2,000 plaintiffs seeking damages against the plant's former owners.

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The US industry had begun confidently taking new orders totalling 8,000 MW in that year 1979 – more than any year since 1974. The 1979 Oil Crisis, in the wake of the Iranian Revolution, was supposed to increase orders for NPPs. President Carter said he would expedite efforts to expand the number of nuclear inspectors and added that "there is no way for us to abandon nuclear power in the foreseeable future", reiterating his administration's intention to introduce fresh legislation to accelerate the licensing of new nuclear plants. However, this would never happen. The US nuclear industry slowly retreated after 1979. The one thing that Carter had been sure to quit was the fast breeder project, at Clinch River in Tennessee (the American Creys-Malville).

Laguna Verde in Mexico[12]

There is an NPP in Mexico, Laguna Verde, that includes two nuclear power units of 805 MW each. The construction of the first plant began in 1976 and it started operating in 1990, the second one started in 1977 and was connected to the electric grid in 1995. Since the beginning, there were protests of civil society organizations, especially the group *Madres veracruzanas*. They claim that the presence of the plant entails a negative environmental risk and that it operates with poor security standards. In 1987 up to 10,000 people demonstrated against the project. With Chornobyl in mind (1986) the community did not want to take the risk.

As Carlos Navarro (2001) reports, the threat of a nuclear mishap in Mexico ignited a debate again in 2011 on whether the Mexican government should proceed to expand the capacity of Laguna Verde. The plant, property of the state-run electric utility Comisión Federal de Electricidad (CFE), provides 4 per cent of Mexico's total electricity needs. The Fukushima disaster prompted a group of environmental organizations, led by Greenpeace México, to demand the government abandon nuclear power altogether. Opinions in the Mexican Congress were varied. The governments have been confident in the Laguna Verde facility because it has been certified by Mexico's Comisión Nacional de Seguridad Nuclear y Salvaguardias (CNSNS). Authorities point out that the Laguna Verde plant is in a relatively seismic low-risk area. Still, Veracruz is not immune to earthquakes, and hurricanes, which would bring high winds and flooding.

The CNSNS admits that operators of the Laguna Verde facility had to suspend operations 37 times between 2000 and 2007. The CNSNS implemented stricter inspection and training requirements after the World Association of Nuclear Operators released an audit in 1999. Bernardo Salas Mar (2021[13]), a physics expert at the National Autonomous University of Mexico, pointed out that there have been risks of a meltdown. Salas was fired from Laguna Verde for reporting irregularities at the plant. He worried that the nearby population is being exposed to excessive radioactivity. Leaders of communities in Veracruz assert that there have been excessive cases of cancer. Greenpeace México opposes the plant together with local organizations – including Grupo Antinuclear de Madres Veracruzanas and La Asamblea Veracruzana de Iniciativas y Defensa Ambiental.

IN THE PACIFIC

The Fukushima Daiichi disaster in Japan has been briefly described in Chapter 2.

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Mururoa: French Nuclear Colonialism in the Pacific[14]

We now spend some pages on a very large topic – nuclear arms testing in colonial peripheries which goes together with deprivation of human and political rights, describing the conflicts in Mururoa, in the Marshall Islands and in Kazakhstan under the Soviet regime. In the Pacific Ocean, France and the United States used some colonial possessions as nuclear warfare test stations. This was opposed by powerless local inhabitants and by international environmental organizations such as Greenpeace.

In the 1960s, the Algerian Independence War forced France to move its nuclear tests out of the Sahara Desert. The new location chosen for the tests was French Polynesia (FP), in particular, the Mururoa and Fangataufa atolls in the Tuamotu Archipelago. The first atomic bomb was dropped in 1966. Since then, and for 30 years, the *Centre d'Expérimentation du Pacifique* (CEP) carried out 193 nuclear tests in the atmosphere and underground (after 1974). The first hydrogen bomb (H-bomb) was detonated in Fangataufa in 1968 and had an explosive power 200 times superior to Hiroshima's A-bomb. The atoll had to be declared off-limits for six years.

The French military was and is very secretive on the impacts of the tests on the Polynesian population. Studies on the impact of radiation fallout on the population are lacking. In the 1970s, Japanese scientists were alerted to the correlation between the nuclear tests and the ciguatera fish poisoning illness. Moreover, New Zealand and Australian monitoring stations detected high levels of radiation fallout.

According to the local population, each time there was a new detonation the military moved them to shelters and their houses had to be decontaminated. The population affirmed they never saw the radiation monitoring inspectors mentioned by the CEP. Moreover, it was alleged there was also plutonium leakage from undetonated bombs, which the military covered with bitumen. During the 1980s, strong cyclones destroyed the plutonium-bitumen layer and the radioactive material ended up in the Ocean.

The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) said little on the impacts of the French nuclear programme in the Pacific. In the 2000s, the *Observatoire des Armements* published a report which showed that radiation levels in food, drinking water and rainwater in the Mangareva atoll (to the east of Mururoa) were well above the accepted limits. Despite having access to this information, the CEP chose to continue the tests. Moreover, a study from the same period indicated a strong correlation between thyroid cancers and the nuclear tests. It was reported that approximately 9,500 suffered from radiation-induced diseases in the region. The Polynesian Territorial Assembly (local government) tried to form a civilian commission to conduct a thorough survey of the population's health and was constantly blocked by the French Government.

There have been protests since France decided to start the tests in Polynesia. In 1973, there was an anti-nuclear meeting in Tahiti that gathered some French parliamentarians and a few thousand locals. During the early 1970s, there were also protests occurring in Australia and New Zealand because of the monitoring activities mentioned above. Many civil society associations also called for a boycott of French goods. At the same time, the nuclear detonations were criticized at the UN (1975). In the same year, the governments of Australia and New Zealand filed a demand against France in the International Court of Justice (ICJ) for polluting their territories. France did not recognize the competence of the ICJ to decide on the matter, and also ignored the court injunction order.

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Protest actions escalated when New Zealand sent a warship to Mururoa with a cabinet minister and members of the press. Some civilians also sailed vessels in international territorial waters nearby Mururoa in the advent of a set of nuclear detonations, which pushed the French military to detain the crews in order to carry on with the operation. In the early 1980s, after the beginning of the underground tests, French technicians working at Mururoa denounced the dumping of radioactive waste material to the French press when the government failed to hear their claims. On 10 July 1985, two agents of the French secret services sank the flagship of the Greenpeace fleet, the Rainbow Warrior, at the Port of Auckland in New Zealand on its way to a protest against a French nuclear test in Mururoa. Fernando Pereira, a photographer, drowned on the sinking ship.

The nuclear activities in French Pacific only ended in 1996 prior to France's ratification of the Comprehensive Nuclear-Test-Ban Treaty. Since then, both the Polynesian population and ex-military members have had many difficulties obtaining information and compensation for the radioactivity-induced impacts on their health. In 2010, France passed a Law (Loi Morin) authorizing compensation to people who had developed cancers because of nuclear tests in Algeria and the French Pacific. In eight years (from 2010 to 2017), the Committee for nuclear tests victims' compensation (*Comité d'indemnisation des victimes des essais nucléaires*) received 1,245 demands, 811 of which were related to the Pacific programme. From these, only 69 military and 11 local civilians managed to receive compensation. In 2010 Polynesian workers at the test sites formed an association to defend their rights, in particular those with radiation-induced health problems. It's called "Mururoa e tatou" ("Mururoa and Us", in local creole).

In 2013, some declassified documents showed that plutonium fallout from the tests had affected a much larger area than previously admitted by the French State. The island of Tahiti had been exposed to radiation levels 500 times above the maximum accepted. In 2014, FP's Territorial Assembly demanded $US 930 million in compensation for radioactive pollution and $US 132 million for the occupation of the Fangataufa and Mururoa atolls. Two years later, the French President, François Hollande, recognized the environmental and health impacts. In 2018, a Polynesian politician and ex-president, Oscar Temaru, filed a complaint against the State of France in the International Criminal Court (ICC) in The Hague on behalf of the victims of nuclear colonialism.

US Nuclear Colonialism: Atomic Tests in Bikini and Enewetak Atolls, Marshall Islands[15]

In a related case, 60 years after the last nuclear weapons tests in the Marshall Islands, their legacy reverberates in the form of health problems and people living in exile due to the radioactive contamination. In the post-war period, between 1946 and 1958, the US military carried out 67 nuclear tests in the Marshall Islands, a United Nations trust territory under its administration which became independent some years later. The explosive yield dropped in the Enewetak Atoll (44 bombs) and the Bikini Atoll (23 bombs) during the 12-year period is said to be equivalent to the daily detonation of 1.6 Hiroshima bombs.

The first tests occurred in the Bikini Atoll in 1946 and its residents were moved beforehand with the promise of only temporary displacement. Since then, the Bikinians have moved through different islands, often facing malnutrition. They eventually settled on Kili Island. During the 1960s, the US scientific community deemed the Bikini Atoll safe. Some families

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returned to Bikini in 1969, but nine years later they had to leave once again due to high radiation levels.

The people of Enewetak also had to leave their home. They also faced precarious conditions, but finally managed to return to Enewetak in 1980. Nonetheless, they live under threat of contamination due to the presence of a nearby nuclear waste facility, contaminating the soil around it with plutonium-239. Rising sea levels and the risk of a typhoon could augment the problem.

Due to wind effects, the fallout of Castle Bravo (1954), the strongest detonated bomb, affected people on Rongelap and Utrik Atolls. People from Rongelap were evacuated some days after when people began to show signs of exposure. They returned in 1957 but fled again in 1985 amidst fear of residual radiation. In the 1990s, declassified documents have shown that the US used Rongelap inhabitants as unconsented medical subjects, deliberately exposing people to radiation in order to study how it moved through the environment, food chain, and the human body.

The consequences of US nuclear tests in the Marshall Islands range from serious health problems to cultural and economic impacts. Project 4.1 was a medical study conducted by the US of those residents of the Marshall Islands exposed to radioactive fallout from Castle Bravo nuclear test at Bikini Atoll. Project 4.1 described several degenerative health effects: lower red blood cell counts and anaemia; immune system disorders; miscarriages, congenital defects, and infertility; higher prevalence of cancer, particularly thyroid and leukaemia. The nuclear tests deprived entire communities of their homelands and contributed to the loss of their cultural heritage. The economic impacts were significant as displacement led to malnutrition, starvation, and debt. Once self-sufficient communities, they became dependent on US food aid programmes.

The US used the condition of Territory Trust of the Marshall Islands to deny legal protection to Marshallese claims for justice. However, the National Environmental Policy Act of 1969 opened new channels for the affected communities. In 1973, the Enewetak managed to stop a new battery of military tests and obtained repossession of their lands. In 1975, the Bikinians required a radiation study in their Atoll, conducted three years later. In the early 1980s, they also managed to receive two trust funds from the United States government as compensation.

In 1986, the Marshall Islands signed a Compact of Free Association agreement, thus leaving the condition of Trust Territory to become an independent Republic. The agreement led to the creation of a Nuclear Claims Tribunal to adjudicate claims for compensation for health effects from the tests. Five years later, the Bikini Council filed a lawsuit against the US Government seeking payment. After dismissals in lower courts, the US Supreme Court refused the case in 2010. No liability. In 2012, a special rapporteur from the United Nations High Commissioner for Refugees visited the Marshall Islands and wrote a report stating the long-lasting and irreversible effects. It urged for fair compensation, but the US government dismissed many of the report's claims. Christopher Loeak – Marshall Islands' former president – has pleaded with the US to act and solve the nuclear testing legacy. Yet the US government said the responsibility is now on the Marshallese government.

NUCLEAR TESTING IN THE FORMER SOVIET UNION AND THE NEVADA-SEMIPALATINSK MOVEMENT[16]

Hanaček's and Martinez-Alier's article of 2021 on nuclear conflicts in Soviet and post-Soviet territories has a table with 14 cases between 1998 and 2020. Nine are related to NPPs. There

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are some conflicts on military nuclear tests, and others focused mainly on nuclear waste. The anti-nuclear movement was an important factor in the dismembering of the Soviet Union. Thus, the environmental movement "Zelenyi Svit" (1988) demanded the Ukrainian government to declare a moratorium on any new nuclear reactors in the country (Sak 1993). Two conflicts against NPP are situated in Chornobyl, Ukraine near the border with Belarus, and in Mayak – a plutonium production site for nuclear weapons and nuclear fuel reprocessing plant, today Ozyorsk, Russian Federation. The explosion of a nuclear reprocessing facility in Ozyorsk exposed 177,000 people to high levels of radiation.

Only during the democratization period of the 1980s–90s did people start to openly protest against officials responsible for the impacts of nuclear tests, accidents, and waste management (Kasperski 2012). For instance, commemorations of the Chornobyl victims were among the first public gatherings, where affected people expressed their concerns and opposition (Kasperski 2019). At the same time, formerly classified information on nuclear radiation harms became known to the public (Bauer et al. 2013).

One of the most successful mass anti-nuclear protest movements – the Nevada-Semipalatinsk Anti-Nuclear movement in Kazakhstan – was active between 1989 and 1991. Anti-nuclear sentiment was influential in the independence of Kazakhstan. The name reveals a transcontinental link with the anti-nuclear and Indigenous movements in Nevada, United States. Kazakhstan is a very large country, with low population density, and an important producer of uranium, oil and gas. The Kazakhstan movement of 1989–91 achieved not only the closing down of the Semipalatinsk nuclear testing site, but a moratorium of all nuclear testing in the former Soviet Union (Bauer et al. 2013). The movement's largest demonstration with 50,000 participants took place during the 44th anniversary of the nuclear attack on Hiroshima. In 1990 the Kazakhstan parliament passed a bill banning nuclear weapons testing in the whole country. The same year, the Semipalatinsk site was officially closed (Magnarella 2008).

IN CHINA AND INDIA: SOME MORE NUCLEAR ENERGY CONFLICTS

In China: Daya Bay and Taishan in Guangdong[17]

South of Semipalatinsk in Kazakhstan we find several uranium-related conflicts in the Kyrgiz Republic. From the Soviet era there is a legacy of thousands of tonnes of radioactive waste accumulated in the town of Mailuu-Suu, upstream of the Syr Darya River basin. There are anti-uranium mining protests in Issyk Kul province. Further to the south-east, in Xinjiang not far from Urumqi, we approach the nuclear military testing sites of China, still indulging in military nuclear testing in Lop Nor desert in 1996. Here, China detonated its first nuclear bomb in 1964, followed by 22 atmospheric and 22 underground tests. There are reports of high cancer rates.

Nuclear energy has caused grassroots protests in China. Leaving the military aspect aside to the extent that it is possible, we shall consider a few conflicts far from Xinjiang, in coastal China. In fact, Chapter 6 presented a nuclear conflict that grew into successful protests against the proposed Sino-French nuclear reprocessing plant in Lianyungang, Jiangsu. Another case against nuclear power for electricity is the Daya Bay NPP in Guangdong. Meanwhile, in 2021 another urgent alarm developed at the Taishan NPP also in Guangdong, again owned and built in part by French interests.

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Daya Bay

In 2019 China had a total nuclear power generation capacity of 49.6 GW from 50 reactors, with an additional 17 GW under construction. In 1986 after Chornobyl, there was an Anti-Daya Bay Nuclear Plant Campaign developed under the shadow of political uncertainty over Hong Kong's future. Daya Bay Nuclear Power Station ("DBNPS"), which currently includes Guangdong Nuclear Power Station ("GNPS") and Lingao Nuclear Power Station ("LNPS"), is located about 50 km north-east of Hong Kong city centre. About 70 per cent of GNPS's electricity output is supplied to Hong Kong. The output of LNPS is entirely supplied to Guangdong Province. According to Hong Kong Nuclear Investment Company (HKNIC) the electricity produced by Daya Bay saves Hong Kong each year million tonnes of pollution from sulphur dioxide, nitrogen oxides and particles from fossil fuels.

According to the Administration, GNPS comprises two French-designed pressurized water reactors similar to those at LNPS. Each reactor is protected by three barriers to prevent the release of radioactive material from the core. In addition, there are many other protective systems. The joint venture contract was signed in early 1985 following formal approval from both the Central Government in Beijing and the Hong Kong Government. The negotiation for the Daya Bay nuclear power station project coincided with the political negotiations between China and Britain over the future of Hong Kong, and was seen as a symbol of cooperation between the Chinese and the British Government for the long-term benefit of Hong Kong.

Concerns over the nuclear project were limited to local environmental groups, focusing more on the environmental and radiological impact of a nuclear power station than specific technical and safety issues. As for the general public, the project wasn't much of an issue… until April 1986. The Anti-Daya Bay Nuclear Plant Campaign overlapped with the nuclear accident at Chornobyl which helped mobilization by changing people's views of nuclear energy.

At the beginning, there was a debate in the local media on the safety of nuclear energy. The debate then quickly turned into a polarized process of politicization between the pro-Daya Bay camp (pro-PRC-Daya, conservative, and business interests) and environmental NGOs, social activists, and environmentally sensitive middle-class liberals. Hong Kong legislators also visited nuclear sites in France, Austria, the United States and Japan in response to mounting disquiet in Hong Kong since the nuclear disaster at Chornobyl.

After their return, Hong Kong's Legislative Councillors wrote a report in which they urged the Chinese authorities to take more stringent safety measures at Daya Bay. The report made it clear, however, that it was the Chinese government, not the Hong Kong government, which would take the final decision over construction at Daya Bay.

The Chinese nuclear industry minister said that the Daya Bay site was chosen after careful geological study. For more than 1,000 years, the area has had no earthquakes more than 7 on the Richter scale. The Daya plant will be able to withstand quakes of 8 or more, he said. Such assurances failed to quieten the Hong Kong opposition. Political groups, legislators and newspaper publishers questioned whether Hong Kong residents could be evacuated fast enough in case of a disaster. The NPP became, as elsewhere, a geopolitical issue.

Under the leadership of a Joint Conference for Shelving the Daya Bay Nuclear Plant formed by 107 local pressure and community groups in the late 1970s, the Anti-Daya Bay movement had obtained more than one million signatures. However, the Chinese minister of nuclear industry rejected the petition. A feature of the movement was that the core leaders in the Joint Conference were not strongly associated with established NGOs. Both CA (The Conservation

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Association) and the FoE (Friends of Earth) were members of the Joint Conference, and the latter's spokesman, Reverend Fund Chi-wood, was a member of CA. However, the Anti-Daya Bay movement was steered by other veteran pressure groups, such as the Hong Kong Professional Teachers' Union, the Hong Kong Christian Industrial Committee, the Hong Kong Social Workers' General Union, the Hong Kong Federation of Students, and elected officials and community organizations. After the campaign, the leaders of the anti-nuclear campaign turned to other social issues on the political agenda and, in the late 1980s, to political liberalization. The Anti-Daya Bay campaign died down. In 2010, it was reported that there were leaked traces of radioactive iodine into the surrounding cooling fluid, but no radiation escaped the building. After Fukushima in 2011, there were anti-nuclear marches around the world, including a march in Hong Kong as well. A representative, on behalf of the alliance Anti-Nuke, posted two letters to Chinese Premier Wen Jiabao and Japanese Prime Minister Naoto Kan respectively, asking them to support the abolition of nuclear power and a nuclear-free zone in Asia.

Taishan, one new EPR reactor

The Taishan NPP is a nuclear power plant in Guangdong province. The plant features two operational EPR reactors. The first unit, Taishan 1, entered commercial service in December 2018. The second unit, Taishan 2, entered commercial service in September 2019. On 23 July 2021, France Press announced that "France's EDF Would Have Shut Taishan 1 Down" as Co-Owner of the Faulty Nuclear Plant, while Chinese authorities have said that damaged fuel rods led to increased radioactivity at one of Taishan's two reactors, but that it remains within safety limits, and have allowed it to keep operating. The following section on Jaitapur, India, gives further details on the parallels with other French EPR reactors under construction or planned.

In India, NPPs in Jaitapur and Haripur[18]

The state in India is so committed to nuclear energy for the future (as China also is) that it deserves a large space in this chapter, adding cases to the ones in the previous chapter. We start in Ratnagiri, in Maharashtra. The French connection is obvious. An overambitious project was planned in 2005 with six units of 1,650 MWe each at a cost of US$ 55 billion. The distance between each adjacent reactor unit was planned to be 250–300 metres. They would be so-called European Pressurized Reactors (EPR) from Areva, that would be placed in the district of Ratnagiri, Jaitapur. Bringing Jaitapur and the Chinese Taishan's incident of 2021 together, a report in *The Leaflet* by Sonali Huria written for the Indian public, stated:

> The Indian media has remained singularly obsessed with China's failings. The trigger for these debates was a CNN report regarding a potential "radiation leak" at the Taishan plant following warnings of a "performance issue" and the possibility of an "imminent radiological threat" from Framatome, the French firm that designed Taishan's EPR (…). Chinese foreign ministry was to dismiss such reports […]Taishan's two-unit nuclear power plant is a joint venture between China Guangdong Nuclear Power Group, EDF and Chinese utility Guangdong Energy Group. At present, Taishan is the only site where EPR design reactors are in operation, even as similar EPR projects like Jaitapur in India, Hinkley Point C in the UK, Flamanville in France continue to experience long delays and massive cost escalations […] The continuing troubles for the French nuclear industry concerns India, which is in the final stages of negotiations with EDF to host a massive nuclear power park in Jaitapur along Maharashtra's ecologically diverse and fragile Ratnagiri coast, despite Gram

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> sabhas in Jaitapur have routinely passed unanimous resolutions opposing the nuclear project […]. Farmers from the villages of Madban, Niveli, Karel, Mithgavane and Varliwada in Ratnagiri district have already been evicted. The lack of transparency and the bulldozing of peaceful dissent have also meant the routine promulgation of Section 144 of the CrPC.

On 4 December 2010, protests had become violent when over 1,500 people were detained from among thousands of protesters, who included environmentalists and local villagers. Members of the Konkan Bachao Samiti (KBS) and the Janahit Seva Samiti (organizations opposing the project), were also detained. The protesters raised serious doubts about the objectivity of the EIA Report. Parallel studies by the venerable Bombay Natural History Society showed that the project will cause substantial environmental damage. The former chairperson of the Atomic Energy Regulatory Board, A. Gopalakrishnan, questioned the wisdom of India entering into a contract with Areva for the EPR. In 2008, it had been estimated that the Jaitapur plant would be fully operational in the next 20 years. Areva, who was to provide the technology for the reactors, went bankrupt and was taken over by EDF. The project was also delayed by farmers' protests as they were opposed to the acquisition of their land.

In Haripur, West Bengal, the story was similar although the partner was not France but Russia. During his visit to Russia in December 2009, Prime Minister Manmohan Singh signed an agreement with the government for collaboration on setting up five nuclear plants in India. The project was given environmental clearance by the Centre Government and land in Haripur was allotted to Russian company Rosatom for developing a nuclear park. Local farmers and fishermen, supported by a number of NGOs, launched strong resistance against the proposed Haripur nuclear power plant and forced the state government to reject the union government's proposal. Haripur was expected to have six nuclear reactors each of 1,650 MW – a total installed capacity of 10,000 MW of electricity. It would be located in the coastal area of Contai, East Midnapur district, roughly 170 km away from Kolkata.

COMPLAINTS ON URANIUM MINING IN NAMIBIA, NIGER AND BULGARIA: ACTIVISTS MOBILIZING SCIENTISTS

Before the Fukushima accident in 2011 it seemed that the world nuclear power industry would grow and with it the demand for uranium. Through EJOLT project, 2011–15 we got new contacts with CRIIRAD in France (Commission for Independent Research and Information about Radiation, a small EJO founded in France by nuclear scientists in the aftermath of the Chornobyl accident of 1986), and with activists in Namibia and Bulgaria. Marta Conde (then a PhD student at ICTA UAB) was in charge of this part of EJOLT. One of her articles was titled "Activists mobilising scientists". I use this concept again in Chapter 28. She drew on events in Niger and Namibia in which she herself had been involved helping local activists to secure technical advice from Bruno Chayeron, an expert on nuclear energy and head of CRIIRAD. A group in Malawi was also involved. The uranium mining cases in the EJAtlas often have a strong anti-colonial flavour. They also tend to belong to the category of "post-normal science", where there is urgency in taking a decision, lack of local knowledge, and where values such as economic gain compared to human health are in dispute and not commensurate (Funtowicz and Ravetz 1993).

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Namibia[19]

In Namibia, near Arandis, the Rössing uranium mine belonged to Rio Tinto (about 70 per cent) and to the government of Iran (15 per cent). In the apartheid era there were allegations of health damage to workers at Rössing with an attempt to claim damages in a court case in London. By the early 1980s, the UK was importing nearly half its uranium requirements from Rössing alone. The deal led to an international Campaign Against the Namibian Uranium Contract (CANUC), which brought together the Namibian independence movement, the anti-apartheid movement, and "Partizans" (People Against Rio Tinto Zinc), a London-based grassroots organization. The mine employed about 500 people, the fifth largest open-pit uranium mine in the world. There were plans around 2007 to invest another US$112 million, to increase uranium oxide production to the mine's full planned capacity of 4,000 tonnes, which was achieved. EARTHLIFE Namibia and CRIIRAD organized radioactivity measurements in areas located in the vicinity of uranium mines in Namibia, especially Rössing. The dose rate measured in 2011 by CRIIRAD in the parking lot of Rössing mine was about six times above natural background value. The radioactive rocks are washed down by rainwater and contaminated the sediments of the Khan River with values ten times above those collected upstream. The small local organization EARTHLIFE used such data in their campaigns, but Rio Tinto, as usual, managed to escape its socio-environmental liabilities. The health damage to uranium miners has not even been acknowledged.

Niger, in Tuareg Territory[20]

In Niger, the French nuclear giant Areva started mining activities in the Agadez Region in 1968, with the creation of the holding company SOMAIR and the open-pit mine of Arlit. In 1974 a second holding company, COMINAK, was created together with the underground mine of Akouta, also built by Areva, close to the town of Akokan. Local organization Aghirinman together with other EJOs contacted CRIIRAD, Sherpa and Greenpeace to evaluate the health and environmental conditions of the area. They found alarming levels of radioactivity in water, soil and air samples. The aquifers are contaminated and have been drained, making the traditional way of life of Tuareg people impossible. People living in the area are exposed to radioactivity and death rates linked to respiratory problems Peaceful demonstrations and strikes were organized by local CSOs and miners asking for better working conditions and a more equitable share of profits. A Tuareg rebellion continued on and off for many years despite negotiations.

In Agadez, the French nuclear energy company Areva also developed a mine in Imouraren, in 2014–15, expected to last 35 years. In April 2012, 800 workers at Imouraren staged a strike over work conditions and in July 2012, 1,200 workers at the COMINAK mine undertook a 72-hour strike to demand higher wages. During the intervention in Mali in December 2012, French forces were sent to protect the new mine. In 2007, China National Nuclear Corporation (CNNC), through its local subsidiary Sino-Uranium, invested US$ 334.7 million to be able to exploit Niger's uranium deposits. Like mining companies from Canada, Korea, and other countries, China received one of the contracts offered to bidders by the Niger government in 2007, breaking the 40-year monopoly held by the French company Areva. The Société des Mines d'Azelik SA (SOMINA) began production in 2010 in the area of Azelik/Teguidda, about 150 km away from Arlit and Agadez.

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The soils of Teguidda n'Tessoumt, heavy in salt content, were used for salt production for centuries. Ingall, a town to the south, is the destination for hundreds of thousands of livestock every year during the annual transhumance to replenish livestock salt needs. These age-old practices shifted in 2009, when the government leased the community's land to Sino-U for uranium exploration. Salt traders have launched community campaigns throwing stones at mining machinery. The movement seeks compensation for the loss of salt activities due to mining. Local officials in Ingall attempted to find a solution for these losses. "They say they have direct communication with the central government", adds Mohamed Mamane Illo, Tuareg rebel and elected councillor of Ingall (Armstrong 2010).

In March 2013, a 72-hour strike was carried out by over 680 mining workers demanding better wages and bonus payments (Green 2013). Niger workers are provided with dorms separated from Chinese workers, but these dorms are located near to open-pit uranium mines, prompting disease (Armstrong 2010, in *The Christian Science Monitor*).

In February 2014 the mayor and nomadic pastoralists of Ingall reported that many hundreds of livestock died mysteriously after drinking from reservoirs near the Azalik mine.

Buhovo in Bulgaria[21]

Another trip with Bruno Chayeron took us in June 2011 to Buhovo, one of the first uranium mines in Bulgaria, and this is a summary of what we wrote in the EJOLT Blog (Meynen 2011). Our partner in Bulgaria was the organization Za Zemiata which is a member of the confederation Friends of the Earth International. In 1938, uranium from the Buhovo mine was sold to the German army for 'unknown' purposes. Some years later, uranium was exported from here to allegedly produce the first Soviet atom bombs, according to Todor Dimitrov, a former mayor of the town. After the political change in post-Soviet times, in 1992, the uranium mining and milling industry in Bulgaria was closed down by Decree No. 163 of the Council of Ministers.

In Buhovo, the local agricultural land was polluted. In the 1980s, the government forbade the population from growing plants for animal and human feeding. Despite the rehabilitation programme water and soil are still contaminated. Radioactive and toxic dust from the tailings is blown even over Sofia city, 20 km away. The area is also polluted additionally from the steel plant and waste reprocessing. The condition of the previous mining sites was of lack of vigilance, there was easy public accessibility. Potential hazards arise from the re-use of materials from uranium mining sites.

GASTRE, PATAGONIA, ARGENTINA: ATTEMPTED DISPOSAL OF NUCLEAR WASTE IN A FARAWAY FRONTIER[22]

This conflict takes us to the other end of the nuclear energy chain (from uranium mining to nuclear waste disposal). In 1996 the people of Chubut stopped the project for a large nuclear waste cemetery, which was supposed to store nuclear waste from Argentina and France. In 1989, according to Greenpeace, Henry Troude representing Pechiney Ugine Kuhlmann S.A. offered the Argentine government to finance the nuclear repository and transport system between the city of Puerto Madryn and the town of Gastre. The deposit would get US$ 30 billion in ten years, and the Argentine government would receive some US$ 13.5 billion.

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Argentina has some operating nuclear power plants. In 1976 a plan during the dictatorship established that, by the end of the century, six nuclear power plants would operate in the country and all stages of the nuclear cycle would be controlled. The military link was obvious. For the people of Gastre, the nightmare began in 1986, after the dictatorship, when the Comisión Nacional de Energía Atómica (CNEA) publicly announced that the place chosen to deposit the waste would be their town, with the echoes of the Chornobyl disaster.

"The public's mobilization and complaints were key to stopping the project", said Juan Carlos Villalonga, Greenpeace-Argentina. A major march in June 1996 put an end to the CNEA project, which was to be the world's first High Activity Radioactive Waste Repository. *La gesta de Gastre*, "the exploit of Gastre" as it is known today, counted with the participation of thousands of people from all over the region and from all social strata This triumph is seen in Argentina as an antecedent to other environmental mobilizations in the country such as Esquel, Famatina and Gualeguaychú. In Chubut, people began to organize in October 1986; they gathered 8,000 signatures and handed them over to the then President Raúl Alfonsín but in 1996 the Energy Commission of Deputies of the national congress approved the construction of the atomic waste repository.

On 17 June 1996, a march of two thousand people opposed the project. The crowd marched through the snow. Every year it is reminded that there is no such repository working anywhere in the world with local agreement. The nuclear industry has no answer to the lethal radioactive waste generated by atomic reactors, as shown by the failure of Yucca Mountain, Nevada.

The struggle of Gastre made it possible to introduce into the Provincial and National Constitution the express prohibition of the entry into national territory of radioactive waste. In 2014, Silvana Buján, head of environmental organization BIOS, remarked that Italy had closed down NPPs, Germany had decided to give up nuclear power, and Japan was now dealing with the Fukushima aftermath. Many town halls in Argentina and some provinces have norms against nuclear power. This movement had its origin in Gastre.

An annual march commemorates Javier Rodríguez Pardo (deceased in 2015), who fought against the nuclear dump. Born in Spain, he arrived in Argentina in his youth and settled in Trelew (Chubut) around 1980. In the mid-1980s the announcement of the construction of the radioactive repository led him to a new militancy and to start the Anti-Nuclear Movement of Chubut (MACH). Later on, together with other organizations of a nascent environmental movement in Argentina, he co-founded the National Network of Ecological Action (Red Nacional de Acción Ecologista – RENACE). The *gesta de Gastre* marked a victory for Argentine environmentalism (Figure 10.3).

CONCLUSION: A MOST IMPORTANT BRANCH OF THE ENVIRONMENTAL MOVEMENT WORLDWIDE

I ended Chapter 9 near Chennai in India where the construction of a breeder reactor is taking place in Kalpakkam. Nuclear energy since its discovery around 1900 was seen as a solution to energy scarcity (from coal, and later from oil and gas) and also as a formidable military resource. There were promises in the 1950s of nuclear energy in the form of "atoms for peace" being "too cheap to meter" but the real causes of its growth have not been its cheap price but the perception of imminent energy scarcity plus the military links. Many years later these are still two main reasons why nuclear energy is being used. Sometimes, the "eco modernists"

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Source: OLCA

Figure 10.3 Javier Rodriguez Pardo

present nuclear energy as a solution against climate change caused by fossil fuels. Indeed, this promise of abundance was voiced from the early twentieth century both in the West and in Russia, where the great ecologist V.I. Vernadsky (1865–1945) promoted nuclear energy before and under Stalin. The problem of nuclear waste looms larger and larger, accidents occur from time to time, and it cannot be excluded that the twenty-first century will witness if not a global nuclear war, at least some awful regional wars.

This will hopefully not happen in Latin America because Brazil and Argentina have no nuclear arms, but it might happen in West Asia, and also between Pakistan and India. I still remember Bertrand Russell and Canon Collins in London in the 1950s in the sitting-down street demonstrations of the Campaign for Nuclear Disarmament (CND), They emphasized the perils of nuclear war, but they said very little against the use of nuclear energy for electricity production. Both issues went together.

Leaving nuclear war aside despite threats from Russia's war on Ukraine in 2022, this chapter has dealt with some nuclear energy conflicts around the globe, a "sample within the EJAtlas sample". In the global environmental justice movement, the general rule is that the resistance and information come from local EJOs. In this chapter, I profit however from the documentation from World Information Service on Energy (WISE) which was born from the global movement against nuclear energy. The Japanese network Hibakusha and the Bellona organization (based in Oslo) for the post-Soviet territories must also be mentioned here. The anti-nuclear energy movement operates at the local, national, and international level. It has common symbols.

The opposition to nuclear power has formed since the 1970s one of the most important branches of the environmental movement worldwide. The anti-nuclear movements have been

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often linked to peace and politically democratic movements. Speaking at a rally against the nuclear plant in Brokdorf, Germany, in February of 1977, Robert Jungk coined the term "The Nuclear State" which later gave title to an influential book. While the biodiversity conservation movement (of the IUCN, WWF) is more powerful in terms of social influence and certainly in terms of finance, the anti-nuclear movement has always been grassroots, sometimes with help from dissident scientists.

Until Three Mile Island in 1979 the anti-nuclear energy movement was despised by the mass media and by mainstream politicians, and it was not supported by the conservation environmentalists, with famous disagreements inside the Sierra Club in the United States. Back in the 1970s, the Sierra Club had a pro-nuclear power stance with an ad campaign called "Atoms, Not Dams". Later they changed. Support for nuclear power is still shown sometimes by environmentalists worried about climate change, such as James Lovelock. But after Three Mile Island in 1979, Chornobyl in 1986 and Fukushima in 2011, among the environmentalists as a whole there is no support for nuclear power. To be in favour of nuclear power means to place yourself among the rabid anti-environmentalists. Nuclear power goes together with strong state power and often with nuclear arms. This is shown again in Chapter 24 in the US conflicts on uranium mining in Navajo territory, plutonium in Hanford and the Yucca mountain nuclear waste storage.

One main debate in the rich countries is now often on whether old NPPs should be closed very soon or whether (because of an economic accounting that does not include liabilities) their "life" should be prolonged to 50 or even 60 years. There is also a debate on new "safe" NPPs around the world. The pro-nuclear energy team is down but not out. The displacement of nuclear power has been done by the display of reasonable arguments and by the shocking accidents, by the local opposition movements and the sacrifice of Vital Michalon, Gladys del Estal, Karen Silkwood, Fernando Pereira and other men and women. If I were asked whether the campaign against Diablo Canyon in California or Fessenheim in France was a success in environmental justice, I would reply "no" or "not sure" because it took a very long time to close them down, while to the same question on Wyhl, Kalkar, Valdecaballeros, Plogoff, Haripur or Gastre, I would reply, "yes, certainly". The world's environmental movements need some successes in all their branches.

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11. Biodiversity conservation: "militarized conservation" vs "convivial conservation"

INTRODUCTION: THE HANPP

This chapter traces the contrast between "militarized" and "convivial" conservation. We need first to look at the loss of biodiversity at the level of species (and varieties among the species), and also at the level of ecosystems. Ecosystems are endangered and species are disappearing because of human influence. The IPBES (the body of expert scientists in the field of biodiversity and ecosystem services parallel to the IPCC on climate change) announced in Paris in 2019 that one million species were threatened – providing a plausible explanation. In terms of the planet's long life of over four billion years, we are now at the sixth great extinction, the first one caused by human beings. The fifth one had been caused by a meteorite falling on earth, which led to the disappearance of dinosaurs. The earth certainly has a great resilience, allowing her to come back and produce new biodiversity.

One indicator of social metabolism that the Vienna School has used often (Haberl et al. 2007) and that was first proposed by Vitousek et al. in 1986, is the human appropriation of net primary production of biomass (HANPP). It is an indicator that complements other physical indicators of social metabolism, mainly those provided by material and energy flows accounting (MEFA). The higher the HANPP, the less biomass is available for other species. Population growth drives the increases in the HANPP together with the growth of the economy and the concomitant increases in materials and energy flows.

All species on earth have evolved by "choosing" the available sources of energy provided largely by photosynthesis produced by carbon dioxide in the atmosphere plus water and sunlight. The vegetarians consume the food they require from plants, the omnivorous species consume food provided by plants or by animals that feed on plants. An increase in the HANPP results from a decrease in the biomass produced (soil sealing for roads and infrastructures, forest fires) and from the appropriation of a large share of the biomass as wood, paper pulp and biofuels much beyond human food requirements. There is a contradiction between the objective of keeping biodiversity and the objective of producing and appropriating more biomass energy to absorb carbon dioxide and slow down climate change. The IPBES and the IPCC should face this contradiction. The IPBES should take much more into account the HANPP calculations.

Moreover, the HANPP is not appropriated equally by all humans – those who eat much meat indirectly use more vegetation, those who fuel their cars with ethanol or biodiesel, even more. The poor use less paper and wood than the rich (with the exception of wood or charcoal for cooking). Those responsible for asphalting more land –for airports and motorways, or for big housing in rich suburbia – prevent the growth of biomass much more than poor people do. Inequality appears also in the appropriation of land for monocultures such as eucalyptus,

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rubber or oil palms, which are enemies of biodiversity. In the next chapter, I refer to calculations of the HANPP and its distribution in the Tana delta in Kenya (Temper 2016).

Because of the increase in the HANPP, the richness of species on the planet is decreasing. One single figure illustrates the biodiversity loss in India. About one hundred years ago, the number of tigers living in the wild was estimated at about 100,000, and today there are perhaps 3,000. The situation is so dramatic that even the fate of individual tigers is being followed in Tiger Reserves such as Sariska. "Beneath" each tiger, as a keystone species, there must be much biodiversity. Conservationists are sensitive about this. In some cases, biodiversity might be decreasing from other causes, such as climate change, that changes and reduces the habitats of some species, such as polar bears in the melting Arctic.

THE ICCA: COMMUNAL TERRITORIES OF LIFE

Conservationists exist in the North and in the South, but large, influential and well-funded organizations caring for biodiversity (IUCN, WWF, Nature Conservancy) tend to forget about the livelihood of poor people when practising their "cult of wilderness" (Guha 1989). I was present at the International Union for Conservation of Nature (IUCN) congress in Barcelona in 2008 with 7,500 participants from 183 different countries. The IUCN thinks of itself as "the environmental movement" but it is only the "cult of wilderness" branch. Two other branches (the eco-efficiency stream of engineers and mainstream economists, and the environmental justice movements) are under-represented at IUCN congresses. Before the IUCN congress of 2008 I looked forward naively to a change of strategy anticipated by the commissioned paper written by Professor Bill Adams, that would bring together "the cult of wilderness" and the environmentalism of the poor and the Indigenous. This new strategy was not adopted. In the IUCN congresses, the top extractive corporations such as Shell, Rio Tinto, etc. are present not as enemies but as sponsors.

This is why other networks such as the Indigenous and Community Conserved Areas (ICCA) have been born. The ICCA unites representatives of many local Indigenous communities, it is coordinated by personalities such as Ashish Kothari, who at one point authored the National Biodiversity Strategy and Action Plan for India where many examples of convivial conservation were included. They argue for experiences of "conservation with the people" or "convivial conservation" (Büscher and Fletcher 2019) that would rely on the environmentalism of the poor and the Indigenous against common enemies such as open cast mining, oil exploration, sand and gravel mining, deforestation and tree plantations, new motorways and airports. Meanwhile, there are enough examples around the world of something totally different: top down "militarized conservation", against the people. And perhaps there are examples in between, for instance eviction and relocation of people with "proper" compensation in terms of land and/or money. The asymmetries of political power between the top-down conservationists and the local peoples are usually enormous.

The ICCA is a consortium that gives support to community-based, convivial conservation, and brings together such groups around the world. Are Indigenous peoples and traditional peasants the main defenders of biodiversity against the inroads of the industrial, capitalist economy, or are they themselves among the main predators that need to be kept in check? This is the dividing line between convivial conservation and militarized conservation. Indigenous and peasant people defend the environment mostly because of their livelihood needs and also

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because such defence is in accord with their religions and world visions. They hold "biocultural values" (Toledo and Barrera Bassols 2008). However, when the poor complain about tigers or elephants that kill their livestock or destroy their fields, then conservationists tend to rely on "militarized conservation". Conservationists claim that protected areas are used too intensively by growing numbers of poor local people, and therefore such local poor people must be evicted from those areas.

IN INDIA

Silent Valley in Kerala: A Success in Convivial Conservation[1]

In Chapter 9 I discussed the conservation of Olive Ridley turtles in Kolavipalam, Kerala by a fisherfolk group allied to conservationists opposing the sand mining mafia. Another example of "convivial conservation" again from Kerala is Silent Valley located at the core of the Nilgiri Biosphere Reserve. In 1976, Kerala State Electricity Board planned a construction of a 240-MW hydroelectric project, the Silent Valley Hydro-Electric Project (SVHEP), over the Kunthipuzha River flowing through the Palakkad and Malappuram districts. The plan for construction of the dam, announced already in 1973, attracted the attention of environmentalists not only in Kerala state but also all over the globe. Romulus Whitaker, founder of the Madras Snake Park and the Madras Crocodile Bank, was one of the first persons to draw public attention to the small and remote area. Also, the poet activist Sugathakumari played a role and her poem "Marathinu Sthuthi" ("Ode to a Tree") became a symbol for the protest and was the opening song/prayer of most of the "save the Silent Valley" campaign meetings. The construction of the dam would submerge 8.3 km^2 of forest land and would destroy the rich ecological flora and fauna of that region. People expressed their concern and it triggered a wave of protests. Many environmentalists, scientists, and concerned people also joined the demonstrations. Soon it became India's major environmental movement with far-reaching consequences. In 1978 Indira Gandhi, Prime Minister of India, approved the project, with the condition that the state government enact legislation ensuring safeguards.

That year, IUCN (Ashkhabad, USSR, 1978) passed a resolution recommending protection of lion-tailed macaques in Silent Valley and Kalakkad. The controversy heated up. In 1979, the Government of Kerala passed legislation regarding the Silent Valley (Protection of Ecological Balance Act of 1979) and issued a notification declaring void the exclusion of the hydroelectric project area from the proposed national park. In 1982, a multidisciplinary committee with Prof. M.G.K. Menon as chairman and Madhav Gadgil, Dilip K. Biswas and others as members was created to decide if the hydroelectric project was feasible without significant ecological damage. After studying the Menon report, the Prime Minister of India decided to abandon the Project. Silent Valley National Park is now considered a biodiversity 'hotspot'. The "Save Silent Valley" movement was a grand success for the environmental movement in India.

Eviction in Wayanad Wildlife Sanctuary and Muthanga Adivasi Agitation, Kerala[2]

Not far from Silent Valley, the next case shows "militarized conservation" as opposed to "convivial conservation". In Kerala, protests against an animal reserve (elephants, tigers)

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and for recognition of land rights became known in 2003 as the Muthanga agitation, when Wayanad tribals fought for the land. Wayanad Wildlife Sanctuary (WWS) was constituted as a separate entity in 1985. There were about 107 settlements comprising 2,613 households within the boundary of the Wildlife Sanctuary. The total population was estimated at 10,604. These households comprise different tribal communities, other "backward" castes (OBCs) and others. The Particularly Vulnerable Tribal Groups (PVTGs) of Kattunaikar and Mullu Kuruma are the majority in the area, and they have a closer relationship to the forest.

WWS was initially notified in 1973 by carving areas out of the Wayanad and Kozhikode Territorial Divisions. A separate Wildlife Division, the Wayanad Wildlife Division was constituted in 1985. There are 13 Reserved Forests in this sanctuary. The Sanctuary is a part of Nilgiri Biosphere Reserve and Project Elephant Reserve No. 7. It is contiguous with Mudumalai Wildlife Sanctuary of Tamil Nadu and Bandipur and Nagarhole National Park of Karnataka. It has an extent of 344 km². Large wild animals such as Indian bison, elephant, deer and tiger are found there. The Core Zone comprises natural forests including areas contiguous to interstate boundaries. Tourism, forestry and managing intervention activities are only allowed in the buffer zone.

In an article in *News Minute* on 20 February 2019, Korah Abraham wrote:

> Nestled amidst the silence and the towering trees […] it wasn't an easy task to reach the house of CK Janu, one of the leaders of the Muthanga agitation and leader of the Adivasi Gothra Maha Sabha (AGMS)… Janu doesn't waste any time with small talk as she starts recapping the Muthanga agitation in 2003, that can be said to be one of the landmark protests in the history of the tribal communities in the country in their fight to obtain cultivable land. 'It all began in 2001 after 30 tribals died of starvation. Following their deaths, thousands of tribals, led by the AGMS (Adivasi Gothra Maha Sabha) started a *kudil kettal samaram* (protest tents) outside the state Chief Minister's office'.

On 19 February 2003, the state had sent the police force to evacuate the site, killing Jogi, one of the Adivasi protestors (Figure 11.1). According to Janu, "the whole concept of *bhoomi samaram* (protesting for land) was formed, where Adivasis would enter the land, set up tents and start cultivating as a sign of protest". After the implementation of the Forest Rights Act (FRA) in 2007 the situation did not change much. In contrast, while some individual *patta* (land titles) were distributed, a collective eviction plan started in 2012, when the Kerala Forest Department proposed to convert the sanctuary into a Tiger Reserve. This led to waves of protests against the move. Although the WLS sanctuary has never been converted into a Tiger Reserve, displacement started to be carried out. The people were induced to move out under a compensation plan which was not properly respected. Indeed, the community rights under the Forest Rights Act were denied to the communities. Instead of cultivable land, only homestead land was distributed, leaving people in the same chain of poverty.

In 2013, 16 families that got relocated had protested saying they did not receive the 10 lakh rupees which were promised, and hence decided to come back to their land. New families which were planned to be relocated after started to protest, asking for a fair compensation before relocation. By 2017, about four villages had already been relocated and there was a plan to relocate 14 other settlements. In September 2017, a report in *The Hindu* stated that Kerala Government was seeking 100 crore rupees for the relocation of families from protected areas. Individual Forest Rights have been distributed to almost every family; however, the families were being evicted in contradiction with the FRA law.

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Figure 11.1 Jogí's memorial monument (killed in Muthanga agitation of 2003, Kerala)

Evictions from Nagarhole, Karnataka[3]

I add a second case of "militarized conservation" from a nearby protected area in South India, Nagarhole, which I visited years ago travelling as an eco-tourist. The visit was expensive, the local people were poor, and the big mammals were elusive. The origins of the Nagarhole National Park, also known as Rajiv Gandhi National Park, go back to the 1950s. It is situated between two districts, Mysore and Kodagu, in the state of Karnataka. Since 1983 it was extended over an area of 643 km^2 and was declared as a National Park. In 1999 it was declared the 37th Project Tiger Reserve, and it is part of the Nilgiri Biosphere Reserve. The Western Ghats Nilgiri Sub-Cluster of 6,000 km^2, including all of Nagarhole National Park, has been under consideration by the UNESCO for selection as a World Heritage Site.

In 2007, the entire Nagarhole National Park was declared as a Critical Tiger Habitat. A buffer and a fringe area of the park were also notified, extending the entire park to 1205 km^2, with a core of 643 km^2 and a buffer of 552 km^2. A high number of tribal people, mostly from Jenu Kuruba and Yerawa tribes, were evicted from the Nagarhole National Park just after the implementation of the Wildlife Protection Act (1972). According to a Report compiled in 2014, 3,418 families were displaced between the 1970s and 1980s. Today, most of these displaced tribal communities continue to be landless labourers. From 1999/2000 until 2010 about 487 tribal families were 'voluntarily' moved out of the Park. Initially, 280 families were relocated in Nagapura and Sollepura between 2000 and 2007, for a compensation of 1 lakh rupees and 5 acres of land. However, the rehabilitation's site lacked drinking water

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and other basic facilities. In 2010, under the National Tiger Conservation Authority (NTCA) sponsored scheme of 10 lakh rupees' compensation, 147 families agreed to relocate to the new site of Shettihali-Lakkapatna and Hebala, in Hunsur district.

In response to the forced relocation, the Adivasi got organized under the name of Budakattu Krishekara Sangha (BKS). The movement peaked in the 1990s when the locals successfully protested against the creation of a Taj tourist resort. Again, they fought at the end of the 1990s against the creation of an eco-development project funded by the World Bank. After the implementation of the Forest Rights Act in 2008, things got more conflictive. Because of their political action, between 2001 and 2011, 192 criminal court cases against tribal people have been registered. In 2015, many people settled in tents in fringe areas of Nagarhole. In 2016, the tribal forum asked for rehabilitation measures. In May 2017, after the NTCA order against the implementation of the FRA titles within the Tiger Core Areas, the Jenu Kuruba protested before the District Collector demanding the withdrawal of the unconstitutional order. The clampdown on this strong movement led to a loss of hope by the tribals, which have mostly decided to leave their land and get the compensation package offered.

Kaziranga National Park, Assam[4]

Another well-known case of "militarized conservation" is in north-east India, that of the Kaziranga Park in Assam housing a large number of rhinos, a success in conservation but a failure in human relations. One meeting of the Indian Society for Ecological Economics (INSEE) was in 2013 on the shores of the formidable Brahmaputra River. A book came out of the meeting, in which I have a chapter. Kaziranga National Park is one of the oldest wildlife conservation reserves in India, first notified in 1905 and constituted as Reserve Forest in 1908. It was established for conservation of the Greater One Horned Rhinoceros (*Rhinoceros Unicornis*) whose number was estimated to be 20 pairs at that time. Kaziranga was declared a Game Sanctuary in 1916. It was declared a Wildlife Sanctuary in 1950, and notified as Kaziranga National Park in 1974 under the Wildlife (Protection) Act, 1972, with an area of 429 km^2, which has now extended to 899 km^2. Home to two-thirds of the world's one-horned rhino population, in 2016 Kaziranga received 170,000 Indian and 7,843 foreign tourists. Here, there exists a dramatic quadrangle of tourists, forest department officers, assumed poachers and some real poachers.

Kaziranga is doing well chrematistically, as expressed by the willingness to pay of tourists. Incidentally, the use of the word "sanctuary" in English by the colonial administration and later by the state of India after 1947 attributes non-market values to territories valued by their biodiversity and beauty. "Sanctuary" is a Latin-derived word not specific to India; a "wildlife sanctuary" is translated into Hindi as अभयारण्य. Tourist revenues are welcomed by the administration, though not commensurate in other scales of value. Such top-down "sanctuaries" contrast with other types of sacredness of nature in India, such as village "sacred groves" (Chapter 22) meaning small forests which are communally protected and sheltered by deities.

Poaching of wildlife, mostly rhinos, is a serious problem in Kaziranga. Between 2006 and 2016, reportedly 141 rhinos were poached. Coming under pressure from conservation organizations, the then Congress-party-led Assam government amended the provisions of Section 197 of the CrPC (Code of Criminal Procedure) granting forest officials immunity from prosecution if they attack poachers. Following the amendment, Forest department officers shot 22 and 23 suspected poachers in 2014 and 2015 respectively.

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Meanwhile, in 2012, the Guwahati High Court had *suo motu* registered a Public Interest Litigation (PIL) (66 /2012), following wide media coverage on poaching of rhinos in Kaziranga. Along with this, another PIL (67/2012) was filed with an additional petition for removal of human habitation and encroachment in the animal corridors in Kaziranga. It was also admitted. In October 2015, the court issued directions to district administrations to evict the human inhabitants from Kaziranga and from adjoining villages within one month. The bench in its judgment also observed that the individual claims for a handful of persons were in conflict with the public and national interest. Also, that the inhabitants in the park fell in the suspected group because they were aware of the animal movements, and therefore would alone be in a position to do poaching successfully or abet poaching by others. Following this, an eviction drive was carried out on 19 September 2016; two people were killed and 17 were injured.

In the evening of 19 September 2016, the Assam government announced a compensation of Rs 2 lakh (200,000) for each of the families of the dead victims, and Rs 50,000 for those who were grievously injured. Next day, the Guwahati High Court refused to interfere after hearing a writ petition filed by one Mohammad Jalal Uddin against the eviction drive. In response, student-led organizations and Krishak Mukti Sangram Samiti (a farmers' body) protested on behalf of the evicted people and demanded better rehabilitation, and an investigation into the killing of presumed poachers. The conflict goes on. The number of rhinos increased at the cost of repression against neighbouring populations. It was reported that only three rhinos were poached in 2019 in Kaziranga National Park. The reason behind the poaching of rhinos has always been the high demand for the unique horn in Asian countries, particularly in China (Barbora 2017).

Buddhist Monks Oppose Dams in Tawang (Arunachal Pradesh)[5]

From Kaziranga we go to Tawang, still inside India, at a height of over 3,000 m (Figure 11.2). This case belongs with other cases of Buddhist defence of Nature in Chapter 22. Tawang is an example of "convivial conservation" which could still be brutally sacrificed to hydropower since in the whole state there are grandiose plans for 50,000 MW. Tawang is the last Indian district bordering China, a 2085 km^2 patch where in 1962 the Chinese army came trooping in. The 1914 Simla Accord defined the McMahon line as the new boundary between British India and Tibet, relinquishing several hundred square miles of Tibet's territory, including Tawang, to the British, but this was not recognized by China.

Tawang is home to the Monpa people, it is a tourist destination thanks to the well-preserved Tawang Monastery and a seat of Tibetan Buddhism. Since 2011, it has witnessed public protests against the state government's decision to build up to 13 hydroelectric projects across the district. To stall this spree of dam construction, people from the Monpa community joined hands with local Buddhist monks in 2011 to form the SMRF. On 2 May 2016, as fully reported in *The Wire* and *The Telegraph* (3 May 2016), things took a deadly turn. In a demonstration calling for the release of arrested anti-hydropower movement leader Lama Lobsang Gyatso, the secretary of the SMRF (Save Mon Region Federation), at least two people were killed by unannounced police firing.

On 7 April 2016, the National Green Tribunal (NGT) suspended the environmental clearance of the 780-MW, Rs 6400 crore Nyamjang Chhu project in response to an appeal filed by the SMRF. The Tribunal asked for fresh EIA, a public hearing for local people and appraisal by the Expert Appraisal Committee on River Valley & Hydroelectric projects and

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Source: Arielle Landau

Figure 11.2 From Tezpur and Kaziranga up to Tawang

the Ministry of Environment, Forests and Climate Change (MoEFCC). A major issue was the impact on the wintering habitat of the black-necked crane, a vulnerable endemic bird sacred to the Monpa people, considered an embodiment of the 6th Dalai Lama who wrote about the bird in his poetry (Figure 11.3). The NGT noted that the project – promoted by the Noida-based steel conglomerate LNJ Bhilwara Group – was not taking into account that the bird is rated "vulnerable" in the IUCN's list of endangered species and is listed in schedule 1 of the Wildlife (Prohibition) Act 1972. Corruption was also alleged.

The week before 2 May 2016, Gyatso was arrested twice for reasons "linked (as he said) not only to the NGT decision but also our plan to take legal recourse against other hydel projects". He was taken to the court of the district magistrate for hearing on his bail application. In the morning of 2 May, many villagers and lamas assembled in front of the police station seeking his release. He was denied bail. Afterwards, the small crowd (perhaps 200 people) began moving towards the police station. They were then fired upon with live bullets. Among the dead, there was allegedly a woman and a student of the Tawang monastery. By mid-afternoon, orders under Section 144 were clamped on Tawang town and the army was called in to stage a flag march. It was reported that Chief Minister Kalikho Pul, who was in New Delhi, announced Rs 5 lakh ex-gratia to the families of those killed. Local MP and then Union

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Source: Ghai, R. (2018). As black-necked cranes return to Tawang, expert says awareness key for survival, *Down to Earth*, 4 December

Figure 11.3 Black necked crane

Minister of State for Home, Kiren Rijiju, was said to have called up the Tawang deputy commissioner and SP, downplaying the situation and relying on the army. The NAPM (National Alliance of People's Movements) demanded an official commission of enquiry. By 2021, the SMRF still refused the government's renewed plan to construct dams in the district.

Bhitarkanika Protected Mangrove Forest in Odisha, India[6]

Still in India, let us go to a coastal area with mangrove forests threatened by the growth of shrimp or prawn aquaculture. Mangroves are cut down and, in their place, ponds are built where shrimp are fed, also given antibiotics, and then harvested and frozen for export. This is an itinerant industry because the ponds become too polluted after a few years. As is common around the tropical world, mangrove forests are a very valuable ecosystem in terms of biodiversity, carbon uptake, and defence of the coastline. The opposition between mangrove conservation and development of shrimp farming is a classic of political ecology and also of ecological economics, since H.T. Odum and one of his students calculated that the energy to be gained by exporting shrimp and buying fossil fuels with that money revenue was less than the energy embodied in the original mangroves. I saw this first-hand when I was teaching at FLACSO, Ecuador, in 1994–95, and visiting the province of Esmeraldas with Acción Ecológica, where courageous Afro-American women from clam collecting families were fighting for mangrove conservation. Their complaints were indeed a case of environmentalism of the poor.

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The Bhitarkanika National Park, in the Kendrapara district of Odisha, north from Chilika Lake (Chapter 8) contains India's second largest mangrove forest after the Sundarbans. According to the 2011 census, there were 310 villages with 145,301 people living inside the park. It was designated as a national park on 16 September 1998 and as a Ramsar site on 19 August 2002, due to its large variety of endemic flora and fauna, including the leopard cat, sambar, saltwater crocodile, python, water monitor lizards, marine turtle and brahminy duck, to name some.

This high-density population of tribal groups dependent on the biodiversity-rich forest is the background to a triangular dispute between conservationists, small paddy farmers and inland fisherfolks, and the illegal prawn industry. The first major conflict is between the traditional fisherfolk and the forest officials. Each year there is a ban on fishing for a period of seven months coinciding with the breeding period of the Olive Ridley turtles. As a result, nearly 20,000 traditional fisherfolk in Kendrapara district are affected every year (Banerjee 2017). In 2014, 221 fishermen were arrested and 32 boats and trawlers were confiscated in the region.

There have also been conflicts on land rights. The forest department claims rights on the land and has partially accomplished evacuating the whole village, which has led to various protests and to the villagers being forced to migrate to nearby villages (Banerjee 2017).

Another such protest took place in 2001. The villagers protested for two days in favour of the construction of a river embankment but were beaten by the forest department, which was not in favour of the embankment. The embankment was needed as it would prevent the salt water from the creeks from entering the fields, and was finally constructed (Banerjee 2017).

The second major conflict is between the fisherfolk and the illegal shrimp farms, controlled by the shrimp mafia. Hundreds of farmers of the seaside villages blame the mushrooming of illegal shrimp farms and its effluent for destroying their fertile agricultural lands. Noted environmentalist and president of Marine Turtle and Mangrove Conservation Society (MTMCS) Hemant Rout said the effluent of the prawn gherries is released into the nearby rivers and ponds, also polluting the groundwater in villages. Besides, they are a threat to the nearby mangrove forests. In 2017, the district administration and Forest department demolished large tracts of illegal prawn farms near Bhitarkanika. However, the prawn mafia repaired their gherries.

In May 2015 it had been already reported that the "shrimp mafia" felled mangroves to make way for shrimp farms. By building embankments around 5,000 acres of riverside shrimp ponds, the river's water can't flow to the sea and was flooding local crops. Girija Mandal (62), a farmer of Talachua Village, said, "I used to grow paddy [rice, vegetables] on my two acres of land. In 2012, some people converted ten acres of land near my field into shrimp farms and started releasing all the effluents onto my land. As a result, my land turned barren and is now unfit for raising paddy crops". Almost all shrimp farms in Bhitarkanika are illegal as they violate Coastal Regulation Zone (CRZ) norms and the directives of the Supreme Court and High Court.

IN YUNNAN, CHINA

The Nujiang-Salween River[7]

In Yunnan, in a different political context, the beautiful Nujiang River houses in its valley a very rich biodiversity that was saved from the threat of hydropower through the struggle of

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Chinese environmental organizations. The Nujiang (Nu River) is one of the last free-flowing international rivers in Asia, shared by China, Thailand, and Burma (Myanmar). The Nujiang in the so-called Three Parallel Rivers area is seen as one epicentre of Chinese biodiversity. A government and private industry plan for building two reservoirs and 13 dams along the middle and lower reaches of the Nujiang River was stopped by persistent civil society movements at the end of 2016. Disputes over dams continue in China, the country with the most megawatts of hydropower. Here we look also at the Tiger Leaping Gorge dam controversy, also in Yunnan, on the Jinsha River. In this confluence between nature conservation and the local livelihoods, local and national organizations were involved with international ones: environmental justice at its best.

Between March and June of 2003, the Huadian Group and Yunnan provincial government had established the Yunnan Huadian Nujiang Hydropower Development Corporation. As a UNESCO world heritage site and one of the world's biodiversity hotspots, the Nu River "flows through the Gaoligong Mountain Nature Conservation Zone… [which possesses] 6000 types of advanced plants and 25 percent of the wild animal [species] in China". As such, the dam project ignited bitter public controversy. The central government policy shifted its rhetoric from achieving rapid economic growth at all costs towards the pursuit of "scientific development". This, alongside the momentous passage of the EIA Law in September 2003, allowed State Environmental Protection Administration (SEPA) to legally express its "serious reservations" towards the Nujiang plan. Opposition between different factions of the Chinese environmental governance system gave a political opportunity for environmentalists to voice their discontent towards the government's plan to develop Nujiang.

Wang Yongchen, founder of the environmental NGO Green Earth Volunteers (GEV), seized the occasion to mobilize the media, environmental NGOs and other environmentalists through hosting workshops and conference meetings, writing petition letters, and attending international meetings. Wang's efforts enabled local opposition towards the Nujiang dams to coalesce around "a disparate group of scientists, academics, NGO activists and journalists, both inside and outside state employment". While the network began by conducting its affairs informally, "core activists formalized their cooperation as the China Rivers Network (Zhongguo Hewang) in 2004". Seven organizations constituted the network's founding members: "Friends of Nature, Global Village Beijing, Green Earth Volunteers, Green Watershed, the Institute for Environment and Development, Brooks Education Institute, and Wild China Films" based out of Friends of Nature's office in Beijing.

Members of the China Rivers Network (CRN) faced almost immediate retaliation from government authorities, with Green Watershed's founder Yu Xiaogang losing his affiliation with the Yunnan Academy of Social Sciences while having his passport confiscated for a year. Other network members faced similar reprisals, with Global Village Beijing (GVB) being accused of assisting in the promotion of "foreign agendas…[since] it receives funding from the Heinrich Boll Foundation, which is affiliated with the German Green Party…". Members of CRN agreed in January 2006 to end formal operations and return to an informal structure like the one that had emerged organically in 2003. The efficacy of this informal anti-dam network remained to be seen, despite its initial success in pressuring then Chinese Premier Wen Jiabao to halt the Nu dam projects. In 2004, China's 12th Five-Year Plan had foreseen restarting hydroelectric dam plans on the Nu River.

However, Beijing later seemed to have abandoned plans to dam the river which snakes down from the Tibetan plateau through some of China's most breathtaking scenery before

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entering Myanmar, Thailand and eventually flowing into the Andaman Sea. By December 2016 the environmental alliance could celebrate after ten years of fighting that the large dams on the Nujiang River, which would displace over 50,000 people (mainly ethnic minorities), destroy the biodiversity of a large area and damage spectacular landscapes over 2,500 km, were set aside.

The Tiger Leaping Gorge Dam on the Jinsha River[8]

A case in a parallel river in Yunnan on the Tiger Leaping Gorge dam was seemingly successful in 2007, although there was news in 2019 that the project could revive. This is the story of how the Hutia xia dam was stopped, drawn from an excerpt from Liu Jianqiang's chapter in the book *China and the Environment: The Green Revolution* (Hilton 2013). Tiger Leaping Gorge is a canyon on the Jinsha River, a primary tributary of the upper Yangtze River, located 60 km north of Lijiang City. It is part of the Three Parallel Rivers of Yunnan Protected Areas World Heritage Site. The Jinsha is the upper stretch of the Yangtze River in Yunnan Province.

Although the hydropower companies had long wanted to dam Tiger Leaping Gorge, work never started. The successful campaign to protect it, which ran from 2004 to 2006, not only safeguarded one of China's most magnificent landscapes, but it also saved the homes of ethnic minority peoples. On 27 July 2004, the state news agency Xinhua reported that the National Development and Reform Commission had passed the Planning Report on the Damming of the Middle Reaches of the Jinsha River. It had recommended that work started soon on the Tiger Leaping Gorge dam.

In the plan, hydropower stations, forming an eight-dam cascade starting at Tiger Leaping Gorge, were to be built on the middle reaches of the Jinsha River. It would forcibly displace 100,000 people and about 13,000 ha of agricultural land would be submerged. The main public opponent of the dams was a man named Xiao Liangzhong, an anthropologist and editor at a Beijing-based publishing house, who hailed from the Tiger Leaping Gorge area. His grandmother, parents and brothers all still lived there. He was 31 years old and full of energy.

The plan to turn the Jinsha River into an eight-dam cascade had Tiger Leaping Gorge at the top, and the Jinanqiao hydropower station as the fifth dam. Jinanqiao was owned by the Beijing Huarui Investment Group, and preparatory work on the dam started in 2002. It was to be 156 m high, with a capacity of 2,500 MW. According to the plan, the river would be dammed by 2005. Local villagers said they suspected that construction work on the Jinanqiao dam had begun illegally. A journalist, with help from the Lisu ethnic group, bypassed the guards and found out that the dam was already under construction. The journalists also found out that the town of Lijiang would earn about 4 million yuan in tax revenues from the dam – the reason why the local government had warmly welcomed the project. Back in Beijing, the project had definitely not yet been approved. The journalist phoned an official from the SEPA who sounded shocked.

The journalist's article was published on the front page of *Southern Weekend* on 29 September 2004, with the headline "Emergency at Tiger Leaping Gorge". Chinese and international media began to cover the story. The article quoted environmentalists who said that the Tiger Leaping Gorge dam could wipe out whole species. The resettlement of the Naxi ethnic group, who live along the banks of the Jinsha River, would mean the irreversible loss of the traditional sites and accumulated wisdom of their Dongba ritual culture. But supporters of the dam stressed its economic benefits. Their view that you must flood people to get them

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out of poverty was challenged by anthropologist Xiao Liangzhong. Land in the Jinsha River Valley above Tiger Leaping Gorge was both fertile and flat, he said. It was a traditional farming community with excellent quality soil. The compensation fund for relocation was far less than what the local people would really lose. Clearly, the farmers of this river valley would be impoverished if they were evicted from their land. Moreover, the *Southern Weekend* report confirmed two important points. First, construction work on the Jinanqiao hydropower station was unlawful. Second, the 100,000 local people hadn't been informed and they were opposed to being resettled.

Li Xiaoxi was an associate professor at the Air Force Command Institute and knew an official in the office of the premier, Wen Jiabao. She called that official and said that Wen should read the article. Shortly afterwards, Wen Jiabao ordered the project suspended.

However, the building plans continued. In early 2006, helicopters flew in the sky, and surveyors appeared in the fields but their markers would be pulled out by farmers at night. The conflict kept escalating until 21 March 2006, when farmers seized a group of seven surveyors and held them hostage in the fields. The villagers did not think that they had the central government's approval. The next morning, a government official said he was taking a surveyor to breakfast, and then helped him escape. The villagers were enraged. The angry villagers began gathering in front of the local government building. Soon, 10,000 people from the surrounding area showed up with metal bars and rocks. However, local leaders received a tip from a local official: the provincial government wanted to resolve the conflict as quickly as possible. In the morning, the provincial government posted a statement all over town: the Tiger Leaping Gorge dam was to be stopped, and any further dams would not be built without the consent of the locals. The jubilant villagers took the flyers home to keep as evidence. This was a case of convivial conservation based on an alliance between country people in a remote corner of China and journalists, eco-tourists and conservationist organisations (Green Watersheds and others) with support from international organizations. A feeble alliance in comparison to the powerful Chinese state, able however to stop the project in 2007 but not perhaps forever.

Saving the Green Peafowl[9]

In Yunnan again, there is a struggle to save the green peafowl, a bird which is part of the aesthetic culture of China and Myanmar. After the retreat of the tiger and the elephant from China, this harmless and beautiful bird is now losing its remaining habitat. In this case, hydropower is again the main threat, and poaching too.

As reported in the China Daily (Liu 2018), Gu Bojian played an important role since 2013 when he tried to find a well-hidden secluded haven in which the green peacock must be making its last stand. In 2013, Gu was a researcher at the Xishuangbanna Tropical Botanical Garden, a research institute that is part of the Chinese Academy of Sciences, in Xishuangbanna, Yunnan province. Carrying out field research for his master's degree, he reached the Luzhi River valley, 200 km from the provincial capital, Kunming. "The farmers told me that there were still 'old peacocks' living in the area … I wasn't convinced until they brought me a feather of the species". Gu was aware of the green peacock, but he had never seen one before. He ventured into river valleys and was surprised to find a large area of well-preserved monsoon forest. He revisited the region over the next three years, sometimes with other scientists and conservationists. They were eventually able to photograph green peacocks feeding and mating on the river beaches. "Most Chinese don't even know what a green

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peacock is". Those seen in China are usually blue peacocks (*Pavo cristatus*) that originate in India. But the green peacock (*Pavo muticus*) is much less common, and the IUCN asserts there are fewer than 20,000 worldwide.

Archaeological findings 4,000 years old suggest that green peafowl were widely distributed south of the Qinling–Huaihe Line (秦岭淮河线) as used by geographers. The line runs from Qin Mountains in the west to Huai River in the east, dividing eastern China into northern and southern regions that differ in climate, culture and cuisine. One 1995 survey on China's wild green peafowl by the Kunming Institute of Zoology estimated that between 800 and 1,100 lived in Yunnan. However, in 2016, a survey estimated that the population had fallen to 500, and they lived in small groups, reducing the chances of propagation.

River valleys and monsoon forests offer the bird proper humidity, sufficient food, drinking water and open space, making them ideal habitats for it. However, in southern and southwestern Yunnan, large areas of such an environment have been reclaimed as farmland. The loss of former habitats forced the species to retreat to remote river valleys. The survivors were now threatened by hydropower operated by a local water resources company. If the water level would rise as planned, an area of more than 40 km of low-lying valley along the Xiaojiang and Luzhi Rivers was likely to be damaged. Many valuable and rare plants in the forests would also be affected. Gu decided to make a public plea for the green peafowl and its habitat to be protected, and he put information online, drawing a wide response. Several wildlife organizations and experts joined the effort. In March 2017, three wildlife groups sent an urgent letter to the Ministry of Environmental Protection proposing suspension of the hydropower project. In July 2017, Friends of Nature initiated a Public Interest Lawsuit against the hydro project operator, formally filed in Chuxiong Yi autonomous prefecture in Yunnan. Construction of the hydro project was put on hold, and the provincial government listed the green peacock as a critically endangered species. The species also faces threats from poaching.



Source: Wikimedia Commons, William Stephens, 2014

Figure 11.4 *The green peacock (*Pavo muticus*)*

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VIRUNGA NATIONAL PARK IN R.D. CONGO AND OIL EXPLORATION[10]

The Virunga National Park, the home of gorillas, is often the scene of violence against park wardens: in Global Witness report's R.D. Congo scores rather high in the number of environmental defenders killed every year. They are "professional" environmental defenders, natural park wardens, somewhat an exception to the most frequent type of environmental defenders killed around the world (common people or sometimes Indigenous). As in Kaziranga, in Virunga the park guards sometimes kill poor invaders, assumed to be poachers. And sometimes the park guards are themselves killed. Moreover, there are guerrilla movements from Uganda and R.D. Congo operating inside the park. The Virunga Mountains are one of only two places in the world where the gorilla is found, together with many other unique species, along with Uganda's Bwindi Impenetrable National Park.

The R.D. Congo is a post-colonial state, it was part of a Belgafrique in parallel to the former French colonies constituting Françafrique. Katanga in R.D. Congo is part of the Copper (and Cobalt) mining Belt (next to Zambia), where the population are used to extractivism and become its victims. The Congo was seen from European eyes as an immense buffer state in 1885, when in Berlin the European powers divided Africa among themselves. This is the geopolitical background to understand the continuous pillage of the R.D. Congo, from the time of rubber and ivory extraction, to the role of the Union Minière du Haut Katanga, to the assassination of Lumumba in 1961, to today. Virunga, however, is something of an exception to a pattern of extraction of minerals and hydroelectricity because it is a sanctuary of conservation. The Virunga National Park has 7,800 km^2, established by King Albert I of Belgium in 1925. It is deemed to be the continent's most biologically diverse protected area and was designated a UNESCO World Heritage Site in 1979. The park is particularly known for being the habitat of the critically endangered mountain gorilla, made famous by the film "Gorillas in the Mist" (1988).

The UK-based company SOCO International signed a production-sharing agreement with the DRC government in 2006 to explore for oil in Virunga National Park. The company received its permit to explore in Block V in October 2011. More than 50 per cent of the area of Block V lies within the park, next to the endangered mountain gorilla habitat. The documentary "Virunga" (2014) by Leonardo DiCaprio and Netflix highlights the activities of SOCO International within Virunga National Park. The film revealed a Congolese Army officer trying to bribe one of Virunga's wardens. One of the wardens, Rodrigue Mugaruka Katembo, later declared that he had tried to stop workers from setting up an antenna, which supposedly led to him being kidnapped by Congolese soldiers in 2013. In 2017 he would be awarded a Goldman prize.

In January 2014, a local farmers' cooperative in Rutshuru organized a 300-people march to oppose SOCO's activities. Although local authorities were informed about the demonstration, policemen entered the cooperative's office and confiscated computers and other materials. Later, some of the protesters were also detained and beaten by the police. Many of those incidents of repression were documented by Human Rights Watch (HRW). One of the most violent attacks was carried out against park director Emmanuel de Mérode in April 2014; at least three men in military uniform fired at him in an area that is controlled by the DRC army. He luckily survived the attack.

In September 2014, local and international newspapers reported about DRC soldiers guarding the British company's activities. Two fishermen were reportedly beaten to death

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after supposedly criticizing SOCO's activities. A formal investigation was launched by park authorities, after claims were later corroborated by a HRW investigator. On its website, the company declared that all of SOCO's operations in Virunga National Park had ceased on July 2014, and that no exploration drilling had taken place in Block V.

The British company's decision to pull out of the exploration of Virunga National Park followed legal mediation in London in June 2014 together with WWF, although reportedly SOCO finally gave in to pressure from the British government, UNESCO and high-profile defenders of the park such as Richard Branson and Archbishop Desmond Tutu. Conservation groups also collected signatures of more than 700,000 people against the exploration.

Despite SOCO's declarations, the oil drilling within Virunga National Park may not be over. The DRC government discussed a "slight" modification to the park's boundaries, which makes the future of oil activities within Virunga National Park seem unclear.

IN COSTA RICA: GRASSROOTS MOVEMENTS FOR DEFENDING SHARKS[11]

Conservationists sometimes focus on whole ecosystems like a tropical rainforest, or on landscapes like a unique river canyon, or on specific animals – not necessarily big terrestrial mammals like gorillas or rhinos. It could be the green peafowl in Yunnan or the Monarch Butterfly in Michoacan, for example.

As in other cases, sometimes common people engage in cruelty to animals, or they compete with animals for the same territory. But sometimes common people develop an ethics of "animal rights", a multispecies ethics of convivial conservation when confronted by industrial extractive industries. Then humans are not only concerned with species threatened by extinction, but also are worried about the welfare and health of large concentrations of domestic animals, as in the CAFOs. Human health might also be a concern in such cases because of the resistance to antibiotics developed in industrial farming and the contamination of waste and soils by excrements.

Beyond such overlapping concerns and values, in this case the defence of animals sacrificed economic gain. In the last 50 years shark populations in Costa Rica decreased by 60 per cent mainly because of "finning" or *aleteo.* The increase in the purchasing power of the citizens of Hong Kong, Taiwan and mainland China encouraged the growth of the Shark Finning industry, a practice (not unique to Costa Rica) that consists in cutting off the fins of a shark and returning the rest of the body to the sea. On many occasions, the shark is still alive and slowly dies falling to the bottom of the sea. The fins are used for soups of high commercial value. In Costa Rica, the Convention on International Trade in Endangered Species of Wild Fauna and Flora and the International Convention on the Conservation of Migratory Species as well as national NGOs such as the Restoration Program for Sea Turtles (PRETOMA), the Conservation Federation of Costa Rica, among others, have promoted the protection and conservation of different shark species. In 2010, Rándall Arauz, founder and president of PRETOMA, won the Goldman Prize for his fight for their protection.

Since 1996, the Costa Rican government has moved forward and backward in certain key policies for the protection of sharks. Unfortunately, some new regulations promote the practice of finning. In addition, it is unknown how many tons of fins are extracted from Costa Rican waters. In 2010, President Laura Chinchilla began developing regulations to strengthen

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the prohibition of finning. However, Costa Rican President Luis Guillermo Solís later stopped promoting conservation, allowing the export of hammerhead sharks to Hong Kong, and the consequent violation of international agreements. Additionally, the poor application of shark fishing and trade regulations during the chain of custody in Costa Rica endangers the survival of certain populations protected by international treaties such as dog shark, *Carcharhinus longimanus* (whitetip shark) and hammerhead shark species (*Sphyrna spp.*).

IN EUROPE: A CIVIC MOVEMENT AGAINST DEFORESTATION IN LITHUANIA[12]

The following conflict is a convivial struggle for nature conservation against a government which is motivated by economic gain. It is a fight on the conservation of old growth forests in the periphery of Europe. In most of central and northern Europe, tree plantations substituted old growth forests, but there are some very valuable remains in Lithuania, a small country of only 2.7 million people. The goal here is the preservation of unique primary forests, some of the few left in Europe, comparable in biological richness and beauty to Bialowieza in Poland, which is also threatened. In mid-2018 a so-called Peasant and Green government in Lithuania approved high logging rates responding to the wood processing (mainly furniture makers) industry's concern on rising timber prices, by increasing logging rates favouring local industries, some of which serve as IKEA suppliers. Also, due to high dependence on Russian gas for heating purposes, the last few years saw a switch towards central heating with more biofuel, which implies a higher demand for wood (increasing the HANPP). One of the first tasks this so-called Peasant and Green government did when it came into power in 2016 was to reform the state forestry sector; it centralized the many regional state forestry companies into one. Economic sectors dealing with raw wood no longer had to negotiate price with 40 different small state companies, but instead deal with one.

The news of increased logging rates broke in September 2018 and a civil society movement arose because the government was elected on a promise of a green agenda, including a promise to decrease logging rates. There were a few marches in the Forest of Labanoras, an orchestrated visit to this forest by journalists, the Minister of Environment and activists, and protests in front of the parliament. An activist, Andrejus Gaidamavičius, had raised these issues for years as a professional forester, ecologist, environmental activist and educator. The State logging maps often overlapped with protected areas. There is a noticeable change in lifestyle towards more outdoor activities, rural tourism, getting acquainted with protected areas of Lithuania and cultural heritage. This is not meant to decry the theory of an "environmentalism of the poor and the indigenous". But in the Lithuanian forest conservation movement, more prosperity has reinforced environmentalism as a "defence of the commons". Another more immediate reason for the mass movement for forest conservation was a documentary film which is also a success beyond Lithuania.

The problem that the protesters raise is that state forests belong to all citizens, therefore, citizens should be consulted about their use. In October 2018, the Ministry of Environment arranged a round table responding to the protests, and Andrejus Gaidamavičius was part of it. The round table failed and the European Commission noticed the protests. Large-scale activities in protected areas such as intensive logging should have gone through impact assessment procedures, which was never the case.

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In August 2019, the European Wilderness Society and the Baltic Environmental Forum stated that the ancient Punios Šilas forest was now under threat from commercial logging and increasingly intensive hunting. The forest is part of the Natura 2000, a European ecological network. It is one of Europe's most ancient forests, home to endangered species. The Punios Šilas forest is located within a bend of the River Nemunas – which is currently split between a small highly protected 457-ha nature reserve and a larger 2,313-ha botanical zoological reserve where hunting and logging is permitted. Some of its oak trees are around 600 years old. Such ancient forests are now nearly extinct in Europe.

CONCLUSION: ARGUING AGAINST "FORTRESS" CONSERVATION

The preservation of biodiversity and ecosystems is critical for human prosperity. The issue is not their economic value in money terms but rather the contributions in biological and physical terms nature provides to humans as shown in the IPBES framework, and the contribution of humans to nature (Muradian and Gomez-Baggethun 2021). Traditional conservation models, with their focus on conserving 'wild' ecological landscapes and species, have typically focused on approaches of "fortress conservation" or "militarized" conservation, models from which local communities are excluded. This approach continues to exist. However, there have been attempts to move towards "convivial conservation". Conservation can be motivated by "animal ethics", by the "cult of wilderness" and also by the "environmentalism of the poor", resting on livelihood interests as we see in instances of defence of mangroves, for example. In other cases, compromises between the interests and values of local peoples and conservation could be reached. If conservationists are motivated by values of respect or even sacredness of nature, they may come to agreements with the local populations who fight against economic extractivist interests. At other times, however, there are clashes between conservation and the local populations. As argued by Bontempi et al. (2023), based on over 450 entries in the EJAtlas, growth-oriented extractivism is a major driver of conflicts in protected areas. Protection is also a driver of evictions. However, protected areas can also sometimes become tools that support peoples' struggles against extractive projects.

As I wrote at the beginning of this chapter, from 5 to 14 October 2008, the IUCN World Conservation Congress was held in Barcelona. I was involved (trying to help Bill Adams) in the attempt to introduce the environmentalism of the poor and the Indigenous as a social movement and a force that was not necessarily in opposition to the "cult of wilderness" represented by the IUCN, WWF, Nature Conservancy and the like. Both currents of environmentalism could work together. This was the aspiration. But the attempt failed. It was painful to enter the main venue of this conference and see the two stands of Shell and Rio Tinto, while there was no stand for the movements for environmental justice and the environmentalism of the poor. The Via Campesina (promoting traditional agro-ecology) was not represented, nor were the myriad movements against open cast mining, logging, uniform tree plantations and fossil fuel extraction.

Why would companies at the top of the champions' league of extractive industries support the conservationists? Perhaps because they hope to stop criticism coming from the more radical environmentalists. At that conference I shared a well-attended session with my friend Pavan Sukhdev (who became an expert on the economic valuation of environmental services) and with Tom Albanese (CEO of Rio Tinto at the time, and later top executive of Vedanta). But the IUCN was and is not ready to support an alliance between conservation and the environmentalism of the poor.

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This chapter is a quick commemorative journey around the world, searching for cases of biodiversity conservation that would illustrate the dilemma between "convivial conservation" and "militarized conservation". Conservationists are used, after years of calling attention to the loss of landscapes and biodiversity, to combine modest propositions (for instance, let us keep only 30 per cent of the terrestrial part of the planet for conservation) with authoritarian attitudes that come often from their upper-class background and financial power. Instead, there are possibilities of "convivial conservation" relying on local social values, and also building on the fact that human population growth is about to stop soon.

As Büscher and Fletcher (2019) wrote, the conservation community is divided over where to go. Some want to place 'half earth' into protected areas. Many believe conservation requires full integration into capitalist production processes in which "ecosystem services" would be valued and compensated in monetary terms. Others propose convivial conservation as the way forward. This approach incorporates the needs of humans (Indigenous and not Indigenous) and the needs of nonhumans. It is perhaps the ICCA way.

In India, two cases of "convivial conservation" have been considered in this chapter: the current conflict in Bhitarkanika in coastal Odisha, and the success of Silent Valley in Kerala in the 1970s. But we have also seen cases in Kerala where the conservation of wildlife, including tigers, is deemed to require the displacement of Adivasi populations. Kaziranga in Assam is another proverbial case of "militarized" conservation (successfully preserving rhinos), with local populations as the main protagonists and victims of the conflict. On the other hand, in Arunachal Pradesh the citizens and the Tawang Buddhist monastery opposed the state in order to preserve a sacred lake and migrant birds. In all cases, there are value system contests. In Tawang there was a contest between hydropower and money on the one side, and wilderness (or biodiversity) on the other. A third valuation language was relevant, the religious beliefs of local people in terms of a high degree of sacredness, cultural and historic values. And possibly a regional feeling.

In China, two cases in Yunnan province show the defence against hydropower of the Nujiang River and of the Tiger Leaping Gorge in the Jinsha River – the tiger being here a mythical animal and not a really existing tiger. Another beautiful landscape in Yunnan houses the Green Peafowl; threatened by hydropower again. Protagonists in the Chinese cases are often journalists and professionals, plus the Chinese conservationist organizations, international allies, and sometimes the local populations. The enemies of conservation are the state and private enterprise, and sometimes also poachers that cater to outside demand, as is clear in the cruel practice in Costa Rica of cutting off and exporting shark fins. On the relations between environmentalism and "animalist" movements, as in this Costa Rican case, there are other conflicts recorded elsewhere in this book.

Then, in Africa, we looked at the R.D. Congo where the Virunga National Park is threatened by oil exploration, mining and not least by poachers, and where park wardens are sometimes killed. Finally, in Lithuania, there is a conflict at present on the preservation of remaining primary forests against its own government. There are many other "biodiversity conservation conflicts" found in other chapters in this book. In the chapters on Africa with the EJAtlas as a guidebook, I look at Kenya and Tanzania which sometimes are seen from Europe as wildlife tourism destinations. Equally, in Chapter 13 on Mozambique and Madagascar, we shall look at the defence of the environment by local peoples, the conservationist BINGOs and their alliances with multinational companies.

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12. East Africa: Kenya and Tanzania, wildlife and human livelihoods

INTRODUCTION: EASTERN AFRICA IS ONE OF THE WORLD HOTSPOTS OF CONSERVATION

The EJAtlas contains many entries from Kenya, starting in Lamu and going south to the border with Tanzania. The dilemma between militarized conservation and convivial conservation presents itself starkly but most conflicts in the region are caused, not by nature conservation but by the increase and changes in the flows of energy and materials, often for export.

The first conflict we shall look at takes place in the Tana Delta in Kenya (which I visited in 2008), where the protagonists were sugar cane plantations, pastoralists, small scale agriculturalists and the remaining wildlife (birds, hippopotamus, monkeys, etc.) defended by conservationist organizations. This is where this chapter starts, not far from the spot in Malindi from where Vasco da Gama crossed the Indian Ocean towards Malabar (today's Kerala) in search of a precious commodity, pepper. Sanjay Subrahmanyam, the great Indian historian, explained Vasco da Gama's life, uncouth behaviour and colonialist motives.

KENYA

The Tana Delta and the HANPP[1]

As analyzed by Leah Temper (2016), the Tana Delta, on the east coast of Kenya, comprises riverine mangrove forests, wetlands and rangelands. It is also home to Indigenous pastoralist, farmer and fisher communities, whose traditional multi-user livelihood strategies have helped preserve or at least have been compatible with exceptional local biodiversity. The Tana Delta is one of the most important wetlands in Africa. Supporting over 350 species of birds, the core Delta area covers 130,000 ha and is a rich mix of habitats with thousands of wetland birds as well as hippos, elephants, buffaloes and numerous breeding fish and amphibians. Here, an alliance formed between the pastoralist Orma and the NGOs concerned mainly with biodiversity (including international NGOs and personalities) acted against plans for large sugar cane plantations. There was a quadrangle of interests: the pastoralists, the conservationists, the local agriculturalists (Pokomo) and the plantations who kept an eye on the international ethanol market.

Pastoralists and agriculturalists have often been in conflict in many places. The alliance of pastoralists and conservationists in this case was remarkable. The Orma pastoralists in the Tana Delta used to be nomads who occupied the pastures only during some seasons, but they have become more sedentary, having large herds of cattle. Livestock keeping is the basis of

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Figure 12.1 *Memorial to Vasco da Gama in Malindi on the Indian Ocean between Mombasa and the Tana Delta – new routes to the commodity frontiers of India*

their livelihood. Nowadays, conservation also plays an important role in the area, allied to ecotourism.

Tana and Athi Rivers Development Authority (TARDA) – a state organ – together with Mumias Sugar Company Ltd (MSCL) came into an agreement to undertake sugarcane growing and ethanol production in the Tana Delta on 20,000 ha. An EIA study was done for the project but it received major opposition from environmentalists. Nevertheless, an EIA licence was given in June 2008. A court case put an injunction on this project, but the case was thrown out in June 2009. In April 2009 TARDA decided to grow maize and rice because Kenya was facing a food emergency as a result of the drought. Local communities including farmers and pastoralists were evicted from the area to give way to agricultural developments. In August 2010 a new court case was filed by representatives of Tana Delta local communities in the Kenyan High Court. The court case was widely covered in the Kenyan media and a court hearing to consider the injunction was scheduled for December 2010 and postponed until December 2012.

There have been numerous "development" projects focusing on plantation crops in this area, primarily fuel crops such as Jatropha, oil seeds and sugarcane. Titanium ores mining and gas and oil exploration have also targeted the region and arrived elsewhere in Kenya. Of these, planned sugarcane projects represent the largest area (although many are now

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defunct), such as the Tarda project (20,000 ha), MAT International and another from Kwale International Sugar Company Limited (Kiscol), of 8,000 ha. Following a court ruling in 2013, all projects were put on hold pending a planned Master Land Use Plan for the Delta that resulted in large part through the advocacy of Nature Kenya and other organized opposition. The Master Land Use Plan was finalized in 2014 but there was no further news of these projects being reinitiated.

The TARDA-Mumias project was first stopped by a court decision in 2013, and in 2016 the project was finally discarded: the alliance between Orma pastoralists in the delta (including their political representatives) and Kenyan and foreign conservationists was successful. In this case, the pastoralists led to a victory of conservation, over plans for an economy of sugarcane for ethanol exports to the detriment of their livelihoods and wildlife. Leah Temper (2016) contributed a novel analysis of this case in terms of the Human Appropriation of Net Primary Production (HANPP), an indicator used by system ecologists that quantifies human-induced changes on the production and harvest of biomass flows. HANPP is calculated by seeing how much of the net primary production (NPP) of biomass flows created through solar energy and current photosynthesis are appropriated by human activity, and how much is left in the ecosystems for other species. Her article (2016) introduced calculations of the HANPP in political ecology by not only studying the distribution of biomass between humans and non-humans, but also (and this is the main point) between different groups of humans.

To make the point clearer let us give a numerical example. Imagine that the biomass potentially produced per year (NPP) from an area without human intervention equals 100 units. These 100 units are used by other species, in other words, are used by nature herself. Some pre-industrial humans appear, and in the form of pastures and/or agricultural products appropriate 20 units of NPP, the remaining 80 units continue to be used by other species. The HANPP is 20 per cent. Human intervention will regularly decrease the amount of NPP (because of deforestation, paving…) but in exceptional cases (irrigation, fertilization) the NPP might increase through human intervention. Let us think of the Tana Delta converted into a fertilized sugarcane plantation, with an NPP of 120. Humans might use 80 of these units for the national and international market for sugar and ethanol, 10 units for the crowded-out local population, and only 30 for the "wildlife". This would be an analysis in terms of the HANPP and its distribution among diverse classes of humans, and among humans and other species. In a sugarcane plantation with irrigation, biomass production and the proportion of it appropriated by humans would increase, the Orma pastoralists and the Pokomo farmers would be dispossessed, less biomass would be available for local 'wild' biodiversity, and a much larger proportion of the NPP would be exported as sugar or ethanol.

Meanwhile, upriver in the Tana, another conflict confronted Pokomo farmers, not with pastoralists, but with conservationists. This was the famous Tana River Primate Reserve established in 1976 to protect the remaining forest and the most threatened primate species: the Tana River Red Colobus and the Tana River Mangabey, both endemic to these forests. These species are threatened by habitat loss and forest degradation. The potential sugarcane plantations would remove more forested areas. In 1996, the World Bank donated US$ 6.2 million on a period of five years to help Kenya Wildlife Service (KWS) protect and manage the Tana River Primate Reserve. The project aimed at relocating communities living in the reserve to an alternative site. However, it faced a lot of resistance from the locals who refused to relocate, and therefore it did not provide a solution.

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Conflicts on Energy: Coal and Wind in Lamu[2]

Nearby the border with Somalia, the city of Lamu is much appreciated by tourists and is the seat for various investments recorded in the EJAtlas, not least a large port and airport. A pro-industry report (Ochieng 2019) announced:

> Though Lamu County is positioning itself to become the next frontier for energy production in the country, companies and investors involved […] are not happy about the myriad of "roadblocks" placed on their path by various stakeholders. The proposed three power projects are namely; the 300-MW Kenwind Power project in Bahari area in Mpeketoni, the 1500-MW Amu Coal Project in Kililana area in the mainland and the 200 MW Zarara Oil and Gas Project in Pate Island.

Among such projects, one was related to imported coal and one to local wind. Coal may be seen in Europe (with the exception of Poland, Greece and still Germany) as an old-fashioned fuel. However, in the world at large coal extraction increased seven times in the twentieth century, and has increased again, at a lower rate, in the first twenty years of the twenty-first century.

Therefore, the bulk of the energy supply in the world is still fossil fuels, and it is growing in absolute terms. "If you check all industrialised countries, coal has been a significant factor in their growth", Amu Power Chief Operating Officer said. And in Lamu, a beautiful place, as well as in uglier places, there are grievances and claims against both coal and wind energy. First, against coal, with an alliance of local civil society groups, local government and some interventions of outside international NGOs such as 350.org. The construction of the US$ 2 billion, Chinese-financed coal-fired power plant in Lamu was planned for December 2015. However, by 2019, the project was suspended.

In 2016, the Lamu County Assembly rejected an ESIA on the coal-fired power plant. The assembly wanted the project owners to come up with a resettlement plan for residents who will lose their land. The plant was to be set up at Kwasasi by Amu Power Company, which was formed by Gulf Energy, Centum Investments and Power Construction Corporation of China. This was Kenya's first coal project, part of the Government's plans to generate 1,920 MW of electricity from coal by December 2017.

There were several conflicts involved. First, Kenya would have had to import coal from South Africa. Second, the Lamu area is an untouched nature paradise, the population lives from soft tourism, fishing and agriculture, which could be destroyed by the pollution caused by a CFPP. The desalination system from the water cooling might destroy the rich sea life, which is why banners claimed "Coral yes, Coal no".

The locals did not want the project, but they were not informed. The local governance system had no clout against the multinational corporations. However, Amu faced intense hostility from activists. "Save Lamu", a community-based organization, led residents in mounting pressure on the county government to halt the project. By 2019, a court decision stopped the project at least for the time being. As reported in *QUARTZ* by Abdi Latif Dahir in June 2019, Kenyan judges at the National Environmental Tribunal said that officials had failed to conduct a thorough assessment of the plant's impact. The tribunal cancelled the licence issued by the National Environmental Management Authority and ordered developer Amu Power to undertake a new evaluation. The court also faulted the power plant for unclear plans for handling and storing toxic coal ash.

The ruling was a win for environmental activists and local communities. "It really is a great day for the people of Lamu", said Mark Odaga, a lawyer from the non-profit group Natural

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Justice. The judgment dealt a blow to Kenyan authorities, who argued that the CFPP would help meet the country's fast-growing demand for electricity.

The project was another example of Beijing's efforts to push its Chinese corporations to develop CFPP overseas. African countries have welcomed Chinese investment of different kinds: in Kenya itself, the new Nairobi-Mombasa railway has been built with a high degree of approval. After 2019, Amu Power could still apply for a new licence or appeal the decision. Local communities were celebrating the win. "We're now old, but we inherited a clean and healthy environment from our fathers, and it's our duty to give our children a clean and healthy environment as well", said the vice chair of NGO Save Lamu, Mohammed Mbwana. By November 2020, the Industrial and Commercial Bank of China withdrew all financing because of the environmental and social risks of the project.

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Another Lamu energy and land grabbing conflict is on wind energy, one of a growing number of such conflicts around the world (Avila 2018; Temper et al. 2020). The main issue about wind energy is not the property rights on the wind itself but the land requirement to set up wind energy parks. Also, the material and energy requirements to build the windmills, and the length of their working lives before replacement. In the Lamu Cordisons Wind Power Project a conflict arose between wind energy projects (Cordisons against Kewind) and also with landowners complaining about low compensations for "land grabbing". This started around 2013. Cordisons International intended to implement a Wind Power project in Lamu County. In May 2013, an EIA for the project was submitted to NEMA, to which Nature Kenya's main concerns were the need to carry out detailed biodiversity surveys and set baselines, to adopt avian safe wind farm design and turbine placement, and to develop and implement a biodiversity monitoring framework. However, the EIA was approved without incorporating these issues and implementation of the project began. Land rights are also a potentially conflictive issue in the Lamu region, as the large majority of the population does not have title to the lands they occupy. In 2016, the conflict escalated between two firms, one foreign and one local, Cordisons and Kenwind, trying to get land for wind power projects in Baharini Village in this region.

In an article cited previously (Ochieng 2019), it was reported that Lamu county would advance by energy projects to be an economic and industrial zone spurred by the Lamu port, which would be the next logistics and trans-shipment hub besides Mombasa. Unresolved land issues and environmentalists' concerns remained a thorn in the investors' skin. The Kenwind Project ran "into headwinds especially from a fellow prospective company (Cordisons) that has also been seeking land for a wind power project". Kewind had to deal with court cases brought forward by Cordisons International, a private energy company seeking to be allocated 11,000 acres of land by the Lamu County government in 2009, but denied the rights by the National Land Commission (NLC) because they did not meet the requirement to operate at such a scale. The legal mess was shown by a Court of Appeal application lodged by Cordisons International in May 2018. The firm, despite getting approvals from the Lamu County government, the Energy Regulatory Commission (ERC) and the NLC, could not operationalize its wind power project. Cordisons in turn accused the NLC of favouring Kenwind and resorted to lodging a flurry of court cases that delayed the progress of the Kenwind Project. Kenwind was hoping that once the Resettlement Action Plan was concluded, with the affected 375 farmers

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being compensated, the project would kick off. Kenwind was backed by the International Finance Corporation (IFC) of the World Bank.

Kenwind earmarked 3,200 acres of land in the Baharini area in Mpeketoni for the project. Upon completion, the project was expected to generate 90 MW of electricity sold to Kenya Power and Lighting Company under a 20-year Power Purchase Agreement (PPA). However, by 2020 the project was in difficulty on the issue of land availability.

This is a similar case to that of the Lake Turkana Wind Power Project, in northern Kenya, also found in the EJAtlas. This is taking place on Indigenous ancestral lands of the Turkana, Randile and Borana communities (Loyangalani district, Marsabit County) The Lake Turkana Wind Power consortium (LTWP) planned to provide 310 MW of power to Kenya's national electricity grid with 365 wind turbines. This plan by Vestas is supposed to be the largest wind power project in Africa. There was some opposition to the project, especially from Nature Kenya, due to its environmental impacts. In late 2021 with the project already running, a local court found that the deeds to the land were unlawful though the wind farm will remain standing after the verdict.

Ilmenite for Titanium in Kwale[3]

In this section we move south of Mombasa to look at a conflict created by the world demand for a bulk commodity, ilmenite as an ore for titanium. I myself became aware of the world titanium ore boom on a visit to Kwale in 2008 (I used to be an economist ignorant of industrial ecology). Chapter 15 analyzes other conflictive projects on sand mining for metals around the world.

The Government of Kenya allowed the Canadian company Tiomin Resources Inc. to grab the lands of native people for the exploitation of titanium deposits located in the Kwale region and the project was planned to start without an EIA. After years of negotiations, the Government of Kenya approved the project. A coalition formed of local communities and human rights organizations called Coast Mining Rights Forum opposed the mega-project, as it called for the displacement of 5,000 Indigenous Digo and Kamba people and was to contaminate local soil and aquifers with heavy metals. In 2008–09, the Tiomin company tried to sell the rights to Jinchuan, a Chinese company. The project started in 2013 and led to forced displacements.

In February 2014, it was reported that Kenya did the first shipment of 25,000 tonnes of ilmenite to China, from Kwale Mineral Sands Project, owned by Base Titanium, the Kenyan subsidiary of Base Resources. Rough estimates show that 250,000 tonnes of Titanium ores were to be exported per year.

By March 2019, the company Base Resources was planning to expand the mine. Relocation of local people would be needed. It candidly acknowledged that "despite the company's good work, attempts to expand have been met with constant community hostilities". Base Resources is an Australian based, Africa focused, mineral sands company with an established operation in Kenya and in Madagascar. By 2021, Base Titanium was pleased, announcing that it "owns and manages Kwale Operation, a high-grade mineral sand mine, located 50 kilometres south of Mombasa".

Waste Dumping in Mombasa and Nairobi[4]

One famous case of urban industrial pollution in Mombasa is the lead-acid batteries recycling factory that impacted on people's and the environment's health. For forcing its closure, Phyllis

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Omido won the Goldman Prize in 2015. Using the terminology of the US environmental justice movement of the 1980s, this was a triumph of "popular epidemiology" against environmental racism. In 2007, the Indian company Metal Refinery (EPZ) Ltd. began its operations of recycling lead from old used lead-acid car batteries in Owino Uhuru, in Mombasa. In Owino Uhuru, the people were dying. The smelter satisfied an export demand to India.

There is another impressive case in Nairobi, where one of the largest unregulated landfills causing serious health issues, lies a few kilometres away from the United Nations Environmental Programme (UNEP). Dandora dump is a sprawling dumpsite, over 30 acres, in the heart of the Nairobi slums of Korogocho, Baba Ndogo, Mathare and Dandora. It opened in 1975 with World Bank funds and was deemed full by 2001. Yet it continues to operate, and people at the bottom of the socioeconomic ladder come here to make a living from scavenging the waste. This case is a very accurate example of environmental injustice whereby the poor social groups are impacted by waste dumped from the whole Nairobi region, and are polluted with dangerous elements such as lead, mercury, cadmium and PCBs. Yet, it is explained as the best solution for all because the poor people scavenge for materials to sell to the recyclers.

Due to the insufficient official scientific bodies in Kenya but also to political clashes, popular epidemiology was used to prove sickness and mortality in Dandora. No official study or statistics have been undertaken, therefore "lay" knowledge is valid. UNEP commissioned a couple of studies: lead and cadmium levels were 13,500 ppm and 1,058 ppm respectively, compared to the action levels in the Netherlands of 150 ppm/5 ppm for these heavy metals. The Stockholm Convention on hazardous pollution, which Kenya has ratified, requires eliminating these pollutants. The promise to act was agreed by the Government, interested stakeholders and the civil society. Unfortunately, nothing was done. On the contrary, more and more waste is sent to the landfill. The City Council of Nairobi was to decommission the dumpsite in 2012, however, conflict between the council and the Kenya Airports Authority over the relocation of the dumpsite to Ruai brought the process to a grinding halt. The community sees that there will be no easy end to the dumpsite.

The Standard Gauge Railway from Mombasa to Nairobi and Related Conflicts[5]

This is a new railway that cuts across the Tsavo National Park (East and West), a great area for wildlife, and impacts on the Nairobi National Park. It is an impressive Chinese investment outside China. Leaving aside its social exclusiveness and its ulterior motives in terms of extractivism and primary exports, it is a relative socio-environmental success. The railway has many advantages, but it comes together with plans for a wider road and herders complain of the new barriers that the railway implies. May 2017 marked the launch of the Mombasa-Nairobi Standard Gauge Railway, connecting the port city of Mombasa to Kenya's capital city Nairobi. The railway replaces the decrepit colonial Uganda Railway that was built during the British rule in the nineteenth century. Construction, which by 2019 was already underway on phase II of the Kenya SGR, was to extend the railway to the Uganda border by 2021.

The prime contractor on the railway was the China Road and Bridge Corporation. The project is estimated to cost US$ 3.8 billion, with 90 per cent supplied by a loan from the Exim Bank of China and 10 per cent coming from the Kenyan government. Ninety per cent of the workers are Kenyans. However, in October 2014, more than two hundred residents in Voi, located 142 km from Mombasa, halted traffic with burning tyres to demand jobs from the Chinese company.

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The design capacity of the railway is 25 million tonnes per year. The Chinese government and official media hailed the completion of the project as another success of the East Africa regional railway network. If things proceed smoothly, the Mombasa-Nairobi line is to eventually link Kenya, Tanzania, Uganda, Rwanda, Burundi and even South Sudan and Ethiopia. The railway is well seen in the country, as a big political success with a positive effect on the economy. Mombasa is of course the main port city. The port of Mombasa is doing nearly 30 million tonnes per year in cargo traffic.

Indeed, the new line will decrease journey times from Mombasa to Nairobi from over ten hours to five hours, with freight trains completing the journey in eight hours. It also represents the biggest investment in rail infrastructure since 1901. There have been some complaints by conservationists and pastoralists. The new railway bisects Tsavo National Park. The railway only has a few bridges under which elephants and giraffes can pass. Conservationists together with Save the Elephants, Tsavo Trust and the Kenya Wildlife Service pressure the government to ensure any future highway will include overpasses. There was a significant increase in elephant deaths from train collisions during railway construction.

The National Lands Commission (NLC) said that the Government would offer reasonable compensation to landowners affected by the railway. Addressing locals at Kasemeni Ward in Kinango NLC Chair, Dr Muhammad Swazuri said it is a public project that has benefits for the East African region. "We are pursuing this land for public use and not as a profitability venture. We therefore cannot offer what private investors are offering for land they acquire here", he said. Some landowners held protests to say they were being offered too little.

Near Nairobi, the railway cuts through Nairobi National Park, a 117 km^2 wilderness where buffalo and rhino roam. There were complaints against this, but Kenya's wildlife service, the land commission and national railways authorities agreed to build long bridges. Paul Muya, spokesman for the Kenya Wildlife Service (KWS), agreed with the solution. After some months of functioning, herders are known to have broken barriers for their animals to pass, and "vandals" are blamed for taking metals away in large quantities.

Amboseli National Park[6]

This case is one of several in Kenya classified in the EJAtlas as a "biodiversity conservation conflict", where "ecotourism" is also a salient feature. The one described here follows the interpretation of Serah Munguti (of Nature Kenya, a conservationist organization). The guiding line is how to bring together conservation of wildlife and community interests as ICCA, the international network, incessantly promotes and was called "convivial conservation" in Chapter 11. The communities here are Maasai (Figure 12.2).

Amboseli National Park is an Important Bird Area, with over 400 bird species recorded, including over 40 birds of prey such as the lesser kestrel (*Falco naumanni*) which uses the site during its migration period. Wildlife tourism is one of Kenya's main sources of foreign revenue, and Amboseli brings much money from park fees and related tourist activities. In September 2005, the President of Kenya directed that Amboseli National Park become a National Reserve. This meant that the management of the park was removed from the Kenya Wildlife Service and placed under Olkejuado County Council. This move downgrading the status of this protected area, having come ahead of Kenya's first Constitutional Referendum in 2005, was seen as an attempt to get the Maasai Community to support the new constitution. But supporters said handing over management of the park to the local council authorities

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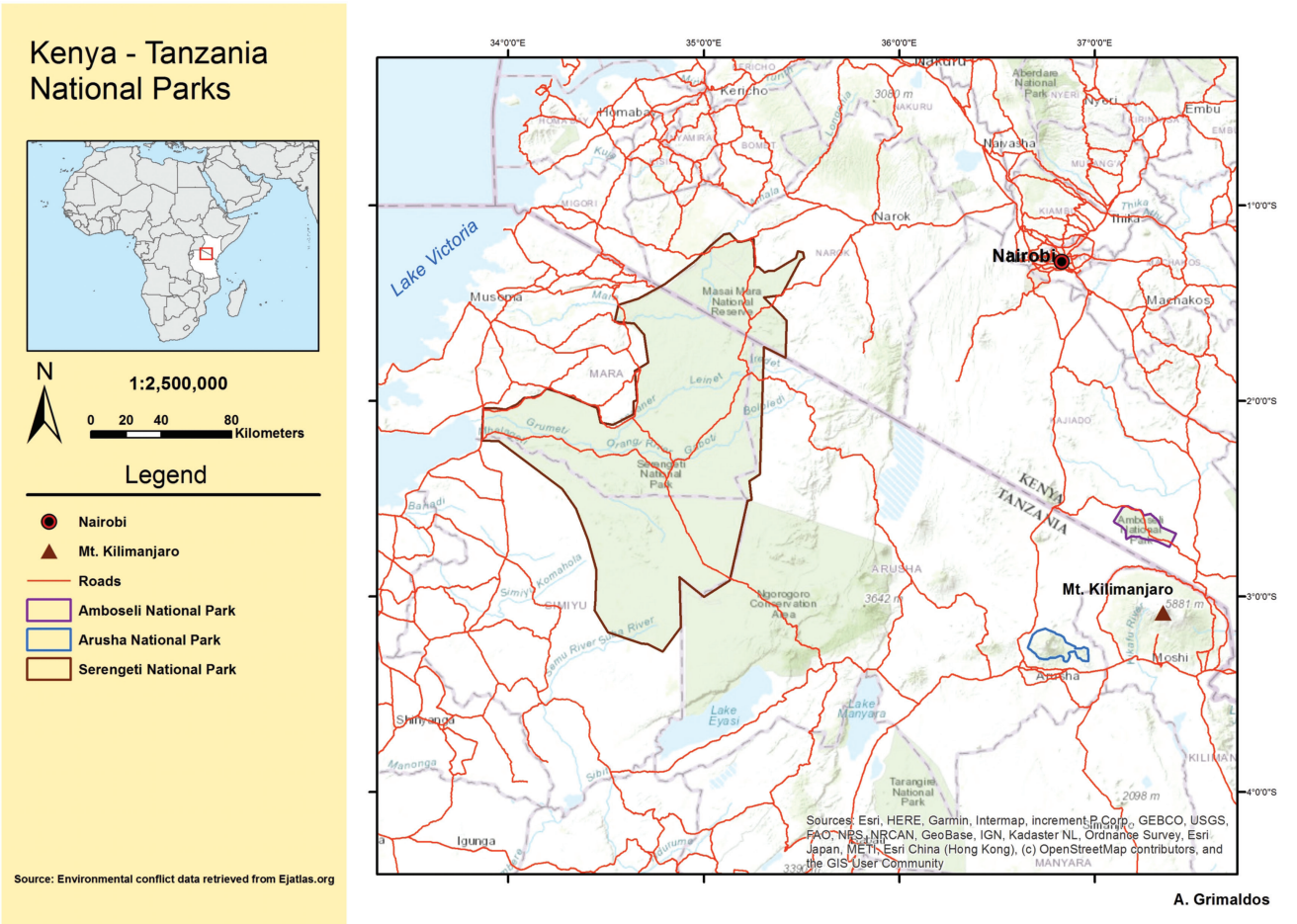

Source: A. Grimaldos

Figure 12.2 *Map of National Parks at the border between Tanzania and Kenya*

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would allow the Maasai to benefit from Amboseli revenue, correcting what they say was the theft of Amboseli 31 years ago, when the land was taken away from the Maasai people.

Many civil societies and wildlife experts opposed the move, terming it illegal. They filed two cases in the High Court of Kenya: first, to challenge the Government's decision to de-gazette the park and, second, to set an injunction on the decision so that Amboseli would maintain national park status.

In September 2010, there was a victory for Amboseli after the High Court of Kenya reversed the order and found the move to de-gazette the Park illegal. Organizations argued that they recognized the importance of encouraging the involvement of local communities in wildlife conservation and the need for communities to benefit from the resources. However, downgrading the National Park to a National Reserve was not necessarily the best way to achieve this objective. Instead, revenue sharing and community participation in the development of management plans could contribute to the success of a twenty-first-century National Park.

TANZANIA'S ECOLOGICAL DISTRIBUTION CONFLICTS

Attacks on the Serengeti National Park[7]

I could write more on Kenya but there is neither time nor space, and now we move south to Tanzania, starting with a conflict on a road to be built inside the Serengeti National Park (SENAPA). South from the Amboseli National Park around the Kilimanjaro, crossing the border of Tanzania, we would reach Arusha, from where a road might be built west to Lake Victoria. The SENAPA is famous for its wildlife, the wildebeest migrations and, adjoining the Maasai Mara reserve in Kenya, houses all the species of big animals from Africa. The SENAPA, a UNESCO World Heritage Site and Important Bird Area, is home to over 450 bird species, including three Tanzanian endemics and two globally threatened species, the Grey-Crested Helmet Shrike and Karamoja Apalis.

Again, this is a conflict between conservationists (and some eco-tourists) against the forces of progress. In 2010, the government of Tanzania proposed to develop a highway consisting of a 480-km road to connect two major ports on Lake Victoria (Mwanza and Musoma) to Dar-es-Salaam on the Indian Ocean, with 53 km of the road passing through the SENAPA. This road would take 3,000 vehicles per day (one every 30 seconds) by 2035. Opponents thought that part of the traffic would benefit the extractive industries and would certainly damage unique wildlife.

After conducting an EIA, it was confirmed that the 480-km commercial highway was unfit for wildlife management. Nevertheless, the EIA was disregarded. This raised immense opposition from environmentalists. In June 2011, the government responded by assuring that the 53-km stretch through SENAPA would not be paved or upgraded and would remain a gravel road. Yet, having a road passing through SENAPA, paved or gravelled, would affect the ecosystem through increased road kills of large mammals, disruption of the wildebeest migration route, increased human interference and easy access for poachers, as well as loss of revenue through tourism.

In March 2012, the East African Court of Justice ruled against objections by the Tanzanian government and decided that the case presented against the Serengeti highway could proceed to a full trial. The project did not involve all stakeholders in the decision making, although the

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park is a trans-boundary resource. Local populations were to be consulted. By June 2014, the East African Court of Justice, a significant actor, issued a ruling rendering the construction of the highway unlawful. The applicant had been the African Network for Welfare (ANAW).

The Costs of a Gas Pipeline for Exports: Mtwara to Dar-es-Salam[8]

We continue with another transport project, in the southeast of the country. Tanzania signed a contract with three Chinese companies on 21 July 2012 to start construction of a 512-km pipeline leading north from Mtwara to the country's capital Dar-es-Salaam, possibly turning Tanzania into a large gas exporter. It caused protests and violent repression by state forces, but was finally built. The project is financed by a Chinese loan as well as grants from the World Bank (US$ 300 million) and the African Development Bank (US$ 200 million). Another major pipeline is planned by the Total company from Uganda to Tanzania (see Chapter 27, EACOP). And gas is a main commodity in the trouble in Cabo Delgado in northern Mozambique.

The conflict was political (regional versus central interests in Tanzania, and involvement with foreign investors), and it was economic and ecological. The catalyst for the protests was the announcement of the government's decision to construct a gas pipeline instead of a gas processing plant situated in Mtwara. At the beginning, promises were made that a processing site would boost local development. On 27 December 2012, thousands of residents from Mtwara undertook a march protesting the pipeline construction plans. A legislative member and lawyer, stated: "I don't believe the country is ready to implement the existing systems and laws that will effectively protect our coastal environments".

During January 2013 protests, around 44 people were arrested in connection with the violence and riots that occurred. When the protesters clashed with police at the end of January, four people were killed and 12 more were injured. On 27 January 2013, protesters destroyed ten vehicles of the District Council, set fire to a court building as well as the district education office and several local officials' personal homes. On 22 May 2013, street battles and protests erupted again in Mtwara, when residents were not satisfied with the government's handling of the contracts signed for the pipeline project. Police and army forces used teargas and live rounds to shut down the unrest. The country's opposition parties demanded to make public all contracts signed with foreign governments, especially the loans from Chinese government investors. During the May 2013 protests, 90 people were arrested and one person was killed.

In reaction to the protests, President Jakaya Kikwete said that it was unacceptable to call for a stop of the pipeline construction, and affirmed that it "is something unacceptable that national resources can be restricted only to the place where they are found". The president also reaffirmed the Government's earlier promises to build many factories in the region in order to tackle unemployment. The construction of the pipeline was completed in 2015. Reuters announced that "discoveries off east Africa's seaboard have led to predictions the region could become the world's third-largest exporter of natural gas".

Swedish Sugarcane Plantations in Bagamoyo: Land Grabbing for Ethanol[9]

Resistance by local villagers who were to be evicted and concern for wildlife stopped the Swedish company Agro EcoEnergy project for sugar and ethanol production in Tanzania. As reported in the *Guardian* (2015), Per Carstedt, executive chairman of Agro EcoEnergy, dreamt of a Plantation on the north Tanzanian coast. Under his plan, farmers who once depended on subsistence work

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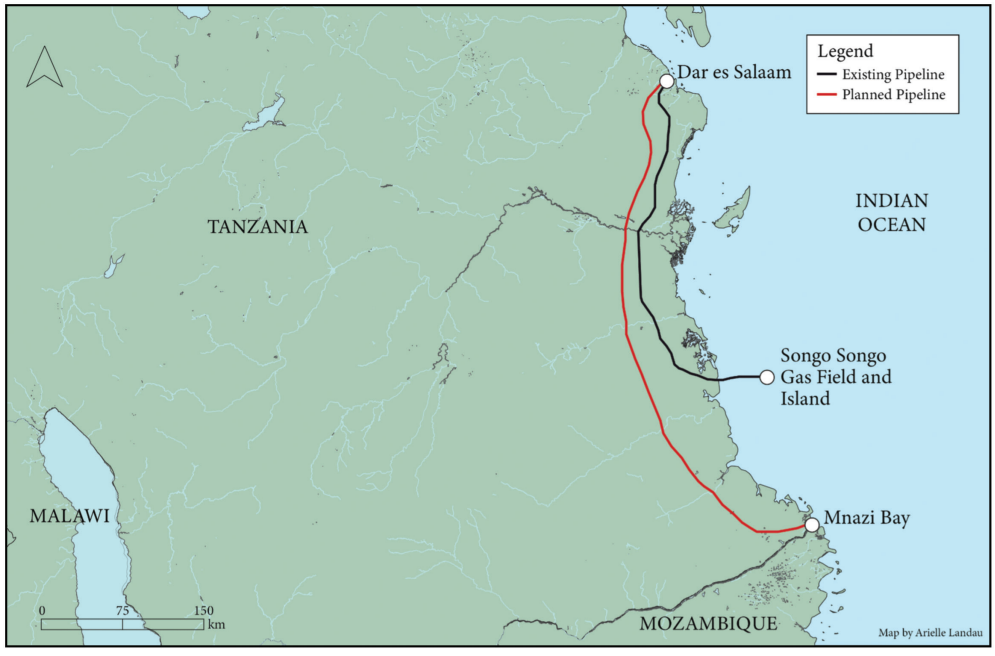

Source: Arielle Landau

Figure 12.3 The Mtwara-Dar-es-Salam gas pipeline

would earn wages on a sugarcane plantation or from selling sugarcane to a sugar mill. The factory would process sugar for export as well as ethanol. The fields would be crisscrossed with irrigation canals and treated with a mix of organic and synthetic fertilizer. Within a few years, Tanzania would be the biggest sugar producer in East Africa. "What can a smallholder do if he doesn't have access to infrastructure, access to market, access to training? Well, he does what he's done for generations – produce the food he needs to survive", Carstedt said.

In 2006, the company SEKAB signed an MoU with the Government of Tanzania to cultivate 20,000 ha of sugarcane for the European biofuel market. The area targeted by the company is located 20 km from Bagamoyo town. In 2007, SEKAB chose ORGUT, a Swedish consultancy firm, to conduct the ESIA. They found out that more than 1,000 people were living within the project's area and showed some critical issues such as a huge water requirement, the possible loss of biodiversity, the rise in conflicts between communities and the increase of diseases such as HIV and malaria due to the influx of workers. Despite these risks, SEKAB altered ORGUT's conclusions and allegedly submitted a softened version of the ESIA to the National Environmental Management Council, which was approved in 2008. In 2009 SEKAB sold the project to the Swedish company Agro EcoEnergy. The new company revisited the project by planning the production of sugarcane for the local market and the production of ethanol for the generation and supply of electricity. The African Development Bank Group (ADBG) accepted to provide funding for this project on the condition that the ADBG's Involuntary Resettlement Policy and the World Bank's IFC's Performance Standards on Environmental and Social Sustainability were complied with by Agro EcoEnergy.

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The company's first Resettlement Action Plan identified 1,374 people to be affected by the project and eligible for compensation. After a year of negotiation, the Government decided to act as if the land was legally occupied and recognized 815 people eligible for compensation. This census didn't include the Barbaig pastoralists or the illegal charcoal makers. Moreover, the Government's monetary compensation failed to comply with the funders' standards. For this reason, the company was supposed to bear the costs of providing new houses and land for those living in the area. In 2013, Ecoenergy acquired a right of occupancy for 99 years, but in June 2016 the Tanzanian Government took the decision to halt the project. Action Aid considered this a victory for vulnerable local communities and for the surrounding wildlife.

Jatropha in Kilwa District[10]

Another case of benevolent European land grabbing for "green" crops was the failed Bioshape Kilwa Jatropha Project. The Dutch company BioShape acquired a 50-year lease in 2006 for 81,000 ha of bio-diverse land in the Tanzanian Kilwa district at a site west of Lindi, about 20 km inland from Kilwa. It planned to sell biodiesel to Europe on the back of an EU Renewable Energy Directive. Jatropha was seen around the world as a wonderful biodiesel crop that could grow without much water. There were many early criticisms.

Huge tracts of land were cleared, much of it ecologically sensitive woodland. But one of the main investors in BioShape, Eneco Energie BV, pulled out in early 2009. In November 2009, the company ceased operations. Areas of dispute stretch back to allegations of irregularities in the EIA. Other concerns were around food security, people leaving farming to work for Bioshape, poor working conditions and compensation paid for land not meeting expectations. Furthermore, there were allegations that Bioshape was more interested in timber from cleared forests to be exported.

We can interpret what happened in this case in Tanzania in terms of a short-lived world boom of interest in jatropha as a fossil fuels substitute. Jatropha caused many conflicts on access to water and land; it did not substitute fossil fuels.

The Rufiji Delta: Mangroves and Shrimp[11]

Another biomass conflict in Tanzania of interest around the tropical world is the defence of the Rufiji delta's mangroves against the shrimp industry. When I was writing *The Environmentalism of the Poor* in 1999–2000, I had never been to East Africa. Now I know more about this successful campaign against a large proposed commercial shrimp aquaculture which would have destroyed the largest mangrove forest in Eastern Africa. The Rufiji River is about 600 km long, and the delta is the home to approximately 53,000 acres of mangrove forests, which provide protection from hurricanes, preserve quality of life, sustain many species of land and water flora and fauna, and are also the direct source of livelihood of 41,000 people, most of whom are small farmers and fisherfolk.

In 1997, the Tanzanian Government sanctioned the proposal by the African Fishing Company (AFC) to set up a 19,000-ha shrimp aquaculture site within the Mafia Island Marine Park, which would consist of a hatchery, processing plant, and a feed mill, and would replace a part of the mangrove forest reserve. The business was alleged to produce US$ 500 million a year in export profits from the supposedly 6,210 kg of shrimp per ha per year, mainly for Europe and Japan.

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However, the local people and local and international NGOs strongly opposed this proposal. The advisory body of the Tanzanian Government, the National Environmental Management Council, proposed the rejection of the project as it would have a considerably negative impact on forestry, fisheries, land use, water use and agriculture. The pollution would increase eutrophication, toxicity and acidification of surrounding water resources, and destroy endangered species of mangroves as well as other plants and animals. However, the Tanzanian cabinet chose to ignore these recommendations and approved the project.

In February 1998, the East African Wildlife Society started two advocacy campaigns in opposition to the proposed prawn industry. The first was a mass media campaign, led by the Journalist Environmental Association of Tanzania, where activists travelled to the delta for updates on the project and interviewed local communities. The second campaign was geared to people living in the delta. Forums and open public meetings were held for awareness and sensitization of the local people. All these led to a petition signed by 2,000 resident villagers of the Rufiji delta, suing the Government for not involving them in the decision-making process. Finally, in August 2001, it was announced that the AFC would be liquidated, and the project was halted.

Uranium: A Commodity Extraction Frontier in Malawi and Tanzania[12]

Whether it is oil or gas, gold or copper, phosphates or timber, the African continent plays a role as supplier of commodities for the industrial metabolism of rich areas. Uranium is relatively new, from Niger, Namibia, Malawi, and also from the Mkuju river in south-west Tanzania near Malawi. I mention in Chapter 28 the remarkable role of the French CRIIRAD laboratory in "citizen science" research in Namibia and Niger. In May 2012, they conducted radiation monitoring in the uranium mine in Kayelekera (Malawi), exploited by Paladin Africa Limited, an Australian company. Radiation monitoring was done with Citizens for Justice and the local communities in Kayelekera. CRIIRAD discovered hotspots in the environment of the mine and a high uranium concentration in a stream entering the Sere River. CRIIRAD shockingly found out that many tonnes of radioactive and chemically polluting wastes were disposed of on a plateau with very negative geological and hydrogeological characteristics.

The Tanzanian Government welcomed the prospect of uranium mining. The Ministry of Energy and Minerals (MEM) opened its doors to issue prospecting licences in 2005. Subsequently, 70 prospecting and exploration licences were issued to companies and individuals. Among those companies were several subsidiaries of the same foreign company registered under different names. Mantra Resources Tanzania Limited was reported (2017) to be developing and making final preparations for the Mkuju River uranium project to begin soon. Similarly, Magnis Resources Ltd (ex Uranex Ltd) was making final preparations in the Bahi-Manyoni-Area in central Tanzania.

Uranium exploration activities by MRTL began in the Mkuju River in 2005 and the permitting process was registered in 2009. Since 2005, concerns surfaced. One of them is the location of the mine partially within the Selous Game Reserve, a World Heritage Site under the care of the Tanzanian Government and UNESCO. Besides, there are fears of damage to the wildlife in the reserve. Despite protests from local and International NGOs, in July 2012 the UNESCO World Heritage Committee approved Tanzania's request to slightly modify the boundary of the game reserve for the Mkuju River Project. Consequently, in August 2012 Tanzania's Minister of Environment approved and issued the EIA certificate. There

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remain several concerns about the negative impact of uranium exploration due to waste radioactivity. Uranium mining activities can cause diseases such as leukemia or cancer which can show up only 15 to 20 years after exposure. The earth mined cannot be used anymore for agriculture or any other purposes.

This company installed solar power in a boarding secondary school in a neighbouring village. They also provided the village with four hospital beds. Regarding employment policy, those who worked with Mantra Resources reported that they were hired as cheap labourers. Observations conducted by WISE and CESOPE (a local organization) revealed that local people and NGOs in the surrounding project area were deliberately misinformed. At the beginning of exploration activities, villagers were made to believe that works were part of construction of new antennae for mobile phone networks. Local politicians denied ongoing exploration and intimidated NGOs' concerns on the issue. The Tanzanian Government welcomed uranium mining as a solution to poverty, but the capacities to handle side-effects in terms of laws and regulations, skilled staff, know-how, financial power and institutional factors are low. The communities appeared to be determined to fight for their rights and engage the Government in stopping the activities of uranium extraction. By 2017 it was announced that Rosatom State Corporation, which planned to start mining uranium at the Mkuju River mine, postponed the development of the project.

CONCLUSIONS: SOCIAL METABOLISM AND ENVIRONMENTAL CONFLICTS IN KENYA AND TANZANIA

Tanzania is a large country, with 945,000 km^2 and a population of 57 million, while Kenya has 580,000 km^2 and a population of barely 50 million. The growth and the changes in the social metabolism have led to ecological distribution conflicts. The protagonists of such conflicts display several languages of valuation – "eco-compensation" in money terms for damages suffered is only one of them. How does this notion of plurality and incommensurability of values (a foundation of ecological economics) apply in practice to the cases we have seen? Let us reflect on the conflicts in this first African chapter of the book. Which preciosities and which old and new bulk commodities are involved? What steps could be taken towards a political ecology of Africa with "African characteristics"? How do environmental justice movements in Africa connect to worldwide movements? There are "old" commodities involved in these conflicts (coal, copper, hydropower, sugarcane, timber) and there are some which are modern (shrimp, ethanol, natural gas, biodiesel, ilmenite, uranium, wind energy, "ecotourism"). The Agro-Eco-Energy conflict in Tanzania has similarities with the failure of the TARDA/Mumias project in the Tana Delta in Kenya. The resistance to pipelines and the defence of coastal areas are common to both countries. The East African Crude Oil Pipeline Project (EACOP) is a pipeline that would transport oil from Uganda's Lake Albert oilfields to the port of Tanga in Tanzania to be shipped to world markets. TotalEnergies is very much involved in this conflict (Chapter 27).

This chapter describes about 15 conflicts on mining, industrial energy and biomass. There are conflicts on bio-conservation in emblematic protected areas like Amboseli and Serengeti, and on the defence of mangroves in the Rufiji delta against large-scale shrimp aquaculture. The wetlands created by the main rivers of Kenya and Tanzania are present in this chapter. In the Serengeti the conflict on a road that would cut across it is described, while in Kenya

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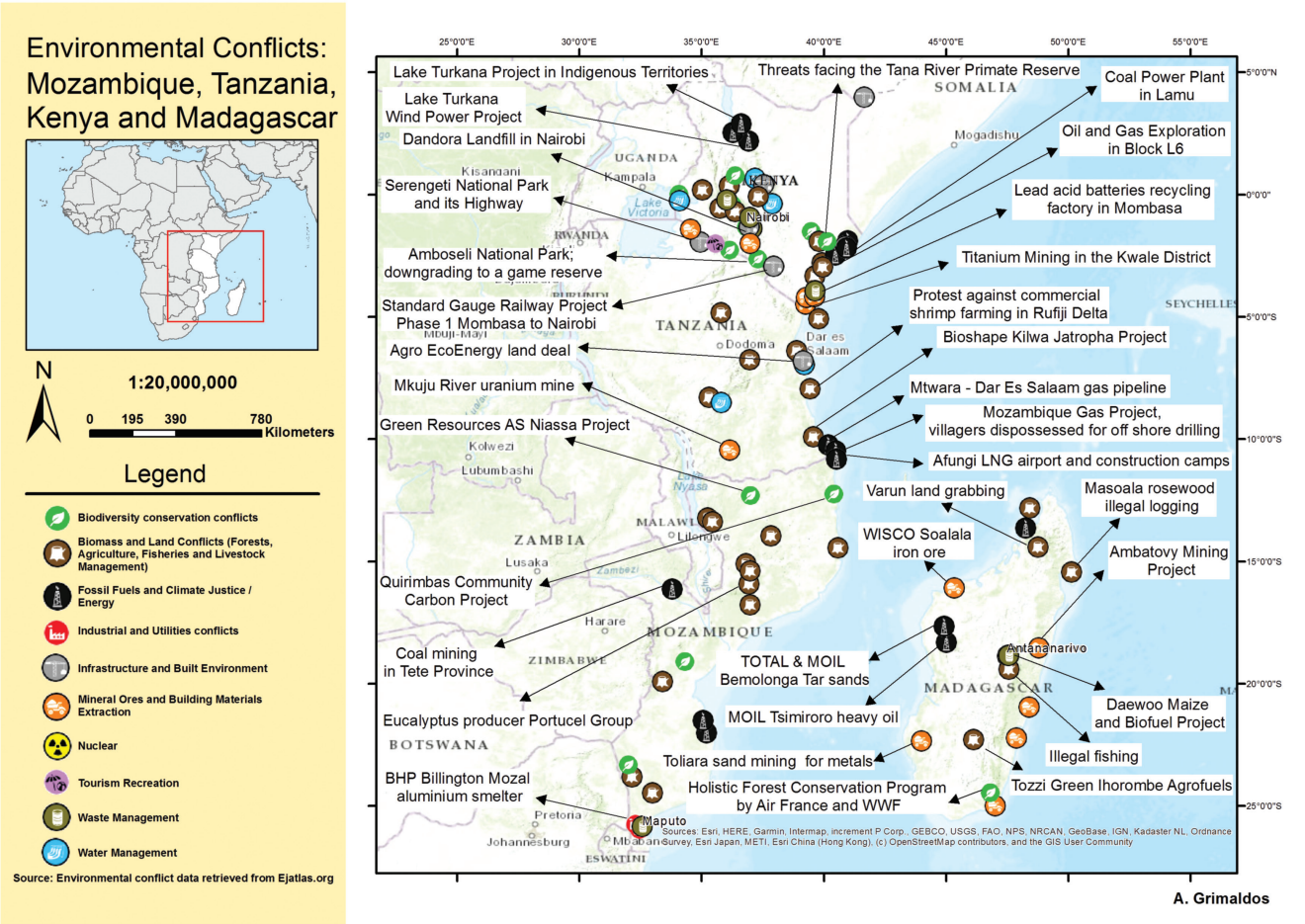

Source: A. Grimaldos

Figure 12.4 *Map of cases in Mozambique, Tanzania, Kenya and Madagascar*

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we look at the "pains and gains" from a successful Chinese investment, the railway from Mombasa to Nairobi. "Eco-tourism" is also a commodity, perhaps compatible with conservation. We also consider two waste dumping cases at the end of the socio-metabolic processes, involving some recycling: the Dandora landfill in Nairobi and the lead-recycling industry in Mombasa.

If we take up, as I do, Wallerstein's fruitful distinction between preciosities and bulk commodities in the colonial international trade in the world economy since the sixteenth century (Chapter 26), we realize that most commodities in our list are bulk commodities (except perhaps for shrimp: low weight and high price). Oil pipelined from Uganda to Tanzanian ports, and LNG from Cabo Delgado in Mozambique just south of the Tanzanian border are next on the export list. Uranium would be exported in small quantities, but its mining is relatively voluminous. Ilmenite mining swallows up large dunes, one after another.

Regarding value systems, in which units would the balances be drawn, or should we appeal instead to a multi-criteria evaluation? If we take for instance the section in this chapter on the railway Mombasa-Nairobi, the discussion remains in the sphere of money values. What about the dead elephants? What about the damage to children's health from lead recycling in Mombasa? Phyllis Omido's fight was not for economic compensation but aimed to raise awareness of the irreparable damage and to ban the activity. There are valuation contests and one main question in political ecology and ecological economics is: who has the power to simplify complexity and impose one language of valuation above others? Poverty is multidimensional. Money does not necessarily increase freedom – economic development quite often implies loss of territorial rights, it curtails the freedom to customarily use land and water.

Finally, as a conclusion, we can already perceive some other themes of African political ecology: the presence of pastoralists, the land sometimes held in common, the presence of ethnic minorities (recognized by states or not) and the threat of a "resource curse" due to the obsession driven from abroad (from Europe and China) for exporting raw materials, facilitated by foreign investments. Also, the links across countries by new means of transport, the strong presence of civil society organizations defending wildlife and the activist journalists. From Somalia to Mozambique, along this coast there is a rosary of mosques (sometimes called Swahili mosques). They are witnesses to the diffusion of ideas, people and material cultures in the Indian Ocean, to the building of maritime identities and trading networks before the European conquests. Among the most southern sites, the mosque in Dembeni on the small island of Mayotte, a French colony that may come to play a role in the Cabo Delgado conflict.

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13. South East Africa: Madagascar and Mozambique; transnationals and BINGOs

BACKGROUND: VICTIMS OF "EXTRACTIVISM"

Mozambique has a local environmental group called Justiça Ambiental ("environmental justice" in English) which is affiliated with Friends of the Earth International. In seven of 24 conflicts recorded in Mozambique in the EJAtlas there is participation of FoEI, which would be an obvious node in a network analysis of the organizations belonging to the world movement for environmental justice. However, grassroots fights for environmental justice do not depend on organizations. On its side, Madagascar, a former French colony, also has some socio-environmental NGOs: Alliance Voahary Gasy (AVG) and Collectif pour la Défense des Terres Malgaches (TANY). Extractivism is also the cause of the main conflicts in Madagascar, in the form of mining and biomass extraction through land grabbing. In both countries there are also land grabbing conflicts related to the carbon credit trade (REDD and CDM) and there is the presence of big transnational mining firms. Aluminium, coal, oil, natural gas, titanium ores and nickel for export are sourced at these "commodity frontiers", as also rosewood (for China). In Mozambique, the anti-colonial struggle against Portugal was more leftist and more recent than in Madagascar. Mozambique went through a difficult process of armed struggle and independence from Portugal after 1975 while Madagascar became independent in 1960, after the cruel defeat of an insurrection against colonialism in 1947.

On a first look at the environmental conflicts in these two neighbouring countries, an easy comparative interpretation comes to mind. In Mozambique there is a strong presence of environmental justice struggles while Madagascar has more presence of international big conservationist non-governmental organizations, the BINGOs. But a closer inspection shows that there are more similarities than differences in the political ecology of both countries. The BINGOs believe they are the "world environmental movement". But there is also an environmentalism of the poor and the Indigenous. The confederation Friends of the Earth, for instance, navigates between both currents, some of its members fully on the side of the poor and the Indigenous.

MOZAMBIQUE

Next to the Tanzanian Border, a Coming War for Gas and Oil in Cabo Delgado[1]

I start with a conflict on gas extraction in north Mozambique, which geologically is a prolongation of the conflict in Tanzania on the pipeline from Mtwara to Dar-es-Salaam. Northern Mozambique is very far from Maputo, the capital of the country. This gas project led originally by the Texan company Anadarko, recently displaced farming and fishing communities,

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who lost their livelihoods giving incentives for the youth to join Islamist rebel groups. In Cabo Delgado there is a large Islamic population. A local insurgent group is called Ahlu Sunnah Wa-Jama, meaning, "followers of the prophetic tradition", often compared to Boko Haram in Northern Nigeria. Between October 2017 and February 2018, they were suspected to have killed over 40 people in the province. Some of the arrested suspects were reported to be opposing gas drilling. So, there is a triangular conflict between gas companies, villagers and the Islamist groups. After attacks in June 2018, thousands of villagers fled to Pemba, the capital of the province.

According to Eric Morier-Genoud et al. (2018), the sudden arrival of fossil fuels companies made for a "potential powder keg" in this poor and isolated part of the country. Because of their dissatisfaction the youth become targets to be enrolled by Islamist armed rebels. Also, in June 2018, the Bishop of Pemba, Luiz Fernando Lisboa, addressed these concerns in a pastoral letter, where he said their attacks "are forcing us to ask serious questions about the future we are offering our youth", and about how our natural resources could have "generated a better life for everyone in the province". Researcher Morier-Genoud made several recommendations to face this situation. He mentioned the need to send more troops to north Mozambique, but yet avoiding vexing the Muslim community, and also suggested a political commitment to the issue of land ownership. The tension with this Islamist rebel group reached a new level by January 2019 when the group attacked vehicles on main roads, killing 12 civilians. Anadarko was the initial investor of the consortium meant to exploit the offshore area. Anadarko built an airfield and was also constructing a liquified natural gas (LNG) plant. This occupied at least 17,000 acres (6,900 ha) and was a fortress area after displacement of local people including the village of Quitupo. Shell also wanted to build another gas refinery in Senga. The fishermen from Milamba were forced to move 15 km away from the sea.

Going back to June 2015, after a national court decided in favour of Anadarko's endeavours, the US company committed to a US$ 180 million dollars resettlement package to affected communities. Both farmers and fishermen expressed their dissatisfaction regarding the compensation process. Farmers say that Anadarko promised them that for every hectare lost, they would be compensated with a new hectare, which was not true. Paralegals denounced threats they received from the government because of their volunteering work. Overall, the population and the paralegals denounced that the lands had been taken without prior agreement or compensation. In May 2018, there was a demonstration of hundreds of young people in Palma, demanding jobs in fossil fuels' companies. They protested that they were occupied by non-locals. Their claims were not heard.

Originally, the major shareholder was Anadarko Moçambique Area 1 Lda (26.5 per cent); then came Mitsui E&P Mozambique Area 1 Ltd. (20 per cent); in third position came the Mozambique State owned company, Empresa Nacional de Hidrocarbonetos (with 15 per cent of the shares); the two Indian companies ONGC Videsh Ltd (16 per cent) and Bharat PetroResources Ltd (10 per cent); the Thai company PTT Exploration & Production Plc (8.5 per cent); and last, the other Indian company Oil India Ltd (4 per cent). The gas fields and the LNG plant were to be connected through a 45-km-long subsea pipeline corridor. Friends of the Earth Mozambique (Justiça Ambiental) recalled that natural gas was a polluting source of energy because it releases CO_2 and methane. The gas drilling process releases more than 300 chemicals, suspected to cause cancer. There were growing fears that gas drilling will affect biodiversity in the area, especially the Quirimbas Archipelago, a UNESCO biosphere.

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In 2019, Anadarko sold its interests in Cabo Delgado to Total. Ilham Rowoot of Justiça Ambiental had written:

> When, in 2010, US energy company Anadarko found major gas reserves off the coast of Mozambique's Cabo Delgado province, many hoped that the discovery was going to bring prosperity to the impoverished region. The following year, Italy's ENI also found a massive gas field in the area. Since then, Mozambique has seen an influx of foreign energy companies fishing for lucrative contracts […]. Cabo Delgado is now home to Africa's three largest liquid natural gas (LNG) projects; a number of communities will have to be evicted to make way for the support facilities onshore.

Total supposedly aims for "net zero" emissions by 2050, its website pledges, but in reality, it planned a radical increase in LNG production: from 34 million tons per annum (MTPA) in 2019 to 50 MTPA in 2025, from Cabo Delgado and from the Arctic's fragile Yamal Peninsula and Gydan.

Total claims gas is a bridge fuel to renewable energy, despite the wreckage of local ecologies due to fracking and greenhouse-gas climate damage when methane is vented or leaked. Making the gas liquid for LNG exports involves a large energy expenditure. As for social responsibility, Total often funds regimes guilty of human rights violations and socio-economic oppression (Chapter 27). On 26 March 2021, scores of local residents and a few foreign workers died violently, as Total gambled far too much in search of what would be the continent's biggest fossil fuel bonanza – and ran into Islamic guerrilla resistance. The end of the rainy season left the town of Palma vulnerable to what was a terrible attack leaving dozens of dead, including several international consultants and expat managers. Until the Palma massacre, Total had joined Rome-based ENI, Dallas-based ExxonMobil and Beijing-based China National Petroleum Corporation (CNPC) in hoping "counter-insurgent" Mozambican military support would allow more rapid gas extraction offshore Cabo Delgado.

The Islamic insurgency, generally credited to some version of localized 'Islamic State' extremism, began in earnest in 2017. But the region's grievances date back many decades, to Portuguese colonial underdevelopment, to post-colonial neglect after 1975, to recent disruptive ruby mining and timber extraction and now to abuses committed by the gas companies. In January 2021, Total had asked the Mozambican government to provide a 25-km safe zone perimeter at the Afungi Peninsula. It tried to provide security by using for-profit military allies: allegedly the notorious Wagner Group from Moscow, the Dyke Advisory Group from South Africa and the Paramount company, a major weapons supplier to regimes across Africa and the Middle East.

Leaving the Gas under the Sea, in Exchange for a Climate Debt Down Payment?

London-based journalist Joe Hanlon regrets how a corruption-riddled state elite became "dazzled by the gas, and believed Mozambique would be like Abu Dhabi, Qatar, or Kuwait. Gas would make the elite fabulously wealthy and also trickle down to ordinary people". Instead, the insurgents have disrupted the corporate-state extraction strategy. But South Africa remains a dangerous player, because of the country's main oil company – formerly state-owned Sasol – and also because South Africa National Defence Force troops are available. According to foreign minister Naledi Pandor: a "great opportunity exists for South Africa to import natural gas from Mozambique, thus the security of Cabo Delgado is of great interest to South Africa and her energy diversification strategy".

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There could be a moratorium to extraction: "leave gas under the sea". Indeed, Patrick Bond argued that a down payment on the "climate debt" that the Global North already owes Mozambique and many other poor peoples could finance state social programmes and ensure a Basic Income Grant to all Cabo Delgado communities – this could go together with a precautionary halt to fossil fuel extraction. Instead, by August 2021, there were troops from Rwanda and from South Africa in Cabo Delgado starting to fight a war for the government of Mozambique, and for Total's extraction and exports of LNG.

Green Resources and Envirotrade: Forest Plantations for Carbon Credits[2]

To the south-west of Cabo Delgado in Mozambique, there is a conflict on a plan to conserve the forest to absorb carbon dioxide. In this conflict we get a simple geoengineering experiment to absorb some of the excessive carbon dioxide produced by excessive use of coal, oil and gas in rich countries. In these cases, we see how environmental injustice (how the costs of mitigating climate change are shared) and agrarian injustice (how local "food sovereignty" is compromised by tree plantations to absorb somebody else's carbon dioxide) come together. They become intersectional social injustices, agrarian injustices and environmental injustices. Green Resources from Norway planned a forestry plantation and carbon sequestration project, located in Lurio and Sanga districts in the Niassa Province of Mozambique. The local population obviously loses control over their forest resources. When the forest is replaced by uniform tree plantations, there is a loss of biodiversity, an environmental damage done in the name of controlling climate change. Tree plantations are not true forests. This conflict is one of the many Reducing Emissions from Deforestation and Forest Degradation (REDD) conflicts or Clean Development Mechanism (CDM) conflicts collected in the EJAtlas. The company Green Resources moreover achieved Forest Stewardship Council (FSC) certification in 2011.

The 2009 agreement with the Mozambican government gave permission to develop a 126,000-ha forest plantation over a 15-year period. This was the largest forestation project approved in Africa. There are a great number of grievances. Many villagers denounce that they had no say in the land acquisition process; furthermore, they feel frustrated because of the temporary jobs provided and the unfulfilled developmental promises on the part of the company. We shall find Green Resources again in Chapter 21 in Uganda.

Also, in Cabo Delgado province, the Envirotrade Quirimbas Community Carbon is a carbon sequestration project, located in the Quirimbas National Park and affecting agricultural communities. Some 95,000 people currently reside in the park and 30,000 in the buffer zone. The aim of the company, Envirotrade, was to capture carbon through agroforestry, and sell carbon credits on the voluntary markets. Planting, preserving and protecting these forests are all services regulated by a seven-year contract between Envirotrade and the farmers. Yet, as stipulated by the contract, the producer (farmer) is under the obligation to plant and care for trees, and will receive an annual payment, which varies according to the system chosen and the size of the area. After seven years payments cease, but farmers still have a duty of care.

According to Via Campesina (22 June 2012): "Food production and people's sovereignty in Africa could be seriously compromised by carbon capture projects and the so-called Reducing Emissions from Deforestation and Forest Degradation Plus (REDD+) mechanism". Envirotrade had three such projects in Mozambique. Back in 2012, EJOLT's report no. 2, titled *The CDM Cannot Deliver the Money to Africa. Why the carbon trading gamble won't*

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save the planet from climate change, and how African civil society is resisting, analyzed other such conflicts in several African countries.

Again "Tree Plantations Are Not True Forests": Portucel[3]

There are a number of other "biomass" conflicts in Mozambique (recorded by the World Rainforest Movement). The conflicts arise from plans for large-scale tree plantations inspired by the paper pulp industry. They have regularly counted with the opposition of Justiça Ambiental. Eucalyptus plantations have been a great disgrace for Portugal, and nevertheless The Navigator Company (formerly known as Portucel Soporcel Group) also wanted a slice in its former colony's land grabbing. The company is a large paper producing firm in Portugal. It acquired land for eucalyptus in 2008 in Zambezia province (173,000 ha) and in 2011 it acquired a Land Use Permit for an additional area of 182,886 ha in Manica Province, issued by the Mozambican government. The Group now had at its disposal a total area of approximately 360,000 ha. This would be a threat to local food sovereignty since the destruction of local vegetation and its replacement by eucalyptus monoculture destroys local biodiversity. Moreover, it is known that the monoculture of eucalyptus consumes large amounts of water and destroys soils.

As of 2020, communities in the province of Zambezia, Mozambique – in particular in the Ile, Namarroi and Mulevala districts – have been living and using the land for centuries, but now it is being expropriated from the local population. In regard to tree plantations, since 2000, more than 600,000 ha of land have been placed in concessions to produce pine and eucalyptus in Niassa, Nampula, Zambezia and Manica provinces, mostly controlled by two large companies: Portucel (The Navigator Company) and Lúrio Green Resources.

In 2013, the government of Mozambique committed to granting around three million ha of land in concession to companies that promote tree monocultures in Niassa, with the goal of making the country the second largest pulp producer in Africa. The concessions have led to social unrest, forced resettlement and localized food insecurity. And yet, at the 2019 meeting of the New Generation Plantations platform (PNG) – an initiative by conservation organization World Wide Fund for Nature (WWF) to promote the industrial expansion of monocultures Portucel referred to these plantations as a group of "sustainable plantations that support rural prosperity".

The Fight Against Invasions of the "Machambas" – this is the word used to refer to lands for food production in Mozambique. On 14 July 2018, the organization MISSÃO TABITA was informed of a conflict between Portucel and the communities of Mugulama in the Nanretete area of Ile District. Portucel technicians came to Nanretete to inform the community about cemetery mapping, asking the following questions: "Where are the remains of people buried, and what is the cemetery registration procedure?". Meanwhile, the leader of the community and the company technician ordered entry into the cemetery to take photos. The community reacted very strongly in response to this action and the company's attitude. In July 2019, MISSÃO TABITA received an alert in the communities about the construction of small dams on their rivers.

Coal Mining and Hydropower in Tete Province by Vale and Other Foreign Companies[4]

Tete province is a "commodity extraction frontier" rich in hydropower and in coal. It holds an estimated 23 billion tons of coal reserves. In this region the Zambezi River and the enormous

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reservoir of Cahora Bassa are located. Mining concessions and exploration licences approved by the government cover around 3.4 million ha (34 per cent of Tete province area). When licences pending approval are included, around 60 per cent of the province's area is covered. There are several plans for CFPP. Resettled families still haven't received proper compensation. Brazilian major mining group Vale extracts coal from the Moatize mine, planning to lift output from 11 million tons to 22 million tons per year and to build a 600-MW thermal power plant at Moatize. Hundreds of families displaced in 2012 blocked trains used by the Brazilian company, claiming it failed to keep promises made over the past years. Local farmer communities have been on the losing side, especially since the 2009 resettlements. The land companies' claim includes nearly all the grasslands that herdsmen from the region need access to. On 13 July 2017, a citizen was reportedly shot dead by police in the village of Moatize, when a group protested against the closing of Vale Mozambique mining company concession gates. This is not the first time that Vale Mozambique has requested police intervention in conflicts with hundreds of small farmers still at odds with them and other coal extraction companies. Mozambique became the second-largest coal producer in Africa, behind South Africa. Several new infrastructure projects related to coal production are planned as well, which include a new coal terminal at the Beira port, coal export terminals in Nacala and a new port at Macuse. The companies Vale, Rio Tinto, Riversdale and Jindal Steel from Brazil, the UK, Australia and India have invested billions of dollars. As a consequence, the communities have faced disruptions in accessing food, water and work, as Human Rights Watch (HRW) reports. "Some of the world's largest mining firms from both established and emerging economies have descended on Tete … to extract some of the world's largest untapped coal reserves" (Kirshner and Power 2015).

On 10 January 2012, an estimated 500 residents from the resettlement village Cateme from the company Vale protested and blocked the railroad linking the coal mine to the port. The demonstrations were suppressed violently by local police. About 700 families were resettled to the Cateme area between 2009 and 2010 and recently suffered from a lack of access to water, electricity and agricultural land. As Kirshner and Power state (2015), "The Frelimo government – once guided by a Marxist–Leninist ideology – has come to view coal mining and export as a pathway to modernisation and development. In October 2018, neighbours of Moatize who live along the fence of the company managed to shut down part of the Vale mine, known as 'Moatize-2'". According to the Associação de Apoio e Assistência Jurídica às Comunidades (AAAJC), the population complains of excessive pollution, decay of houses due to explosion of dynamite, and unbearable noise, resulting in lung diseases and other health impacts.

In November 2018, the Mozambican Bar Association (OAM) demanded that coal mining companies in Tete be held responsible for their failure to resettle people. Meanwhile, Kirshner and Power (2018) state, "Tete hosts another planned energy mega-project with the proposed Mphanda Nkuwa dam, sited 60 km downstream from Cahora Bassa at a cost of US$2.2 billion".

BHP Billington Mozal Aluminium Smelter[5]

Mozal is an aluminium smelter in Beluluane Industrial Park, located 20 km west of Maputo. It began operations as a producer of aluminium exclusively for export. It consumes much cheap electricity, sometimes spewing toxic gases straight into the air. Mozambique has considerable

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energy resources: natural gas in deep waters, an estimated hydropower potential of 12,000 MW and vast coal reserves. The Cahora Bassa hydropower dam in Tete Central Province, exports electricity mostly to South Africa (and Zimbabwe). Shockingly, Mozambique buys back its own electricity from South Africa's Eskom, a large part of which is used by the MOZAL aluminium smelter that is owned by Australia-based BHP Billiton (47 per cent), the Mitsubishi Corporation of Japan (25 per cent), the Industrial Development Corporation of South Africa (24 per cent) and the Government of Mozambique (4 per cent).

The worst episode of air pollution took place in 2010. Mozal was alleged to have poor operating conditions, weak maintenance, bad monitoring and fundamental design faults, with numerous reports of random discharges and regular events where the filters are bypassed. The environmentalist group Justiça Ambiental explained that Mozal's "filter systems came near to collapse in 2010 and the pollution bypassed its filters for 4 months, spewing toxic gases straight into the air of a densely-populated city".

Given the seriousness of this pollution and the lack of information, civil society requested clarification. Request for an injunction was put forward by six environmentalist groups: Livaningo, Environmental Justice, Centro Terra Viva, Kulima, Mozambican Human Rights League and the Centre for Public Integrity. Only after several newspaper articles, interviews and television debates, and a petition demanding the bypass be immediately cancelled, did the Ministry of Environment Coordination (MICOA) and Mozal finally decided to organize a public meeting. But it gave frustratingly little information. Vital documents were not made public. The Environmental Management Plan (EMP) lacked clear mitigation measures, had weak to no quantitative data, did not evaluate other alternatives, did not even have an annex which refers to the dispersion and deposition of fumes and gas, and did not mention the impacts of these substances.

After insignificant progress at the national level to dissipate the ignorance created by Mozal, including legal action, Mozambique's civil society was forced to submit claims internationally to Mozal's main funders, which included the Compliance Advisor Ombudsman (CAO) of the International Finance Corporation (IFC) of the World Bank, and the European Investment Bank (EIB). Mozal continued bypassing its filters and production even before the court ruling and before the CAO and EIB investigations were finalized. They monitored air emissions during the bypass period but did not even make the report publicly available.

IN MADAGASCAR: LAND GRABBING AND MINING[6]

Here we shall analyze some cases from Madagascar, one of the top countries in the world for biodiversity. Being a large island, approximately 95 per cent of its many reptiles, 89 per cent of its plant life and 92 per cent of its mammals are endemic; they have evolved there and exist nowhere else on Earth. Lemurs are well-known, but there are many other species under threat, mainly because of deforestation. Hence the first case, whose protagonists are big non-governmental conservationist organizations such as the WWF. They are BINGOs.

Holistic Program for Forest: Militarized Conservation and Carbon Credits[7]

In 2008, in cooperation with WWF and the GoodPlanet foundation, the French company Air France launched a programme to fight deforestation in Madagascar by protecting more

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than 500,000 ha of forest. The project combines trade in carbon credits with militarized conservation. The opposition is muted. The so-called Holistic Conservation Program for Forest (HCPF) has multiple objectives: protecting endangered forests, replanting and restoring them, creating new protected areas and training local communities in the principles of sustainable management of their living heritage. The HCPF activities are carried out on five WWF sites in moist forest (379,974 ha) and dry forest (126,798 ha). This area of Madagascar represents close to 32 million tonnes of stored carbon that can be preserved by lowering the present rate of deforestation. This should support the Air France "Climate Plan" strategy, in reducing its CO_2 emissions (Figure 13.1).

But the Air France programme has been criticized since scientists and some other NGOs have revealed conflicts in the sites covered by the project. Slash-and-burn agriculture is forbidden in the HCPF areas. And yet, most of the forest people in Madagascar currently depend on clearing forests to establish new agricultural land. Also, they depend on forest products for fuel, construction materials, food, medicine, livestock fodder and pasture. Could conservation be achieved with cooperation with the local inhabitants? Is there room for "convivial conservation" on the island?

Those opposing the project in Amis de la Terre (Friends of the Earth) France, state:

> So that a small minority can continue to pollute the planet, we require the world's poorest people to change their way of life: forests and land are no longer natural areas but have become stocks of carbon that must be protected. Worse, to keep an eye on fraudsters, a forest police have been set up: its mission is to track down villagers who clear patches of forest to grow food to feed themselves. Anybody caught in the act risks a heavy fine. If the individual is unable to pay, they are sent to prison. And as if patrols on the ground were not enough, aeroplanes fly above the villages to keep a better eye on them!

Amis de la Terre is more inclined to grassroots conservation than the WWF. This situation has increased social conflicts in Ifotaka. EJOs like Friends of the Earth and investigative journalists from BASTA! considered this a human rights issue in a report published in 2013. This is a problem of unequal distribution of the pros and cons, the gains and pains of conservation. It is alleged, in conclusion, that only a few households have been compensated by WWF – GoodPlanet. Most of the incoming money is spent on verification of carbon storage… and many local communities do not even know what a carbon offset is and who will benefit from it.

Masoala Rosewood Illegal Logging for Export to China[8]

In 2009, an estimated 52,000 tonnes of rosewood and ebony wood were logged in North-East Madagascar from Masoala and Marojejy National Park. At least 500,000 additional trees and many miles of vines were cut to make rafts to transport the heavy logs. Approximately 36,700 tonnes were shipped in 1,187 containers, almost all to China, for a total export sale price estimated at $US 220 million. In the Sava region, members of the timber syndicate pocketed 76 per cent of this whereas the State collected just US$ 15.3 million.

According to Global Witness and the Environmental Investigation Agency (EIA), a dozen private operators and three main companies have benefited from illegal logging in Masoala; three banks also facilitated the illegal timber trade. Fraud is perpetrated by the syndicate and government administrators along every step in Madagascar's precious timber trade. Poor governance and a lack of clarity in forest regulation have facilitated timber trafficking.

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Source: Sophie Chapelle, Basta media

Figure 13.1 *Sign in Madagascar: "Reforestation activity through a food-for-work system"*

There is a booming trade in *bois de rose*, one of the world's rarest trees, even though its logging and export from Madagascar is banned. According to a report by Tamasin Ford in the *Guardian* (23 Dec. 2013), the final destination is China. The precious wood is rapidly vanishing from the island. The illegal logging and smuggling in the country's north-east exploded after the coup in 2009.

It is interesting to reflect on the variety of EJOs (national and international), BINGOs and other supporters of the efforts to ban this illegal trade of wood: Alliance Voahary Gasy (AVG); Cercle de Concertation des Partenaires Techniques et Financiers du Secteur Environnement (CCPTF-E); Environment Investigation Agency (Washington D.C.); Observatoire National de l'Environnement et du Secteur Forestier Malgache (ONESF); Groupement des Opérateurs Touristiques Maroantsetra–Masoala (GOTMM); SAF/FJKM's Eliahevitra); Madagascar Fauna Group (MFG); World Wide Fund for Nature (WWF); Conservation International (CI); Wildlife Conservation Society (WCS); Mongabay.

Daewoo: Land Grabbing and the Fall of a President[9]

In 2008, South Korean company Daewoo Logistics signed a 99-year lease in Madagascar for about 1.3 million ha. It was the largest lease of this type in history. The organization Collectif pour la Défense des Terres Malgaches (TANY), was established in reaction to the lease and petitioned the government to first consult with stakeholders. The petition was ignored. The mayor of Antananarivo, Andry Rajoelina, criticized the president, Marc Ravalomanana, for

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supporting the deal. Rajoelina's administration rose in popularity because of this. Rajoelina rallied popular support for the opposition, leading to a popular uprising that began in January 2009 and ended two months later with Ravalomanana's resignation. The mayor organized a series of rallies against the president and the Daewoo deal. Some of the rallies turned violent, and over 100 people died. After three months Ravalomanana fled to South Africa and Rajoelina was sworn in as president of Madagascar.

Three weeks later he rescinded the deal with Daewoo. However, many smaller land acquisition deals have been put into operation. Andry Rajoelina was again president in 2019.

Varun's Land Grabbing Project[10]

Varun's land grabbing project started in 2009. It was then reported that Madagascar had definitely abandoned the infamous US$ 6 billion farming agreement with Daewoo Logistics Corp from Korea, but that it might welcome agriculture investment in the future. Rajoelina's new government was then considering the plans by Varun International, an Indian company, to lease 465,000 ha of land in the regions of Melaky, Atsinanana and Sofia, in northern Madagascar.

An agreement had been actually made between the Indian company and each Association of 13 different plains in the Sofia Region. Following the signature of the convention between the chief of Sofia Region and Varun Agriculture SARL, on 20 December 2008, the project of joint development for the big plain of Madagascar (GPI MAD project) had the objective to promote cultivation of rice, corn, maize, wheat, pulses, fruits, vegetables and other crops.

In January 2009, peasants from the region and 90 per cent of the mayors of these 13 plains went against this project. They refused the obligation to sell 70 per cent of their products to Varun, which would export them. While the land grabbing project by Varun was stopped, the same Indian company has other large investments in Madagascar.

Tozzi Green Jatropha Plantations[11]

The biofuel and biomass project with the Italian company Tozzi Green in Ihorombe, in central south Madagascar, became very controversial. Tozzi Green was a subsidiary of the Italian Tozzi Holding group and particularly of the Tozzi Renewable Energy branch. The company was operating in the renewable energy field and agriculture, employing over 500 staff in Italy and overseas. Many Malagasy activists and international scholars criticized the secretive process of attribution of a 100,000-ha area to Tozzi Green. They denounced the possible displacement of the population and were concerned about the jatropha agriculture the Italian company aimed to develop in this region.

On 18 November 2013, 350 inhabitants signed a petition which they sent to the local and national authorities asking them to stop the expansion of the plantations and to prevent their eviction from the areas targeted by Tozzi Green and by the Indian company Landmark. The Collectif pour la Défense des Terres Malgaches (TANY) received testimonies. They said they had inherited the lands of their great-grandparents who had farmed according to the ancestral customs there. If the State obliged them to give up these lands, their income from cattle raising would be lost. On 1 December, the chiefs received a warning letter from the State not to disrupt the expansion of Tozzi Green.

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A large part of the population in the Ihorombe Plateau is composed of Bara breeders and the open spaces, which city-dwellers might see as "idle land", are the pasture zones of their zebus. In 2015, of the 8,000 ha already granted, 2,000 ha were allegedly exploited. According to the promotion by Tozzi Green, "The project registers 170 permanent employees and approximately 2,000 seasonal workers among which more than 50% are native of the Ihorombe region". But, according to the activist association TANY, the benefits in terms of employment were minuscule compared to the economic, social and cultural damage being inflicted. TANY asked for transparency: How many hectares are covered by the current contracts? How are the procedures and the conditions of progressive land allocations formulated? All questions remained unanswered.

Tozzi Green announced the implementation in Satrokala of a land office that would deliver land certificates on untitled private properties, which outraged locals. Total transparency of the contents of the contracts signed by the State was urgently needed. In November 2013, news came in that a famine was starting to set in for the communities that lost grazing land to Tozzi Green.

Toliara Sand Mining for Metals, Ranobe[12]

There are several conflicts in Madagascar on sand mining for minerals, like the "Rio Tinto / QMM Ilmenite and zircon sand mining" case (Chapter 15) and the related "Mainland Mine Analanjirofo" conflict with a Chinese company. Here we present the Toliara conflict.

West of Ihorombe, the Ranobe protected area has among the highest endemicity of plants and animals anywhere in Madagascar. It is targeted by the Australian company World Titanium Resources (WTR) (Base Resources) that aims to exploit several hundred km^2 of primary spiny forest. The main ore used in the primary production of titanium is ilmenite. The sand mining project is expected to last up to 100 years, consuming approximately 30,000 litres of water per minute during the course of its operations. The project was first expected to start exploitation in 2014. There was a lot of pressure on the conservation community to reduce the size of the protected area to make way for more mining concessions. Aside from the impacts on biodiversity and the forest-marine ecosystem, the mine would displace entire villages as it would consume the local populations' only water source.

In addition, vast areas of tombs would need to be relocated to make way for a new road. The relocation of tombs is taboo in southern Madagascar, but local leaders had been seduced into breaking custom and trying to convince most of the rural population to go along with the mining company's plan. The exploitation permit was finally granted in 2016. Yet the contestation of the project by locals, mainly farming and fishing families, has been constantly growing, together with the help of national NGOs. Overall, locals do not believe in the mining company's job promises nor in the possible restoration of the natural resources afterwards. The villagers refuse to sell their lands as they won't be able to feed their families. In July 2018, several NGOs signed and published a common statement contesting the decision by the national executive power and also condemning the repressive measures taken against the MA.ZO.TO. Association that supports the affected communities. The government had declared of public utility the lands in the mining perimeter, thereby enabling the acquisition of the parcels by the mining company through amicable settlement or expropriation. The government considered likewise of national interest the port and road infrastructures for the project.

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At the same time, in July and August 2018, the local populations organized local demonstrations to express their fierce opposition to the project. A petition was signed by 13 organizations against the Toliara sands project. Through the case of the Toliara sands project, the civil society rendered more visible its claims for a revision of the Mining Code of Madagascar, if not its total rewriting. The exploitation of the mine was expected to start by the end of February 2019, but the populations continued to demonstrate and oppose the project. In April 2019, another march was organized, demanding that the project be cancelled. In May, 30 villagers from the communities of Benetse, Ampototse and Tsiafanoka were arrested under the accusation of sabotaging the company's properties during the demonstration in April. A communiqué by TANY in August 2019 explained that the communities still opposed the project of Base Resources, although there were internal divisions. One issue was the radioactivity threat from the mining.

More Extractivist Projects: Ambatovy Nickel and Cobalt Project[13]

Ambatovy is an US$ 8 billion large-tonnage, long-life nickel and cobalt mining enterprise, the largest-ever foreign investment in the country. It was expected to rank among the largest lateritic nickel mining entities in the world, created by Dynatec from Canada and supported by the European Investment Bank (EIB). The results have been rather disappointing, but it has a production capacity of 60,000 tonnes of nickel and 5,600 tonnes of cobalt per year. Its life is estimated at 29 years.

Actually, the Canadian company Sherritt International incorporated, in a joint venture with Sumitomo, a Japanese company (Kores) and a South Korean company. SNC Lavalin, also Canadian, signed an agreement for cobalt and nickel extraction in Ambatovy with the Malagasy government in 2006. The building of the mine and smelter infrastructure was completed in 2011. This included open-pit mine sites and a mill in Ambatovy near Moramanga, a hydrometallurgical smelter in Tanandava about 10 km from Toamasina, and a 220-km pipeline that will move the milled ore mixed with water to the smelter. The processing will use some toxic sulphur products. The concentrated cobalt, nickel and ammonium sulphate will then be shipped to Asian markets. The toxic tailings from the process will be stored near the process plant. Extreme weather could cause the waste lakes to flood and leaks in the pipeline between the factory and the tailing facility could cause further pollution. Tamatave fishermen wonder about the waste dumped into the sea. Inhabitants say that the water of local rivers has been affected, which has consequences for fauna, crops and human health (Soustras 2017).

The negative consequences of the construction phase of the project reached public attention when a serious accident occurred in 2012, in which four people lost their lives. There have been strikes over health issues, and other accidents have taken place.

WISCO Company Looking for Iron Ore[14]

China's third-largest steelmaker, Wuhan Iron & Steel Co (WISCO), started exploratory drilling for iron ore in Madagascar's Soalala region in 2011. WISCO paid US$ 100 million for permits when Madagascar was under a "coup d'État". Nobody knows how this amount was spent by the Government of Rajoelina (2009–13). Many EJOs and conservationist organizations became concerned because Soalala is a region where the biodiversity is exceptional and vulnerable. It is close to Baly Bay National Park, which is known to be the successful alliance

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between terrestrial and marine and coastal ecosystems, and is the only habitat of the endemic turtle Angonoka. The company WISCO also plans to displace the communities living in this area.

TOTAL and MOIL Bemolanga Tar Sands[15]

Bemolanga is a large oil sands deposit in the onshore Morondava Basin in the west of Madagascar. The field is located north of the Tsimiroro heavy oil field and east of the town of Morafenobe.

Madagascar Oil (MOIL), began further investigation in 2006 and the French company TOTAL joined the project in 2008. Together, they explored Block 3102 in Bemolanga, 170 km away from the west coast of Madagascar. Melaky, the region in the Central Western part of Madagascar, is one of the poorest regions of the island. The tar sands deposits adjoin two national parks and are also in the most arid part of the country. Over 100,000 villagers live in the region near Tsimiroro and Bemolanga. MOIL & TOTAL's proposal is potentially one of the dirtiest mining operations of its kind in the world, in a region where the local people have few options but to live next to it.

Illegal International Fishing in Madagascar[16]

There is a pattern of plunder of African fisheries which here will be briefly touched upon. Madagascar has some of the richest fishing stocks on the continent. Its vast waters, however, are open to illegal, usually foreign, plunder. Fishing statistics in Madagascar are poorly recorded but back in 2008, an estimated 130,000 tons of fish were illegally caught in Madagascar by foreign trawlers, threatening the livelihood of an estimated 100,000 people. The foreign pirate ships operate at night and are rarely caught.

Madagascar, one of the world's poorest countries, had just 11 police speed boats to patrol its 4828-km coast. Under the cover of darkness, gangs from massive Chinese, Thai and South-Korean vessels, bring down illegal fishing nets fitted with deep hooks to trap high-value fish such as prawns, mackerel, tuna and shark, which are then sold for a significant profit in the markets of Beijing, Seoul and Kuala Lumpur. For WWF-Madagascar, if this continues, the social and environmental results could be very negative, since they would bring the ecosystem to the brink of collapse. The disappearance of sharks, for example, would devastate local marine habitats.

Apart from Asiatic vessels, there have been also international agreements on fisheries with the European Union. Madagascar was the first Indian Ocean country to sign, in 1986, a fishing agreement with the EU. In fact, it retains strong economic links with its former colonial ruler, France.

CONCLUSION: PEASANTRIES FACING "EXTRACTION FRONTIERS" IN THE INTERNATIONAL DIVISION OF NATURE AND LABOUR

Mozambique and Madagascar are two large neighbouring countries, with populations of 30 and 26 million people respectively, less than one per cent of the world's inhabitants. Madagascar is part of the Françafrique and perhaps becoming part of the Chinafrique. Both

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countries have a recent colonial past and are home to a numerous peasantry; at the same time, they are new "commodity extraction frontiers" in the international division of nature. In Madagascar, fisheries, nickel, cobalt, ilmenite, agricultural plantations, rosewood for export, heavy oil and the biodiversity are considered a commodity. In Mozambique, coal, gas and oil, hydropower, aluminium, plantation forests for paper pulp and again for the carbon credit market. All such investments are driven by foreign capital. There are environmental organizations in both countries, with the remarkable presence in Mozambique of Justiça Ambiental (Friends of the Earth).

The search for new materials and energy sources is speeding up because industrial economies are not circular but they are, instead, entropic, dissipating fossil fuel energy, tending towards deterioration and chaos. Thus, Tete province in Mozambique is a big source of coal and hydropower for exports. To feed the machine, new extraction frontiers are continuously commodified. The conflict in Cabo Delgado in Mozambique dominated the scene in 2021. The gas fields are said to be worth $128 billion, with Total's stake in the area closest to shore valued at $20 billion. No less important is the adverse impact on the global environment from the metabolic contribution in terms of fossil fuel energy that will be exported.

As we have seen, there are many other socio-environmental conflicts in Mozambique and Madagascar on aluminium smelting, on the use of hydropower, on sand mining for minerals, on illegal wood exports and fisheries, on coal and gas exports and on land grabbing. There is the defence of peasant agriculture against land grabbing investments (even sometimes for Jatropha, an inedible crop processed into biodiesel). Organizations belonging to Via Campesina are active here, in instances of intersectionality between agrarian and environmental movements. There are also conflicts on "tree plantations" either for paper pulp or meant to absorb carbon dioxide – an international environmental justice organization, World Rainforest Movement, denounces them.

Madagascar houses a unique biodiversity. In Africa, as elsewhere, there are two main strands of environmentalism: the "cult of wilderness" and the "environmentalism of the poor and the indigenous" (to which a third must be added, "ecological modernization and eco-efficiency" that here we leave aside). Madagascar is clearly influenced by the NGOs focused on endemic species. "Convivial conservation" could be one point of encounter between conservation and the environmentalism of the poor. We have seen however a couple of biodiversity conservation conflicts where this lack of confluence is salient. The so-called "global environment and conservation movement" (epitomised by the membership of IUCN) excludes many organizations dedicated to environmental justice. Therefore, confluence between BINGOS (subsidized to some extent by extractive companies) and the environmentalism of the poor and the Indigenous is not easy. However, when confronted with land grabbing, water grabbing and pollution of various sorts caused by corporations, the poor people defend the environment because of their vital interest in keeping their own threatened sources of livelihood safe and also, not least, because of their social values manifested in institutions such the cult of sepulchres in Madagascar.

Madagascar is not only the field of operation of BINGOs attracted by its endemic biodiversity, and resorting sometimes to "militarized conservation"; it also has local environmental organizations such as TANY and the Alliance Voahary Gasy, perhaps more effective in dissemination of information than in grassroots activism which is difficult in the country. There are many complaints about government corruption.

The discussion on "extractivism" in Africa (a provider of slaves and commodities in history, and a provider now of preciosities and bulk raw materials as never before), in parallel to

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the discussion in Latin America, is bound to grow, grounded in notions of "resource curse" and "unequal exchange". Some signs of an alternative can be also seen in the intersectionality between peasant and environmental complaints (as in the Portucel case in Mozambique) and in the intersectionality between anti-coloniality, anti-racism and environmentalism in so many other cases. We continue this discussion in the following chapter on the Gulf of Guinea.

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14. Nigeria and the Gulf of Guinea: "we thought it was oil but it was blood"

BACKGROUND: THE NEED FOR "DEGROWTH IN PRACTICE"

From the African coast of the Indian Ocean, we now go to the Gulf of Guinea. The EJAtlas contains numerous cases from Nigeria and other countries in the Gulf of Guinea and the west coast of Africa.

The Gulf of Guinea has been the historical scene of many crimes against humans and the environment. My collaboration with Environmental Rights Action (ERA, Friends of the Earth, in Nigeria, FoEN) dates from 1995 through Acción Ecológica of Ecuador and their contact with Nnimmo Bassey, in the sad days in which Ken Saro-Wiwa and his Ogoni companions were killed by the military dictatorship for their opposition to the Shell corporation. In the same year, 1995, Oilwatch was founded. The names of Agip and Shell, Chevron and other oil companies appear in many of the conflicts recorded for Nigeria in the EJAtlas. Nnimmo Bassey coined the words "We thought it was oil but it was blood", as he also coined the slogan "leave oil in the soil". Years later this was behind the Yasuni ITT proposal in Ecuador. We could also say in this chapter, "we thought it was palm oil, but it is land grabbing and deforestation". To stop the flow of oil, palm oil and other raw materials from the South to the North (in protest against the local socio-environmental damages and also the ruinous prices) would be "degrowth in practice". It is not true that the poor cannot contribute to degrowth of the capitalist industrial economy because they are "too poor to be green", and that therefore degrowth should begin in the world's wealthiest economies. It should begin everywhere, and in the South by the socio-ecological movements of the poor and the Indigenous against cheap and damaging exports, and against the import of waste and against climate change.

Nigeria has a still growing population of 212 million people in an area of 923,768 km^2. It is the country with the largest population in Africa, and the seventh largest population in the world. Some other countries in West Africa barely reach 30 million inhabitants (Cameroon, Ghana, Ivory Coast). I visited Nigeria and the Niger Delta in 2013. Before that, I had visited Benin (which in the past was part of the kingdom of Dahomey) for a meeting of Friends of the Earth on the ecological debt from North to South organized by Ivonne Yanez of Acción Ecológica and Oilwatch in 2001. The impressive Nigerian economic writer Festus Iyayi was in the Benin meeting but he died in a road accident a couple of years later. Nnimmo Bassey was also there and accompanied those at the meeting on an emotional walk on the slave road in Ouidah, many of us crying. My friend the environmental historian José Augusto Padua from Rio de Janeiro was there – many of the slaves were taken to Brazil and brought the Yoruba religion with them.

This is the coast of slavery, also the gold and the ivory coast, and now the coast of bauxite, iron ore, oil, gas extraction, palm oil, and sand mining – an undisguised commodity

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extraction frontier for many centuries. It is also a destination for solid waste disposal giving rise to some socio-ecological conflicts. This is not a remote territory – it is in some way the centre of the world, where in our usual representation Parallel 0º and the Greenwich Meridian 0º intersect. As slavery was eventually stopped, so the barbarity of the present economic-ecological system must be stopped.

WASTE DISPOSAL CONFLICTS

Trafigura in Ivory Coast[1]

The Trafigura waste dumping case happened in August 2006. Toxic waste was illegally exported from Europe by the multinational company Trafigura in the tanker Probo Koala, and left in Akoudo dump site (Abidjan), and in other sites in the city. Tens of thousands of people suffered severe health effects and about 15 people died. Ivorians staged protests in the city following the dumping, but the company paid the Ivorian government US$ 195 million in settlement and became immune from prosecution.

In 2010/11, a Dutch court found Trafigura guilty of the illegal export of waste from the Netherlands to Africa and for concealing the harmful nature of the waste for life and health. However, an out of court settlement requiring Trafigura to pay a total of $1.7 million in fines concluded the legal process in the Netherlands. No studies were undertaken to assess the long-term health impacts of the waste. Thousands of Ivorians were yet to receive compensation. Small liability in money terms and no criminal responsibility: this is the rule of cost-shifting.

E-waste Recyclers in Agbogbloshie, Accra[2]

Agbogbloshie is a slum in the heart of Accra, Ghana, that achieved notoriety as one of the most polluted slums in the world by hosting one of the largest electronic waste dumps in Africa. In this area the poorest classes of Accra have been spending years dismantling, recovering, weighing and reselling parts and metals extracted from heaps of electronic waste. The majority of the e-waste first enters the African continent through South Africa, Tunisia and Nigeria, so shipments containing hazardous materials circumvent the Basel and Bamako Conventions due to wording and labelling tactics. Once in Ghana, a shipment will more likely reach an informal facility in Accra where end-of-life electronic goods will pile up in one of several locations in the city, like Agbogbloshie.

Every day informal workers transform used electronic products into working units and extract heavy and precious metals for reuse in second-hand formal and informal markets. The e-waste that has been either refurbished/repaired or recycled will later arrive in the hands of a middleman, e-waste intermediaries who send Ghanaian recovered copper, mixed scraps and other metals to international recycling firms in Europe, China, India, and the Middle East. These international players have greater technical capabilities and accumulate scraps from numerous e-waste hubs, thereby achieving economies of scale in recycling. At the same time, some streams of refurbished and repaired consumer goods, as well as extracted metals, re-enter the Ghanaian domestic market from scrap dealers. The non-valuable fractions and the

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unusable/irreparable e-waste components end up in a formal landfill or in an informal dumping ground to be burned.

All these rudimentary recycling techniques practised by informal e-waste processors release environmental toxins that pollute and contaminate landscapes, waters and biota of Agbogbloshie. Waste left in fields and nearby bodies of water is ingested by animals and marine life, thus creating entry points for toxins into non-human ecological systems, while indirectly affecting humans via consumption of fish and seafood. On the other hand, little-to-no protective measures in use endanger not only the e-waste workers, but also local inhabitants. In fact, residents of the nearby settlement of Old Fadama and those working and residing in the central business district are at risk of experiencing high exposure levels of environmental toxins. A report by the UK-based Environmental Investigation Agency says that the waste contains many toxic chemicals, neurotoxins and carcinogens. E-waste recyclers can develop respiratory illness, developmental and behavioural disorders, damaged immune, nervous and blood systems, kidney damage, impaired brain development, mental disability from lead poisoning, and eventually cancer. Ghana's authorities have proposed the demolition of Agbogbloshie several times, and early operations began in June 2015. But the approach taken is raising concerns because, according to local organizations, this doesn't solve the problem, it simply moves it elsewhere. The Agbogbloshie site alone provides cash to approximately 4,500–6,000 workers and perhaps another 1,500 indirectly. E-recyclers earn between $6 and $10 per day.

Based on research conducted in 2009, the area of Agbogbloshie was home to 80,000 individuals. More generally, Ghana's e-waste activities sustain the livelihoods of at least 200,000 people nationwide and generate US$105–268 million annually. This amount, in 2009, represented 280,000 metric tons of e-waste that entered Ghana, of which only 1 per cent were processed through a formal facility.



Source: Wikimedia Commons

Figure 14.1 Map of West Africa and the Gulf of Guinea with the Niger and Volta Rivers

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Mbeubeuss Landfill, Dakar, Senegal[3]

I continue with a description of an awful urban waste disposal site in Dakar, Senegal, and the rights of waste pickers. Mbeubeuss illustrates the tensions between a top-down imposed perspective on waste management for the sake of private profits, and a grassroots perspective from the waste pickers defending their source of livelihood. Mbeubeuss is a means of subsistence for one of the poorest populations in Dakar suburbs. This open-air landfill causes air and soil contamination in the Malika District, where more than 17,000 people live. The waste pickers' community is formed by young populations unable to find a job in Dakar. Mbeubeuss is only 27 km away from the capital. The 2,500 informal waste pickers are a marginalized and discriminated group among the Senegalese society, but they organized with the creation of the Bokk diom Association in the late 1970s when the government tried to remove them.

Foreign investment interests, mainly coordinated under the World Bank programmes, have been influencing the Senegalese government. Already in 2005, a report from the Energy Sector Management Assistance Program proposed the privatization of the waste from Mbeubeuss for the creation of methane capture technology to generate electricity, but the project never materialized.

By 2009, the closure of the Mbeubeuss landfill became conditional for the relocation of the 3,000 households near Pikine, being displaced for the construction of a highway as the chosen relocation area was 2 km away from Mbeubeuss. The Senegalese government's creditors (mainly the International Development Association, part of the World Bank group) pressured for the landfill closure. The World Bank proposed to open a new site which would only have generated 300 job positions with lower salaries. The waste pickers defended their self-employment and mobilized with the help of ENDA to oppose the project. As a result, the situation of the landfill remains the same, although the World Bank and its associated programmes, other development agencies such as the Canadian agency CRDI/IDRC, also advocate in favour of the closure of Mbeubeuss for sanitarian and environmental reasons. The agency funded the project "Pure" from 2006 to 2011 during which time it monitored the social, health and environmental impacts of the landfill on Malika, Diamalaye and Njagoo neighbourhoods.

The waste pickers fight for bottom-up mitigation solutions, which take into consideration their needs, instead of a managerial imposed perspective whose aim is to foster private and foreign profits. The involvement of international and foreign institutions, though, is not necessarily going against the waste pickers' will. For instance, Bokk diom has set up a school for the children of the dump thanks to financial help from European organizations (French Agence Française du Développement, the Luxembourg Agency for Development and the Belgian Ministry for Cooperation). The waste pickers also obtained funds from the United Nations Development Program to construct a medical centre. Security issues remain recurrent in the landfill. Tragedies happened in December 2016, when a fire in the landfill killed two people. After these tragedies, the public authorities committed to study the possibilities of the future of the landfill.

OIL PALM PLANTATIONS AND OTHER BIOMASS AND LAND GRABBING ISSUES

The cases that follow on oil palm plantation conflicts, land grabbing and agricultural biodiversity illustrate the persistent colonial domination in the area. These are not geographically

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limited extractivist "enclaves", these are expansive plantations. Sometimes this type of colonial domination is exercised by new companies with a global reach (such as Wilmar, from Singapore). At other times, there are European owners, such as Bolloré from France and SOCFIN, active in Africa and SE Asia. By July 2021 the EJAtlas had 101 conflicts related to palm oil, most of them in Indonesia and other countries in SE Asia, followed by West Africa and Central and South America. The yearly production of palm oil is approximately 75 million tons (Figure 14.2). Indonesia and Malaysia are the largest producers, followed by Thailand, Nigeria, Colombia and Guatemala.

Golden Agri Resources/Golden Veroleum Palm Oil Plantations, Sinoe County, Liberia[4]

The expansion of large Palm Oil Plantations in the south-eastern Liberian rainforest is made at the expense of livelihood and sacred sites of local communities. One of the best documented land grabbing cases took place in Sinoe County. A partnership between Golden Agri Resources (GAR) – through Golden Veroleum Liberia (GVL), a subsidiary of the New York-based Verdant Fund LP and the Government of Liberia – was announced in August 2010. The area was supplemented by 40,000 ha for small holder plantations. By 2021, GVL, the world's second largest palm oil company, was subject to claims filed in July 2018 by Friends of the Earth groups from Liberia (Sustainable Development Institute), the Netherlands (Milieudefensie) and the United States (FoE US). It was found that GAR committed deforestation of over a thousand hectares of forest, including endangered species habitat and wetlands. The company also had violated the communities land and cultural rights including the right to free prior and informed consent. In early 2019, GAR was delisted from the Dow Jones Sustainability Index after several high-level company executives were jailed for bribing Indonesian officials, which in practice did not change anything in Liberia.

The terms of the contract, which are valid for 65 years, are for palm oil plantations, outgrower schemes and the construction of a new port. In October 2012, Green Advocates, an NGO, filed a first case against the company for non-compliance with the Roundtable on Sustainable Palm Oil (RSPO) on behalf of communities in Sinoe County where crops were destroyed, shrines were desecrated, villages uprooted and grave sites destroyed.

However, the company continued its expansion during the Ebola crisis of 2014, as Global Witness reported that GVL obtained the signature of four land-concession agreements. Blogbo people's sacred sites were profaned, the Palotro Hill and the Sleni River suffered from a mill for processing the palm oil which was constructed, risking the contamination of the river's water. By July 2016 the Liberian forestry authority proposed to allow the sale of the timber logged from the concessions. which might incentivize further deforestation. It finally was not concretized thanks to joint efforts between the Sustainable Development Institute and the Rainforest Rescue.

Okumu Oil Palm Plantation in Edo State, Nigeria[5]

In June 2017, ERA/FoEN, representatives of the Owan and Okomu communities urged the Dr Godwin Obaseki administration in Edo State to uphold a revocation Order on land expropriated by Okomu Oil Palm Company Plc (a Belgian company). Under former Governor Adams Oshiomhole, the sale of the lands in contention had been reversed, which cover an estimated 13,750 ha spread through Okomu Forest reserve to Owan Forest reserve. The Okomu Oil

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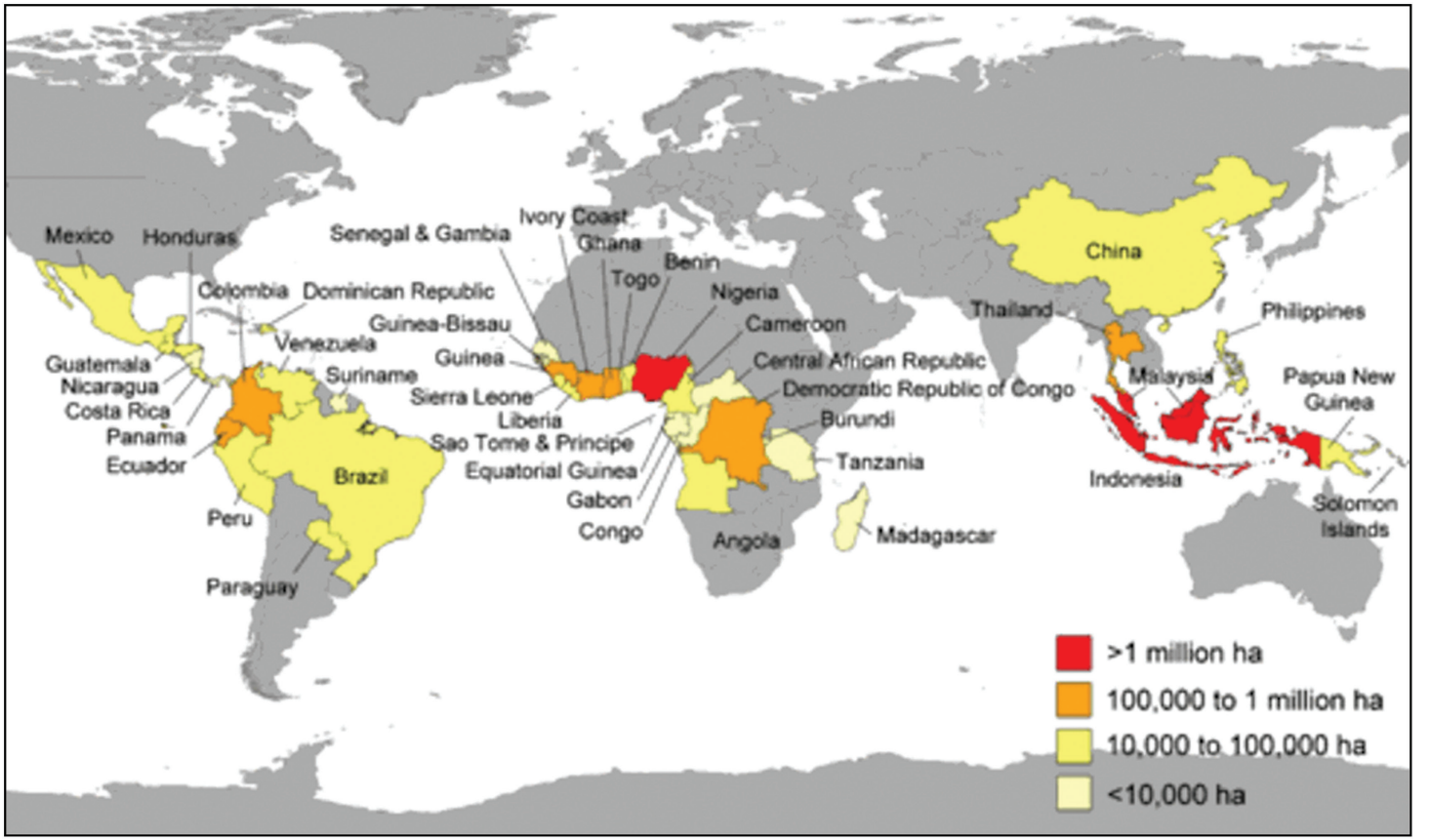

Source: Rico Kongsager, 2012

Figure 14.2 *A map showing where oil palm plantations have been created*

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Company Plc disregarded the Edo State Government order. The company is alleged to have militarized the communities and continued bulldozing the forests for palm oil plantations. "In the process, over 60,000 rural farmers have been displaced and a host of communities impacted", the ERA/FoEN disclosed in a statement made on June 21 2017. There were street marches and other forms of protest.

Two years earlier, in 2015, ERA/FoEN had expressed dismay towards multinational companies in the country denying their host communities the use of their lands without any commensurate compensation. Rita Uwaka, project officer of ERA in her research findings, told journalists that Okomu Oil Palm firm, a member of the global SOCFIN Group, grabbed land across forest reserves for oil palm business. Community-based livelihoods, comprising mainly farming and fishing, had been truncated with over 20 communities risking eviction and human rights abuses. According to her:

> There is an increasing threat to the existing food security system as hunger prevails, sicknesses and diseases arising from plantation chemicals and poor sanitation are having differentiated impacts on women and children. No documented evidence of an EIA is in sight. Entry and exit of community people from their territories is at the mercy of the plantation company. Some were hopeful of this "development opportunity".

ERA alleged that over 11,000 ha of forested land as well as communal farmlands had been grabbed by Okomu Oil Palm Plc in Nigeria. Meanwhile, in 2019 it was reported that the government and the Central Bank of Nigeria supported further growth of oil palm plantations.

Wilmar Concessions in Cross River State, Nigeria[6]

According to ERA-FoEN, Edo State is currently the second highest in terms of deforestation in Nigeria behind Cross River State. Okomu Oil Palm has become one of the major drivers of deforestation for oil palm cultivation. Another similar case triggering deforestation, land grabs and threats to the locals' livelihoods and culture, is in the Cross River State in the Niger Delta region whose government handed over vast concessions of land to Wilmar International in its bid to restore its past glory as a palm oil exporter. ERA-FoEN considers that at least 20,000 people were directly affected by Wilmar's concessions in Cross River State, among which potentially 10,000 are at risk of displacement. The locals' daily life and farming activities are impacted by Wilmar's use of chemicals. They also see the biodiversity of their surroundings put in jeopardy.

Communities informed ERA that the Calaro, Ibiae and Biase estates were acquired in 1959 by the then Eastern Nigeria government via the Eastern Nigeria Development Corporation. These lands were meant for palm oil plantations. In December 1963, a formal agreement was reached between the communities and the Eastern Nigeria Development Corporation. At the creation of the Cross River State in 1967, the new state administration took over the estates. However, over the years the estates became moribund because of administrative neglect, but locals were allowed to farm on the land if they paid a yearly rent.

An independent research led by G. C. Schoneveld (2014), considered that at least one-third of the lands in the concessions of Calaro, Ibiae and Biase were being farmed by smallholders prior to the arrival of Wilmar. These farmers were deemed to have the right to farm in perpetuity. The results of Schoneveld's study were ignored by Wilmar. The communities from Calaro, Ibiae and Biase estates complained that they were not adequately consulted on the transfer of the land to Wilmar. Testimonies collected by ERA alleged that the Nigerian

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government and Wilmar have instrumentalized the local chiefs' authority to pretend they had gained the populations' consent despite obvious local discontent. The impacted villagers wrote a petition to the state government via their lawyers in April 2012, where they said that by virtue of the breach of fundamental provisions of the 1963 lease agreement the government had ceased to have any legal rights over the lands. The communities alleged that the government failed to pay the rents and royalties agreed over a 24-year period.

The acquisition of Obasanjo's concession is also a case of land-grab. In 1992, communities of Ekong Anaku, Mbobui, Mfamosing, Abiati and Anigheje (in Cross River State) agreed to hand over their lands as a forest reserve. In exchange, the government promised to undertake programmes for agroforestry and rural development and credit for small farms. Those promises were never fulfilled. In 2002, the Cross River State government handed these lands to the company Obasanjo Farms Ltd, owned by the president of Nigeria at that time: Olusegun Obasanjo, who in 2011 sold the concession to Wilmar. The communities were never consulted nor compensated. Nigeria is one of the countries in Africa that has not ratified the 169 ILO Convention that provides protection to Indigenous and Tribal peoples.

With the assistance of civil society groups, the communities raised the issue of the failure of Wilmar to conduct a mandatory EIA as required by law and to also abide by the National Park Act and the Forest Laws. Communities argued that it is wrong for Wilmar to commence massive forest clearing without an approved EIA Report. ERA argued that the way that Wilmar obtained these concessions represented a major violation of the rights of consultation as guaranteed by the United Nations Declaration on the rights of Indigenous peoples of 13 September 2007 and the Principles and criteria of the RSPO.

In February 2014, Wilmar Nigeria Limited was billed to appear in court to answer charges of unlawful trespass by its host communities from Calaro, Ibiae and Biase estates. The company was accused of unlawful acquisition of communal land and non-compliance with applicable laws and regulations. Mr Odey Oyama, an environmental expert and Executive Director of Nigerian-based NGO Rainforest Reserve and Development Center (RRDC), filed a suit. RRDC cited multiple infractions of Nigerian state and federal laws governing land ownership and the Land Use Act. According to news reports by August 2018, the communities failed to obtain justice after a series of appeals.

RRDC filed several complaints to the RSPO, of which Wilmar is a member. In what concerns the Obasanjo plantation, RRDC again considers the deal between Wilmar and the government was illegal. RRDC also alerted the European Union on the effects of its biofuels policy on Southern countries like Nigeria, as the European demand for biofuels feeds the greed of multinationals like Wilmar.

The RSPO Roundtable appears in other chapters of this book. It was established in 2004 for promoting the growth of palm oil products through global standards and multistakeholder governance. It is a "greenwashing" organization that in their own words "unites stakeholders from the 7 sectors of the palm oil industry: oil palm producers, processors or traders, consumer goods manufacturers, retailers, banks/investors, and environmental and social NGOs, to develop and implement global standards for sustainable palm oil".

Again, Palm Oil in São Tomé and Principe[7]

São Tomé and Principe (Biosphere Reserve) is a small island nation west of Equatorial Guinea, with unique flora and fauna. Of a total avifauna of 143 species, including 72 breeding

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residents, 28 species are endemic to the islands, of which 12 are species of global conservation concern. Here, resistance was based on the local population, but it also appealed to international biodiversity conservation organizations.

According to a WRM report, the oil palm grows naturally on the two main islands. When the Portuguese arrived between 1469 and 1472, the introduction of sugarcane cultivation based on slave labour led to the forced arrival of Africans from Benin, Congo and Angola who brought with them the traditional uses of oil palm (*Elaeis guineensis*). Their leaves have traditionally been used in basket weaving, bags and brooms by local people. Moreover, this type of palm is used to produce wine.

After the Independence of the islands, the EU financed the plantation of 650 hectares of oil palm in Ribeira Peixe, São Tomé island. The first palm oil mill Empresa de Óleos Vegetais (EMOLVE) was established by a loan from the European Investment Bank. During the 1980s, EMOLVE continued expanding its palm plantations. By 1990, EMOLVE's industrial plant produced about 2,000 oil tonnes/year. In 1999, the oil production declined, finally coming to a halt in 2007, as the oil palm groves grew old and the company's equipment deteriorated. In 2008, the equipment was improved with a contribution from Taiwan, but the problem was not resolved.

In 2009, Agripalma, a subsidiary of STP Invest and São Tomé investors acquired a concession to recover and expand oil palm plantations from 610 ha to 5,000 ha with the aim of processing the oil as biofuel in Belgium. The people of Principe Island rebelled against the agreement, preventing the deforestation of more than 1,000 ha of land in the Sundy area, so the government looked for more land on the island of São Tomé to respond to the agreement signed in 2009 with Agripalma. This new expansion took place close to the Monte Carmo forests of the Obô Natural Park and overlapped with the Natural Park's buffer zone. The state expropriated land from agriculture and gave it to Agripalma Company, generating land conflicts that the farmers are individually fighting. According to Bird Life International, the Natural Park is suffering serious threats like "increasing hunting and extractive pressures on the forest birds and other biodiversity". International NGOs have developed a campaign to avoid losing the rich biodiversity.

Since 2013, some citizens organized and they complain that the oil palm is replacing their staple food, coconut. Here livelihood needs and biodiversity conservation come together. The conservationists focused on small corners of the island only. By July 2013, the court approved an injunction against Agripalma, imposing restrictions on the development of palm oil plantations in the country. However, the court merely imposes conditions with the objective of protecting specific areas (Carrere 2013).

Palm Oil and Rubber Plantation Deforestation, Gabon[8]

Two agro-industrial companies, Olam International and SIAT Gabon, are involved in the large-scale development of palm oil and rubber plantations in Gabon. The Gabonese government allocated a total of 300,000 ha for plantations to Olam, which has had timber concessions in Gabon since 1999, but only obtained the palm and rubber land in the late 2000s. The development of the plantations involves the clearing of large areas of pristine tropical forest that communities depend on for their livelihoods for agriculture, hunting, fishing and collecting non-timber products. The project will benefit from a 16-year income tax holiday, and exemptions on payment of duties or tax on machinery, gas, oil, fertilizers and other inputs.

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Land insecurity, food insecurity, working conditions and resource management issues are other concerns. Moreover, communities face more restrictions than before on use of forests in OLAM's concession areas, which the company could use as compensation.

Olam was reported to want to reach a production of at least 60,000 tons of rubber by 2016. Olam is the main industrial oil palm company in the country, with the Gabonese government holding a 49 per cent stake in the company. According to a September 2019 WRM article, in December 2016, the US conservation NGO Mighty Earth evidenced in a report that OLAM had deforested approximately 20,000 ha in Gabon for its industrial oil palm plantations. Three months later, Mighty Earth signed an agreement with OLAM, which committed itself to a moratorium on further deforestation.

In 2018, the Gabonese Ministry of Agriculture proposed to modify the current forest definition based only on tree coverage. The proposal would consider a forest not only as an area with trees, which in itself mistakes a tree plantation for a true forest. Moreover, it would set a parameter of a minimum quantity of carbon that a forest area should contain. If this definition is adopted, it would create a dangerous precedent and its overall purpose would become very evident: OLAM can expand its plantations into areas of secondary forests and forests in regeneration while claiming to be upholding its international "zero deforestation" commitment.

The Retreat of Monsanto GM Cotton from Burkina Faso: Conservation of Agricultural Biodiversity[9]

There are other biomass-related conflicts in West Africa, a land of peasants but also of colonial plantations. I now move to a case in Burkina Faso, a success in environmental justice against a big multinational company reflecting very clearly the clash between international commercial interest and local livelihoods and markets. In 2015, seven years after Monsanto Bt cotton was first commercially cultivated in the country, a decision was taken to return to conventional cotton.

> Burkina Faso was once the poster child for genetically modified (GM) crop advocates. Its adoption of GM cotton for smallholder farmers in 2008 was hailed as an example of how these technologies could alleviate poverty by protecting crops from pests and increasing yields. But this much celebrated success story came to an abrupt halt in 2016 when the Burkina Faso government and cotton companies decided to abandon GM cotton. (Luna and Dowd-Uribe 2020)

Burkina Faso is a major producer and exporter of high-quality cotton. It has gone through the experience of large-scale planting of Bt cotton provided by Monsanto, a GMO variety. Farmers did not have much choice given the marketing structure for the cotton crop. Sofitex –a state company – and two smaller private companies dictate what cotton farmers plant. Large-scale planting of Bt cotton started in 2008. However, seven years later it was being phased out after showing a marked decline in fibre quality compared to conventional Burkinabé cotton. In 2015 there were street demonstrations in the capital against Monsanto. By 2016–17 Burkina Faso, Africa's top cotton producer, was phasing out genetically modified cotton on quality grounds. The world's tenth largest cotton producer said it was giving up Monsanto's GM Bt cotton because it had proved uneconomical: low price of the crop, and more expensive inputs. The Inter-professional Cotton Association of Burkina (AICB), grouping the country's main producers and the national cotton farmers' union, was opting instead for "100 percent

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Source: Inter Réseaux

Figure 14.3 Banner "Our seeds, our knowledge. Monsanto shall not pass over us"

conventional" production, announced Wilfried Yameogo, director of Sofitex. The events had an echo in India (Andhra Pradesh), where there were also criticisms against Monsanto Bt cotton and problems reached a much larger scale in terms of area and population.

To sum up, in a modernizing effort to increase yields, AICB began introducing Monsanto's Bollgard II trait into Burkinabé cotton varieties in 2009. Monsanto started getting juicy royalties. The AICB, which groups together Burkina's Sofitex and two other cotton companies, and the national cotton farmers union (UNPCB), believed the trait has increased levels of short fibres in its cotton, and reduced the ginning ratio, thus reducing its market value. US$ 84 million were claimed by the Burkina Faso government from Monsanto due to losses to cotton farmers. In 2017 the money dispute with Monsanto was settled (Figure 14.3).

Monsanto (taken over by Bayer AG at a cost of US$ 66 billion) is a company that appears in other chapters. One wonders how Monsanto's socio-environmental liabilities were valued (in money terms) when Bayer's takeover took place. All the more remarkable is this success of Burkina Faso farmers in conservation of agricultural biodiversity (López Villar 2017).

FOSSIL FUELS

The Gulf of Guinea is also a region of oil and gas extraction geared to export reaching south to the corrupt regime of Equatorial Guinea. The Niger Delta is the central region but we shall start with the Chad-Cameroon oil pipeline against which there was a strong but ineffective campaign in the late 1990s (Figure 14.4).

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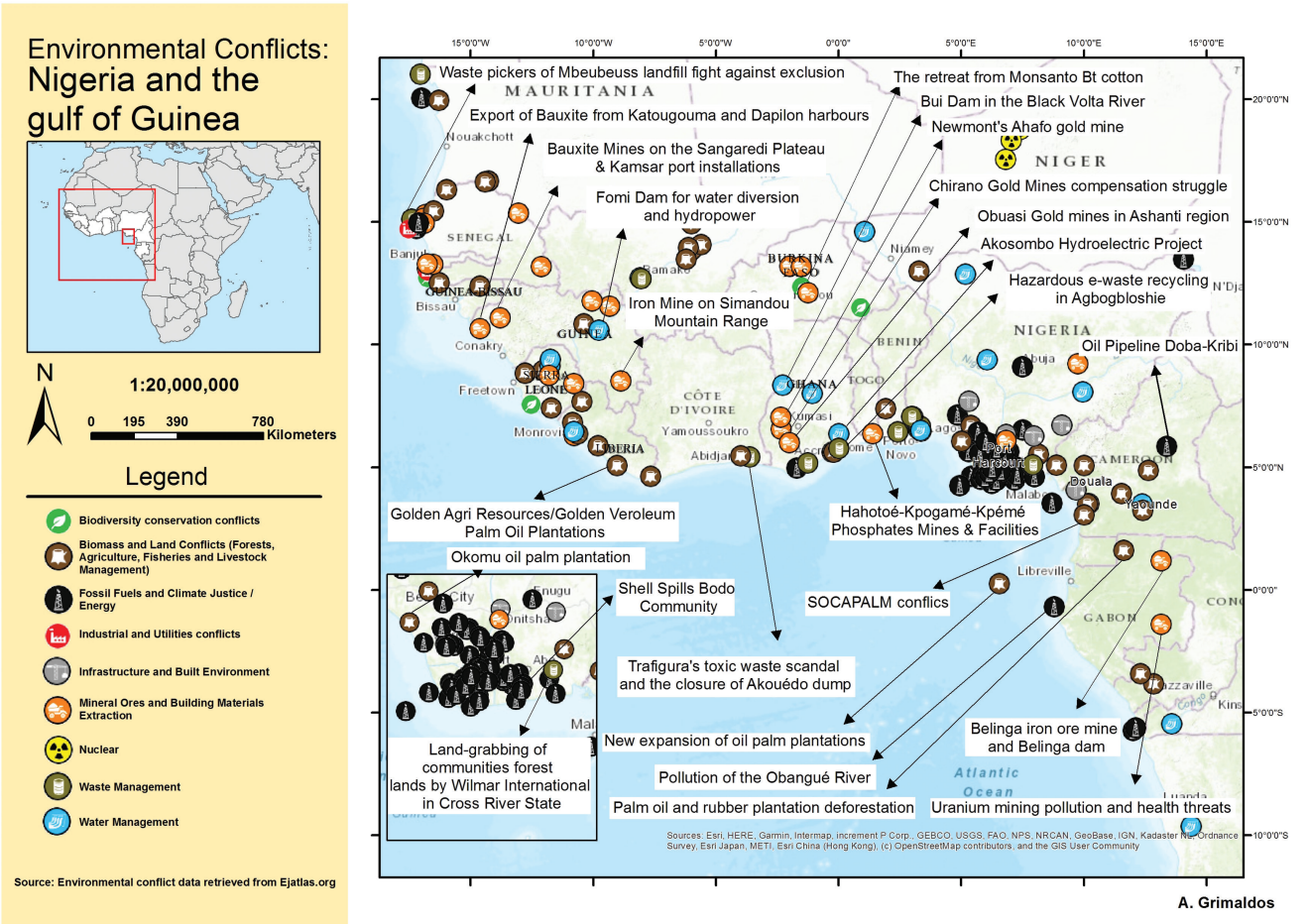

Source: A. Grimaldos

Figure 14.4 *Map of EJAtlas conflicts in Nigeria and the Gulf of Guinea*

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The Doba-Kribi, Chad-Cameroon Pipeline[10]

In June 2000, in spite of a three-year global opposition campaign led by local population and international NGOs, the World Bank financed the Chad-Cameroon Oil Pipeline, a 1,100-km pipeline for crude oil from southern Chad to Cameroon's Atlantic coast, through tropical rainforest. The pipeline has a capacity of about 225,000 barrels of crude oil per day, roughly equivalent to 10 million tons of crude oil per year, meant for export. The project was one of Africa's largest public-private partnerships at the time and took upwards of $3.7 billion in investments, including the construction of 300 oil wells in Chad. The Cameroonian rainforest covers an area of about 20 million ha. Besides posing a serious threat to the biodiversity and the ecosystem of the country, the construction of the oil pipeline and the subsequent deforestation generated serious social conflicts, and deprived local Indigenous communities of territorial resources and traditional livelihoods, especially the Bakola Pygmy people. Bantou villagers claimed Pygmies' lands as theirs and received the compensations which were due to the Pygmies. In 2002, a project by the Forest Peoples Programme helped resolve some of the long-standing rivalries between the Bantou and the Pygmies. Overall, the compensation plan by Cameroon Oil Transportation Company (COCTO) was insufficient.

A Yaoundé Peoples Tribunal was launched in September 2005 by organizations supporting local communities' five-year protest against the project. In operation since 2003, local NGOs denounced the numerous oil spills regularly occurring. The oil extractive industry also threatens the fishing economy of Kribi, Cameroon's port, from where the oil is exported. Far from relieving poverty, the pipeline provoked health problems for the population living in the 242 villages it goes through. In 2011, a complaint against the World Bank and International Finance Corporation listed the following points against COCTO's operations:

- A rise in HIV/AIDS;
- Concerns over adequacy of compensation packages;
- Loss of livelihoods among fishermen;
- Inappropriate waste management;
- Work related accidents;
- Displacement of and improper compensation to indigenous communities; –
- Concerns about subcontractors and compensation process; –
- Concerns regarding royalties.

In spite of the multiplication of reports of monitoring entities the World Bank demonstrated its incapacity or unwillingness to influence the operations of oil companies in any meaningful way. The pipeline also has severe consequences on Chad. Scandals burst out, denouncing that the government finances its war against the rebels in the North and East of the country with the revenues from oil. It is alleged that none of that money has benefited the local residents near the pipeline.

Oil and Gas in the Niger Delta: An Introduction[11]

Oil is the major source of revenue for Nigeria. It is the largest producer of crude oil in Africa when the oil fields are not riddled with violence. The associated environmental impacts lead to conflicts, violence and killings. It was the state and the companies who started the violence;

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Source: Arielle Landau

Figure 14.5 *Nigeria and its states in the Niger Delta*

before, there was peaceful resistance for many years (by the Ogoni, until the killing of their leaders in 1995), and later there was violence when the Ijaw youth and others took up arms (Figure 14.5).

After decades of field monitoring, ERA-FoEN had generated many documents on environmental degradation. As written by Dr Godwin Ojo (of ERA), colonial trade in natural resources historically meant expropriation and dispossession. Since British companies like the Royal Niger Company needed palm oil in the industrial era for lubricating machines, they secured a monopoly of the trade in palm oil through force. Many years later, in 1995, Ken Saro-Wiwa and eight other Ogoni Niger Delta leaders were murdered by the military dictatorship in a bid to silence the people and ensure that oil corporations have free rein over their activities. Commercial exploitation of crude oil commenced in 1958. Since then, the region has known no peace. Conflict arises from the impact of oil extractive activities from the oil companies, the gas flaring and the lack of transparency and accountability in the sector. The environment, soil, air and water bodies are polluted and little or no compensation is given for destroyed livelihoods.

Professor Richard Steiner, a biologist at the University of Alaska, observed this overwhelming situation in 2016:[12]

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> The Niger Delta's legendary "blood oil" disaster has persisted for decades, and is now deepening. Oil in the Delta fuels a dangerous mix of environmental devastation, a violent militancy that has killed thousands, human rights abuses, corporate greed and exploitation, epidemic corruption, massive oil theft, sabotage, repression, poverty, anger and despair. The 30,000 square mile Niger Delta – including rich coastal waters, islands, mangroves swamps, and rainforests – was once one of the most productive and diverse ecological habitats on Earth. But today, the region's environment and society are devastated – a textbook example of the "oil curse". This is, again, not a small extractive "enclave", it is a large region, it was a fertile region.

In fact, at present, there are over 5,000 identified oil spill locations that require attention, which have an impact on the natural resources upon which many Niger Delta communities depend. The major oil companies operating in Nigeria's Niger Delta are Shell Petroleum Development Company (SPDC), Nigerian Agip Oil Company (NAOC), ExxonMobil, and Nigerian National Petroleum Company (NNPC). Drinking water is polluted, fishing and farming are significantly impacted, and biodiversity and ecosystems are degraded, affecting the health and food security of rural people. Although the industry regularly claims that most of their oil spills are caused by sabotage, none have been adequately cleaned up. A further count is available in EJOLT report n. 6,2013.

On 19 March 2013 I wrote:

> In the EJOLT trip to the Niger Delta in March 2013, we visited the communities of Goi and Bodo (in Ogoni territory), both badly damaged by oil spills. A citizen of Goi who was suing Shell was denied compensation in The Netherlands. The case is now on appeal. We visited his property and the creek nearby, full of oil. Meanwhile, the community of Bodo is litigating in London against Shell. The situation in Bodo is terrible, with schools and houses located next to official advertisements exhorting the population to "keep off" because of contamination. There is widespread poverty and environmental damage. Perhaps three million barrels of oil are extracted from the Delta per day, while a large amount of gas is flared. As EJOLT, we were in Nigeria supporting our partner Environmental Rights Action (ERA) in its 20th anniversary celebrations and to take stock of the progress of the EJOLT project. We visited the community of Ikot Ada Udo within a two hours' drive from Port Harcourt. In the village hall one of the plaintiffs in The Netherlands court case, Friday Alfred Akpan, whose farm and fish ponds were damaged by oil spills, read the following text addressed to the village head, to the EJOLT visitors from different countries, to ERA of Nigeria, to Friends of the Earth from Norway, to the women of the Niger Delta and "all others too numerous to mention":
>
> "I am grateful to the Almighty God for the journey of mercy he granted you and your team to my village. Permit me to thank Barrister Chima Williams and those working for him in ERA for properly linking me up with Friends of the Earth Netherlands – who make it possible for me as an individual to sue Shell SPDC in a world court. […] I will specifically thank my lawyer for pulling the case the way it is.
>
> It is my joy to let you know that our forefathers were in business with Shell SPDC for the past decades and yet Shell SPDC refused to respect the terms of their business agreement. I do not want to go into that now but I will have to let you people know that Shell SPDC came into Ikot Ada Udo community as far back as 1958. After the exploration they corked their well with the Xmas tree erected facility and left the community uncared for until 1997, when they started to release crude oil spilling into my farm land and fish ponds as well as causing fish to die. I reported to SPDC and they did not listen to my letter. I decided to write a letter to them again on the 14th December 1999 to remind them of the issue but they did not reply. The gradual leaking of the Shell SPDC facility without repairs for a long time made it more dangerous in 2004 to 2006 – which has caused a lot of damage to my 47 fish ponds. My farming business is paralyzed because of the oil spills from the SPDC facility. I welcome all of you who come and see things for yourselves and to see me in particular as the one you sponsored to win in the case which I hope you will follow-up until compensation is paid, as the case may be".[13]

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Shell Spills Bodo Community, Nigeria[14]

We briefly visited the Bodo community with ERA in 2013 in this tour of the Delta, as well-wishing eco-polit-tourists. Court cases in The Netherlands to see whether any kind of justice may be achieved against Shell were still going on in 2019–21. This is just one of many instances of oil spilling together with gas flaring. Bodo community is located in Gokana Local Government Area of Ogoniland, Rivers State. The community hosts Shell's TransNiger pipelines. In August and December 2008, two major oil spills disrupted the lives of the 69,000 people living in Bodo. About 4,000 barrels of oil a day during four weeks were leaking from the pipelines. Shell stated that the spill was caused by equipment failure as a result of corrosion. In 2013, the prolonged failure of Shell Petroleum Development Company to clean up the oil continued to have catastrophic consequences on the Bodo community. Oil pollution remained highly visible; it was everywhere, in the water, mangroves and soil. The human cost is also starkly apparent, since the lives of many people have been directly affected. Many are worried about their health and are afraid to eat locally caught fish or drink water from streams. Those who used to rely on fishing for their living, have lost their incomes.

SOME CONFLICTS IN GABON: OIL, IRON ORES, MANGANESE AND URANIUM

Oil Pollution by Addax in the Obangué River[15]

South east of the Niger Delta and Cameroon, in Gabon, there is also oil extraction. Addax Petroleum has been present in Gabon since 2004. It is a subsidiary of the Sinopec Group, one of the largest oil and gas producers in China and the third largest worldwide oil refiner. Gabon's main source of income is petroleum exports. Together with its subcontractors, the company has been exploiting a concession near the Mandji Isle. In 2010, it was revealed that the company had been discharging toxic chemical waste into an artificial lake which then fed directly into the river Obangué, the principal source of freshwater for inhabitants of the area.

A local official from Fouanou, an oil town which is situated a hundred km from Mandji Isle, testified that inhabitants have been highly exposed to numerous illnesses, as they consume the Obangué river's water and fish. Equally, crops and animals have been reportedly affected by the pollution. After complaints by local authorities, Addax first installed a few public fountains, but did not maintain them when they broke down, leaving villagers with no other option than to continue consuming the polluted river water. According to Marc Ona Essangui, member of the local NGO Brainforest, pollution has been going on for a decade. Also, other sources of pollution have been reported, such as pipeline leaking and gas flaring around the same time.

In 2010, after reports in the newspapers by WWF and local NGOs, the Government of Gabon found Addax Petroleum responsible for polluting the Obangué River. This was considered a great success in the local media although the affected population has not received compensation. From 2013 to 2014, Gabon and Addax Petroleum engaged in a legal battle on licence and breaches of contract issues not directly related to the pollution. After having transferred the Obangue Oilfield to Gabon Oil Company because of failure to pay taxes, Addax was seeking $330 million dollars in damages from Gabon at the ICC International Court of Arbitration, and Gabon responded with a claim of $780 million. It resulted in Addax paying $400 million to Gabon to end the oil conflict and continue its presence in the region.

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Gabon: the Belinga Iron Ore Mine and Marc Ona Essangui[16]

The coastal states of Gabon and Equatorial Guinea are ruled by dictators and subject to plunder on a large scale. One example is the iron ore mine and related dams and railway in Gabon. Again, opposition from activist Marc Ona Essangui and the Brainforest organization became well-known. As explained by R. Dittgen (2011), Gabon historically was one of the major pillars of the "Françafrique", and it has moved into a new geopolitical area which could be called "Chinafrique". The country's interest in iron ore is recent; in fact, President Omar Bongo qualified Belinga as the "project of the century". But apart from iron ore, the growing manganese sector is dominated by three companies: France's Comilog (Eramet), India's Nouvelle Gabon Mining, and China's Commercial Industrial and Mining Company. As one of Central Africa's richest families, the Bongos have been in power for many decades and at the centre of international controversy because of corruption.

In June 2012, an EJOLT's blog entry asked, "When does a man – bound to a wheelchair – become an Enemy of the State?". When Marc Ona Essangui arrived at the New York Forum Africa – a Libreville event attracting politicians and businessmen, he was arrested by police. Ona was cited by Gabon's Interior Ministry as behaving violently. Ona is a brave voice. In 2009, he was awarded a Goldman Prize for defending the Ivindo Forest against iron mining and against the Belinga dam. In 2006, Ona campaigned against the Belinga mine project – a deal between the Bongo government in Gabon and the Chinese company, China National Machinery and Equipment Import and Export Corporation (CMEC), to extract iron ore. The project includes the construction of hydroelectric dams to provide power for the mine. One dam is being built on the Ivindo River, near the Kongou Falls, Gabon's highest waterfall. Gabon's government failed to consult the local population before permission was given for construction.

Marc Ona dedicated his early career to improving education and communications in Gabon, including working with the United Nations Development Programme (UNDP). He later founded the environmental NGO Brainforest, which aims to protect the rainforest for the benefit of local communities. Marc Ona leaked a copy of the Belinga mine agreement between the government and CMEC, revealing that CMEC had been offered a 25-year tax break. "We noticed that it was China, not Gabon, that was the major beneficiary … The government alleged that we were working [on behalf of] Western powers, and we received a lot of pressure to stop the campaign". This culminated in Marc Ona being charged with "incitement to rebellion" on 31 December 2008.

The dam would generate power for the Belinga iron ore project, which is located 500 km east of Libreville. The mine is expected to produce 30 million tons of iron ore annually. It includes 560 km of railroad track from Belinga to a deep-water port at Port-Gentil that will allow the ore to be shipped to China. As planned, CMEC is building the mine, China Exim Bank is funding the entire project, and China's industry would be the sole recipient of the ore. Exporting the ore will not be easy because the deposit is separated from Gabon's Atlantic coast by hundreds of kilometres of dense rainforest. Mines Minister Regis Immongault Tatagani said that the government aimed for exploitation to begin in 2024 or 2025. By 2019, the Belinga iron ore project was seen as a fiasco. Gabon already mines manganese. Officials claim that mining could account for as much as 30 per cent of Gabon's GDP by 2030 versus 4 to 6 per cent currently. Oil accounts for a larger share of Gabon's GDP

Areva in Gabon: Uranium Mining Pollution and Health Threat[17]

Complaints about uranium mining in other countries appear in Chapter 10 and elsewhere in this book. Here we focus on the consequences of radioactive materials left over from 40 years

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of uranium mining in southern Gabon that have dogged French mining giant Areva since it closed down its operations at the town of Mounana in 1999, 60 km from Franceville and roughly 600 km from the capital Libreville. As reported by Hibakusha, "In the jungle of Gabon, the French nuclear company COMUF (an Areva subsidiary) neglected environmental safety standards, exposed mine workers to high doses of radiation and dumped thousands of tons of radioactive waste into the delicate ecosystem of the Mitembe River". The risks are exposure for residents of Mounana and occupational illnesses of former workers at the mine.

A report on Gabon and Niger (another Areva uranium mining site) published in 2010 stated that substantial problems existed around mining operations, the safety of miners and local citizens. After the mine closed, workers formed an NGO advocating for a health and environmental monitoring programme as well as medical compensation. They joined forces with several French NGOs, who sent scientists, doctors and lawyers to Mounana in June 2006. The team took independent environmental readings and interviewed nearly 500 former employees. Residents displayed a range of symptoms, many lung-related, but their illnesses remained untreated. In 2010, Areva entered into an agreement to establish a health observatory to treat former miners. French NGO Sherpa was also part of this agreement, but withdrew in 2012, citing non-compliance by Areva.

By the end of 2016, 367 former workers had died from "pulmonary respiratory infections" linked to working in the mine, according to MATRAC, a campaign group gathering 1,618 former employees. The surviving miners waited for compensation for years. An internal company letter dating from 2015 acknowledged that the company was aware that many of its former employees had developed serious ailments. For former workers, this proves the company's liability and justifies their claims for compensation. The firm has refused to give payouts to most of its employees, apart from compensation payments in 2011 to two families in France of former mine workers who died of lung cancer. The company has repeatedly argued it was difficult to establish if the rate of cancer cases among former miners was greater than those occurring in the wider population. This is a conflict that could be framed as a case of "undone science", a case needing "popular epidemiology" in the combat against environmental injustice and racism.

MORE CONFLICTS ON MINING AND HYDROPOWER: FROM BENIN TO SENEGAL

Moving up the coast of the Gulf of Guinea, and to conclude this chapter, a further selection of relevant environmental conflicts includes: mining phosphates in Togo; mining gold and developing hydropower for aluminium smelting in Ghana; the Fomi dam, and bauxite and iron ore mining in Guinea.

Hahotoé-Kpogamé-Kpémé Phosphates Mines & Facilities, SNPT, Togo[18]

The non-metallic materials such as sand, gravel, and fertilizers, are of great importance to the economy, but despite their volume sometimes they are left aside because of their relatively low chrematistic value (Franks 2020). We do not make this mistake in the present book. Phosphates are the main exports in volume from Morocco (and Western Sahara) and Tunisia (Gafsa). There are also phosphate exports from Togo, the old German colony. Hahotoé and Kpogamé phosphate mines and Kpémé processing plant pollute the local environment and

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threaten human health while the State company Société Nouvelle des Phosphates du Togo (SNPT) does not respect its workers' rights.

To start the exploitation of phosphate reserves in the sites of Hahotoé and Kpogamé, the local populations were displaced. The phosphates extracted are being treated at the plant in Kpémé, 40 km east of Lomé and on the ocean coast. These industrial extractivist activities have numerous adverse effects on the surrounding communities' lives since the mines' effluents and the dust from the Kpémé processing plant are not treated before being discharged into the air and the environment. Deforestation, loss of soils' fertility and heavy metals pollution threaten the surrounding communities' livelihoods and they suffer from fluor pollution.

As with Areva in Gabon, sometimes one cannot separate what are environmental conflicts, health conflicts and labour conflicts. This is a working-class environmentalism (Chapter 20). The Hahotoé/Kpogamé/Kpémé complex is mainly known for the ongoing conflict between SNPT and its workers. The latter claim higher wages, and the required equipment to be properly protected. They reiterated their strikes in the past years, paralyzing the sector for 72 hours in 2013, and again in 2014 and 2015. The workers' bodies and health are under constant threat because they are not being granted the necessary clothes and footwear for their jobs. Also, their wages are too low to make a living. On 10 August 2016, the workers from the extraction site Hahatoé and the processing plant in Kpémé started a 72-hour strike and again a 48-hour strike on August 24th since nothing had changed. An agreement was signed in September 2016 but was not implemented by SNPT.

In 2019, the situation had hardly changed. "Death has become an everyday companion", says one worker interviewed by *27 avril*, an online Togolese newspaper. Eight deaths had already been recorded since January. Workers advocate for the establishment of a commission that must include health and safety services at work, the search for the exact cause of these deaths, the implementation of regular medical examinations, the recruitment of two doctors and the acquisition of two new ambulances per site, among other demands.

Obuasi Mines in Ashanti Region and Other Gold Mines in Ghana[19]

The Ashanti formed an empire that resisted colonialists for some time. The British gave the name Gold Coast to the territory. The colonialist gold mining company took the name Ashanti. Cynicism, racism and coloniality in the Gulf of Guinea. Obuasi AngloGold Ashanti (AGA) mine has been accused of water and land pollution. In 2014, the mine closed down in order to become more efficient, but nothing was said about the liabilities from contamination. It reopened in 2018. Ghana is the world's second largest producer of gold. In Obuasi, in the Ashanti Region, mining started in 1897 under British rule.

AngloGold Ashanti was registered in 2004 in Johannesburg as the result of the merger between the state-owned Ashanti Goldfields Corporation and the South Africa Anglo Gold Mining Company. Nowadays, it has operations in ten countries all over the world, including Ghana, Guinea, Mali, Namibia, South Africa, Tanzania, Argentina, Brazil, Colombia, the US and Australia.

In fact, that Colombia is mentioned makes me remember an encounter with AngloGold Ashanti in La Colosa project in Colombia (Chapter 17). But I have not visited in Ghana the Obuasi mining concession that covers a large area, and 80 communities within a 3-km radius of the mine. The forecast for the 2018 reopening was to get a production of around 350,000 to 450,000 oz (gold ounces) in the first ten years and a bit more over the next ten. In 2011,

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AngloGold Ashanti was declared the worst company for bad corporate behaviour in Ghana in the Public Eye Awards. In 2016, the *Wall Street Journal* reported that AngloGold Ashanti Ltd., the world's No. 3 gold producer, closed shafts at its Obuasi mine amid sinking metals prices. In 2016, hundreds of men broke through the 13-mile fence around Obuasi and started prospecting for gold there on their own.

In February 2018, AngloGold Ashanti announced that it had signed an agreement with the government of Ghana to provide a framework for the redevelopment of the Obuasi Gold Mine. Under the agreement, which incorporates a development agreement, a tax concession agreement, a security agreement and a reclamation security agreement, AngloGold would invest $450–$500m in bringing Obuasi back to producing.

Another conflictive gold mining project in Ghana is the World Bank's IFC-supported exploitation of Ahafo gold deposits, led by the Newmont company. It dispossessed and relocated thousands of farmers and communities from their ancestral lands, suffering recurring cyanide pollution. Also to be included is the unsuccessful Chirano Gold Mine compensation struggle against this combined underground and open-pit gold mine owned by Red Back Mining up to 2010, when it was taken over by the Toronto based Kinross Gold (at 90 per cent) and the Government of Ghana (10 per cent).[20]

The Volta River Dams: Akosombo and Bui in Ghana[21]

Ghana is not only the "gold coast". After such colonial episodes, we must remember Kwame Nkrumah, the first president of Ghana after independence. He was brought up on the teachings of Marcus Garvey, C.L.R. James and W. Du Bois. He was a formidable anti-colonialist Pan African leader and also leader of the Bandung movement (with Sukarno, Nehru, Tito and Nasser). He was against colonialism and unequal exchange, as was Sekou Touré, the president of neighbouring Guinea. We may ask: was and is anti-colonialism, in Africa and also in India, Vietnam etc., as a triumphant movement of the twentieth and twenty-first centuries, also an environmental movement? Thinking of Gandhi (and Kumarappa and Mira Behn) we might answer "yes", but remembering Nkrumah we would say "no".

Nkrumah's advocacy of industrial development led to the Volta River Project: the construction of a hydroelectric power plant in eastern Ghana by the Kaiser aluminium company. The Volta River Project was a centrepiece of Nkrumah's economic programme. The country would no longer rely on cocoa exports and subsistence farming. The contradiction between anti-colonialism and extractivism did not yet bother Nkrumah.[22]

The Akosombo Hydroelectric Project had an original electrical output of 912 MW, which was upgraded to 1,020 MW in 2006. The biggest hydroelectricity project in West Africa from the 1960s, it displaced 80,000 farmers to fulfil a national idea of "development". Originally designed in the 1920s to serve the British colonial metropolis, the Volta River Project was reshaped by the country's founding leader Kwame Nkrumah.

Because there were insufficient funds, the American company Volta Aluminium Company (Valco) loaned money to Ghana so that the dam could be constructed. The primary purpose was in fact to provide electricity for the aluminium industry which would be based on bauxite mining. The final proposal outlined the building of an aluminium smelter at Tema, a dam constructed at Akosombo to power the smelter and a network of power lines. The smelter received its financial investment from Valco shareholders, with the support of the Export-Import Bank of Washington, D.C. However, Valco did not invest without first requiring assurances from

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Ghana's government, exemptions from taxes on trade and discounted purchases of electricity. The dam was finally built between 1961 and 1965.

In May 1960, the Ghana government called for tenders for construction of the hydroelectric dam. In 1961, an Italian consortium, Impregilo, which had just completed the Kariba Dam between Zambia and Zimbabwe, won the contract. They carried out the dredging of the river bed and completed the dam. It flooded part of the Volta River Basin, and led to the subsequent creation of Lake Volta, one of the largest man-made lakes in the world. It covers 8,502 km^2. By 1981, a smaller dam was built at the town of Kpong, downstream from Akosombo.

Despite a policy requiring those displaced to be enabled to at least regain their former living standards, a 1994 World Bank review cited few instances where this had occurred. Increasing demands for power exceed today what can be provided by the current infrastructure. Power demands go along with unforeseen environmental trends like the lower lake levels.

***

The Bui Dam in the Black Volta River is a 400-MW hydroelectric project built on the Black Volta River at the Bui Gorge, at the Bui National Park. It was first envisaged in 1925 and remained on the drawing board since the 1960s, when Ghana's Akosombo Dam was built further downstream on the Volta River. By 1978, planning for the Bui Dam was advanced with support from Australia and the World Bank. However, four military coups stalled the plans. At the time, Ghana began to be plagued by energy rationing, which created goodwill among the population towards the construction of the plant. In 1992, the project was revived. Construction on the main dam began in December 2009, and its first generator was commissioned on 3 May 2013. Funded largely by China Exim Bank and by the Chinese government, Bui was built as a turnkey contract in which the Chinese dam builders Sinohydro are the contractors who build the dam and then transfer its ownership to Ghana's government.

This put Ghana's government in charge of the resettlement, compensation, mitigation measures to reduce the environmental impacts, and daily management of the dam. The cost went up to US$622 million. The dam's capacity of 400 MW might be constrained by increasing drought from climate change. The dam project inundated a quarter of the Bui National Park, home to one of two populations of hippos in Ghana, and monkeys, lions, buffalo, monitor lizards, antelope and leopards. The altered flow regime is also expected to negatively impact 46 species of fish that are important to the local communities. Two thousand six hundred people were relocated, losing fishing grounds, homes and farms, and facing the danger of schistosomiasis disease outbreaks from the new dam.

GUINEA: DAMS, IRON ORES AND BAUXITE MINING

The republic of Guinea (capital city, Conakry) is about half the size of France, and holds over 12 million people. Here I shall focus on the transnational conflict of the Fomi Dam, and then on the mining of bauxite and iron ores for export.

Fomi Dam in the Inner Niger Delta for Water Diversion and Hydropower, Guinea-Mali[23]

The Fomi dam would produce electricity and water for mining and large-scale agriculture under the name of poverty reduction. This is a transboundary conflict. The Inner Niger Delta

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in Mali is one of Africa's largest wetlands bordering the Sahara Desert. It hosts millions of migratory birds coming to Africa from Europe and serves as a lifeline for one or two million people who depend on its fisheries, agriculture and pasturelands. The unique ecosystems of the Inner Niger Delta are in turn sustained by the beneficial annual flooding of the Niger River that inundates up to 30,000 km^2.

However, the region is targeted by large-scale water diversion plans. The projects include a 102-MW hydropower dam at Niandan River in Fomi in Guinea, a 25-MW hydropower plant in Toussa, Mali, and the 565-MW Kandadji dam in Niger. They are all meant to boost hydroelectricity and irrigation, reduce desertification and flooding, and improve economic activities across the region. The Fomi dam is planned to be built near the river's source in Guinea and is funded by the World Bank (WB), under the Niger River Basin Management Project (NRBMP) and through its International Development Association fund. In January 2015, the WB approved a budget of US$7.5 million for NRBMP, half of which would cover activities to build the Fomi dam which has long been a priority for the government of Guinea.

Three Ramsar sites, a total of 1,620 km^2, have been declared in the Inner Niger Delta. The WB is helping revive the project, and according to its documentation, "Seven of the Basin countries are among the 20 poorest countries in the world, all of which have a predominantly rural population relying on rain-fed agriculture, pastoralism or other natural resource-based livelihoods. […] Water infrastructure […] can significantly contribute to economic growth and poverty reduction, and build resilience against extreme weather".

In addition to generating power in Guinea, Fomi is now meant to double lands under cultivation in the Office du Niger, the Malian irrigation scheme of colonial times that yields the country's rice and sugarcane. According to International Rivers (IR), large tracts of land in the Office du Niger have already been allocated to foreign investors, pushing out smaller producers. The two largest projects provide water for the sugar giant Illovo and a Chinese state enterprise. However, IR warns that: "The Bank is laying the groundwork by bankrolling requisite studies that examine environmental impacts and technical feasibility, as well as resettlement planning for an estimated 45,000 Guineans who would have to be relocated". Also, hydrologists have warned that massive engineering works on the Niger river are set to turn the delta into a desiccated area.

During the World Water Forum in Marseille in 2012, studies were presented on the impact of Fomi dam in the territory. According to the hydrologist Leo Zwarts of a Dutch consultancy, during the last major drought in 1984, three-quarters of the delta dried out, fishing failed, cattle died and people fled. His study warned that the dam and irrigation schemes would make a disaster like the 1984 drought on average every four years. While increasing Mali's production of commercial crops, the projects would cause extreme poverty and force more than a million people into migration. IR has also put it clearly: "If the Fomi Dam is indeed built, this will most likely spell ecological disaster for the Inner Niger Delta. By leading the process to bring Fomi forward, the World Bank will bear responsibility for a scheme that is fundamentally flawed".

Compensation will also remain a key issue for the Fomi project. Despite the announcement in 2017 that construction would begin with Chinese finance and expertise, by 2021 the project is stalled (Pearce 2021).

Bauxite Mining from Boké, Guinea[24]

According to *Aluminium Insider*, a trade journal (23 April 2019), Guinea is poised to be at the centre of a global increase of bauxite mining in the coming years. A significant driver

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are aluminium producers from China like Société Minière de Boké (SMB), but also from other countries, such as Vedanta from the UK and Emirates Aluminium. As the world's biggest bauxite consumer and aluminium producer, China has established a vast bauxite supply chain. However, there are labour strikes and a deterioration in human rights in the mining districts of Boké and Telimélé. Land grabbing by foreign mining firms as well as environmental damage detrimental to agriculture and water resources are widespread.

The Boké region is known for its abundant mineral resources. The Bauxite Company of Guinea (CBG) initiated the exploitation of bauxite in 1973, operating several mines on the Sangaredi Plateau and an aluminium plant at the port of Kamsar. Villages near CBG mines have suffered negative consequences which are not being taken care of by the public authorities or the company. Their houses are cracked by dynamite explosions, the fertility of agricultural fields is decreasing, and muddy water has polluted the rivers. The livestock of the agro-pastoral villages are endangered by the pollution of the vegetation they eat. The villagers also report respiratory problems, coughs and stomach aches. The populations demand a better consideration of their situation, but not the shutting down of the activities. Some villagers expressed their desire to see their children being employed by the mining company.

The riots of April 2017 in the city of Boké arose in a social context even more tense after the intensification of mining activity since the arrival of new companies, like the SMB-WAP Chinese consortium. Negative effects intensify, while Boké still lacks basic infrastructure. The inhabitants of Boké rose up after repeated power outages and the death of a taxi-motorcycle driver, overthrown by a truck carrying bauxite. One of the many problems is the air pollution caused by the transport of bauxite in the city. The protestors' grievances led them to make a list of 35 claims, including the claim for water and electricity supplies, youth employment and the construction of a road so the bauxite trucks would bypass the city.

The NGO Action Mines Guinée works on a national scale aiming to involve university students in the creation of committees for the transparency of extractive industries. In March 2019, 13 villages lodged a complaint against the IFC of the World Bank for financing CBG. The complaint reports systematic violations of IFC's social and environmental standards by CBG. The villagers are represented by the Center for International Trade for Development (CECIDE), the Association for Rural Development and Mutual Aid in Guinea (ADREMGUI) and the US organization for the defence of human rights, Inclusive Development International (IDI).

Export of Bauxite from Katougouma and Dapilon Harbours in Boké, Guinea

The Compagnie Minière Boké-Winning Africa Port consortium (CMB-WPA) has been exploiting bauxite ore deposits on the Kaboyé plateau since July 2015. Despite its recent arrival, the exploitation and export of bauxite for the Chinese aluminium industry has been problematic and the source of many socio-environmental problems. The transport of bauxite from the mines to the two river ports of Katougouma and Dapilon triggers the contamination of the fields, the water sources and the flora. Villages like Diakhaby (Dapilon) and Baniré (Dabis) neighbouring the mines, ports and the mining road denounce the air pollution caused by bauxite, which endangers their health and their sources of subsistence.

The company proudly states it has compensated the populations for the fields taken away, yet the villagers complain that despite compensations the decline in land productivity puts their livelihood in jeopardy. The National Waterworks Development Service has dug a well in Djoumaya, where three out of six rivers have dried up. Although drilling can mitigate social

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impacts, the drying up of rivers endangered animal species. For its part, CMB-WPA is very eager to increase its capacities of extraction, transport and storage at the ports while it is not taking any responsibility for the pollution provoked. For decades, Boké has been denouncing the air pollution. Already in December 2016, the youths of Corrérah (Boké) demonstrated demanding from CMB-WPA the asphalting of the road between Corrérah and the city centre. The neighbourhood suffers from bauxite pollution caused by the consortium's trucks. Residents reported that their cashew trees, one of the main sources of subsistence, had not produced anything in 2015. They only obtained the watering of the road three times a week.

In addition, CMB-WPA is contested by its employees due to indecent working conditions. The Katougouma workers have repeatedly gone on strikes: between July 2015 and March 2016, they went on strike 24 times. During the strike on October 2015 the workers denounced the lack of healthcare, housing safety and protection equipment necessary for them. These demands were not met.

A recent investor is the United Arab Emirates (UAE) based aluminium conglomerate Emirates Global Alumina (EGA). Its Boké bauxite project is being developed approximately 168 km north of Conakry. The greenfield project will have two phases through its subsidiary Guinea Alumina Corporation (GAC). The first phase is estimated to cost $1.4bn and the second phase $4bn. Construction works under the first phase were started in 2017. Production from the first phase is expected to go up to 12 million tonnes per annum (Mtpa) of bauxite, which will be entirely exported.

Iron Ores from Simandou Mountain Range, a Great Extraction Frontier[25]

Simandou, Nimba, Zogota and Yekepa are potentially very large iron ore mines, and therefore they also require big and dangerous tailings dams (Figure 14.6). Transport to the export harbour is a problem – a new railway is supposed to go through the western route around Sierra Leone to northern Guinea, while Arcelor Mittal in Yekepa, Liberia, exports through Buchanan. Nimba (a Unesco site) and the other mines are in dispute because of the great biological worth of the territory. Some of the largest iron mining transnationals have been there including Rio Tinto, Vale and Chinalco. In 2021, the arrival of a military junta in Conakry opened a new stage, the outcome of which remains uncertain. In 2019, there was an agreement between Beny Steinmetz's group (BSGR) and president Alpha Condé over the Simandou and Zogota iron ore projects, negotiated with the help of French ex-president Nicolas Sarkozy.[26] The Simandou region holds huge reserves estimated at nearly 9 billion tonnes with an iron content of 65 per cent. The mine could produce 150 million tonnes annually, 7 per cent of the global production (2019). The project has been plagued by corruption scandals, and by coups d'état. Rio Tinto was the original major owner of the site.

Even though commercial exploitation has not started yet, the infrastructures built have disturbed the hydrological connectivity of the area and reduced the water quality. Action Mines reported the voices from the communities living downstream who have lost access to drinkable water. The local inhabitants asked Rio Tinto to drill but their claims were ignored. Roads built by Rio Tinto to access the site have also divided farming lands, which has decreased locals' farming productivity, affecting their future living conditions What's more, the impacts on biodiversity conservation are anticipated to be considerable.

Since BSGR's arrival in December 2008, all operations at Simandou's site were suspended. However, the joint venture between BSGR and Vale (VBG) began mining the iron ore on the Zogota deposit. There was local opposition. The Guinean law enforcement and security forces

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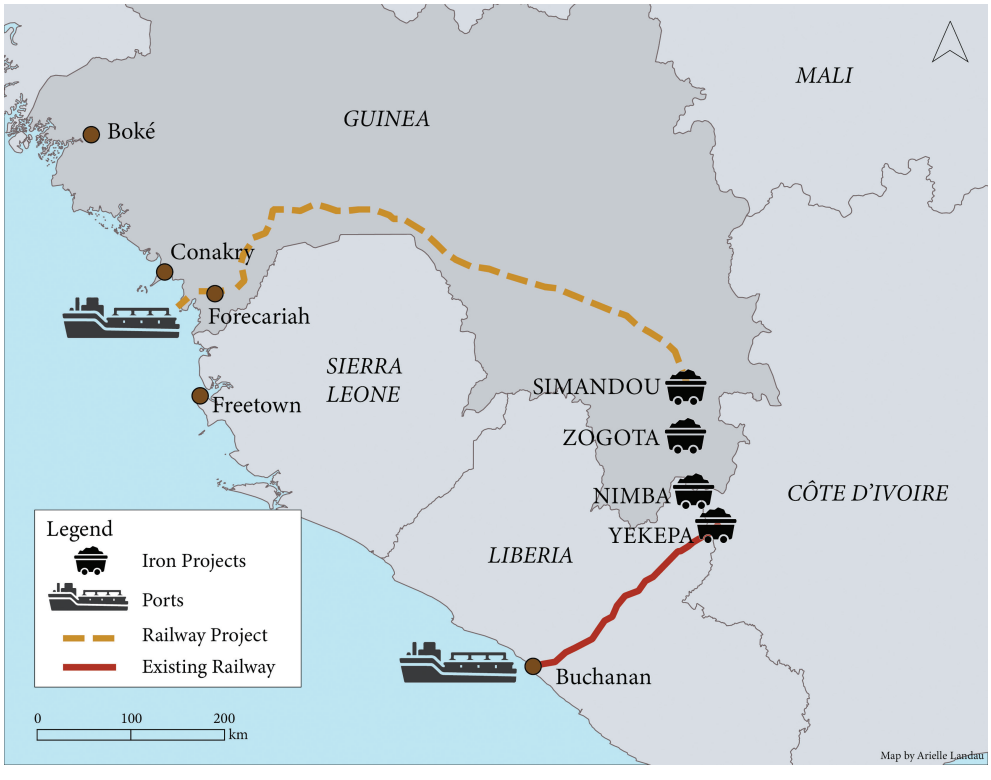

Source: Arielle Landau

Figure 14.6 *Getting the iron ore out – through Liberia and Buchanan, or around Sierra Leone through Conakry*

intervened on the night of 3 August 2012, where six villagers were killed, several wounded, and properties destroyed. A complaint was lodged against state officials at first instance at a Guinean court. But the prosecutor declared himself incompetent in trying the suspects. In September 2018, the NGO Rights for All filed an additional complaint against the company Vale for providing the Guinean law enforcement forces with the logistical and material means necessary for this massacre. Finally, given the inertia of Guinean justice, the NGO also filed a complaint against the Guinean State before the ECOWAS. After the change of government in 2021, the Simandou project remained stalled in 2022. It is jointly owned by Singapore's Winning International Group, a number of Chinese-funded enterprises and Rio Tinto. Guinea's government says that any developer of the mine must build the railway spanning the country.

CONCLUSION: PERSISTENT COLONIAL EXTRACTIVISM AND POLLUTION IN THE GULF OF GUINEA

The chapter started with descriptions of three large waste dumping cases, that of Trafigura in the Ivory Coast, the e-waste recycling in Agbogbloshie and the Mbeuleuse dump in Dakar.

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These topics in political ecology deserve as much attention as extraction of raw materials. Marco Armiero has a proposal that the Anthropocene should be called the Wasteocene, and this makes even more sense if we think that carbon dioxide from burning fossil fuel has also become waste. Apart from conflicts on industrial and domestic waste, at national or international level, there are many other types of environmental conflicts in the region that comprises the basins of the Niger River and the Volta River. There are conflicts on uranium mining but not on nuclear energy power plants.

This is the region of origin of oil palms. Large-scale plantations are an industrial, capitalist institution. Tree plantations are not true forests because they eliminate biodiversity, undermine human livelihoods and are not sustainable. We followed the fights against palm oil or rubber plantations in Liberia, in Nigeria (Edo state and Cross River state), in São Tomé and Principe, and Gabon, and we learnt the names of the main palm oil international companies (Wilmar, GAR, Socfin) and have noticed the power they hold. In Chapter 27, we shall have a look at SOCAPALM in Cameroon. Another biomass and land conflict is related to Monsanto's GM cotton in Burkina Faso. More will be said about precious wood exports in Chapter 26.

The Niger River articulates the region from its birth in Guinea to its mouth in the Delta in Nigeria, next to Cameroon. There are conflicts about the management of the river, such as the Fuomi dam in Guinea that would affect the Inner Niger Delta in Mali. And then there is the Delta itself that has suffered terrible social and environmental impacts in the last 50 years from the oil industry. Oil has been a curse. The Shell company and others will be historically associated with this forever. Beyond the Niger Delta, we have also seen conflicts on oil, iron ore, manganese and uranium mining in Gabon, and on phosphates in Togo. In Ghana the main extractivist conflicts are on gold mining, aluminium smelting and hydropower. Hydroelectricity is produced by the Akosombo and Bui dams in the Volta River. In Guinea, bauxite from Boké for aluminium, and the enormous iron ore mine of Simandou are being made available to international companies.

The means of transport are so convenient at present that the volume (in tons) of the plunder of nature for export or for domestic consumption has never been so high as today. For oil and gas this is made possible by means of transport such as the controversial Chad-Cameroon pipeline and the new conflictive coastal gas pipelines from Nigeria to Ghana, also involving Benin and Togo, operated by Chevron. There are advanced plans for a Nigeria-Morocco Offshore and Onshore Gas Pipeline, a project signed in 2016 that is in the news in 2022 because of the crisis of Russian gas supply to Europe after the invasion of Ukraine. In the Niger Delta, apart from the terrible oil spills, another scourge has been gas flaring. Oil comes out together with so-called extraction water, which is toxic, and also with gas. It has been convenient for the companies (Shell and others) to flare it, in the absence of nearby markets.

There are also notable conflicts on sand mining for minerals on the coast of Senegal and Gambia which I leave for Chapter 15. I end this chapter anticipating two other themes treated in Chapters 26 and 27. Most of the conflicts in the Gulf of Guinea in this chapter involve large foreign firms (European, North American and Chinese) looking for materials and energy to supply directly or indirectly the metabolism of metropolitan industrial economies: commodities such as oil, gas, biofuels, iron ore, aluminium… and also colonial "preciosities" of high monetary value. On top of the old stories of trade in preciosities like ivory, diamonds, hard woods and gold exported from this region we must now become aware of the millions of tons of iron ore and palm oil to be exported, and the hydropower used for smelting metals. This is a commodity extraction and export region, whether of slave human labour, or preciosities at

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different periods (the "blood" diamonds from Sierra Leone, the ivory from elephants, the gold from Ghana). More recently the increased use of energy and materials in the world economy including China means that remote areas are now extractive frontiers from where 'bulk commodities' essential to the metabolism of the rich economies (oil, coal, gas, iron ore, bauxite, nickel, copper, timber) are supplied, together with the old preciosities. This export trade has a great influence on the metabolic profile of each country and region, which is connected to the local socio-ecological conflicts.

Another general relevant issue is the lack of environmental liability enjoyed by the extractive and the polluting industries. The largely unsuccessful attempts in bringing to court corporations show how the rule of "cost-shifting" operates. The enormous damages from oil extraction in the Niger Delta by Shell, Chevron, AGIP and other companies have not given rise to commensurate compensation, if this were possible.

There are some further issues that appear in the Gulf of Guinea. There are environmental networks such as the ENDA (Enda Tiers Monde) international organization in Dakar, Senegal, and ERA in Nigeria, a member of Friends of the Earth International. There are many ad-hoc local organizations related to local conflicts. On geopolitics, I wonder what are the connections in Nigeria between the Biafra war 50 years ago and the oil industry. I am also interested in the topic of transboundary environmental conflicts. In West Africa, as we have seen, railways for exports and pipelines cross borders. Will dams in Guinea alter the hydrosocial regime of the Niger River and what is the response from Mali?

A further transversal theme is corruption. In my view, it is born from the great disparity of economic and political power between foreign corporations (and old and new colonial powers) and the local politicians, whether duly elected or reaching power by military coups. The local political opposition and the civil society cannot, despite their efforts, confront such external powers. There are remarkable fighters for environmental justice in Nigeria, Gabon, Cameroon and elsewhere but their task is too heavy. One extreme case is the dictatorship in Equatorial Guinea, a small country with very large oil exports (1.4 million inhabitants, 230,000 barrels per day of oil). In July 2019 the government revoked the authorization granted to the Center for Development Studies and Initiatives (CEID) – one independent NGO that denounces human rights violations in the country.

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15. Sand mining for metallic minerals: a new commodity frontier

with Arpita Bisht

INTRODUCTION: SAND AND GRAVEL EXTRACTION AROUND THE WORLD

Not everybody is yet aware of the conflicts on the extraction of the bulkiest of all commodities (apart from water): sand and gravel. This is a thematic chapter that builds on the beaches of Senegal and the Gambia, and remembers Kwale (in Kenya) and Ranobe (in Madagascar).

Sand and gravel mining are a large part of the "non-metallic" minerals. Another bulky item is fertilizers. Figure 15.1 shows the trend in material extraction at global level (excluding water) according to the methodology of the Vienna school of social metabolism (by Fischer-Kowalski et al.) adopted by Eurostat and UNEP. At global level, about 22 Gt of sand, gravel, stone or clay were extracted in 2005 (Haas et al. 2015). The total extraction of all materials is reaching 100 billion tonnes per year, i.e. 100 Gt. Notice the little downturn of the economic crisis of 2008, as we shall notice the pandemics of 2020–21. Less than 10 per cent of the total 100 Gt of materials are recycled. One reason for the low rate of recycling is that many of the materials are fossil fuels. They burn only once and the energy dissipates. Another main reason is that many of the materials go to stocks of infrastructure and buildings, and this needs in turn a larger and larger amount of materials for maintenance (Krausmann et al. 2017).

Aurora Torres et al. (2017) gave a plausible estimate of 29 Gt of sand and gravel extracted, i.e. almost four tons per capita/year in the world if it would be equally shared. Much of the sand and gravel goes to the cement and building industries. Moreover, cement is energy-intensive. The degree of recycling or "circularity" is low in practice, in other words the "metabolic gap" is very large, and hence the search for fresh sources. Extraction frontiers for sand and gravel are often not far away because these are bulky commodities. Sand and gravel are taken from river beds and lakes, and also from the beaches. Clashes between extraction and local populations occur, particularly in India. According to Arpita Bisht (2021, 2022), by July 2021, of 3,500 cases registered in the EJAtlas, 107 included sand and gravel among the commodities causing the conflicts. An EJOLT fact-sheet was published in 2014 with colleagues from JNU, Delhi, on this topic that would certainly deserve a whole chapter if not a book.

Here, at a much smaller scale than for the building industry, we consider extraction of sand mining for metallic minerals, which are less bulky and travel large distances. Ilmenite as an ore for titanium is a major one. Zirconium alloys are used in the nuclear power industry. Extraction of minerals from sand such as ilmenite, rutile, zircon, garnet and magnetite for iron requires a brutish treatment – a large quantity is mechanically collected and ground or milled to obtain the ores (Bisht and Martinez-Alier 2022).

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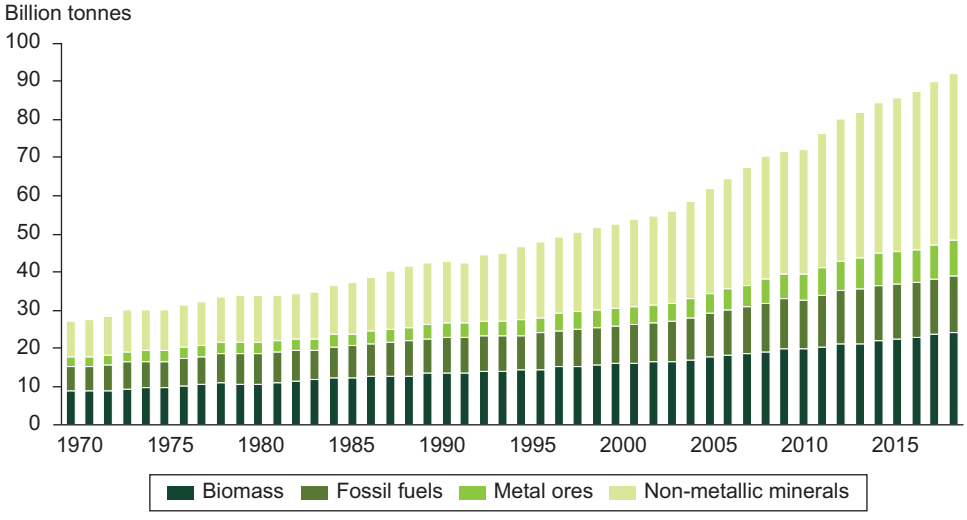

Source: *Europe Environment Agency* (2019). Trends in global domestic extraction of materials, 1970–2017

Figure 15.1 *Trends in global extraction of materials, 1970–2017: biomass, non-metallic minerals, fossil fuels, metal ores*

SAND MINING FOR METALS IN SENEGAL: TITANIUM AND ZIRCONIUM

Senegal and the Gambia have 20 conflicts entered in the EJAtlas, on phosphate exports, fisheries and biomass for biofuels for export. Here I deal only with sand mining for metallic minerals.

In the Niayes

The Niayes, in the Thiès region, is a narrow band 25 km wide stretching for 180 km from Dakar north to Saint-Louis along the Atlantic coast. It was traditionally dedicated to vegetable gardening and fruit growing. Yet today, Thiès is considered the largest mining area in the country, whose activity is concentrated in the Niayes. On land annexed without consultation of the farmers, the Grande Côte Operations (GCO) belongs to the company TiZir (and Eramet). TiZir means Titanium + Zirconium. Founded in 2011, TiZir has two sites: GCO in Senegal to exploit mineralized sand (zircon, ilmenite, rutile and leucoxene) and TiZir Titanium and Iron in Norway a joint venture with France's Eramet to work the Senegalese materials. The GCO project displaced vegetable gardeners and continued pumping the water resources at the expense of agriculture. A departmental commission was in charge of determining the amounts of compensation to the farmers. Once again, economic "commensuration" of damages and benefits sacrifices other values. Commensuration is an act of power that failed: in July 2013, villagers opposed the visit of this commission and 21 were arrested by the police and judged by the court of Thiès. Ibra Fall, Gora Wade and Djibril Bèye, vegetable producers from the Diogo village, were sentenced to three months in prison "for the offenses of illegal

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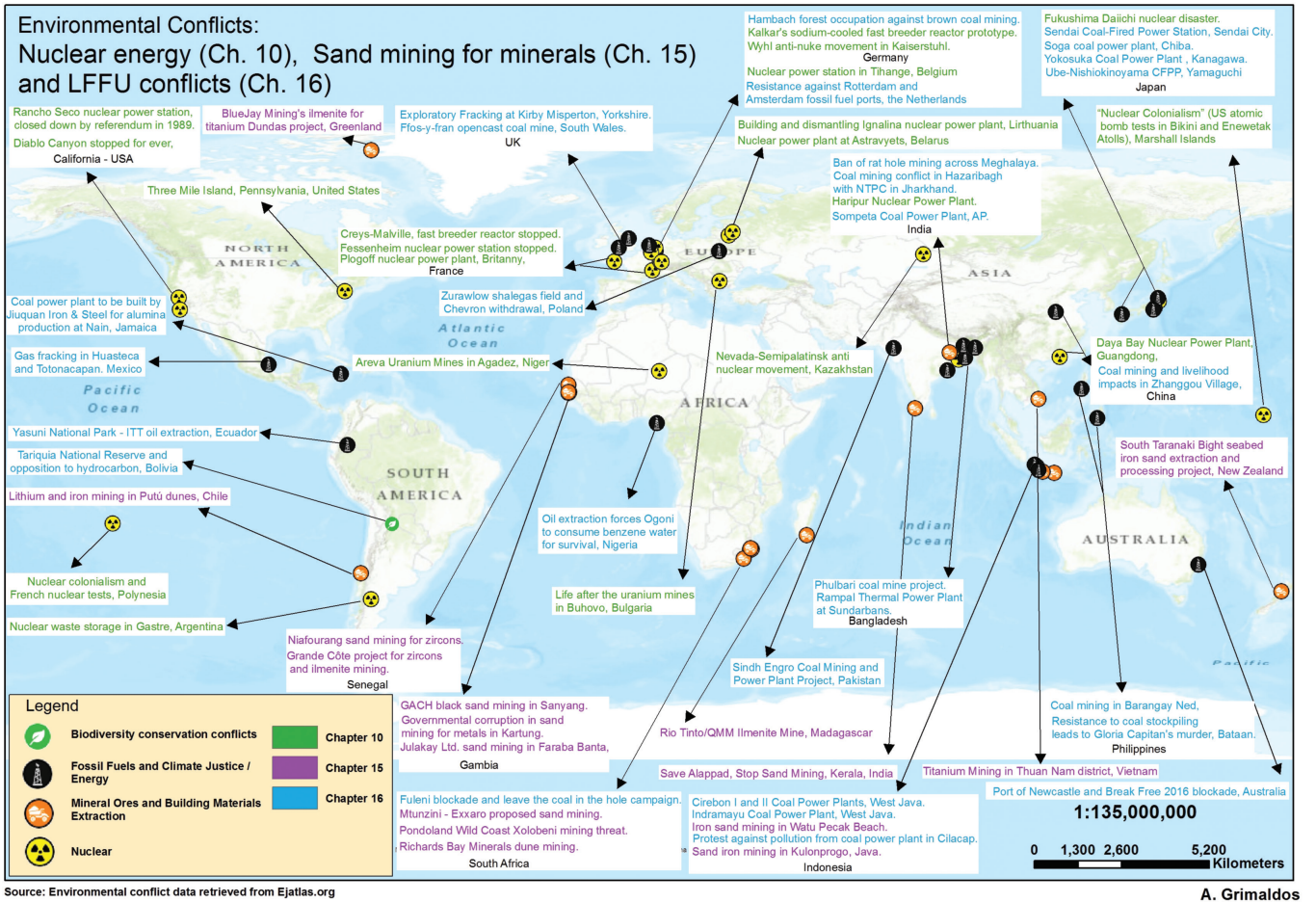

Source: A. Grimaldos

Figure 15.2 *Map of conflicts on nuclear energy, sandmining and LFFU (Chapters 10, 15 and 16)*

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assembly and plunder of machinery". Thirteen others were condemned to three months suspended prison sentence.

GCO has compensated the farmers with amounts up to five times higher than those imposed by Senegalese law (3,750,000 CFA francs/ha). However, the compensation scale was set in 1994 and has never been updated. It was considered insufficient by many villagers. According to the sub-prefect of Méouane, a total of 644 producers were impacted and compensated. Seven hamlets of Diogo and Foth were displaced in February 2017 to a new city, Medinatoul Munawara, with way less arable lands.

Land grabbing goes hand in hand with water grabbing. Since the beginning of GCO, the lack of water has been impacting the area, slowing down vegetable production. Underground water, previously available at 5 m deep, today requires wells of 12 m. In terms of employment, GCO did not keep the promise of granting one job per dispossessed family. They must find alternative sources of income, less sustainable than farming. Regarding health, the promised hospital at Darou Fall was not built but an ambulance in Diogo started operating by mid-May 2016. The associations of vegetable gardeners, with NGOs' support, organized their advocacy for the protection of remaining arable lands in the Niayes. The NGO Enda Pronat has been working in the area since the Diogo farmers' uprising in 2013, notably in Thiès, Taiba Ndaye, Darou Khoudoss and Diogo, to sensitize the populations on their land rights.

The project's own view is that:

> Given the itinerant nature of GCO's operations, neighbouring communities are mainly impacted by population displacement and the loss of access to agricultural and pastoral lands. As such, the community relations team helped resettle nearly 920 people from the villages of Diogo and Foth in 2016 and 2019. The communities themselves were closely involved in deciding how the process would be carried out (selecting the site, setting up the new village, assembling the housing and shared infrastructures, etc.). Substitute agricultural land was provided to the villagers, and a cattle route was set up near the villages.[1]



Source: Le Quotidien

Figure 15.3 The Grand Côte project for zircon and ilmenite mining in Senegal

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Zircon Mining in Separatist Casamance[2]

In Casamance, Senegalese region south of the Gambia, locals are defending their sustainable and traditional livelihoods against zirconium mining and weakening of the Niafrang dune. In this case, local populations, conservationists and some outside foreign tourists act together. There is a confluence between the environmentalism of the poor and biodiversity conservation. The case also has geopolitical implications, given the separatist movement of Casamance; the struggle against mining has attracted outside support.

The dune of Niafrang on the north coast of Casamance is coveted for the zircon of its sand. The region was weakened by a civil war which lasted many years. A ceasefire was signed between the Senegalese government and the rebel forces of the Casamance Democratic Forces Movement (MFDC) in December 2004. But the conflict has not been fully resolved and the MFDC is not entirely disarmed. In November 2004, a ministerial decision granted an exploration licence to the Australian mining company Carnegie Ltd. People were not consulted and only informed much later. The first hearing of the public inquiry took place in 2011, while the Casamance people continued to denounce the lack of information: type of mine envisaged, drilling techniques to be employed etc. The villages around the Niafrang dune depend on rice growing, market gardening, fishing, apiculture, oyster farming and tourism. The rice fields are protected from the sea and its saltwater by the dune. Casamance people know that this activity would contaminate the groundwater and eradicate the rice fields and the market gardeners, since the coast and the rice fields are below sea level.

The International Committee against the Zircon in Casamance was mobilized on social media and with protests on the ground, debates and international petitions. The EIAs were contested. The MFDC also expressed its opposition to the project. The Senegalese government, concerned by the involvement of MFDC, deployed more military forces in the area. Populations near Niafrang dune clearly expressed their preference to preserve their rice fields against the promises of employment in the mine (160 jobs promised in an area of more than 10,000 inhabitants). The dune is essential for wildlife, it is a crucial stop for migratory birds and it is where the turtles lay their eggs; moreover, the Marine Protected Area of Abene would also be contaminated by the exploitation.

SAND MINING IN THE GAMBIA

Governmental Corruption in Sand Mining for Metals in Kartung

The country, of only 1.8 million people, is partly landlocked in Senegal. In the mid-1990s, the Gambia had decided not to allow sand mining in order to protect its coasts. Yet Carnegie explored Gambian coasts and started commercially exploiting three sand mineral deposits in June 2003. The sand mining in Kartung, Batokunku and Sanyang has been the subject of a great corruption scandal involving the former government under Yahya Jammeh's presidency. Investigations show that the permit granted to Carnegie was revoked in 2008 in order to benefit Gambian companies' ventures in relation with or under direct ownership of Yahya Jammeh himself.

By the end of 2015, the villagers of Kartung demonstrated asking for the closing down of the illegal mines. At least 45 people were arrested and sued, including young men and women. By early 2016, Kartung mining site was closed by the National Environment Agency. The company

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transferred its operation to the Sambouya deposit. Gamico is also involved in the exploitation of the Sambouya mine. The companies came and left one after the other without restoring the sites. They should have replaced the mined sand but left the ditches open. Flooded, the ditches attract mosquitoes all year round. The presence of crocodiles has also increased. The Inquiry Commission (set up by the new government in order to investigate the financial issues of the former government) visited the devastated sites in October 2017. The communities shared their concerns for the environment and the undermining of the agricultural activities, soil erosion and sea level rise. The sand mining ends up as exports to China and other countries.

Near Kartung there is another conflict in Sanyang and nearby villages. Women farmers lost their livelihoods, but their complaints to the government were unresolved and denied. In 2018, the Gambian government issued a mining licence to Gambia Angola China (GACH) Mining Company to mine black sand, which has high concentrations of zircon, silica and quartz, in Sanyang village, Kombo South.

Faraba Banta: Villagers Killed[3]

Quite near, the Julakay Group is operating in Faraba Banta without the village's consent. Jukalay's sand mining puts in jeopardy the villagers' rice fields as its activities might trigger the salinization of the soils. Women are particularly concerned as they are traditionally in charge of rice cultivation, guaranteeing food sovereignty. In January 2018, Faraba's Village Development Committee (VDC) made a request to the ministry of Local Government and Lands to revoke Julakay's mining licence. The VDC claims that operations harm the community and its lands. The permanent secretary at the Ministry of Lands was said to have set up a technical team to visit Julakay's mining site and verify VDC's claims. In May, the Inspector General of Police informed that Julakay's mining licence was in due order and the company was granted the permit to continue.

The villagers, especially the youth, were very unsatisfied with that decision and protested. Some villagers and VDC members decided to take the matter to the court. During the clashes on May 26th, the Gambia Police Intervention Unit (PIU), a paramilitary force, intervened and since then remained in the village surroundings and protected the mining site. The Inspector General of police argued Julakay pays a quarterly compensation equivalent to 1,789 euros to Faraba community, which denied receiving a dime.

In June 2018, the PIU killed at least two villagers during demonstrations. Others were injured and detained. "The PIU has a history of using excessive force against demonstrators, and escaped censure during former President Jammeh's abusive rule", said Jim Wormington, researcher at Human Rights Watch. After this lethal repression, five officers were suspended and the President of Gambia set up a Commission in Faraba Banta to hear witnesses. Also, women travelled to the capital, Banjul, to meet with members of the National Assembly and confront them. During another meeting, the elders asked Julakay for help "repairing road and bridge, building a local market for the women, and to helping in the rehabilitation of the village health centre, provision of job employment for the youths".

PUTÚ DUNES, CHILE[4]

The Putú Dunes are located 22 km north of the Constitución municipality, at the mouth of the Maule River. They cover 38 km long in their entirety along the beach, and they are a natural

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barrier that separates the wetlands from the sea, avoiding catastrophes in case of earthquakes and tsunamis. The users are recreational visitors, some for car and motorbike racing. The area is being processed to be declared a Nature Sanctuary since 2005, as it concentrates 40 per cent of the 240 regional species of fauna in addition to housing migratory birds. This is primarily a biodiversity conservation conflict. The participants in the defence of the Dunas de Putú include local EJOs; local government and political parties; neighbours, citizens and communities; recreational users; local scientists and professionals; and conservationists – but not peasant farmers or Indigenous peoples.

In January 2010, Aconcagua S.A., a Chilean subsidiary of the Australian firm South American Iron & Steel, secured concessions to exploit the area, which houses a large source of lithium, titanium, vanadium and iron. The calculations amount to 823 million tons of iron sand. There are permits granted for exploitation in the Junquillar area, south of Putú and a request for another 1,200 ha in the North Maule. The readiness with which the State delivered concessions aroused suspicion of parliamentarians in the area and generated a broad citizen movement. In January 2011, the Commission of Natural Resources sent inspection requirements, where it was asked why the declaration process as a sanctuary was paralyzed.

In the opinion of deputy Pablo Lorenzini, the authorities granted the concession to Aconcagua S.A. because they were unconcerned about environmental and tourism interests. Until 2012, the project was still under exploration as the declaration of Sanctuary of Nature was waiting. The Court of Appeals of Talca ordered that the mining work in the area be paralyzed, following a neighbours' and representatives' complaint about the company's aggressive, unauthorized intervention over the dunes. In April 2013, the Parliament approved unanimously a draft agreement asking the Executive to protect Putú Wetlands. They were officially declared Sanctuary of Nature in 2017.

"KIWIS AGAINST SEABED MINING"[5]

Across the Pacific from Chile, in New Zealand, we find a different coalition of protesters trying to stop a seabed mining project. The North Island's west coast is a unique marine ecosystem, with distinctive purple and black sand. The black matter is Titanomagnetite, a mix of titanium and iron. As well as being present on the shoreline, sand dunes and coastal hinterland, there is an even greater amount in the seabed. It was formed by the nearby volcanic cones Taranaki, Pirongia and Karioi. Ocean currents then moved the sand. The result is a series of deposits along 480 km of coastline from Wanganui to the Kaipara Harbour and in nearly 20,000 km^2 of the adjacent seabed.

Trans-Tasman Resources Limited (TTR) holds a mining permit to undertake iron ore extraction in the South Taranaki Bight, west of Palmerston North. In October 2013, TTR applied for marine consent to undertake iron ore extraction. In June 2014, the application was refused, it was appealed to the High Court. One of the primary concerns was the effect that uplifting the sand would have on the seabed environment. Based on the evidence presented, the Environmental Protection Authority (EPA) thought that the sediment plume created by mining would cause shading in the water column affecting primary productivity of phytoplankton and reduce light availability at the seabed affecting benthic primary productivity.

The project would have involved the excavation of up to 50 million tonnes per year of seabed material containing iron sand. Approximately 10 per cent of the material would have

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been processed offshore into iron ore for export, with the remaining material returned to the seabed. One of the key reasons for the EPA to refuse was that the existing interests were not taken into account. Acknowledging the criticism, the firm TTR developed a consultation plan that provided for open and inclusive consultation with the existing interest parties, *tangata whenua* (people of the land in Māori) and stakeholders that addressed the identified shortcomings and would improve the overall effectiveness of the consultation process**.**

In March 2015, TTR facilitated a visit for interested stakeholders to De Beers Marine (Pty) Ltd (DBM) in Cape Town, to provide the opportunity to "see and feel" the proposed equipment, witness the tried and tested technology and meet the scientists and regulatory authorities involved in monitoring DBM's offshore diamond mining activities. Invitations for this visit were accepted by the EPA, TRC and representatives of the Iwi Fisheries Forum.

In August 2016, TTR lodged a revised Marine Consent application with the EPA for the proposed South Taranaki Bight iron sands mining project. But the venture was opposed by "Kiwis against Seabed Mining" (KASM), Patea-based Ngati Ruanui, environmental groups Greenpeace and Forest & Bird, and by Talley's Fisheries. KASM is a civil society organization concerned about worldwide seabed mining. In 2016, a 6,000-signature petition was presented to Parliament by KASM and Ngati Ruanui calling for a moratorium. Much of their concern focused on the sediment plume that would be generated by the mine, killing low-living organisms and possibly causing fish to avoid the area and impacting on blue whales and Maui's dolphins.

In August 2017, the application to the EPA to mine South Taranaki's iron was granted on a split decision despite acknowledgement there could be "100% loss" of marine life on the seafloor. Protesters geared up immediately to fight this decision. Indigenous leaders said that the decision felt like a repeat of history when their land was being confiscated by soldiers in 1869. "These guys are only there for the money (…) there's going to be no life in that seabed for our children for tomorrow". Ngāti Ruanui and ten other environmental and fishing groups appealed the decision. By July 2021, there was no decision yet.

SAND MINING FOR BEACH MINERALS IN TAMIL NADU[6]

The main driver of many sand mining conflicts in India is the booming building industry, but also for minerals to export. Several firms have controversially been extracting sand from the coast of Tamil Nadu for such industrial minerals for many years. In 2013, journalist Sandhya Ravishankar heard about a district collector in Tuticorin preparing to raid some illegal sand mines in the region. When she phoned collector Ashish Kumar, he confirmed. Less than eight hours later, he had been transferred to another post. She heard of the entrepreneur S. Vaikundarajan, owner of VV Mineral (VVM), one powerful and controversial beach sand mining baron.

While Ashish Kumar was still at his post, *The Hindu* reported in August 2013 that

> Special inspection teams conducting raids at the sand quarry of VVM (…) found large-scale illegal sand mining along the stretches of beaches at Vaipar, Vembar, Periyasamipuram and its surroundings in Vilathikulam taluk. […] Mr. Ashish Kumar said that around 81,000 cubic meters of raw sand had been mined illegally on more than 30 hectares of *porombooke* [commons] land at Vaipar, whereas miners were legally entitled to mine only on four hectares of leased land… Based on five complaints of illegal sand mining by fishermen in June and grievances aired by them at a meeting

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> in July, a preliminary inspection was done… ahead of the raid. The fishermen raised fears of sea erosion and environmental hazards owing to indiscriminate mining at beaches'.

A fine was imposed on the offender. In 2017, *The Hindu* ran another report concerning illegal beach sand mining:

> As many as 30 godowns containing beach sand have been sealed in Thoothukudi district, according to Collector M. Ravikumar. […] During the search operation, the squads found a total of 455,245 tonnes of beach minerals and 312,314 tonnes of raw beach sand. The searches were initiated by the district administration in the wake of the suspension of Assistant Director of Mines Krishnamohan over allegations that he had produced fake documents (…).

Despite being threatened, Sadhya Ravishankar wrote reports in *The Wire* and *The Economic Times* that also largely raised awareness. By February 2021, VVM, which had an annual output of 700,000 tonnes of heavy sand minerals, was in deep trouble because its owner S. Vaikundarajan was sentenced to three years' imprisonment in a case involving the bribery of a senior official in the Union Ministry of Environment, Forest and Climate Change.

In conclusion, here we see a struggle from fishermen and some upright state officers against local firms which engage in large-scale sand mining.

TITANIUM MINING IN THUAN NAM DISTRICT, NINH THUAN PROVINCE, VIETNAM[7]

The EJAtlas holds 24 conflicts for Vietnam including "Exposure to Agent Orange, a case of ecocide" during the war against the USA and its long aftermath. Although environmental movements in Vietnam are somewhat curtailed by the political regime, there are well-known episodes such as the Formosa Plastics crisis (2016). There have also been movements against bauxite mining and sand mining.

One of the conflicts on titanium ores took place in the southern Thuan Nam district, where villagers in the area strongly opposed mining. In August 2012, the provincial People's Committee of Ninh Thuan province approved a titanium mining permit for the Quang Thuan company, covering 83.7 ha. Since then, the mining activities caused significant environmental pollution and led to respiratory inflammations and eye diseases. Further impacts include drastic reduction of groundwater sources and drying up of wells due to the company's tapping of water for ore processing. Consequently, it provoked an uprising of locals. Following many complaints, and in response to the company's lack of a licence to use groundwater sources for ore processing, a suspension was ordered in 2012. The provincial government asked for a new EIA as well as the establishment of clean water facilities for the locals. In 2013, the company was allowed to continue mining in a small area of 19.32 ha, since they would control environmental pollution.

However, when the company was going to fully resume its activities in March 2014, in the absence of the required clean water facilities, around 700 villagers gathered in front of the Phuoc Dinh commune's governmental building to voice their opposition. Some of them allegedly set fire to the company factory and equipment. The provincial government then decided to suspend the company's activities again, while investigating the factory burning.

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Six activists were arrested and charged. During the following week, thousands of people marched in Thuan Nam district to protest, demanding their release. They clashed against the anti-riot police, producing violent fights and injuries on both sides.

It was reported that the neighbouring southern district of Binh Thuan has the highest titanium reserves at an estimated 599 million tonnes, or 92 per cent of total national reserves. However, exploiting it without taking mitigating and environmental restoration measures has left the mines constantly covered with thick layers of dust that badly pollute the air and contaminate water sources.

IN JAVA, INDONESIA

Sand Iron Mining in Kulon Progo[8]

In Indonesia, there are several cases of coastal sand mining for iron ore resulting in violent conflicts. The "black gold" mining in Yogyakarta to extract titanomagnetite and other minerals takes place along the Southern Java coast. A network of peasants and farmers, the PPLP, struggled successfully against sand land dispossession.

Kulon Progo's iron sand mining project was a joint venture between Australia's Indo Mines Limited and Indonesia's Jogja Magasa Mining, and it began in 2007 on a sliver of land owned by the Sultan of Yogyakarta. Many local residents opposed this first pilot phase of the project. Their concern, said Suparlan, the director of the Yogyakarta office of WALHI, was that it could weaken the barrier against salt intrusion from the ocean into coastal farms. The mining venture proposed expanding its operation to cover a 1.8 km by 22 km area, home to some 20,000 people. Residents of Kulon Progo refused to discuss the land grabbing and continued to oppose. During several years of escalation of the opposition, several community members were sent to jail.

The farmers established the Paguyuban Petani Lahan Pantai (Association of Shoreline Farmers – PPLP). The careful efforts of more than 40 years had made the wasteland a fertile and productive zone: with chilli, aubergine, bitter gourd, castor bean, etc. the hands of the farmers had turned the landscape green. The key to their success was collective knowledge. The farmers' resistance in Kulon Progo is praised as an example of a struggle against power characterized by anti-politics, autonomy and self-management.

In 2009, the mining watch organization JATAM had condemned the violence at the proposed Australian-owned iron mine. Their press release said:

> police brutality towards the people of Kulon Progo of Central Java for protesting against the Australian mining company PT Jogja Magasa left 41 people injured. What happened that day is one of many examples of how the government has put foreign investor interests above the local communities' interests (…) The extraction of iron puts the livelihoods of 123,601 local farmers and fishers at risk.

It also related that people marched against the project and refused the public consultation, but the government granted the permit anyway. JATAM added that damaged ecosystems will not be able to stop the strong currents and sea winds from eroding the coastline. The site is also prone to earthquakes and a potential tsunami. It would also move sand dunes which serve as a corridor for migratory birds.

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On the cultural side, the vocabulary of resistance included a Chili Festival against sand iron mining in 2013. The crowd was invited to walk in procession to a field near the coast, where they did a symbolic "first picking": "the most important focus for us is to maintain our livelihood – planting and harvesting. Because if we leave it, we are not farmers anymore, and we lose our identity". Planting in Kulon Progo is an act of resistance.[9]

By 2017, there was a new struggle against the construction of New Yogyakarta international airport. It is connected to the previous struggle, which was won not through legal actions but through community grassroots riots, arrests and massive international solidarity that went beyond the language of the public policies of the state.

Iron Sand Mining in Watu Pecak Beach[10]

Extraction took place in Selok Awar-Awar village in the Pasirian district, about 18 km south of Lumajang. This area is used for the Hindu ritual ceremony called MELASTI (Larung Sesaji). The local residents believed a flood soaking their homes happened because of the destruction of coastal ecosystems. International, national and local activists asked for the stoppage of quarrying activities. In September 2015, the group staged a protest action against sand mining in Watu Pecak Beach. The protest halted the quarrying and blocked trucks transporting the iron sand. Three days after, the environmental activist Salim Kancil was reported to be killed by a group of more than 30 men. The environmental activist Tosan was also attacked. International and national organizations asked the government and authorities to ask police and other related institutions to investigate the case.

KERALA, INDIA: SAVE ALAPPAD BEACH FROM MINING OF ILMENITE, RUTILE, ZIRCON, MONAZITE[11]

Alappad panchayat is a 16-km-long, narrow strip of land in this densely populated coastal area. It lies between the TS Canal and the Arabian Sea. The mineral-rich sand (commonly called black sand) is called Chavara Deposits. Extracted by Indian Rare Earth Limited (IREL) and Kerala Minerals and Metals Limited (KMML), the minerals find uses in the titanium dioxide pigment industries and nuclear power reactors.

Alappad beach risks being encroached on by the sea and threatens to displace over 5,000 families off their land and livelihoods. Protests against the mining companies began with a fight for labour and land issues. This changed in the 1990s. The very popular song for environmental protests in Kerala, *Ini varunnoru thalamurakku, Ivide Vasam Saadhyamo* (Will this land be able to support the new life?), was written by the poet Injakkadu Balachandran in 1992 for the Nature Protection March.

The tsunami of 2004 wreaked havoc and protests intensified. Roads to the site were blocked by protestors. This led to the closure of the sites for about two years. Around 2017, protests were consolidated, and the popular social media campaign "#SaveAlappad, Stop Mining" followed. Various social and cultural activists then turned out to support the locals. They also declared an indefinite relay hunger strike that lasted over 100 days. Taking cognizance of a viral video by a 17-year-old girl emotionally talking about the environmental impacts of the mining in her community, the National Green Tribunal sought a report from the district administration.

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Source: Save Alappad campaign

Figure 15.4 Alappad, a campaign poster

This report concluded that "it is unlikely that beach mining can be conducted without erosion". It also points out loss of land resources, traditional fishing and habitats, as well as the deprivation of the natural coastal protection, altered coastal microclimate and the effects on the recreational and cultural aspects of the community. A comparison of satellite images from a decade ago proves that the impact of irresponsible mining is leading to the shrinking of the coast. It also affects the rituals and local practices of the community. For example, the localities are not able to practise Kambavala, a method of fishing using the coast to lay the nets.

A lot of people who were dependent on foraging seafood have lost their source of food and income too, and the 10,000 fishermen who live in the villages risk a loss of livelihood if Alappad goes under the sea. The mining has also caused saline water incursions into the area making it unfit for cultivation of any kind. Moreover, if the sea links up with the backwaters, the rate of intrusion of the seawater will be unpredictably large. This will render the national waterway TS Canal useless and will also affect the land and people beyond Alappad.

IN SOUTH AFRICA

Stopping Sand Mining in Xolobeni on the Pondoland Coast[12]

Mineral Sand Resources (MSR), a subsidiary of Australian company Mineral Commodities Ltd (MRC) applied to mine sand minerals discovered on the Xolobeni coast in 2002. Over a lifetime of 22 years, the mine would extract 9 million tons of ilmenite, titanium-iron oxide, rutile, zircon and leucoxene from sand dunes south of Port Edward in the Amadiba traditional area. Although mining rights were initially granted by the Department of Minerals and Energy in 2008, the decision was suspended after legal interventions by the Amadiba Crisis

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Committee and the Legal Resources Centre. This is perhaps the most famous of all conflicts on sand mining for metals around the world.

The Amadiba Crisis Committee represents community members who have been fighting the mining development for many years. They argue that tourism should be the mainstay of the economy in this "Wild Coast", which holds remarkable biodiversity. Their spokesperson, Nonhle Mbuthuma, was threatened. She told *Ground Up* that Sikhosiphi "Bazooka" Rhadebe, their chairman, had phoned her to check on her safety. He had spoken of a hit list containing their names and others. This was just before he himself was killed in 2016.

MRC, through its subsidiary Transworld Energy and Minerals and local partner Xolco, proposed to mine old sand dunes at Xolobeni on the Pondoland Coast. Approximately 40 km long and up to 3 km wide, the area falls within the Pondoland Centre of Endemism (PCE), a botanical hotspot. If allowed, it would adversely affect the PCE as well as amaMpondo people's traditional land. They would need to leave the land that supports their agrarian livelihoods, traditions and spiritual and customary land-use practices. The Amadiba Crisis Committee accused MRC and its local partners and allies of using violence to intimidate the community into accepting the mine, with the complicity of the police: threats, armed attacks and raids. Several people have been injured, some seriously.

Members of the Pondo nation are deeply divided over the proposed mine. The murder of Rhadebe marked a crisis that has been building for over two decades around land and chiefs in rural black South Africa. A raft of laws since the advent of democracy has progressively given power over land and people to traditional leaders. Many chiefs are scrambling to push themselves to the forefront of empowerment companies for self-enrichment, which leads to confrontations with people. The government just keeps making things worse. This has become obvious with regard to landholding and decision-making about communal land. Land restitution for people who had been dispossessed of their land under apartheid began with the opening of the land claims process between 1994 and 1998. The Communal Property Association Act of 1996 created a mechanism for people who successfully submitted restitution claims to hold their restitution land communally and make decisions collectively. Traditional chiefs expressed vociferous objections to this and some simply allocated restitution land belonging to CPAs to others. The consequences have been devastating. What is alarming is that these traditional councils are undemocratic institutions in which women generally have insignificant representation.

In 2018, the community won a landmark court case. David Fig reported:

> On 25 November 2018, a long-awaited high court judgment in South Africa changed the way in which mining companies must operate in relation to rural communities, the subjects of customary law. In the past, mining companies have resorted to superficial consultation with communities or their designated leaders in order to gain a mining licence. From now on, the principle under which licences must be granted has to rest on community consent that is "full and informed". […] This judgment has led to ecstatic celebration in the Xolobeni area. The conflict goes on, however. (Healy 2022)

Richards Bay Minerals Dune Mining in South Africa

Mining of ilmenite, rutile and zircon from deposits in forested coastal sand dunes has been taking place north of Durban since the mid-1970s, by Richards Bay Minerals (RBM), a subsidiary of Rio Tinto. After destroying the biodiversity-rich coastal dune forest, dredgers in

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giant ponds are used to extract sand that contains the mineral ores, then separated using centrifugal and magnetic processes. Minerals are trucked to the smelter, where they are processed into raw materials such as titanium dioxide and pig-iron for export.

After mining, the remaining sand is dumped back, bulldozed to roughly resemble the original dune, and then crudely revegetated with mostly alien species not found in the original forests that were removed. The dredging and separation process uses large amounts of fresh water pumped from rivers. Together with the smelter, the mining also uses huge amounts of dirty energy generated from coal.

Local people, who have been removed from their land and endured the polluting emissions and dust from the mining, transportation and smelting on their doorsteps, remain poor despite the great wealth extracted from their land by the company.

Mtunzini – Exxaro Proposed Sand Mining[13]

Next to Richards Bay, people in Mtunzini and surroundings are resisting a proposal by Exxaro to establish sand mining operations in the area immediately to the south of Mtunzini. Mining will be for titanium, ilmenite and zircon. The community has formed an association to oppose the mining and employed a lawyer to assist with legal aspects.

Exxaro Sands is already mining at Hillendale, about 20 km north of Mtunzini. This mine was due to close in 2012 and its plans are to physically move the plant along the highway to mine at Fairbreeze immediately south of Mtunzini, before continuing to Port Durnford and Insese to the north. The proposed mine would degrade the soil and ruin the landscape for 60 km along the scenic N2 route.

IN MADAGASCAR: RIO TINTO / QMM ILMENITE AND ZIRCON SAND MINING[14]

In Madagascar, the mining of sands containing minerals (Toliara, in Ranobe, Chapter 13) also destroys the environment and impoverishes the peoples. Since 2010, the Chinese company Mainland Mining Ltd has been exploring ilmenite and zircon in the Vatovavy-Fitovinany region, in the south-east of Madagascar. They have got 26,000 *carrés miniers* along the Pangalana River. The area is a property of QIT Madagascar Minerals (QMM), which is a joint venture between Rio Tinto and the Malagasy government.

Before this, in the extreme south-east corner of Madagascar, QMM built a mineral sands mining operation near Taolagnaro supported by the World Bank. QMM intends to extract ilmenite and zircon from heavy mineral sands over an area of about 6,000 ha along the coast over the next 40–50 years. This is one of the most ecologically diverse regions of Madagascar, but also one of the poorest and most isolated; 82 per cent of Anosy inhabitants live below the poverty line. The construction of the Rio Tinto QMM project started in January 2006. It displaced local people from their land and required the removal of rare fragments of coastal forest and heathland found only in Madagascar.

Among local people, differences of understanding about the project have already led to conflict and mistrust, further compounded by the lack of communication. In January 2012, local communities from Taolagnaro demonstrated in the street, carrying banners and asking for the resignation of the Chief of Anosy region.

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In addition, many social conflicts were observed on the ground. Property prices have increased dramatically and inflation has severely affected the livelihoods of most Taolagnaro inhabitants. Some long-term residents left. Most of the Malagasy population hold customary land rights with lower legal status despite having been held for generations. Changes to local property ownership were extended significantly by revision of the land laws. This has affected local people's ownership of their homes.

The most important biodiversity impact is the loss of coastal forest habitat at Mandena, Petriky and Sainte Luce. By 2019, it was reported that QMM had violated national law, entering a "sensitive zone" and raising the possibility that radionuclide-enriched tailings could enter a lake that local people use for fishing and drinking. Rio Tinto acknowledged the breach for the first time in March.

DUNDAS ILMENITE PROJECT IN GREENLAND[15]

Finally, we now visit Greenland, where a large project of ilmenite extraction is going ahead. This case is classified in the EJAtlas as a "latent conflict", which means that there is some tenuous opposition and that it may grow, although in the north of Greenland there is almost no local population. Opposition might come from outside.

In April 2021, the "anti-mining" left-wing Inuit Ataqatigiit party won the elections in Greenland. The social-democratic Siumut party came second, having been in power for all but four years since 1979. They decided that the Kvanefjeld mine with major deposits of rare minerals would not go ahead (Chapter 7). However, it appears that BlueJay Mining's Dundas titanium project will go ahead in the Municipality of Avannaata. Construction was scheduled to commence in June 2020. By 2021, it was announced that the initial 30-year period exploitation licence for Dundas was granted. A financial study estimated the after-tax net present value to be $83.1 million with 67.1 million tonnes of ilmenite. The company's other assets in Greenland include the Disko-Nuussuaq project, the Kangerluarsuk project and Thunderstone. In Finland it has a joint-venture agreement with Rio Tinto.

In 2013, after the project was proposed by BlueJay Mining Plc, WWF wrote a report on titanium and several other mining projects in Greenland, raising concerns about future management of the "Last Ice Area". WWF urged the importance of public discussion in the consultation process, especially with environmental NGOs and local groups. Mining industries have become increasingly interested in Greenland; however, the country's scarce population remains divided over its mining industry.

With the Dundas ilmenite mine, the plan is to mine the material in Greenland and then ship it to a processing plant in Canada in the six months during which shipping routes are not frozen. The north-west passage (a route to Asia) might open up throughout the year. In 2019, the Rio Tinto company received a 42,000-tonne bulk sample from the project developer to analyze climate change as an opportunity to mine Greenland's soils.

CONCLUSION: A BUSINESS BRUTAL TO HUMANS AND NATURE

Heavy metallic sand mining operations (HSM) are relatively recent, having begun on large scales around the late 1930s in Australia (Bisht and Martinez-Alier 2022). The growth of the industry was linked to war given its applications in the military sector. Since then, the

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industry has expanded to many other geographical locations: Sub-Saharan Africa, China and other Asian countries. Important uses of the sand mining for metals are in pigments and paint industries, ceramics industry, aerospace and shipbuilding, medicine and prosthetics, and chemical processing units or factories, including nuclear energy. Ilmenite, as we have seen, is considered the most important ore of titanium and has its commercial uses in the production of paint, adhesives and personal care products, and in various alloys.

Currently the extractive industry is largely controlled by corporations such as Rio Tinto, Mineral Commodities, BlueJay Mining, Astron Mining and Base Resources but there are also local firms. Although sand mining for metals is a small percentage of overall sand and gravel mining for the cement and building industries, it is important at new fragile commodity extraction frontiers. They are highly disruptive to local ecosystems. It is an itinerant industry along beaches. In many cases, extraction has involved the destabilization of coastal dune systems which are both rare ecosystems as well as serving important protective functions for coastal communities. In other cases, HSM has involved the destruction of coastal forest ecosystems which, apart from being rare ecosystems, are also extremely biodiverse as well as providing livelihoods to local communities. In some recent cases, extraction under the sea disrupts marine life. These minerals can possess radioactive elements. These can leach into local aquifers and result in groundwater pollution. Mining operations have also resulted in varying levels of localized conflicts which have spanned from threats to and arrests of local journalists and activists, to physical violence and murder of protesters, to the threat of war by local anti-State and anti-mining rebel groups.

Bringing together the cases on sand mining in the EJAtlas is quickly done because the number is relatively small, as it is a new and difficult commodity extraction frontier. The EJOs and other NGOs active in the resistance are sometimes conservationists but at other times they are pro-peasant organizations (such as JATAM and Walhi in Indonesia or the Amadiba Crisis Committee in the Xolobeni coast in South Africa) or defend the fisherfolk (as in Senegal and the Gambia, or in Kerala and Tamil Nadu). There is intersectionality of agrarian and environmental interests and values. In a few cases, social actors are Indigenous (like in the New Zealand case of sea-bed mining) but also scientists and professionals, or recreational users (as in the Putú Dunes in Chile).

The geological opportunity structure that allows heavy sand mining is combined as in the Gambia, for instance, with the end of a corrupt dictatorship that provided a political opportunity. Whatever the local circumstances, these local movements have much in common. Without exception, we realize that the minerals mined from sand will go to export and not to the local activities. Corruption of various kinds appears. There are alliances between the environmentalism of the poor and the conservationists (as in Alappad in Kerala, where a culturally strong movement has arisen at state level). In some cases, the governments suggest compensation to be paid to the local inhabitants, and this raises the general issue of commensuration as a social and political process imposed by force. In any case, "the poor are cheap". They are also sometimes in danger of paying for the defence of nature and human livelihoods with their own lives, as we have seen in the Xolobeni in South Africa, in India, in the Gambia and in Indonesia in the present chapter. Similar conflicts exist in the Philippines, Kenya and other countries as described in previous chapters.

Overall, extraction of sand metallic minerals results in large-scale and serious local ecological degradation, negative environmental and social impacts which are cost-shifted onto local communities. There is an *international division of nature*. The beach sands are materials involved in ecologically unequal trade. These mining operations need to be understood

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within the framework of extractivism. The conflicts around them must also be seen as part of the world movements for environmental justice.

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16. Blockadia and climate justice: LFFU movements

INTRODUCTION: KEEP THE FOSSIL FUELS UNDERGROUND

In this book we discard the miraculous coming of a "circular economy" whether by virtue of the Chinese law for its promotion of 2009 or by the many directives from the EU Commission in Brussels. Meanwhile, India is making progress in its transition to coal (Roy and Schaffartzik 2021) while China has been financing coal-fired power plants (CFPPs) also outside China. This is a crucial chapter in this empirical book. It focuses on the grassroots actions around the world preventing greenhouse gas (GHG) emissions from the supply side. Meanwhile, the extraction of coal, oil and gas still increases. The COPs have made no difference in the Keeling curve. It is difficult to decrease GHG emissions because of the close link between fossil fuel energy, economic growth and political power; and also because the unburnt fossil fuels in the ground become "stranded assets".

In 2019, global carbon dioxide (CO_2) emissions caused by humans from combustion of fossil fuels reached a record high of 37 billion metric tons. About 5 billion more must be added from net deforestation and land use changes. The oceans absorb about one-third of the emissions. The emissions are still going up in 2022. The envisaged compromise from international negotiations is a reduction of about 20 billion tons of CO_2 per year. How much of this can plausibly be achieved by the "leaving fossil fuels underground" (LFFU) burgeoning movements? (Temper et al. 2020; Pellegrini et al. 2021, 2022; Martinez-Alier, 2021). Their supply-side contribution to the required decrease in CO_2 emissions could be complemented by disinvestment activism from shareholders and stakeholders, by emissions quotas by country, carbon taxes, changes in technology, economic degrowth and rapid population degrowth.

Assume that activists in the USA would manage to stop the Sherer CFPP (coal-fired power plant) in Juliette, Georgia, which burns 11 million tons of coal per year with four units each of 880 MW, and produces altogether 27 million tons of CO_2 per year. Or assume that in Taiwan a social movement would close down the Taichung 5,500 MW CFPP, said to produce 40 million tons of CO_2 per year. In this chapter, we look at a diversity of LFFU movements against fossil fuel extractivism (Martinez-Alier 2021). Their repertoires of actions include hunger strikes, hanging the national flag upside down, blockades, strikes, street marches, petitions to the authorities, climate lawsuits where citizens sue governments and corporations for the violation of their right to a healthy environment

Brown and Green Anti-extractivisms

Environmental conflicts arise concomitantly to the growth and changes in the current social metabolism. Some are born from the use of fossil fuels. Others might arise when attempts are made to narrow the "circularity gap" by introducing forms of energy different from the fossil

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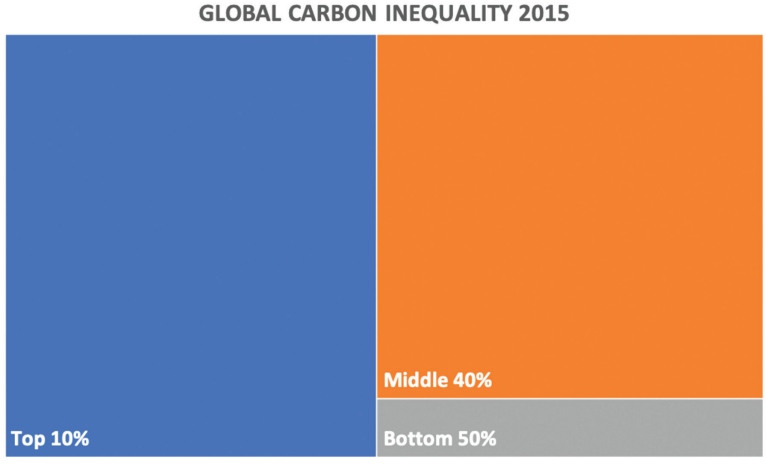
fuels (hydropower, "biofuels", nuclear, wind-mills, photovoltaic), when new or old metals are mined for the electricity transition (lithium, cobalt, nickel, copper), or by the current plunder of light balsa wood for windmills by Chinese firms, or polluting instances of local recycling of metals damaging health. There are also many conflicts arising from the materiality of the communications industry – the reliance of the media technologies on the extraction of minerals such as coltan, the dumping of electronic waste, and the use of great amounts of electricity (Parikka 2015).

Some analysts are more intrigued by the tricks of carbon credits, the rare earths and rare metals, the promises of green energy than by the "boring" existing industrial metabolism. However, the extraction of the "old" fossil fuels keeps growing. Oil might have reached peak extraction, but not coal and gas. Local complaints against fossil fuels contribute to climate justice by preventing local damages and avoiding GHG emissions although there are many different issues involved in such protests that cannot be reduced to tons of GHG or billions of dollars, such as avoidance of oil spills, mining accidents, coal dust or pneumoconiosis (Liu 2021).

Climate Justice: Top Down or Bottom Up?

The production of carbon dioxide (the main GHG) is disproportionately biased to rich countries and rich people both historically and at present. Figure 16.1 summarizes the present distribution by deciles of population. The 10 per cent richest produce 50 per cent of emissions. The 50 per cent poorest produce less than 10 per cent and their emissions present no problem because they would be recycled by the new vegetation and the oceans.

This chapter frames the issue of mitigating climate change as an effort from bottom-up movements. Economic degrowth in rich countries, stopping population growth, public policies



Source: Marina Requena, data: Kartha, S., Kemp-Benedict, E., Ghosh, E., Nazareth, A. and Gore, T. (2020). The Carbon Inequality Era: An assessment of the global distribution of consumption emissions among individuals from 1990 to 2015 and beyond. Joint Research Report. Stockholm Environment Institute and Oxfam International

Figure 16.1 Percentage of carbon dioxide emissions by world population

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and changes in technologies might help, together with a firm LFFU grassroots movement. Those at the bottom 30 or 40 per cent in Figure 16.1, whose GHG emissions are livelihood emissions and not luxury emissions, can claim with reason to be in favour of Climate Justice. The notion of Climate Justice has two different origins, as a "bottom-up" complaint against the disproportionate distribution of historical (and present) emissions of GHG compared to the distribution of the likely effects of such emissions (Agarwal and Narain 1991); and as a "top-down" approach discussing and dictating the principles of justice that should apply to climate change in an intragenerational and intergenerational context. For instance, are John Rawls' principles of justice applicable to climate change? In an article in *Development and Change* in 2015 I summarized these two approaches, comparing two books on climate justice, one by academic Henry Shue and one by activist Naomi Klein.

Henry Shue, from Merton College, Oxford, is a well-known writer on climate justice. I place him as a top-down author, in contrast to Naomi Klein and to myself, who are bottom-up authors. Henry Shue believes that there should be effective public policies coming from international negotiations. He was influenced over the years by the Conferences of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) and by the reports from the International Panel on Climate Change (IPCC). Shue's work as a moral philosopher and expert on international relations inspired the Climate Justice initiative of the Mary Robinson Foundation and the World Resources Institute. Geoengineering techniques against climate change, with their own set of moral and political issues, also became relevant with time (Hamilton 2013). Shue believes in top-down public policies but he was impressed by Anil Agarwal's and Sunita Narain's bottom-up booklet, *Global Warming in an unequal world: a case of environmental colonialism* (1991), from which he borrowed a basic tenet of environmental justice. Namely, the difference between subsistence or livelihood or necessary emissions of carbon dioxide and 'luxury emissions'.

There are great differences in the use of energy between people, and the reduction effort should be made by the rich. We all need a minimum of energy as food energy or 'endosomatic' use energy, as Alfred Lotka said (1921). This is 'vital energy' as Frederick Soddy, the Nobel Prize winner, wrote in his books. We also all need a minimum of 'exosomatic' energy. Shue rightly insists that climate policy is also energy policy. Many people in the world will increase their energy use. Excessive emissions of GHG imply a unilateral appropriation of sinks, whether they are new vegetation, the oceans or the atmosphere as a temporary deposit. Not only are emissions unequally distributed, but positive harm is also being done to the environment. Could there be a system of international environmental justice as in the case of war crimes? For instance, "bottom-up" activism in the form of court cases based on damage caused by climate change have caused concern among governments of rich states or fossil fuel companies, as in the Kivalina village vs. Exxon court case (2008). The United States representative at the COP in Copenhagen in 2009 (Todd Stern) recognized the US historical role in putting emissions in the atmosphere. Nevertheless, his government had no sense of guilt and objected to the word "reparations". However, a counterpoint could be the principle of 'strict liability' as in domestic environmental legislation in the US and the EU. Shue distinguishes between punishment and responsibility – rich industrial countries are certainly responsible for accumulated emissions. Nevertheless, in the Paris Agreement of 2015, a clause of "no liability" was imposed by rich countries, and meekly accepted by the governments of the world.

Olivier Godard (2012) argued that insistence on repayment of the climate debt irritated rich countries and could become counterproductive for the success of international negotiations.

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I have myself long argued instead that using climate debt as a means to put pressure on rich countries would be the best contribution from the global South in the negotiations. Some of the most inspiring bottom-up proposals from environmental groups in Nigeria and Ecuador since 1997 on 'leaving oil in the soil', and the demands from the South for repayment of the ecological debt and/or the climate debt since 1992 (Warlenius et al. 2015), including payments for 'loss and damage', have failed at the COPs.

The economics of climate change do not provide good guidance for international agreements. Shue (1994, 1999) appropriately mentions Cline (1992) and Howarth (2011) as economists who asked for very urgent action against climate change and who disputed the pertinence of a discount rate applied to future benefits obtained from present reductions of emissions. However, at the end he praises Nicholas Stern's (2008)[l] description of climate change as 'the largest market failure' ever, instead of one of the largest infringements of rights ever. Shue rightly disagrees with the application of Ramsey's rule of discounting because we can no longer assume that there will be economic growth. However, Nicholas Stern also discounts the future precisely because of this assumption.

Shue proceeds to consider the virtues and shortcomings of the 1997 Kyoto Protocol that allocated property rights on carbon sinks and reservoirs to rich countries in exchange for a promise of small reductions in emissions. Meanwhile, the problem looms larger because what matters is the accumulated stocks of carbon dioxide in the atmosphere. So even if peak carbon dioxide emissions are reached, this comes too late. Shue's book ends by asking whether industrial civilization has committed an "unforgivable sin".

***

In contrast to Shue's top-down approach, Naomi Klein's *This Changes Everything* (2014) is more optimistic because she relies on bottom-up activism. Her book was a powerful call for reinforcing an existing Blockadia or LFFU global movement and tried to put climate change at the centre of politics before the 2015 COP in Paris. It denounced the inaction of the UN after Copenhagen 2009, and the failure of top world politicians to face climate change. Naomi Klein learned about the climate debt in 2009 from the young Bolivian ambassadress to the UN in Geneva, Angelica Navarro. At that time, we naively expected presidents Evo Morales from Bolivia and Rafael Correa from Ecuador to become champions in the struggle against climate change. Naomi Klein quotes Sunita Narain saying, "I am always being told — especially by my friends in (North) America — that… issues of historical responsibility are something we should not talk about". Klein was at Copenhagen in 2009, she protested alongside activists. She explains with humour her participation as an invited (or uninvited?) guest at the Heartland conferences reuniting politically motivated climate change deniers, and also at a retreat of top experts on geoengineering methods such as Ken Caldeira and David Keith, sponsored by the Royal Society in Chicheley Hall. Klein believes in the environmentalism of the poor and the Indigenous much more than in the environmentalism of governments or the Big Green organizations.

Her book was written following a methodology of action-research with forays up to the blockades against open cast gold mining in Greece, against shale gas fracking in Romania, against oil pipelines in Canada and into the marshes of Louisiana to inspect the damage from the BP oil spill. Drawing also on reports from the EJOLT project (Temper et al. 2013) and other sources, she reconstructs early proposals to leave oil in the soil in the Niger Delta and in Ecuador, and the founding of Oilwatch in 1995. Klein's book includes travel to the Alberta

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oil sand devastation, and her participation in the resistance to the Keystone XL. It shows the movements against fracking in France and elsewhere, as well as the resistance to mountain-top coal removal. Naomi Klein could have travelled even more to reinforce her point, but she travelled enough.

Naomi Klein believes in the importance of social reproduction and care, and the power of regeneration of life on which she could have quoted Georges Bataille's (1947) *La Part Maudite*. Her labours, her written work and documentaries are not only for the social movements at present, they are also for the benefit of life of our children and of life on the planet. She quotes Article 71 of the Constitution of Ecuador on the Rights of Nature, including the obligation to respect and restore the regenerative powers of Nature. The "right to regenerate" is a keyword of her book calling for a bottom-up global climate justice movement, linking up with other movements such as that for a universal citizens income. It must be a movement as vigorous and successful as anti-slavery was, and feminism has been and is at present. If we continue suffering the insufferable COP meetings, if the languages of ecological debt and liability or economic degrowth are not accepted by rich countries it must be because the environmental movement has become weak or has been bought off. In North America, after Rachel Carson's *Silent Spring* in 1962, the environmentalists achieved successes, reinforced in the 1980s by the movement from the US that fought against 'environmental racism' and proclaimed the 17 Principles of Environmental Justice in 1991. Klein believes that in the US and Canada the strength of environmentalism was lost in the neoliberal era of Ronald Reagan.

It is therefore time for more radical policies. According to Klein, the urgent task of decreasing GHG emissions falls mainly on the many Blockadia movements that form networks drawing their strength from the battles on the ground against fossil fuel companies. Klein's book explains that in December 2012,

> Brad Werner… made his way through the throng of 24,000 earth and space scientists at the Fall Meeting of the American Geophysical Union in San Francisco… Werner's own session… was titled 'Is the Earth F**ked?'… Standing in front of the conference room, the University of California, San Diego professor took the crowd through the advanced computer model he was using... He talked about system boundaries, perturbations, dissipation, attractors, bifurcations… in complex systems theory... When a journalist pressed Werner for a clear answer on the 'Is the Earth F**ked' question, he set the jargon aside and replied, 'More or less'.

There was one dynamic in the model, however, that offered some hope. Werner described it as 'resistance' This was "the likeliest source of 'friction' to slow down the economic machine that is out of control".

Klein might have used words from Walter Benjamin: such movements of resistance must vigorously pull down the emergency brake in the economic engine.

ENDE GELÄNDE, ANTI-COAL, ANTI-FRACKING MOVEMENTS IN EUROPE

The New York group CorpWatch sponsored in 1999 the first known international conference on climate justice, where a definition of bottom-up climate justice was put forward: "Climate Justice means opposing destruction wreaked by the Greenhouse Gangsters at every step of the production and distribution process—from a moratorium on new oil exploration […] to the

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promotion of efficient and effective public transportation"[2] (Kenny Bruno et al. 1999). With help from Oilwatch, since 1997 the debate arose on "unburnable fuels", questioning which reserves must be left untouched to avoid further increases in the concentration of carbon dioxide in the atmosphere (McGlade and Ekins 2015). One hundred years earlier, in 1896, Svante Arrhenius estimated how a rise in atmospheric carbon dioxide would increase Earth's surface temperature through the greenhouse effect. Little was done about it, and until the 1930s scientists were not really worried about increased temperatures; some thought this would favour agriculture in northern latitudes. In 1982 the Intergovernmental Panel on Climate Change (IPCC) was formed. The Earth Summit in Rio de Janeiro in 1992 led the way for the COPs (Conference of Parties) with outcomes such as the Kyoto Protocol in 1997 and the Paris Agreement in 2015. The COPs discourse has shifted more from mitigation to adaptation, accepting climate change as already irreversible, refusing liability but offering little bribes as compensation for damages.

In November 2017, at the COP23 in Bonn, world leaders and climate negotiators met to discuss their voluntary contributions to climate change targets. Members of the Pacific Climate Warriors campaign group (including members of the research group EnvJustice at ICTA UAB) gathered at the edge of Hambach mine before COP23 started, where for the last six years activists had occupied the treetops. Later that day, 4,500 nonviolent Ende Gelände ('Here and No Further') activists descended into the coal mine to blockade three diggers, as they braved police armed with pepper spray and on horseback. This is "degrowth in practice" (Figures 16.2 and 16.3).



Source: Ende Gelände

Figure 16.2 The white suits are emblematic of similar actions in Europe

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Source: Ende Gelände

Figure 16.3 Ende Gelände activists face the police in Hambach lignite mine in 2017

Annually since 2015 Ende Gelände has attracted thousands of activists willing to face police repression. In January 2023, young people (including Greta Thunberg and Luisa Neubauer) tried to blockade lignite mining in Lützerath. In a similar style, in the historical coal extraction region of Wales, the 'End Coal Now' camp in 2016 culminated with over 300 protesters entering the Ffos-y-Fran mine to temporarily halt operations. Whereas these acts of mass civil disobedience usually involve already engaged activists, other communities in Europe are also mobilizing against fracking for gas. Residents fear the emissions of greenhouse gas methane, water pollution, health and environmental impacts and geological instability on land. In 2013, people of Zurawlow, in Poland, occupied a field for around 400 days to blockade the fracking activities of Chevron activities, which withdrew. In the UK, in the first fracking sites nearing operation, direct action protests were active. Fracking for shale gas in Lancashire by the firm Cuadrilla caused earthquakes in the area, which after some scientific controversies led to the imposition of a moratorium on fracking (as will be discussed in Chapter 28). Direct action tactics have also been used to blockade fossil fuel transportation. In 2017, a coalition of climate activists called "Code Rood" (Code Red) called for mass civil disobedience against the fossil fuel industry in the port of Amsterdam. Some 300 people from the Netherlands, supported by groups from Belgium, the UK, Germany, France, Denmark and Sweden occupied the port, shutting down operations for one day. Amsterdam and Rotterdam are among the two largest petroleum and coal harbours of Europe.

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Figure 16.4 *Oilwatch poster (by Vanessita Roa) for a meeting in South Africa: "Keep the oil in the soil and the coal in the hole"*

In every continent communities are defending their land, livelihoods and the climate from fossil fuel projects. These networked spaces of resistance are Blockadia, the same movement as that of "leaving oil in the soil", "leaving coal in the hole" born in 1995–97 from the Oilwatch network (Figure 16.4). In what follows, an overview of these Blockadia or LFFU movements is presented. Often the local grievances are the main factor, and climate change reinforces arguments against fossil fuels.

A SAMPLE OF BLOCKADIA AND LFFU INSTANCES AROUND THE WORLD

Bringing together cases from the EJAtlas where people have used different types of protests to oppose fossil fuel projects, we presented in 2017 a preliminary cosmopolitan Blockadia Map. The selected cases included climate justice claims as well as localized environmental injustices. Many include the violation of human rights, contamination of water, soil contamination and subsidence, air pollution, land and water grabbing, loss of livelihoods, poor working conditions, biodiversity loss, cultural loss, health impacts, inadequate compensation, killings of activists and other forms of violence.

The concept of Blockadia originated from the resistance against Shell in the Niger Delta in the 1990s (Chapter 14). Following the destruction of the land, water and air of the Ogoni

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and Ijaw peoples through oil spills and gas flaring, there was first a peaceful uprising. This culminated in the killing of thousands of Delta residents. In 1998, the Ijaw Youth Council issued the Kaiama Declaration and started armed violence against oil activities in the Niger Delta, linking the fight for community control and against fossil fuel extraction (Temper et al. 2013).

These ideas have spread since 1995. The founding of Oilwatch in Lago Agrio, Ecuador, led to the Yasuni ITT initiative in 2007 with backing from the government to 'leave the oil in the soil', after the damage done by the Texaco-Chevron company (Temper et al. 2013). Acción Ecológica and other groups put forward this proposal. In 1997, environmentalists Nnimmo Bassey (ERA, Nigeria) and Esperanza Martinez (Acción Ecológica, Ecuador), founders of Oilwatch, had already proposed a moratorium on oil exploration and exploitation at the Kyoto parallel sessions (Temper et al. 2013). This was to protect local peoples, to protect local biodiversity and to prevent climate change. Blockadia and LFFU are then grassroots words for environmental and climate justice and sustainability, belonging to the global movement for environmental justice with roots in the mid-1990s.

Climate Justice and LFFU Movements

The premise of climate justice (Bond 2014) is that countries and persons who are responsible for the majority of historical and current GHG emissions should also take responsibility for the damages caused. It's closely linked to that of climate debt (Warlenius et al. 2015; Warlenius 2016) but financial compensation would not be enough, rather the climate brakes need to be immediately applied. The bottom-up position for climate justice is strongest when local arguments for LFFU come together with a global perspective of the need to decrease GHG emissions (Anguelovski and Martinez-Alier 2014).

This confluence between local grievances and environmental issues happened in India within the global youth movement Fridays for Future. The Farmers' movement in Punjab in 2020 decided the issue. The Indian police arrested Disha Ravi who had demonstrated with activists raising the slogan "fund farmers, defund coal" on cardboard, a defiant performative symbol (Figure 16.5).[3] A civil movement by a small group of non-violent young people was cruelly repressed because they were internationalists, and they suggested a radical change in the political and economic agenda of the Modi government.

I divide the rest of the chapter into two parts: coal-related conflicts, and oil and gas conflicts.

COAL RELATED CONFLICTS

The Philippines

One could multiply the instances of opposition to coal around the world (Temper et al. 2020; Roy et al. 2021). In December 2017 (Figure 16.6) members of militant and Indigenous peoples' groups staged a protest in front of the South Cotabato provincial capital in Koronadal City to oppose open cast coal mining and condemn the killing of tribal leaders.[4] Two thousand hectares for mining were to be used by the San Miguel Corporation to take out about 27 million tons of coal. The project was stopped (Delina 2021). This is again "degrowth in practice".

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Source: Disha Ravi

Figure 16.5 Demonstration of Fridays for Future in Bangalore, India

A Failed Coal Renaissance in Japan?[5]

The history of environmental conflicts in Japan falls into three periods (Chapter 2). A very recent period is marked by the reappearance of coal after the Fukushima disaster in 2011. Fuel, oil, gas and nuclear energy had been substituted for coal after the Mitsui Miike coal dust explosion of November 1963.

In Chapter 2 the failure to stop the Kobe CFPP was described. Another case is the Sendai Coal-Fired Power Station, Miyagi Prefecture. The residents opposed the operation of a small 112-MW CFPP that emits 670,000 tons of CO_2 per year. In 2014, the construction plan was reported by the media. It was developed by the subsidiaries of Kensai Electric Power Co. (KEPCO) and ITOCHU ENEX Co., LTD. The capacity of 112 MW does not require an EIA. The residents and city council requested a voluntary assessment but it was never answered until construction was completed. A citizen group called Anti-Coal Sendai was initiated. In September 2017, 124 Miyagi prefecture local residents filed a court case against Sendai Power Station Co., Ltd. This was the first lawsuit in Japan against a single coal-fired power plant.

The background to this and other conflicts on CFPP in Japan is as follows. Japan has around 90 coal power plants and companies were planning to build 30 more with a total capacity of 16,730 megawatts. As climate change issues grew in importance, the government, sought to increase reliance on nuclear power to 53 per cent of the total and reduce that of coal

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Source: Bong S. Sarmiento

Figure 16.6 *Activists and Indigenous people hold a protest in Koronadal, capital of South Cotabato province, against coal mining and other issues*

to 11 per cent by 2030. But the Fukushima disaster threw that plan into disarray. Under the current plan in 2019, the government was aiming to rely on nuclear power for 20 to 22 per cent of Japan's electricity, and coal for 26 per cent by 2030. This plan is also in disarray because of opposition to coal.

The next cases are also on CFPP from Japan. There are several protests against new CFPPs, e.g. citizens` protests against two 650-MW units in Yokosuka City in Tokyo Bay deemed to emit 7.26 million tons of CO_2 annually. This opposition is paralleled in Chiba prefecture against the Soga CFPP of 1,070 MW and estimated to produce 6.42 million tons of CO_2 per year (Figure 16.7).[6] Citizens worry that their living conditions will get worse in an already polluted area. There is strong support from other groups in Japan concerned with climate change. Actually, the amount of carbon dioxide per year released by the economy of Japan amounts to 1.2 billion tons of CO_2. Keeping Soga CFPP out would represent about 0.5 per cent decrease in emissions for Japan, provided this decrease is not compensated by new emissions elsewhere: hence the relevance of NIABY movements.

Another conflict in Japan documented from the Kiko network led to the cancellation of a 1,200-MW CFPP in Ube city. A counter-proposal also discarded was for a 600-MW unit producing 'only' 3.6 million tons of CO_2 per year. Meanwhile, *Asahi Shimbun* in April 2021 announced that Kanden Energy Solution Co. had abandoned plans to build two coal-plant units with a combined capacity of 1.3 gigawatts at Akita Port. This subsidiary of Kansai

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Source: FoE Japan

Figure 16.7 Demonstration against the Soga CFPP

Electric Power Co. said it is no longer feasible to operate coal plants amid the global push to go green and also cited the Japanese government's measures for promoting decarbonization.

One can estimate that bottom-up complaints have managed to avoid emissions of 40 million tons of CO_2 per year from new CFPPs. In 2021, the Kiko network was recognized with a Goldman Prize to Kimiko Hirata.

Lignite Mining and CFPP in Rajasthan, India

Here we shall introduce a conflict concerning both mining and a CFPP in a "traditional farming community" which is not an Adivasi community. In 2007, Rajasthan State Mines & Minerals Ltd (RSSML) signed a joint venture agreement with Raj West Power Limited (a subsidiary of Jindal JSW Energy) for setting up a lignite-fired power plant in the Barmer district of Rajasthan. A "Phase I" of 8 × 135-MW units was completed in 2013, and additional 2 × 135-MW units were planned.[7]

The estimated cost of the project was Rs 5,000 crore. The generation capacity was over 1,000 MW, the second major lignite power project in Rajasthan state. Lignite was to be sourced from neighbouring Jalipa and Kapurdi villages, and water would be brought from the Indira Gandhi Canal 200 km away.

The land acquisition for the project was initiated accordingly. The Rajasthan state government planned to acquire 8,000 ha of land for the project, estimated to affect 40,000 people. Fearing the loss of land and livelihood, villagers staged protests: they did not allow government officials to enter villages for land survey and formed an anti-acquisition group in December 2007.

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According to Kusvinder Singh, the lawyer representing the farmers, those who sold their land got monetary compensation. The organization filed a case against Jindal subsidiary RajWest Power in the Jodhpur bench of the Rajasthan High Court for the proper assessment of land and livelihood and for lack of measures to mitigate environmental and social impacts. The protesting organizations, Gram Sewa Sahakari Samiti and the Sangarsh Samiti started indefinite *dharna* (sit-in protest) in the villages. They stopped construction works at the project site. Notice that climate change from CO_2 emissions was not yet an issue

Coal in India: Chamalapura, Karnataka[8]

In 2007, the Government of Karnataka decided to implement three CFPP projects of 1,000 MW each in Gulbarga, Belgaum and Chamalapura. In August 2007, the Power Company of Karnataka Ltd (PCKL) issued a Global Invitation for Request for Qualification inviting bids for setting up a power plant at Chamalapura. Bids from several companies including Reliance Power and Tata were received. The power plant expected to acquire 1,200 ha of land and to be set up as a public-private partnership at Chamalapura, Mysore district, a region of verdant agriculture between the Kabini and Kaveri Rivers.

In addition to the loss of agricultural lands, displacement of 13,000 people and adverse impact on the groundwater, the CFPP would threaten two wildlife habitats: Rajiv Gandhi National Park at Nagarhole and Bandipur National Park. This proposal quickly met resistance from affected people, environmentalists and social action groups. Cutting across socio-economic barriers and urban-rural divide, the agitations were conducted independently by civil society organizations, with vigils around the project site, street demonstrations, *rasta roko* (traffic road disruption), etc. Peaceful protestors were arrested and charged under criminal laws. There were seminars conducted in Mysore, documentary films, students' protests, meetings organized between village folk and city folk making common cause. There were petitions to all levels of government, and a formal petition was made on October 2007 to the Karnataka Electricity Regulatory Commission (KERC), arguing that the project was undesirable. People lobbied with elected representatives, and delegations went to Bangalore to argue with government officials and political figures. A meeting of 5,000 people took place in Mysore in September 2007, with leaders of all political parties except the ruling party. An apolitical alliance of organizations and individuals was formed and named the Chamalapura Ushnavidyut Sthavara Virodhi Horata Samithi (CUSVHS).

Mysore Grahakara Samiti filed a petition to the KERC for a public hearing in March 2008 on the desirability of establishing 1,000 MW CFPPs in Karnataka. Taking cognizance of the submissions made by affected villagers, Gram Panchayat members, social action groups and environmentalists during the Public Hearing, the KERC in May 2008 observed that the "bidding process lack(ed) transparency". As a result of the continued protests, the Karnataka Power Minister announced that the power plant would not be constructed. After this victory, the CUSVHS decided to erect a victory stone (Vijayagallu) in July 2010. Sometimes climate change is the main factor in LFFU movements, or sometimes it is absent as in this Karnataka movement.

A Ban on Rat-hole Coal Mining in Meghalaya, India[9]

India is an importer and a producer of coal. Most of the extraction is carried out by the National Coal Corporation and by private firms. There is a transition from biomass energy

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to fossil fuels, coal being the main one, and there are numerous protests against coal mining and CFPPs. Coal mining provides legal and illegal jobs, but also destroys livelihoods. One small part of India's coal mining is done by families in underground mines in Meghalaya. Coal mining, once the driver of Meghalaya's economy, has been forbidden in the state by the National Green Tribunal (NGT) since 2014. But it continues to be mined illegally.

On 8 November 2018, Agnes Kharshiing and Anita Sangma were assaulted allegedly by the coal mafia for capturing pictures of coal-laden trucks in the village of Tuber Sohshrieh. They were attacked in broad daylight and their car was blocked by 30 to 40 people who attacked with stones and sticks at about 2 p.m., on their way to Shillong, minutes after Agnes had photographed trucks carrying coal. She was returning to the state capital after a meeting with police officials in Lad Rymbai to talk about coal issues. She is a social activist, working on a range of issues including corruption, violence against women and public food distribution, and the involvement of politicians in the illegal coal-mining business.

According to police reports, the day before she was attacked, she had tipped off the Shillong police about five trucks transporting coal illegally. On the same day as the attack, another activist, Marshall Biam, chairman of the North East Indigenous People's Federation, filed a police report stating seven people had attacked him demanding withdrawal of cases by the Federation against coal dealers, and hinting at a police-coal mafia nexus. This level of violence is not a new phenomenon.

Meghalaya has a total estimated reserve of 640 million tonnes of coal. The most common way of mining the coal in the East Jaintia Hills region is by the traditional rat-hole mining technique. However, in April 2014 the NGT ordered an interim ban on rat-hole coal mining, a result of a petition filed by the Assam based All Dimasa Students Union and Dima Hasao district committee who had complained about the pollution of Kopili river downstream. The NGT also considered the death toll during the rainy season due to flooding of the mines, the unsafe working conditions and the presence of the coal mafia. According to Impulse Social Enterprises, 12,500 people are estimated to have died in rat holes between 2007 and 2014 in Meghalaya. A report by O.P. Singh and Sumarlin Swer emphasizing the negative impact of rat-hole coal mining to the environment and loss of traditional cultural values was also key for the ban. It concluded that roadside dumping of the coal caused air, water and soil pollution.

There were many protests against the 2014 ban. For example, "They should look at ways of improving the current state of affairs rather than a blanket ban on mining. This ruling has left thousands without the means to earn a livelihood", questioned Zinba Sangma, the General Secretary of the Nongal Dobu Coal Truck Owners Association (NDCTOA). The people also blamed Congress, ruling party in the state, for not taking measures to fight the ban. Following protest, the NGT bench chaired by Justice Swatanter Kumar, later allowed for transportation of the already extracted coal, but refused to lift the mining ban. Between 2016 and 2017, there were two extensions given by the Supreme Court for 8 months and again for 4 months between 2017 and 2018. According to an assessment made on 20 March 2018, 5 million metric tonnes of coal remained.

The politics of coal was one of the main pillars of the 2018 state elections. The newly elected state government promised to lift the ban. Shortly after winning the elections, it filed an application in the Supreme Court for further extension and in a hearing dated March 2018 had the date extended till May 2018. Although these petitions only mention already mined coal, the presence of coal mafia and illegal mining is an open secret in the state. On 13 November 2018, the state government of Meghalaya challenged the NGT ban in the Supreme Court by

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questioning the authority and jurisdiction of NGT. At the hearing, the Supreme Court decided to allow transport of already extracted coal till 31 January 2019.

Coal Mining in Chhattisgarh, Jharkhand[10]

Moving to central India, we notice the perseverance of local people, very often Adivasi, to prevent fossil fuel extraction despite threats of violence. The focus of the protests is on land and livelihood issues and not on climate change. An example would be that of Chiru Barwadih village in September 2016 in Hazaribagh district in Jharkhand, where over a thousand villagers started a peaceful sit-in protest near a mining site in Chiru Barwadih village on 15 September 2016. But, on the morning of 1 October 2016, police fired 60 rounds of bullets at these villagers, killing five and injuring 40.

Another case is the Hasdeo Arand conflict in Chhattisgarh. As analyzed by Brototi Roy (2021), this was the first case where rights granted to forest lands under the FRA 2006 were taken away by the government officials to promote coal mining. Here, the claims by communities on the recognition of Forest Rights encounter the plans of coal mining to provide fuel for the growing Indian economy. The Hasdeo Arand forests are not just rich in biodiversity but also in coal reserves. Until 15 years ago, the area had no active coal fields. Now there are 18 coal blocks in the Hasdeo Arand area, and a major part of these coalfields is still in a virgin state. Out of the 18 coal blocks, mining operations are currently being carried out in two of them while proposals for mining in four other coal blocks are under consideration by the authorities.

The Scheduled tribes and Other Traditional Forest Dwellers Act, which is commonly known as the Forest Rights Act (FRA), provides Indigenous communities the opportunities to claim legal ownership over their forests. There have been many delays and misconducts in the granting of these forest rights to the Indigenous people of India, due to the profit making at the extractive commodity frontiers.

In fact, in January 2016, Chhattisgarh became the first state to outright cancel already given forest rights in Ghatbarra village, Surguja district. Instead, the forest was diverted for coal mining of the Prasa East and Keta Besan coal block, allocated to Rajasthan Vidyut Utpadan Nigam Limited (RVUNL) with Adani Minerals Private Limited as the mine developer cum operator. The latter is a 100 per cent subsidiary of Adani Enterprises Limited. The Adani family's enormous wealth is a testimony to the power of coal in the Indian and world economy.

The district administration along with the tribal affairs and the forest department argued that because the land had been given in 2012 to the company, it was no longer classified as forestland in 2013. In October 2014, 17 gram sabhas in this coal field protested against coal mining in their forests, and passed a resolution opposing the re-allotment of coal mines. In December 2014, thousands of villagers gathered under the banner of Chhattisgarh Bachao Andolan (CBA) and signed a six-point resolution demanding to honour provisions of the PESA Act of 1996 (Panchayats Extension to Scheduled Areas) and Forest Rights Act of 2006, under which the gram sabha is the only authority empowered to decide the future of traditional tribal lands.

Again in 2021 a 300-km march was started to save the Hasdeo Arand forests, as described in Chapter 25. "That is the basis of their livelihood, culture and survival. But they are also speaking up about the existence of elephants and wildlife, and the environmental harm caused by coal mining. The challenge of climate change and our role in it poses fundamental

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questions about the survival of the planet. In such a scenario, dense forests like Hasdeo need to be saved from destruction" – said Alok Shukla, an activist in the 300-km march.[11]

Sompeta in Andhra Pradesh[12]

Another similar case of violently repressed resistance, this time to a CFPP in the coastal village of Sompeta in Andhra Pradesh, became internationally known. The Andhra Pradesh government allotted 972 acres of land to Nagarjuna Construction Company (NCC) in order to build a coal-based thermal power plant. In addition, NCC privately acquired over 500 acres. Community members, especially fishermen and farmers, were opposed to the construction since it would destroy their livelihoods. The residents of Sompeta, Baruva and other neighbouring mandals fought against the thermal power plant in 2009. Several people were killed in 2010 (Figure 16.8).

The protest was for the preservation of the common wetlands, locally known as 'Beela land' and against pollution from the thermal power plant. In 2015, the state government finally cancelled the land allocation, after an eight-year-long campaign, which included a relay hunger strike for 2,166 days. After a visit in 2017 we concluded that the local complaints were paramount, and that the implications of coal burning for climate change had not been used as an argument. Nevertheless, this power plant would have emissions of over 7 million tons of carbon dioxide per year. They have been avoided, although so-called "leakage" might have happened – when oil, gas or coal are left in the ground here to be taken out elsewhere. Protests on coal mining predate by many decades the awareness of human-induced climate change. However, the "glocal" links are more and more visible. The bottom-up position for climate justice is strongest when local arguments for LFFU come together with a global perspective to decrease GHG emissions.

From the Russian Arctic to India: Coal Mining and Transport[13]

As we know, the Arctic has become a new commodity extraction frontier. One of the latest conflicts between wilderness conservation, coal extraction and the scarce local population takes place in Dikson, in the far north of Russia. Taymyr peninsula has one of the biggest nature reserves in the world, called Bolshoi Arkticheskaya (The Great Arctic State Nature Reserve). It has 18 kinds of mammals, 124 species of birds and 29 species of fish. The animals include the lemming, Arctic fox, wild reindeer, wolverine, ermine, walrus, seal, beluga whale, musk ox and of course, polar bear. Furthermore, 550 people inhabit the area.

In October 2016, Russia signed ambitious energy cooperation deals with India. The Russian government opened a new mega open cast coal mine in Dikson. Vostok Coal-Dikson is the project developer company, which plans to extract an annual 30 to 40 million tons of anthracite coal (suitable for steel making) from Taymyr, where there's also oil and gas. India's Minister of Petroleum and Natural Gas said: "We are the second-largest coal importer in the world, so we need to increase coal supplies". As for the Russian government, due to these investment projects, the increase in shipments on the Northern Sea Route will be ensured (Chapter 7).

On the other hand, environmentalists stated that new coal projects in such an ecologically sensitive area are illegal. Moreover, an international bird monitoring centre is 2 km from the mine. Polar bears prefer to spend most of their time on floating sea ice, an ideal platform

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Source: The News Minute, 2017; Korada, P. (2017). The Sompeta agitation lives on: How the police killing of 3 men fuelled a battle for the wetland, *The News Minute*, 15 July

Figure 16.8 *A small memorial in the village of Sompeta, Andhra Pradesh to people killed by the police in 2010 when defending their agricultural lands and wetlands against a CFPP*

to hunt for seals. But as the ice pack retreats earlier in the year, more bears are forced to spend the summer on land. The International Barents Observer (IBS) reported to the State Environmental Monitoring Agency on the mining on the Taymyr peninsula and sued the Vostok Coal company for environmental law violations. The court ruled that the company has to pay the equivalent of US$ 7.4 million for the mining violations but, backed by the government, the mining is likely to continue. Russia's strategic priorities are boosting extraction in the polar wilderness. While China is one main market for Russian oil and gas together with Europe, India is becoming involved as an importer of coal.

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Coal in Bangladesh[14]

In Bangladesh, there have been massive mobilizations against fossil fuels. One remarkable case is that of the Save Sundarbans movement, with multiple protests and rallies against the construction of a 1320-MW coal-fired power plant in Rampal since 2013, close to the largest mangrove delta in the world. In 2016, there were two marches to Dhaka where thousands of local people and international activists participated. The protests intended to save the endangered mangrove forests and its flora and fauna, livelihoods of the villagers who live from farming and fishing, and to reduce impact of climate change. But with financing from India, the project is going ahead.

Another long-drawn-out movement took place against the open-pit coal mining project in Phulbari, where in August 2006 more than 50,000 people took to the streets. The protests were against the eviction of 50,000 Indigenous people from 23 tribal groups. This case has been mentioned in Chapter 4.

However, it took countless protests and pressure from international organizations to officially cancel the project. It was a decade later and continents away from the 2006 Phulbari shootings, when in 2016 the protest took the form of a Blockadia action. In December 2016, protesters from Bangladesh were joined by human rights and climate justice activists in London who called for the shutting down of Global Coal Management (GCM) Resources.

Coal in China: A Case from Henan Province[15]

Apart from the local resistance against Chinese financed CFPP in many countries, there is also some resistance to coal in China itself. There is an immense Chinese landscape of about four billion tons of coal extracted per year. Per capita this is "only" about 3 tons per year. There must be enormous environmental liabilities left after mines are closed. I now take one case of the EJAtlas from Henan province, where coal mining and overexploitation of deposits resulted in multiple social-political problems at Zhanggou Village of XinZheng City. Henan Province ranks only eighth in China in terms of coal output. Zhanggou Village was a wealthy village with abundant coal resources in the 1980s. It has been mining coal through external investment and 16 pits were exploited. However, in 2016 the inhabitants had to fight for their livelihoods, threatened by the coal mining activities.

Zhengzhou Coal Industry (Group) Co., Ltd. was the main owner of those pits in Zhanggou Village. Years of exploitation had depleted the resource, causing environmental pollution, house damages, a drop in groundwater level and subsidence of the ground which caused crop failures in the village. Consequently, the villagers were forced to abandon farming and instead borrowed high-interest loans to build some warehouses and workshops on their own farmland, trying to rent them out for an income. Unexpectedly, in 2016 the local government ordered the villagers to demolish those warehouses and workshops. According to the local government, the demolition was due to their illegal status. However, this proposal was strongly opposed.

In October 2016, the Xinzheng Municipal Government and the relevant departments of the Longhu Township Government dispatched some officials to Zhanggou Village to persuade the villagers to dismantle of workshops, but their attempts were rejected by the villagers. On 5 October 2016, villagers demonstrated to protest against the demolition, but the local government mobilized hundreds of armed police to suppress the demonstration and assist in

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the demolition. More than a dozen people were arrested and several people from both sides were injured. According to one of the residents, 1,000 villagers participated in the protest and 450 police appeared with shields and knocked down all the villagers in the front row. Subsequently, the two sides fought against each other with bricks, stones and wooden sticks. The local villagers complained that the government left no way for them to survive. The fierce battle lasted for more than three hours, and the police finally withdrew from the village. In the end, the police once again entered the village to arrest some villagers.

The Longhu Township Government started the rectification of illegal land use at the beginning of 2016 and issued several notices to persuade villagers to demolish the warehouses and workshops, but it was not fruitful. Local officials said that the illegally built warehouses and workshops would have serious safety risks, which involved 276 households in Zhanggou Village. The number of the injured and detained villagers was not disclosed officially, but it was revealed that five policemen were injured.

The total investment for the construction of the warehouses and workshops exceeded CNY 200 million. Apparently, the local government wanted the demolition because it had secretly sold the land a few years ago. At the same time, the compensation from the mine for repairing the houses with cracks caused by coal mining was not delivered to the villagers. Local officials claimed that the villagers' protest was for compensation, which did not make sense for them because they defined the warehouses and workshops as "illegal".

In conclusion, this was not a success in environmental justice. The land of Zhanggou Village cannot be cultivated anymore. The warehouses and workshops were demolished anyway. The amount of compensation can neither cover the costs nor guarantee the payment of interests by the villagers. Villagers lost their livelihood. Coal is essential to the metabolism of the growing Chinese economy, there must be many local protests against coal, and sometimes they might be starting to link up with the debate on climate change. This was not yet the case.

Japan and China Building CFPPs in Indonesia

Meanwhile, Japan and China have amicably been active in promoting new fossil fuel investments. In Chapter 6, we saw examples of Chinese investment in Pakistan and Indonesia.[16] Here we stay in Indonesia where local, national and international mobilization has taken place against Chinese and Japanese investments in CFPPs.[17]

The first unit of the Cirebon coal power plant located in Kanci Village, was put in operation in July 2012. The 660-MW plant is operated by PT Cirebon Electric Power (CEP), which is a joint venture between some of Asia's leading companies in the energy and infrastructure arena: Marubeni Corporation, Indika Energy, Korean Midland Power, and Samtan Corporation. The project was financed through a US$ 595-million loan from the Japan Bank for International Cooperation (JBIC), the Export-Import Bank of Korea (KEXIM) and the commercial actors ING Bank, Mizuho Bank, Sumitomo Mitsui Banking Corporation & Bank of Tokyo-Mitsubishi UFJ. Here we have a case of Japan pushing for coal burning even outside its frontiers.

In 2013, plans were released to add another coal-fired unit – Cirebon II – with a capacity of 1,000 MW. Before the project took ground, PT CEP changed its name to PT Cirebon Energi Prasarana (CEPR) as JERA Co was added to the consortium of investing companies. PT CEPR was granted yet another loan of US$ 1,750 million.

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Local residents have faced substantial livelihood losses as a result of air, thermal and water pollution. Fishing is a main source of income in the region but catches are drastically decreasing and it is necessary to go further out at sea. This has raised costs and led to many fishermen becoming migrant workers. Salt production is another main income-bringing activity, which is now becoming increasingly difficult due to pollution of the sea and river waters. Air pollution is affecting rice yields, and villagers suffer from respiratory problems. As a result, local residents advocate for Cirebon I to be closed, and the expansion of Cirebon II to be stopped.

Widespread mobilization happened both nationally and internationally. In 2016, activists blocked the coal supply. Additionally, villagers and NGOs have sent several formal complaint letters to Japan's Bank for International Cooperation (JBIC) and the commercial lenders, without receiving any response. In March 2017, a petition signed by 280 CSOs from 47 countries was handed over to the Japanese government, calling for a withdrawal of investments from the Cirebon facilities and the coal-fired power plant in Indramayu, West Java. Initial signatories of the petition were WALHI Indonesia, Friends of the Earth (Japan), Japan Centre for a Sustainable Environment and Society (JACSES), Kiko Network Japan and 350 .org Japan. There has also been mobilization against Hyundai Engineering & Construction, which was contracted for the construction of Cirebon II.

In April 2017, residents supported by NGOs filed a lawsuit against the Provincial Investment and Licensing Agency (BPMPT) for issuing the environmental permits for the plant. The court found the permit to stand in conflict with spatial planning laws, and was revoked. However, after having appealed, PT CEPR regained its permit. in February 2019 it was announced that construction of Cirebon II is on track to commence its operations by 2022.

***

Another large CFPP in West Java is Indramayu, in close proximity to Cirebon. The 330 × 3-MW coal-fired power plant was put in operation in 2011. While being operated by the government-owned company PT Perusahaan Listrik Negara (PT PLN), it was financed through a loan from a consortium of public and private lenders led by Bank of China. Surrounding communities have suffered severe livelihood losses like respiratory diseases, diminishing yields and reduced catches of fish and shrimp. Farming and fishing were important income-bringing activities, but have become difficult due to pollution and large-scale acquisition of productive farmland.

At the end of 2015, the Indonesian president announced that the Indramayu facility would be expanded by adding another coal-fired plant (PLTU II) of 2 × 1000 MW. The local residents and supporting NGOs claim the process of public consultation didn't invite all affected residents. Furthermore, the Land Acquisition Plan (LAP) was not prepared until after the acquisition process had started. A loan has been granted to the Indonesian Government by the Japan International Development Agency (JICA) that will cover the costs. PLTU II is planned to commence its operations in 2026.

Mobilization against the PLTUs has been organized by the local group Jaringan Tanpa Asap Batubara Indramayu (JATAYU) (in English: Indramayu Coal Smokeless Network). In 2017, JATAYU filed a lawsuit against the environmental permit granted for PLTU II, motivated by the increased health risks and the lack of community consultation. The administrative court ruled in favour of the community, and the permit was revoked. However, both the High Court

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and the Supreme Court ruled in favour of the company. JATAYU was in the process of filing a verdict review. Finance for Indramayu comes from China and Japan.

Many protest actions have taken place locally and some villagers also travelled to Jakarta to protest outside the presidential office and the Japanese embassy. In 2017, some JATAYU members joined with a few residents from the Cirebon Regency and representatives from Indonesian Forum for the Environment (WALHI) to protest outside the Japanese Government in Tokyo. In April 2019, another coalition of JATAYU and WALHI members went to Tokyo to submit another letter to the Japanese Government, asking for a withdrawal of funds. To calm on-site protests, PT PLN hired military officials and police officers. In December 2017, three Indramayu residents were arrested, accused of having insulted the Indonesian flag by raising it upside down in a protest. In September 2018 they were detained again, and sentenced to between five and six months in prison.

Still another CFPP case in Java: the operation and expansion of the Chinese-built large CFPP in Cilacap was met by protests by local communities as a response to negative health impacts and livelihood losses (Chapter 6). There are articles forthcoming from Bowen Gu (of ICTA UAB) on coal-related investments and conflicts in China and (with Chinese finance) in Indonesia.[18]

In Jamaica: Aluminium and a CFPP[19]

In February 2017, it seemed that the Chinese company Jiuquan Iron & Steel (JISCO) would build a 1,000-MW coal power plant at the Alpart bauxite-alumina factory in Jamaica, that belonged to aluminium giant Rusal. The Russian mining company signed a deal of US$ 300 million to sell it. In a separate pact with the Jamaican Government, JISCO agreed to the expansion of the plant and its conversion to a 500,000-tonne-a-year smelter. The agreements took place in Beijing, where Jamaica's mining minister, Mike Henry, and his energy colleague Andrew Wheatley had talks with Rusal, JISCO, as well as the Development Bank of China. JISCO would be part of a US$2-billion investment despite opposition to JISCO's 1,000-MW CFPP.

Cheap energy is a critical ingredient in aluminium smelting, and its absence had been a barrier to Jamaica's ambition to convert its bauxite to metal. After 2008, Alpart refinery had been mothballed for seven years in the face of a soft market for alumina. More than 21,000 people signed a petition opposing coal-fired power in Jamaica. The #SayNOtoCoalJA initiative, led by the Jamaica Environment Trust (JET) wanted the government instead to continue the transition to a new energy future for Jamaica. Government documents emphasized energy conservation, renewables and liquefied natural gas (LNG) as a transitional fuel for Jamaica.

JET's Chief Executive Officer (CEO) Diana McCaulay is a writer and environmentalist. She said: "Coal plant emissions cause respiratory illness in humans and affect the environment by creating acid rain and contributing to global climate change. […] The 1000 MW plant alone would emit roughly 6.7 million tons of CO_2 per year, just over half of Jamaica's 2025 target under the 2015 Paris Agreement on Climate Change".

For his part, Jamaican Energy Minister Andrew Wheatley said that the disquiet over the coal plant was much ado about nothing. In the end, by November 2017 it was decided that: "It's LNG and not coal for the Alpart plant". Stopping around the world 50 CFPP of 1,000 MW each would avoid emissions similar to those of France or Italy every year. Provided of course there is no "leakage" (Pellegrini et al. 2021, 2022).

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Coal in South Africa and in Russia

Let's look at the murder of a WED in 2020 complaining against open cast coal mining threatening her community in Somkhele, KwaZulu Natal, South Africa.

Coal extraction is certainly not new in South Africa. This is a case of intensification of an existing commodity frontier. Tendele's coal mine was denounced by the South African Human Rights Commission, WoMin, and The Women's Water Assembly for its human rights and environmental violations. In October 2020, four hitmen shot and killed 63-year-old grandmother Fikile Ntshangase in her home.[20] Ntshangase was Vice-Chairperson of a committee of the Mfolozi Community Environmental Justice Organisation (MCEJO). It is suspected that the killing was in retaliation for her refusal to sign an agreement with Tendele to cease MCEJO´s court challenges against the mine (Figure 16.9).

Also, in South Africa, more than a thousand Fuleni residents prevented the Regional Mining Development Environmental Committee from visiting the site for Ibutho Coal's proposed open cast mine in April 2016. This open cast coal mine also in KwaZulu-Natal was proposed near the border of the very valuable Hluhluwe-iMfolozi Wilderness area. There was a confluence of protests from conservationists and local people who blocked the main road to Ocilwane with rocks and tyres which they set alight to stop vehicles from entering Fuleni. They stood guarding the road with a big banner saying "We will not move".[21]



Source: Rob Symons; Brooks, G. (2020). Mam' Ntshangase murder: Lives of human rights defenders, whistle-blowers must be protected, *IOL*, 5 November

Figure 16.9 *Residents protest about the environmental and health impacts of the Somkhele coal mine on the borders of the Hluhluwe-Imfolozi Park in KwaZulu-Natal*

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While South Africa is the seventh largest coal-producing and the fifth largest coal-exporting country in the world, Russia is the sixth largest producer after China, the US, India, Australia and Indonesia. An old area of coal extraction is the Kuzbass. Russia seems determined to extract its fossil resources despite some local opposition. In one case, Mencherep farmers in this Kemerovo region successfully resisted a new open coal pit threatening their village. The Belovo regional court in 2018 said the government had no land rights. Residents in the region are suffering from coal dust which is heavily polluting the air, making agriculture impossible and degrading public health. Pollution of water and destruction of landscapes is a daily reality. Banners say "Against the Mine", or "Mining Not" (transliterated, Razrez Niet).[22]

In Australia – A Coal Mining and Exporting Conflict

In May 2016, in New South Wales, 1,500 activists gathered in the port of Newcastle and hundreds kayaked into the shipping channel to block coal ships in the harbour, which is the world´s largest coal export port. Also, 70 protesters blocked a coal train in a day of civil disobedience at the Sandgate Bridge railway line. This was a part of the global "Break Free from Fossil Fuels" actions. It was reported that 66 people were arrested. In Australia, activism has had some success as communities used non-violent direct action to achieve a moratorium on unconventional gas.

However, the struggle to stop the Adani Carmichael coal mine and railway in Queensland, a project of ten million tons of thermal coal per year, apparently failed. It started in June 2021. The project faced protests from a section of the population, with several banks even refusing to fund it. It signals a failure of the Australian–Indian environmental movements.[23]

OIL AND GAS RELATED CONFLICTS

Chapters 17, 18 and 19 consider environmental conflicts in Latin America but here we anticipate analysis on some LFFU movements.

Belize[24]

In Belize, on the Central American coast, there was a successful story of Blockadia in 2012, when for the first time a popular consultation occurred where 90 per cent of the population voted against offshore oil exploration and drilling. This resulted in the Supreme Court of Belize ruling that all the earlier offshore oil contracts issued would be null, as well as a moratorium on offshore oil drilling. This mobilization occurred after the common people of Belize realized that they were neither consulted nor informed of the harmful impacts of offshore oil drilling when the government started granting oil concessions in 2010, threatening their environment and livelihoods.

The Alliance against Fracking in Mexico: Ban on Gas Fracking[25]

Several entries in the EJAtlas anticipated the ban on gas fracking in Mexico. Resistance in La Huasteca and Totonacapan, for instance. CORASON is a coordinating body born in June 2015; activists meeting at the ejido Emiliano Zapata, in Papantla, set up the Coordinadora

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Regional de Acción Solidaria en Defensa del Territorio Huasteca-Totonacapan. The EJAtlas entry on Chihuahua (by Lena Weber) explains that the local alliance against fracking was supported by geologists and politicians who feared that gas fracking might become another lucrative business for the "narco-mafia". With an estimated 600 trillion cubic feet of recoverable shale gas and 13 billion barrels of recoverable shale oil, Mexico is one of six countries that account for almost two-thirds of recoverable shale gas in the world. Pemex began the exploration process for shale gas production in Chihuahua and elsewhere in 2010, and under the constitutional reforms in Mexico that ended Pemex's 75-year monopoly, allowing foreign companies to invest in gas and oil exploration and production.

In February 2014, Pemex drilled 29 wells in Chihuahua, and officials claimed that more than 18 trillion m^3 were found. Studies undertaken on the potential of fracking in the region took in $230 million in investments. Cesar Duarte, Governor of Chihuahua, supported fracking and claimed that it would help economic and social development. Duarte was meeting with European investors, businessmen and Pemex in his attempts to bring in more investment in Chihuahua. However, Martha Beatriz Cordova, a Chihuahuan Congresswoman, openly opposed fracking. Popular resistance also took place. Hundreds of Chihuahuan small farmers listed fracking as one of their main grievances in the Chamizal Proclamation during a blockade of the Bridge of Americas linking Ciudad Juarez with El Paso. Then, the Chihuahua Citizen Alliance against Fracking formed in Chihuahua City.

There exists a great deal of concern surrounding fracking due to the high levels of overlap with water-stressed regions, threat of toxic waste, threats to natural protected areas and high levels of seismic activity. The Mexican Alliance Against Fracking formed in 2013, and brought together a broad range of groups. In Coahuila, foreign and national companies hoped to drill up to 10,000 fracking wells in the regions of Carbonífera and Cinco Manatiales. A state advisory council on sustainable development claimed that some fracking wells are operated without the EIA. Apart from the Alliance Against Fracking, the environmental litigation organization CEMDA began legal action against wells lacking permission.

Activists in Coahuila also mobilized against the dispossession of land by companies. In November 2014 in Saltillo, members of 'Coahuilenses contra el Fracking' (Coahuilians against fracking) protested in front of the Autonomous University of Coahuila, where the first Energy Expo forum was taking place and where federal and state authorities were present. Those from San Buenaventura denounced the dispossession of their land by GPA Energy for their exploratory gas projects. The protestors blocked part of the federal highway 57 (México-Saltillo). Many anti-fracking forces pushed Congress to pass a moratorium or ban on fracking in the country. By 2021, this ban was in operation in Mexico. Keep it in the ground.

In Argentina: The Barbarism of Western Civilization

In the provinces of Río Negro, Neuquén and Mendoza (Argentina) there has been resistance against gas and oil fracking or drilling. Significant deposits of shale oil and gas were discovered in Neuquén province in the Loma de la Lata field in 2010, adding to Argentina's overall shale reserves, estimated to be the second largest in the world. Argentina's Vaca Muerta shale formation is estimated to hold a large amount of oil and gas. In Loma de la Lata and Loma Campana there have been conflicts over 20 years, first with YPF, Repsol and Petrobras, and now with Chevron on oil and gas extraction and fracking. The resistance involves some

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Source: Ecoticias

Figure 16.10 "Chevron out of Neuquén! No to fracking!"

Indigenous people – the Confederación Mapuche de Neuquén (Figure 16.10).[26,27] There have been blockades against Vaca Muerta.[28]

Allen, Río Negro, is a fruit growing zone settled by Italian immigrants decades ago. It belongs to the Vaca Muerta formation that has reached it from its principal area in Añelo. The government agreement with Chevron was signed in 2013. This is a "commodity widening" and "commodity deepening" process. There is some local resistance: Maristella Svampa, a political ecologist, was born in Allen and in 2019 she wrote a sad book about the events, *Chacra 51, Regreso a la Patagonia del fracking.*

In the Argentinian dilemma between "Civilization or Barbarism" that Sarmiento announced in 1845 after Independence, Argentina has opted sometimes for both, i.e. the Barbarism of Western Civilization as in the so-called Conquest of the Desert in Patagonia against Indigenous populations in 1870, or in the barbarous military dictatorship of 1976–83. The "barbarism of civilization" continues with the deforestation and generalized aerial spraying of glyphosate in soybean fields, in open cast metal mining with cyanide (Walter and Wagner 2021), in gas and oil fracking, and in the enthusiasm of mainstream political parties (including the Peronists) for the extractive economy for primary exports.

Bolivia: Resisting Oil and Gas Extraction at a Time of Political Upheaval[29]

When president Evo Morales and his vice-president García Linera failed to secure re-election in October 2019, the issue of resistance to fossil fuels extraction loomed large. The world press talked about lithium mining as a possible factor influencing politics in Bolivia. But discontent regarding oil and gas extraction had been brewing for some years. Evo Morales'

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government prided itself on the improvements in the terms of contracts with fossil fuel companies. He also, around 2009–10, presented itself to the world as a voice from the South on climate change, asking for repayment of the ecological debt, and organizing in April 2010 a festival in Cochabamba of civil society climate change summits. At least 15,000 people from worldwide Indigenous movements, civil-society groups, presidents, scientists, activists and observers from 90 governments attended.

There was indeed an empty slot for a president of the South to lead poor countries (at the receiving end of climate change) into meaningful grievances and negotiations based on the concept of an ecological debt from North to South. However, the Bolivian government was handicapped by its internal policies, not least by the plans for road building in the Amazon geared to biomass and fossil fuel extraction. Evo Morales and García Linera became left-wing extractivists, propelling the domestic economy by increasing cheap exports of oil and gas. The unavoidable local resistance will undermine the international position. This happened with the TIPNIS road. It also happened in the Tariquía reserve in Tarija, threatened by oil and gas exploration, which has been defended by local peasant unions with supporters from outside. This is a defence of the commons (Figure 16.11).



Source: EJAtlas

Figure 16.11 *"No to Mother Earth. We want oil, power and wealth"*

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The Tariquía Flora and Fauna Reserve, of about 246,870 ha, was created in August 1989. In 2015, the Reserve was at risk from oil exploitation. The state-owned company Yacimientos Petrolíferos Fiscales Bolivianos (YPFB) was about to sign two oil service contracts with Petrobras, British Gas (BG) and YPFB Chaco to intervene in the areas of San Telmo and Astillero, located within the Tariquía de Tarija National Park. Following the promulgation of Decree 2366 in May 2015, which authorized the development of hydrocarbon activities in all protected areas of the country, the areas at greatest risk were Iñao (Chuquisaca), Carrasco (Cochabamba), Amboró (Santa Cruz), Tariquía (Tarija) and Aguaragüe (Chaco). The National Protected Areas Service (Sernap) estimates that around 200,000 Indigenous people, peasants and intercultural communities live there. This was despite Bolivia's temporary role as a champion in the struggle against climate change.

In 2016, peasants from the Tariquía region reached the city of Tarija to express their rejection of the seismic exploration project and to ask the departmental authorities for support to curb the entry of oil companies. The peasant leader of the Arce province, Naval Valdez, informed that after an assembly the ten communities of the region of Tariquía unanimously determined to reject oil exploration in the area. "We want to make our voice heard and let everyone know that we do not want oil intervention", he said. The peasant leader recalled that in 2005 an oil exploration was already carried out in Tariquía that evidenced that there is a risk of severely affecting the nature reserve. A year later the conflict had worsened. Ten of the 22 communities disagreed with hydrocarbon exploitation within the protected area. At the end of January 2017, the Central Campesina of the first Section of the Arce province agreed to a "unanimous rejection of all types of hydrocarbon work or project, exploration, exploitation, prospecting within the National Reserve of Flora and Fauna of Tariquía".

Our entry in the EJAtlas in 2017 got a helpful public comment here translated, from Pablo Gutiérrez:

> In April 2018, the Bolivian government approved three projects to explore and extract fossil fuels ("hidrocarburos" in Spanish) within this national reserve, specifically at the San Telmo Norte and Astilleros points of entry. Local residents blocked the companies involved from accessing Tariquia for 3 days. These government-led efforts exist due to the controversial Decreto Supremo 2366 that, among other things, speaks of reducing extreme poverty and facilitating "development" in the interest of the country. Those in opposition to this decree and to petroleum special interest groups, have been highly critical of President Evo Morales. In 2019, an activist group of students, artists and designers created an Instagram account named "losjucumaridetariquia" which regularly posts updates in defence of the Tariquia National Reserve.

In Norway: The Lofoten Islands Revisited

Very far from Bolivia, in the Lofoten Islands in Norway, and as mentioned in Chapter 7, success was reached in the attempts to "leave oil in the ground", or rather under the sea, believed to hold about 1.3 billion barrels of oil and gas. But the area is also one of outstanding natural beauty. For many years there was a debate on whether to get oil from the biodiversity-rich Lofoten Islands. By 2019, the question is temporarily settled. The forward march of the Norwegian oil-extractive economy to new commodity frontiers continues elsewhere. After years of civil society efforts, by 2019 the alarm at climate change meant that the Labour Party, the country's biggest force in Parliament and a long-time backer of the oil industry, decided to stop pushing for oil exploration in the Lofoten Islands whose fisheries are very important.[30]

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Blockading Pipelines: Canada, the USA, Italy

Shifting our attention from Bolivia to North America, we realize that Indigenous communities have been carrying out Blockadia actions protecting their lands and waters. Stopping pipelines is often an objective of local environmental movements reinforced by global concerns about climate change. The word "Blockadia" was born in these encounters in the USA and Canada, often involving Indigenous populations (Temper 2019).

There is a growing awareness of the ways in which climate change and fossil fuel extraction are a continuation of colonial exploitation. In a historic movement against the Dakota Access Pipeline in "Turtle Island", the native Sioux mobilized Indigenous peoples and diverse supporters. As a form to block construction of the oil pipeline, "spiritual and water protection camps" were founded. Broad-based support was received from all over the United States and beyond. During protests more than 750 people were arrested and others faced pepper spray attacks and rubber bullets.

The Sioux argued that "water is sacred"; therefore, economic compensation was not the issue. The DAPL, with the Standing Rock famous protest, would connect to the Keystone XL pipeline, a network of pipelines that would carry oil from Alberta (Canada) to refineries in the United States. The DAPL is a 1,886-km oil pipeline that would transport nearly 500,000 barrels of crude oil a day from North Dakota to Illinois, where it would be shipped to refineries (Figure 16.12). This is equal to 25 million tons of oil per year which, when burned, would produce approximately 75 million tonnes of CO_2.

According to Vipal Monga in *The Wall Street Journal*, 21 Jan. 2021, President Biden's decision to revoke a permit for Keystone XL, an expansion of an existing pipeline called



Source: KFYR

Figure 16.12 *Sarayaku people and their lawyer visit the Dakota Access Pipeline protest camp in 2016*

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Keystone, spells the end of a 12-year saga. Keystone XL was first proposed in July 2008 by TC Energy Corp. – then known as TransCanada Corp. and ConocoPhillips, which was a joint owner until 2009. The expansion was conceived when oil prices were at historic highs – before the 2008 financial crisis and American shale oil boom – as an artery that would pump Canadian crude from Alberta to the U.S. Gulf Coast.[31,32,33]

Another case of Blockadia opposition in North America, also with origins in the Alberta tar sands (and fully reported in the EJAtlas by Carol Voss) affects the Kinder Morgan Trans Mountain Pipeline Expansion, a US$ 3.5-billion project that would establish a second pipeline from Strathcona County (Alberta) to Burnaby (British Columbia). In 2018, around 240 people were arrested in Burnaby, Canada, for disrupting its expansion.[34]

There are similar pipeline cases elsewhere. For instance, in Southern Italy *Né qui né altrove* is the translation of NIABY (not in anyone's backyard). NIABY is commonly used by the environmental movements as a reply to NIMBY framings (Figure 16.13).[35] In this region, called Puglia, they fought to protect land from the Trans Adriatic Pipeline (TAP). They had good iconography but they failed to stop the pipeline and terminal that threaten ancient olive farms, water sources, cultural heritage sites and a stunning coastline. It is part of the larger project called the Southern Gas Corridor carrying gas to Europe.

Italian best-known "No" movements are in 2021 No Tav, No Tap, No Muos, No Ponte, No Grandi Navi, No Triv, Mamme, No Inceneritore, all born at particular locations but with wide reach. They are respectively on the very material issues of the new rapid railway line between Turin and Lyon, the gas pipeline in Puglia, the Mobile User Objective System



Source: No-Tap, Front-Line Defenders

Figure 16.13 Against the TAP in Puglia: "neither here nor elsewhere"

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(a military satellite communications system), the bridge over Messina Strait, the nuisance from the enormous cruise ships in Venice, the offshore oil drilling and the waste incineration (Bertuzzi 2019).

Bunker Extractivism of LNG in Cabo Delgado, Mozambique[36]

Oil and gas conflicts at the extraction and transport frontiers are not always played out relatively peacefully as the ones we have seen in this section, with sometimes some people arrested and an occasional mortal victim here and there. The truth is that oil and gas have caused wars. A brutal colonial military encounter is making progress in 2021 around the very large LNG project in Cabo Delgado, Mozambique, as described in Chapter 13. Total, the French fossil fuels firm, was forced in 2021 to suspend work at the Afunge airport and gas terminal because of Islamic insurgency. The awful events at Palma, a town on the coast of Mozambique immediately south of the border with Tanzania, happened because this is the base of LNG operations for the growing offshore Mozambique natural gas industry. Although at the beginning community relocation seemed successful (Symons 2018), the gas project led to major local changes and violence, displacing farming and fishing communities who lost their livelihoods.

Over half the population of Cabo Delgado is Muslim. This is a case of enclave or "bunker" extractivism where Total hopes with Mozambican and foreign troops to secure about 7,000 hectares. In March 2021, South African mercenary military security flying helicopters battled the Islamist insurgents.[37] In July 2021, a terrestrial and naval "counter-insurgent" army with Portuguese, US, South African and other forces is being organized to secure gas extraction and export of 60 million tons of oil per year.

An article by Ilham Rawoot[38] mentions coal also and warned that "Unfortunately, it seems Cabo Delgado is heading down the disastrous path of the province of Tete, where the government handed some 60% of local land in concessions to the coal industry".

Three multinationals control the gas in Cabo Delgado: ENI (Italy), ExxonMobil (US), and Total (France, taking over from Anadarko). So far, work has begun on only a small part of the dreamed gas bonanza. The Total CEO told President Filipe Nyusi that Total would only continue if Mozambique guaranteed security in a 25-km cordon around the gas project. It is still doubtful whether a moratorium will be established for some decades instead of resorting to military violence. There is a great appetite for LNG everywhere.

Oil and Gas in Namibia and Botswana: The Kavango Basin[39]

Another large conflict, although probably less costly in terms of human lives, is brewing up across Namibia and Botswana (Figure 16.14). A Canadian company is drilling exploratory wells in Namibia for what could be a major oil and gas find. Local residents and conservationists fear the project would use up scarce water supplies and cause widespread ecological disruption downstream in the world-renowned Okavango Delta. Also, it could damage traditional sites of the San, the Indigenous people in Namibia and Botswana. Reserves are estimated at very large quantities, and exploration licences comprise over three million hectares.

ReconAfrica's plans are located in the regions of Kavango East and Kavango West which are home to 200,000 people making a living from farming, fishing and tourism. A network of rigs, pipelines and roads would sprawl across an environmentally sensitive, semi-arid region

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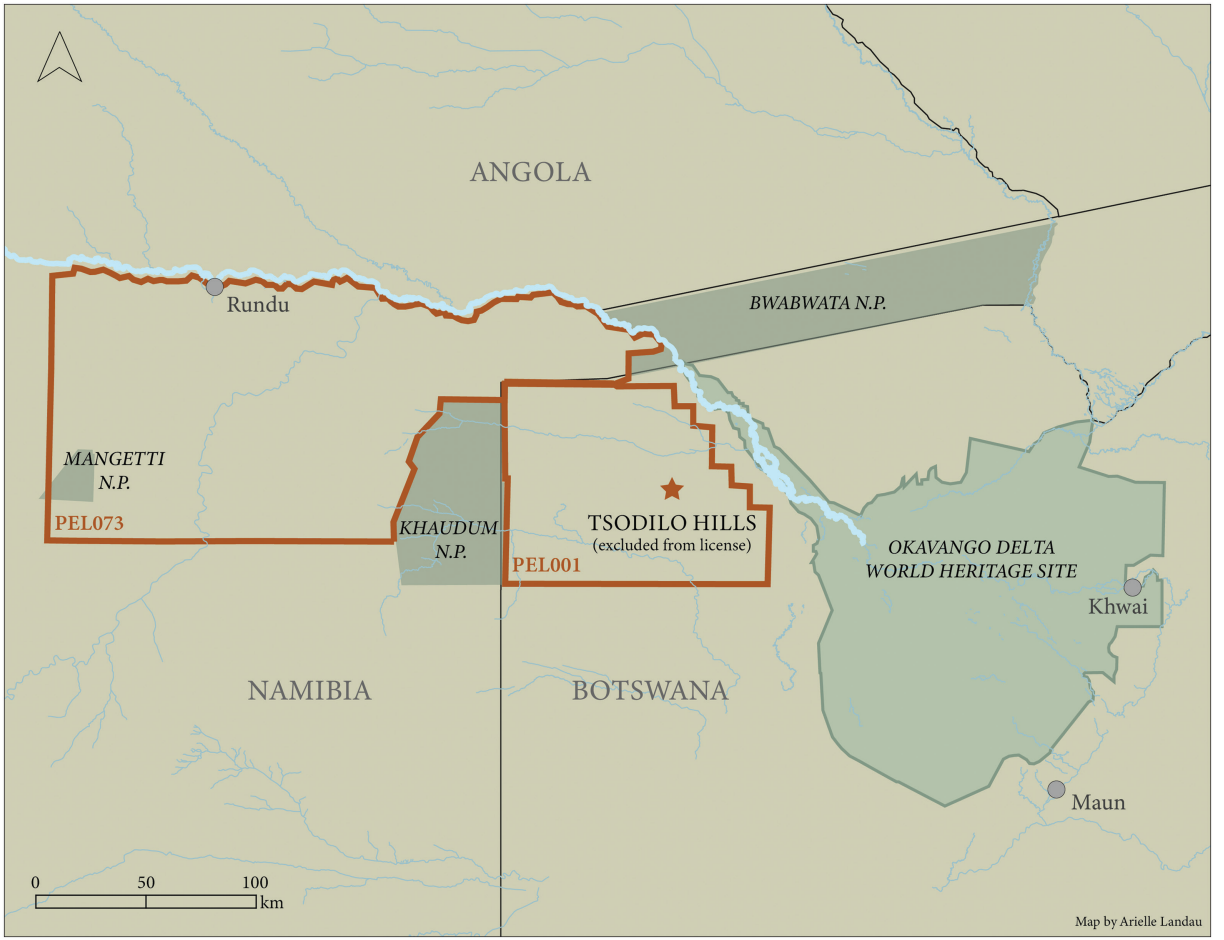

Source: Arielle Landau

Figure 16.14 *Oil drilling in Kavango provinces in Namibia and in North-West Botswana*

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that is home to Africa's largest remaining population of savanna elephants as well as numerous endangered wildlife species. In addition, the drilling would also encompass or border national parks and wildlife conservancies. It could threaten waterways that local communities rely on and that eventually flow into the Okavango Delta, a UNESCO World Heritage Site.

The Kavango Basin, which spans Namibia and Botswana, is part of the Kalahari Desert. In a dry environment, the Okavango River is a lifeline flowing from the highlands of Angola, through northern Namibia, and emptying out into the Okavango Delta Botswana. There are global climate change concerns of eventually burning the oil, but another problem is whether ReconAfrica plans to frack for oil and gas, a technology which contaminates water. Given that water from the region flows into the Okavango Delta, any pollution would be harmful to the Okavango Basin ecosystem as well as Kavango communities.

> Namibia is a water-scarce country, and when news of the company's project became widespread, communities expressed concern that contaminants from drilling would seep into shallow aquifers that supply drinking water and irrigation for crops. Conservationists also worry that contamination from the test drilling could affect wildlife: elephants, Temminck's ground pangolins, African wild dogs, martial eagles.

ReconAfrica has a 90 per cent stake in the Kavango development, while the Namibian government holds 10 per cent.

Environmentalists and community leaders have teamed up to raise awareness: a campaign called #SavetheOkavangoDelta was started by Fridays for Future Windhoek and Frack Free Namibia and Botswana; a protest was organized in Windhoek; and an online petition to governments of Namibia and Botswana garnered 150,000 signatures. "Who gave the government the right to determine the destiny of Indigenous communities? This is just another case of environmental racism", Ina-Maria Shikongo, the founder of Fridays for Future Windhoek, told Al Jazeera. This Kavango Basin entry in the EJAtlas got some comments, openly available on the EJAtlas platform. One comment says, "Thank you for placing everything on one easy to use platform so that we are not overwhelmed with information but can focus on what really counts". The other is critical, and concludes, "let Recon Africa drill oil and help develop the country's economy. Just let it be".

CONCLUSION: LFFU MOVEMENTS. AN ESTIMATE OF AVOIDED EMISSIONS

The industrial economy recycles a very small part of its inputs. An economy based on fossil fuels dissipates photosynthesis from the past. Coal, oil and gas are not "produced", they are extracted, burnt and the energy is dissipated, so the recycling rate of such energy is zero. The industrial economy is not circular but entropic, causing an enormous "metabolic gap" or "entropy hole". This explains the growth of conflicts at the extraction, transport and waste disposal frontiers; the industrial economy continuously searches for new sources of energy because the energy from yesterday is already dissipated and only some materials are recycled. LFFU movements motivated by "glocal" grievances have the result, when successful, of leaving many tons of carbon from coal, oil and gas underground. The bottom-up position for climate justice is strongest when local arguments for LFFU come together with a global perspective of the need to decrease GHG emissions. "Glocality" is the recipe.

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We live in the Entropocene from stocks of photosynthesis from the distant past. Hunter-gatherers and agriculturalists had indeed lived by current photosynthesis. Ecological anthropologists (Rappaport 1968; Lee 1979; Love and Isenhour 2016) calculated the sustainable energy return to human energy input. Pre-industrial agriculture had a favourable EROI (energy return on energy input) compared to modern industrial agriculture (Martinez-Alier 2011). With industrialization and fossil fuels, the world economy became more and more entropic. Solar and wind energy are added to other sources (coal, oil, gas, also hydropower, biomass and nuclear) and they cause their own conflicts because of land and minerals requirements (Avila 2018; Temper et al. 2020; Levenda et al. 2021). This is happening not only in territories in the South of the planet but also in the periphery of Europe. For instance, in Serbia in November 2021 it was reported that protesters blocked major roads against new laws giving free rein to lithium mining companies such as Rio Tinto and China's Zijin.[40] So, environmental conflicts are caused not only by the increase in the social metabolism but also by the changes in its configuration.

The Anthropocene is seen as a period in which scientific awareness of biodiversity loss and climate change will motivate a common ethical project of humanity towards sustainability. I rather look for social movements (akin to "class struggles" in Marxism but inclusive of feminism, Indigenous movements, agrarianism, pacifism, popular health movements…) that could lead to a world different from the necropolitics of capitalism in the Entropocene. However, climate change can indeed lead to the triumph of Garrett Hardin's "lifeboat ethics", a geopolitic of xenophobic zones, a new "age of empires" where internal grassroots movements would be repressed. In this hour of anguish, there is hope in grassroots activism. In September 2021, Indigenous resistance to fossil fuel projects in the United States and Canada was reported to "have stopped or delayed greenhouse gas pollution equivalent to at least 25 percent of annual U.S. and Canadian emissions". Optimistically, this could be complemented by an International Treaty of Non-Proliferation of Fossil Fuels[41] similar to treaties against nuclear arms proliferation.

Academically, this chapter brings together the study of social metabolism in ecological economics and industrial ecology providing evidence for the low degree of circularity of the industrial economy. Environmental conflicts are exacerbated by the need for new sources of energy and materials which outstrip recycling, requiring expansion of extractive and waste disposal sites. Second, the concept of "commodity frontiers" comes from environmental and economic history, the places where the "fresh" material and energy input for the industrial economy come from. The concept of "waste disposal frontiers" is also pertinent for the excessive amounts of carbon dioxide produced. Third, political ecology is deployed as the study of environmental conflicts, which I call "ecological distribution conflicts" (EDC) to emphasize that they are not only economic in nature. The participants in such EDCs exhibit a plurality of values. This is a fundamental tenet of ecological economics. Adding an element from the environmental humanities, I draw on the iconography (Serafini 2019) of conflicts gathered in the EJAtlas, the banners and murals, the slogans and songs that help the awareness of environmental protests in the media and in academia.

There are three striking characteristics which connect these LFFU campaigns. First, they often go beyond environmental protection, and delve into questioning the type of democracy and resource control. Second, they often combine local concerns with a global awareness of climate change. Third, the people protesting are mostly local citizens, peasants or tribal peoples, shopkeepers, students or grandmothers – these everyday people with everyday forms of

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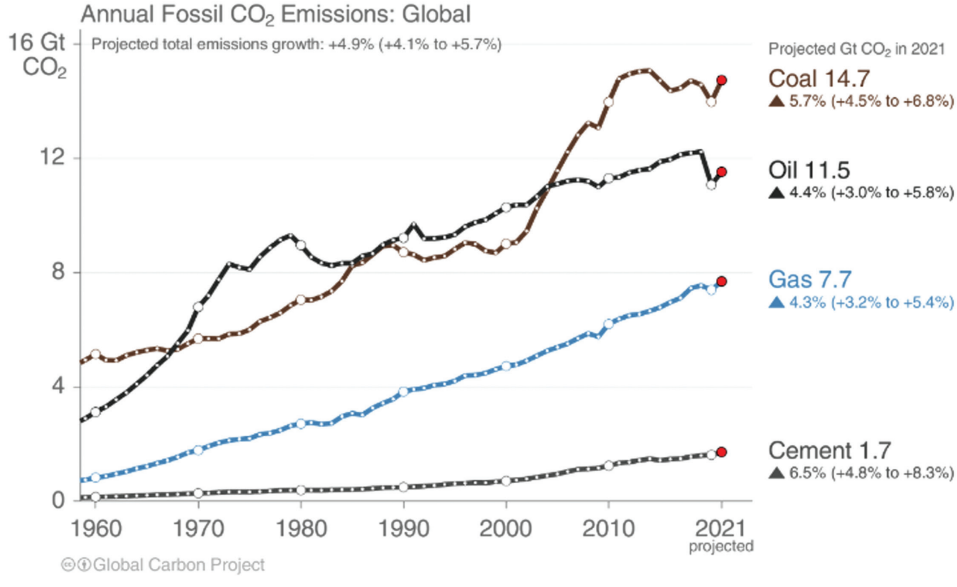
environmental resistance attend local village assemblies, council meetings, march in cities, and are sometimes subjected to violence.

Across the world there are the LFFU movements, with roots in activism in Nigeria and Ecuador in the 1990s. Their motivations are local, but their impacts might be important. They are reactions against the growth and changes in the social metabolism. Oil extraction and burning is peaking at about 100 million barrels per day but coal and gas continue their growth. The main point is that, even if they stop growing, once they are burnt new supplies are required from the commodity extraction frontiers. And, second point, the emissions are double what they should be if we want to stop the growth in the Keeling curve because the oceans and vegetation cannot absorb all the CO_2 emitted.

The yearly human-made emissions of CO_2 are around 40 Gt (thousand million tons), of which 35 come from burning fossil fuels (Figure 16.15) and five come from land use changes. A movement from the South claiming an ecological debt for climate change, and proposing to leave the "unburnable fuels" in the ground was born in the 1990s. I have focused on complaints against extraction, transport and burning of fossil fuels. The protestors are Indigenous and relatively poor people in some instances, or middle-class and professional people in other instances. Climate change–related protests are more likely to attract international EJOs than purely local environmental protests.

We have looked at the interruption of the pipelines Keystone XL and DAPL in the United States. We have seen in the Kuzbass cases of "leaving coal in the hole". While the Yasuni ITT proposal failed, the Lofoten Islands have been saved. In the Philippines there is much violence against the environmentalists and the Indigenous peoples but coal mining in South Cotabato was stopped. In Mexico (as in the UK) gas fracking has been banned, but not in Argentina. In



Source: Global Carbon Project

Figure 16.15 Emissions of CO_2 per year from fossil fuels

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Japan, several CFPPs have been stopped. In India, the extraction and imports of fossil fuels grow, including coal, but there are some cases where "coal is left in the hole" because of social movements, as also in Bangladesh. In Java, Indonesia, CFPPs have been going ahead at full steam with Chinese or Japanese financing, despite local protests.

We could have added descriptions of many other cases. Sometimes the protests are successful. Our focus is the local opposition to fossil fuels' extraction, transport and burning to which climate change arguments are added. The movements are promoted by local communities confronted by national or foreign extractive industries. Sometimes they are supported by external environmental organizations, religious groups, scientists and professionals. In the EJAtlas as a whole, the success rate in environmental protests reaches 17 per cent. The rest are "failures" and "don't know". The success rate is similar for the 612 fossil fuel conflicts registered in the EJAtlas, of which 90 are deemed as successes. Local complaints against fossil fuels (and against investments that indirectly increase GHG emissions) contribute, if successful, to climate justice locally and globally.

The large sample of cases in the EJAtlas allows statistical political ecology (Scheidel et al. 2020). I appreciate such exercises (Cheon et al. 2021). There might be for instance a positive correlation between strength of mobilizations and degree of democracy. However, beyond political opportunities, there is also a sense of the march of history. Environmental issues such as climate change become central to local, national or international politics. The environmental movements of the poor and the Indigenous are a historical wave, and environmentalism is not a passing new social movement, it might change political regimes.

Our hypothesis (Temper et al. 2020; Roy 2021) is that the many grassroots LFFU complaints may become an effective socio-environmental strategy of keeping "carbon captured" – as Oilwatch proclaimed in 1997. Leaving the Yasuni ITT oil in the ground would have meant an economic sacrifice for Ecuador, but it would have benefitted some (though not all) local populations and the local and global biodiversity. On its side, foregoing production of LNG in Cabo Delgado would damage Total's financial results but would avoid about 150 million tons of carbon dioxide per year and methane emissions.

Meanwhile, an efficient 1,000-MW CFPP will emit into the atmosphere roughly 6.5 million tons of CO_2 per year. Many CFPP are locally challenged because they also emit sulphur dioxide, nitrogen oxides and particulates affecting the local populations. World emissions of carbon dioxide per year exceed the ability of the oceans and new vegetation to absorb them. They must be reduced by half. Putting all the effort on coal, stopping one thousand CFPP of 1,000 MW would imply a substantial 6.5 billion tons of CO_2 avoided, an almost 20 per cent decrease of world emissions per year. There are also possibilities to stop coal mining, in actions such as Ende Gelände in Germany or by Adivasi opposition in central India.

In conclusion, a ball-park estimate of the potential of LFFU struggles is a decrease of 20 per cent of the reduction that must be done. Provided of course the decrease is not compensated by new carbon dioxide producing investments. No automatic "leakage" (conflict-free substitution by other fossil fuels projects) is to be expected. However, in the Jamaica CFPP case, we have seen that natural gas will substitute for coal. If there is no "leakage", then there would be "degrowth in practice" meaning, as so often happens, a de-facto alliance between the Degrowth movement in the North and the Environmental Justice movement in the Global South (Martinez-Alier 2012). The force of the growing LFFU movements comes from the many eco-territorial struggles refusing to be "sacrifice zones". Thirty years ago, nobody had yet said "leave oil in the soil, leave coal in the hole". The next IPCC report should have a

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section based on peer-reviewed scientific articles on Blockadia / LFFU movements. It should include a survey of Fridays for Future actions in India, Uganda, Namibia and Europe.

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17. The Andean countries and Southern Cone

BACKGROUND: CONFLICTIVE EXTRACTIVE FRONTIERS FOR COAL, OIL AND METALS

The EJAtlas collected (by July 2021) about 367 environmental conflicts from Venezuela, Colombia, Ecuador, Perú and Bolivia and 145 from Chile, Argentina, Uruguay and Paraguay, known as the "Southern Cone". These countries are somewhat over-represented. We counted with competent collaborators such as Sara Latorre, Mario Alejandro Pérez Rincón, Emiliano Teran, José Carlos Silva Macher, Raquel Neyra or Mariana Walter. Also, we had help from the Observatory of Mining Conflicts in Latin America (OCMAL), Lucrecia Wagner, Acción Ecológica in Ecuador and Censat in Colombia.

In Chapters 18 and 19, I shall add cases from Brazil and the Guayanas, and from Central America, Mexico and the Caribbean. Between Chapters 17, 18 and 19, I describe around one hundred conflicts taken from the roughly one thousand EJAtlas cases from Latin America and the Caribbean: similar causes (the change of the social metabolism, aggravated by ecologically unequal exchange), similar grievances, complaints, claims for justice, repression and some successes. This being said, I acknowledge my own great personal debt to the Latin American school of ecological economics and political ecology, to those who already died (Manfred Max-Neef and Héctor Alimonda) and those who are alive.

IN AZUAY, ECUADOR[1]

Following the methodology of picking from the EJAtlas only a "sample within a sample" of cases, I shall start from Kimsacocha (also called Loma Larga) and Rio Blanco, both in the province of Azuay, Ecuador. Their intricate trajectories had an impact at a wider political scale related to the career of Yaku Pérez, elected governor in Azuay. In 2021, he almost got into the final round of the presidential election with a majority in the Sierra and Amazon regions of the country. He hails from a peasant family and has a law degree from a provincial university.

Kimsacocha

Kimsacocha, the "three lakes" in Quechua language, was a gold mining project from Iamgold, a South African company. The peasant communities in that area have been fighting for water and for their moors for 30 years. On 24 March 2019, there was a binding popular consultation on the mining project in the canton of Girón reached after long struggles, particularly from the Federation of Indigenous and Peasant Organisations of Azuay (FOA) and from the Union of Girón Community Water Systems, which had the backing of other movements,

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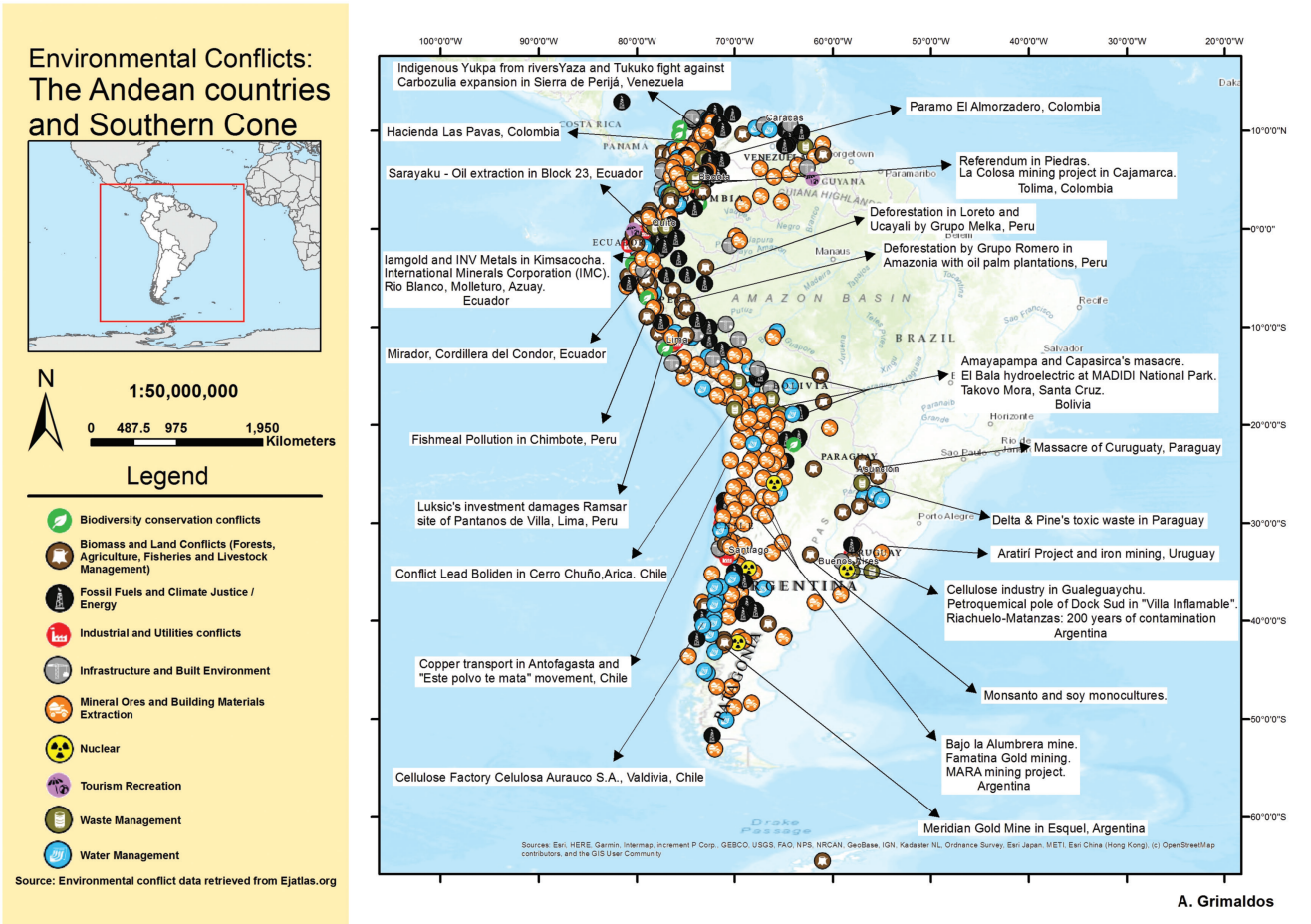

Source: A. Grimaldos

Figure 17.1 *Environmental conflicts in the Andean countries and the Southern Cone*

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among which the Yasunidos de Guapondelig (Cuenca). Yasunidos was born in Ecuador after 2013 trying to revive the Yasuni ITT initiative.

The mining firm COGEMA was the first to carry out exploration work in Kimsacocha in 1991. In 1993, the companies Newmont Mining and TVX Gold became COGEMA's joint venture partners. In 1999, Iamgold acquired the concessions from COGEMA. In 2003 local opposition became active to avoid contamination in the Irquis River basin managed by the parishes of Tarqui and Victoria del Portete that supply water to 1,500 families. Local communities extended their alliances both within the province and beyond. Opposition faced violent repression. After the consultation, environmentalists gathered outside the Constitutional Court in Quito with banners saying "water is worth more than gold". Yaku Pérez said: "in water sources, in moors, wetlands, water recharge areas, we want no mining whatsoever, small or medium, mega, neither formal nor informal". The slogan *el agua vale más que el oro*, born in popular struggles against gold mining in Latin America, scaled up in Ecuador to the provincial political level and to the campaign of a presidential candidate.

Río Blanco

The Río Blanco project is located at the edge of the Cajas National Park whose moors flow a dozen rivers that carry water to Cuenca, the Ecuadorian coast and the rivers of the Amazon basin. In 1995, Rio Tinto Zinc (RTZ) discovered a gold mineralization on the Canoas concession. Social unrest emerged among communities belonging to the parishes of Molleturo and Chaucha because of unaccomplished economic promises, land tenure conflicts and environmental concerns. The company began to work in the Molleturo Protective Forest, an area embracing 25 watersheds and important sources of water for agriculture and human consumption. Communities opposing mining activities asked for withdrawal but authorities did not respond. In 1996, the Canadian mining firm IMC signed a joint venture agreement with RTZ.

IMC carried out exploration works and published its positive feasibility study in 2006. Local opposition grew at the same time as a nationwide anti-miming movement. In 2008, the new Constitutional mining mandate was issued. It should have meant the end of the IMCs contract as it overlaps with a protected forest. This did not happen, as president Correa was strongly in favour of mining. It is estimated that Rio Blanco contains 605,000 ounces of gold and 4.3 million ounces of silver. The project began operation in August 2016. Since 2019, a Chinese owned gold mine, Ecuagoldmining, has been prevented from mining by local resistance. In June 2019 the San Pedro de Yumate-Río Blanco highway, in the Molleturo parish of Cuenca (Azuay), had been cut off. Ecuagoldmining is part of Junefield Mineral Resources, of Hong Kong. By 2022 it threatened to sue the government. There had been no prior consultation with the communities. In the Confederation of Indigenous Nationalities of Ecuador's (CONAIE) uprising of October 2019, a local group burned the mining camp,

Among the lawyers for the Molleturo communities was Zhang Jingjing, a Chinese environmental lawyer who brought a number of public interest cases in China.

PÁRAMO DEL ALMORZADERO, COLOMBIA: COAL MINING[2]

Colombia is a country of much violence and heartless open cast coal mining; until recently, nearly one hundred million tons of coal were exported per year from the coastal regions

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El Cesar and La Guajira. Many conflicts have arisen between multinational companies (Drummond, BHP – also known as BHP Billiton – Glencore) and the local populations (Wayuu people and creole Colombians) who suffer from land and water grabbing, displacement and the pollution effects of coal transport by railway to the two export harbours.

However, the conflict we shall see takes place in the Colombian highlands, in a central part of the country. It is an important conflict, but its metabolic dimensions are much smaller than in the coast. The Páramo del Almorzadero is located in Santander, province of Garcia Rovira. Coal exploitation has been practised by different small companies since 1989. However, this moorland (a *páramo*) is of great importance because it contains streams, rivers and approximately 31 lagoons. The environmental conflict in the Páramo del Almorzadero is part of the national movement of defence of the paramos as valuable ecosystems with their *frailejones* (Espeletia) and as water providers (Figure 17.2).

The streams that are born in the municipalities of Cerrito, Guaca, San Andrés and Concepción, form a binational river system of strategic importance for Colombia and Venezuela. The peasant communities of the municipality and Censat Aguaviva, have maintained a campaign since 1989. Consequently, companies like CARBORIENTE cancelled their projects in this area. In 2004, the national company MINALMO began illegal exploitation over the old abandoned mines. Young people resumed a 'Campaign in Defence of Life and of Páramo del Almorzadero', summoning all the communities of the subregion. This forced the state Autonomous Corporation of Santander (CAS) to order the suspension of mining activity again.



Source: Nicolas Ramirez, Wikimedia Commons

Figure 17.2 Espeletia (frailejones), the unique vegetation of the páramos

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The return of CARBORIENTE in 2005 convinced communities of development possibilities, until environmental impacts were noticed and protests rose again. Forums were convened to discuss the situation and a lawsuit was filed. The Government of the Department declassified El Almorzadero to declare it as a Dry Páramo and thus enable its exploitation. The Campaign in Defence of Life and El Almorzadero forced the CAS to order the suspension of mining activity again. Finally, in September 2008, the tenders by the national government were again suspended. But, a year later, the government gave around 8,478 ha of land's concessions to Continental de Carbones to exploit coal in Paramo Almorzadero. In response, the communities carried out a popular initiative, collecting signatures for the Municipal Council to vote on an alternative proposal in which Paramo Almorzadero would be declared as a natural reserve for life.

In February 2012, the Regional Environmental Forum in Defence of the Paramo del Almorzadero was held with the support of the Association for the sustainable management of the environment – AMASOMA in the municipality of Chitagá (North of Santander). The meeting was attended by Corponor (Regional Autonomous Corporation of Norte de Santander), the mayors of Chitagá and El Cerrito, communities, peasant organizations, environmentalists, trade unions, youth, students aiming at rescuing the sacred, cultural and environmental value that the moorland has for all the villages and communities living around it. One of them is the famous U'wa people. Another actor is the Inter-American Association for the Defence of the Environment, a non-governmental organization of international environmental law. The conflict continues.

CONSULTATIONS OF LA COLOSA IN TOLIMA, COLOMBIA, AGAINST ANGLOGOLD ASHANTI

Between 2013 and 2017, two famous popular consultations were held in the department of Tolima, against the wishes of the Colombian government. The South African multinational AngloGold Ashanti (AGA) had a large concession granted by the Colombian Institute of Geology and Mining (Ingeominas) since 2008 to conduct gold exploration. La Colosa gold mine was perhaps the largest site found in the last years worldwide.

Since 2011, there were demonstrations in Cajarmarca and the capital Ibagué. According to Renzo García, the Environmental Committee in Defence of Life, various social, cultural and environmental organizations in Ibagué, Cajamarca and Anaime, Usocoello, the Marmato communities, the university students and the citizens of Armenia, Circasia, Chaparral, Rovira, Lebanon, gathered 12,000 minds and hearts in defence of the right to a healthy environment for present and future generations.

In Piedras[3]

As part of the La Colosa gold mining megaproject, part of the tailings dam would be located in the Piedras municipality. The material would be transported by gravity pipelines or by pumping systems from the processing plant to the storage area. Piedras has an agricultural vocation due to the richness of its soils and the availability of water. Although the provision for the treatment of the material extracted was not yet defined and the properties were in the process of being purchased, AGA sent a letter to the municipality in 2013 to consider the installation of this tailings dam of evacuation and storage of waste.

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After finding out the intention of AGA, there was a strong mobilization against the social and environmental impacts, such as the contamination of water with cyanide plus the dispossession of land. A popular consultation was held in July 2013: 2,971 people for NO and 26 people for YES. This decision was ratified by the Piedras municipal council declaring a ban on large-scale mining. However, AGA announced that the question asked in the consultation was biased. The government decreed the consultation was illegal: the mayor of the municipality had no competence to organize it since the natural resources of the subsoil were owned by the State and mining required a tailings deposit. These movements against Piedras did not proceed much further because in 2017 a popular consultation stopped in neighbouring municipality of Cajamarca the company that impudently carries the name of the Ashanti kingdom.

In Cajamarca, Tolima[4]

As Juan Miguel Hernández Bonilla reported in El Espectador:

> March 26, 2017 was an unforgettable day for the inhabitants of the municipality of Cajamarca (Tolima). The community said 'no' to the execution of mining projects in its territory and with 6,165 votes, equivalent to 97% of the votes cast, forced the multinational Anglogold Ashanti to stop gold exploration at the La Colosa mine.

In the following months, in a country marked by political violence, there was a proliferation of peaceful civic popular consultations against mining and also against extraction of fossil fuels. The Minister of Mines and Energy said the consultation "did not have the capacity to change the law"; Carlos Enciso, the former corporate operation manager of AngloGold Ashanti, insisted that the decision was not binding; also, the mayor of the municipality, Pedro Pablo Marín, said that in Cajamarca people were already sorry to have voted no to mining. The Municipal Council of Cajamarca reluctantly ordered a ban on mining in the territory and, therefore, AGA decided to stop operations indefinitely and leave the region.

Renzo García said:

> The ball is now in our court. It is our responsibility to demonstrate that agriculture and ecotourism are a real possibility to generate wealth and permanent good living in the territory. It is our duty to potentiate farmer organisations, promote adequate land use, advocate for the consumption of healthy food and generate employment for the entire population of Cajamarca.

In June 2011, British MP Ian Lavery, taking into account AGA's environmental and human rights record in Ghana and the Democratic Republic of the Congo, found it worrisome that this company had a concession in Colombia with inferred resources of more than 25 million ounces of gold (about US$ 30,000 billion). But in 2017 a popular consultation stopped the powerful mining company.

PALM OIL CONFLICT: HACIENDA LAS PAVAS IN COLOMBIA[5]

The cultivation of oil palm extends in tropical America, together with blatant land grabbing and open violence. In Colombia, Afro-descendant people movements in Chocó are famous. In

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that region, the Autodefensas Unidas de Colombia paramilitary group were created at the end of the 1990s and were responsible for grabbing the lands of the inhabitants of the Jiguamiandó and Curvaradó river basins, while several palm companies, such as Urapalma SA, benefited from this violence. We focus on the conflict of the Hacienda Las Pavas (around 1200 ha), in the Bolívar region. The conflict was not only over land but also for the control of the territory to establish a development model associated with palm production. This model is devastating in environmental terms because of the destruction of wetlands; but it is also socially exclusive and racist, because it appropriates the territory providing livelihood to the Afro-Colombian peasants. It generated displacement. This conflict became known outside of Colombia and ended relatively well.

The Las Pavas case appeared to public opinion as a dispute between 123 peasant families displaced from their lands and one of Colombia's large agribusiness companies, DAABON. Between 1994 and 2009 these families occupied Las Pavas. In 2006, they requested extinction of ownership before the Colombian Institute of Rural Development through an Agrarian Reform action. In 2007, the El Labrador Consortium formed by the DAABON group and Aportes San Isidro bought the property from the owner who had abandoned it, initiating the legal process to expel the peasants from the farm. This was achieved through police action in July 2009. However, the purchase and subsequent expulsion of peasants were obtained by passing over the process of domain extinction initiated earlier. This irregularity made it possible to put a demand by ASOCAB, an organization that grouped the peasants displaced, to restart the process by a decision of the Constitutional Court of Colombia in April 2011. The peasants were able to return to Las Pavas.

The implications of this conflict went international since DAABON was a provider of The Body Shop, a recognized European chain of skincare items. There was wide dissemination in the media and various campaigns in different cities of Colombia and Europe. The Body Shop terminated their contract with the DAABON group, and the latter then chose to sell its share to the second owner, Aportes San Isidro.

In November 2011, the prosecutor of Cartagena, Myriam Martínez, based on the versions of witnesses linked to the palm company, issued a resolution that contradicted the provisions of the Constitutional Court. She stated that the peasants were not displaced and never had possession of the property, accusing several of the leaders of ASOCAB of being members of a guerrilla movement. This statement caused a stir in national public opinion. However, after the declaration of experts and NGOs, a visit of the Attorney General to Las Pavas and a march of ASOCAB, the case continued in its process of domain extinction.

MANGROVES VS. SHRIMP IN ECUADOR

I now change the landscape to coastal areas that are still or used to be covered by mangroves. We travel south to the coast of Ecuador. Mangrove forests are threatened by several causes – urbanization in Guayaquil but also deforestation to make room for industrial shrimp farming for export. I shall analyze one of many cases, in the little island of Muisne in Ecuador. Here again a local conflict acquired national relevance and also became known internationally. The areas with largest mangrove forests are in Indonesia (with its many islands), Brazil, Malaysia, Papua New Guinea, Australia, Nigeria and the Gulf of Guinea, Mexico, Myanmar, India and Bangladesh. In the case of Ecuador, the social struggles in defence of mangroves are well

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known. Women of Afro-American descent have been among the main protagonists. They are linked to the rebirth of the Comunidades Negras against displacement, modernization and so-called development, as documented by anthropologist Arturo Escobar in Colombia (Figure 17.3).

From the mid-1980s the expansion of intensive shrimp farms in the Muisne Canton, in the coastal province of northern Esmeraldas, was strongly opposed by locals, and environmental associations like Fundecol. The mangroves were the main source of livelihood for communities and residents until being almost entirely destroyed.

"Sensitization" is an awkward word in English, it is equivalent to "conscientization", in Paulo Freire's vocabulary, meaning to awaken people's awareness. The sensitization of the population about the importance of the mangrove ecosystem was primordial. In 1998, the National Coordinating Corporation for the Defence of the Mangrove Ecosystem (C-Condem) was founded. It brought together associations, communities based on seafood, gatherers fisherfolk, fronts and unions of peoples of the mangrove ecosystem, as well as environmental and social NGOs from other provinces in Ecuador. A crucial concept is "ancestral peoples", meaning the people of Afro-American descent that in the British West Indies could be called *maroons* and in Spanish *cimarrones*. These are *palenques* and *quilombolas* of Colombia and Brazil. C-Condem's goals were to build community management proposals for the recovery, conservation and defence of the mangrove ecosystem that guaranteed the human rights of the ancestral peoples. They scaled up their actions, networking from local and national, to regional and international levels.



Source: Greenpeace/Daniel Beltrá

Figure 17.3 *Este pueblo nació del manglar*

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The first meeting gathering communities defending mangroves from different Latin-American countries happened in 1993, in Muisne. Since 2001, the Redmanglar Internacional gathered members from ten Latin-American countries. Most mangroves disappeared in Muisne as elsewhere on the coast of Ecuador but there are attempts to replant. Still, Ecuadorian legislation legalized the industrial farming practices in mangrove areas.

One morning in July 1998, I took part as a sympathetic observer in an action by Greenpeace together with Fundecol, in destroying at sunrise one crop of shrimp from an illegal pond by opening a hole in one of the walls, letting the water flow out, and replanting mangrove seedlings. I quote below a call from a woman of Muisne (a *conchera* – a collector of clams) a few months after the visit by Greenpeace. Her words (translated into English) were distributed to international networks by Fundecol. She said nothing about the monetary value of environmental services from mangroves such as defence of the coast against sea level rise, carbon uptake or defence of biodiversity. She argued for the commons against a "tragedy of enclosures", in terms of what in the United States would be called "environmental justice" against "environmental racism". She said:

> We have always been ready to cope with everything, and now more than ever, but they want to humiliate us because we are black, because we are poor, but one does not choose the race into which one is born, nor does one choose not to have anything to eat, nor to be ill. But I am proud of my race and of being a *conchera* because it is my race that gives me strength to battle in defence of what my parents were, and my children will inherit; proud of being a *conchera* because I have never stolen anything from anyone, I have never taken anybody's bread from their mouth to fill mine, because I have never crawled on my knees asking anybody for money, and I have always lived standing up. Now we are struggling for something which is ours, our ecosystem, but not because we are professional ecologists but because we must remain alive, because if the mangroves disappear, a whole people disappear, we all disappear, we shall no longer be part of the history of Muisne, we shall ourselves exist no longer… I do not know what will happen to us if the mangroves disappear, we shall eat garbage in the outskirts of the city of Esmeraldas or in Guayaquil, we shall become prostitutes, I do not know what will happen to us if the mangroves disappear… We think, if the *camaroneros* [commercial shrimp growers] who are not the rightful owners nevertheless now prevent us and the *carboneros* [artisanal charcoal makers] from getting through the lands they have taken, not allowing us to get across the *esteros* [the swamps in the estuary], shouting and shooting at us, what will happen next, when the government gives them the lands [legally]? Will they put up big "Private Property" signs? Will they kill us with the blessing of the President?

GALÁPAGOS FISHERIES[6]

The present major conflict, in the 2020s, is with the Chinese fishing fleet that intrudes into the territorial waters of Ecuador. But behind this ecological and geopolitical conflict on marine biodiversity conservation, there is a long history of international conflicts. Many serious clashes between the Galápagos' fishing sector, the authorities and conservation scientists occurred in the 1990s. They were often on sea cucumber fishing, like with the Japanese in the 1990s. In 2017, the ship Fu Yuan Yu Leng 999 was intercepted inside the UNESCO-protected Galápagos Marine Reserve with 300 tons of shark onboard, including endangered hammerheads. There were also conflicts with and within the small artisanal fisheries of Galápagos, an area with a small but rapidly increasing human population induced by the increase of tourism. The conservation of the non-marine biodiversity of Galápagos has also been conflictive – this

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was an area almost without human presence, still at the time of Darwin's visit with the *Beagle* when he saw the turtles and reflected on the peculiarities of the finches.

In July 2020, the Ecuadorian Navy issued a warning that a foreign fishing fleet of about 260 vessels was stationed just outside the exclusive economic zone (EEZ), around the Galápagos Islands. By the end of July, the fleet had swelled to over 342 vessels, the vast majority Chinese-flagged or Chinese-owned. Heavily dominated by trawlers, they often went "dark" for up to 17 days at a time, which is illegal if done deliberately. Illegal fishing constitutes the sixth most lucrative global criminal economy, with estimated revenues of $15 to $36 billion, according to a 2017 report by Global Financial Integrity. China's fishing fleet, the world's biggest, is a major contributor to this problem. Of course, which extractive practices are considered "criminal" and which are not is a moot point.

The fleet moved between Ecuador and Chile. They mostly fish squid. Yet the sheer number of vessels means there are concerns that not only is the fleet overexploiting squid but catching other species as well, including endangered ones such as rays and hammerhead sharks. There have been joint statements issued by the Chilean Foreign Ministry in conjunction with that of Ecuador, Peru and Colombia which condemn illegal, unreported and unregulated (IUU) fishing practices, and commit to collaborating on deepening information exchange and to strengthening regional fishery management organizations. More importantly, it also highlights the decision by the Permanent Commission to the South Pacific, a maritime regulatory body, to condemn any act that resembles IUU fishing, even if it occurs adjacent to a country's EEZ. In other words, the next time a foreign fleet mass trawls off the waters of one of these countries, all four agree to clearly label this as IUU fishing.

COASTAL CONFLICTS IN PERU

The following two cases have something in common – industrial developments that threaten biological conservation and alliances of different social forces opposing them in urban contexts.

Fishmeal in Chimbote[7]

Going south from Ecuador, we would reach Paita, the coastal port from where *Cinchona officinalis* was exported in colonial and post-colonial times, and where Manuela Saenz (Bolivar's lover and political ally) lived after his death. Still further south on the coast, past other valleys, cities and sugarcane plantations, we reach the large polluted fishmeal port and industrial city of Chimbote.

Peru is the world's biggest fishmeal producer. The fishmeal factories that sprang up in the 1960s polluted the air and the waters terribly. There were complaints as it caused major health problems for Chimbote's population of 350,000. The industry also severely degrades the marine environment by bottom-net dragging used to catch tons of fish. Heated water used in the production process is returned to the sea creating dead zones along the coast.

Fishmeal production for export is an aberration of social metabolism. There is massive fish capture in the very productive Humboldt current, then ground up to make fishmeal for export to feed animals. It is a similar resource to guano along the trophic chain – the fishmeal rather at the beginning and the guano at the end. Peru processes about 5 million

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tons of anchovy for over one million tons of fishmeal per year plus the oil. The amounts go down when there is a Niño episode, then come back again. Georg Borgstrom's concept of "ghost acreage" (which inspired Bill Rees' concept of "ecological footprint") calculated the amount of land saved in importing countries by the many tons of protein imported in the form of fishmeal.

A local activist, Maria Elena Foronda, won a Goldman Prize in 2003. She later became a Member of Parliament in the environmentalist group Tierra y Libertad led by Marco Arana. She spearheaded a campaign to clean up Peru's fishmeal industry, which spewed untreated industrial waste causing cholera outbreaks, fungal skin diseases and the worst pollution problems of Peru's coastal cities. Foronda's father was a union lawyer and influenced her decision to dedicate her life to social justice. After completing her master's degree in Mexico, she moved back to Chimbote to do volunteer social work. Foronda dedicated herself to addressing the ubiquitous environmental and health problems caused by the fishmeal industry; she successfully reduced pollution and improved the health standards in Chimbote and other Peruvian coastal cities. She founded and directed Natura and formed partnerships with progressive fishmeal companies, convincing them to operate in a more environmentally responsible manner.

The Ramsar Wetland of Pantanos de Villa, Lima[8]

In the 1990s, a Ramsar site in suburban Lima was threatened by industrial developments – the main one, a large and prosaic pasta factory belonging to the Chilean company Lucchetti which was part of the Chilean Luksic group. The project became conflictive not only for the damage it would cause to a weakly protected ecosystem but also for the discord that Chile and Peru have historically faced since the War of the Pacific (on guano and saltpetre) in 1880.

The Pantanos de Villa Wildlife Refuge is a 300 ha wetland in the district of Chorrillos included in the Ramsar agreement. It shelters about 550 species of migratory and native birds. In the 1990s, Lucchetti built a six-storey building without approval of the EIA or authorization for construction. The Municipality of Lima demanded compliance with the regulations and requested the project to be stopped. The Pantanos de Villa Swamp Defence Committee was created. Lucchetti managed to win several legal cases. The ambiguity of the authorities was evident, and the Municipality of Lima allowed the construction of a highway that cuts the swamps into two, and urbanization companies arrived. Then began a judicial battle between all the actors. The population was actively involved, but it was not until 2003 that the Lucchetti company withdrew, forced by judicial and administrative decisions. The intervention of Chilean environmentalists was remarkable.

The 'Ramsar' category is only granted to wetlands that have special international importance as a habitat for water and migratory birds. The Villa Swamps are the only protected area within Lima´s urban area. It is formed by cattails and lagoons that are integrated into the hydrological system of the Rímac River, whose underground waters emerge in a natural depression. Cattails are common plants in large marshes and on the edge of ponds. These wetlands have become part of the migratory corridor for thousands of birds. The growing urban settlement of neighbouring hillsides, the drilling of water wells, the lack of drainage networks and the consolidation of industries was ecologically strangling the legally protected natural area.

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COPPER MINING, NAKED VIOLENCE, CHINESE COMPANIES: LAS BAMBAS AND MIRADOR

Two signs of the times are the increasing demand for copper and the presence of Chinese mining companies outside of China. The Andes and the upper Amazon basin are witnesses to these variations on an old theme.

Las Bambas[9]

Las Bambas could become the second largest world mine for copper production. Despite the opposition of communities, the project continues under construction by the MMG company supported by the Peruvian state. It is located in the Apurímac region (5,000 m high), in central Peru. Its area of influence covers 49 communities of which six are within the mining complex. This is one of the areas with the highest poverty rates in Peru. There will be some inflow of money, for some years, but poverty, in terms of access to land and water, increases. Poverty is multidimensional, as shown in so many ecological distribution conflicts.

There are deposits of copper, gold, silver and iron. Regarding copper, the project has reserves of more than 40 million tons, like two years of world production. This site was discovered at the beginning of the twentieth century. In 2003, the government convened interested national and international companies to qualify for the auction, and in August 2004 the public auction was won by Xstrata AG Switzerland. Xstrata (later Glencore) is present in the controversial Espinar copper mine in the neighbouring region of Cusco where many protestors have been killed. In Las Bambas during the auction process, the communities located in the area of influence opposed the project, arguing the need to conduct a popular consultation. In March 2005, Xstrata began exploration work until 2011 when the EIA was approved. The communities' claims became even stronger from 2014, when Xstrata sold its stake in the mine to the MMG Ltd consortium, an external subsidiary of China Minmetals Corp, for US$ 5,850 million. The new company was breaking the agreements made between the communities and Xstrata. In 2015, they took de facto measures such as the retention of 100 mine contractor workers and strikes. Some of the demands were: hiring of its inhabitants, payments for social water licences and training for local activities, as well as the installation and expansion of forest nurseries in the 33 communities.

The Las Bambas mega project includes an open pit and the construction of a copper processing plant and its by-products in the upper part of the Challhuahuacho River. The construction of a mineral pipeline to the Cusco region of 206 km was proposed, which caused several conflicts in local communities. However, this plan changed to building a concentrate processing plant near the mine. This concentrate goes with heavy truck transport (and eventually by rail or by pipeline), to the port of Matarani at 295 km. The mine is expected to have a life of 20 years. At the end of September 2015, there was a large protest in Las Bambas against the planned treatment plant in which several peasants died and some police officers were injured. The incidents have continued since then. There are regular reports of killing of demonstrators, whose main protests have to do with damage from transport of copper in the mining corridor that connects the Las Bambas with the port of Matarani.

In 2016, Quintino Cereceda Huisa, from the Choquecca community, died from a bullet wound to the head by the police. Together with four hundred community members, his wife

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Source: M. Neyra, El Comercio, 20 October 2016

Figure 17.4 *Quintino Cereceda burial: "I want justice for my husband, that the killers be found", said his wife, Antonia Huillca, in Quechua*

Antonia Huillca veiled his body on a hill overnight awaiting judicial authority. This was just one of about one hundred environmental victims killed in Peru since the year 2000. Raquel Neyra in her book on environmental conflicts in Peru (Neyra 2020) gives the names, age, gender and circumstances of all of them (Figure 17.4).

El Mirador, Cordillera del Cóndor, Ecuardor[10]

The Mirador project is located in the Cordillera del Cóndor, in the province of Zamora Chinchipe, canton El Pangui. The Cordillera del Cóndor is found in what is called the "jungle eyebrow", the territory that goes down from the highlands to the Amazon plain, along the disputed border between Peru and Ecuador. Mirador is one of several new mines in the region. It is a site of high biological diversity and environmental fragility. It has been home to the Shuar community, one of the nationalities in the Ecuadorian Amazon.

Glencore company carried out exploration work in the area in 1995. After Glencore was transferred to Billiton, they made drilling work on their San Carlos, Panantza and Kutukú projects. In October 1999, Billiton entered into an alliance with Corriente Resources and Lowell Mineral Exploration for exploration. Direct result of this work was the discovery of two new deposits in Mirador and Warintza. The company Corriente Resources, sold its concession rights to the Chinese company ECSA EcuaCorriente S.A., which had the support of Ecuador presidents Rafael Correa and Lenin Moreno (2007–20). This represents an investment of US$ 1.7 billion.

The government support and the offer of benefits generated by the mining activity did not break the resistance of Shuar organizations but divided them. On 5 March 2012, a group

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Source: La CONAIE

Figure 17.5 *The CONAIE logo: Tierra, Cultura y Libertad, with the names of Indigenous nationalities surviving in Ecuador*

of Ecological Action women and other organizations symbolically occupied in Quito the Chinese Embassy to protest. That same month, the March for Life, Water and Dignity of the Peoples went from Pangui to Quito, headed by CONAIE, the prefect of Zamora Chinchipe, Salvador Quishpe and various social organizations. Since then, protests have continued.

Tongling Nonferrous Metals Group, a mining conglomerate from China's Anhui province, along with China Railway Construction Corporation (CRCC), own the Mirador mine. Local people have been evicted from Tundayme. Other Shuar, who used to live where the Panantza-San Carlos copper mine now operates in another corner of the Cóndor range 40 km away, complained of similarly violent evictions.

The resistance to mining in Cordillera del Cóndor took some time to develop. By 2019 and 2020, it was in full swing. CONAIE has always demanded that the government previously consults them on mining contracts in Indigenous territories (Figure 17.5). In this case, the CONAIE does not acknowledge the agreement between the State and the mining companies. The president of CONAIE has been Jaime Vargas, a Shuar leader.

As reported by Jonathan Watts in the *Guardian* on 6 December 2014,

> The body of an indigenous leader who was opposed to a major mining project in Ecuador was found bound and buried, days before he planned to take his campaign to international climate talks in Lima. The killing highlights the violence and harassment facing environmental activists in Ecuador, following the confiscation last week of a bus carrying climate campaigners who planned

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to denounce president Rafael Correa at the United Nations conference in Lima. The victim, José Isidro Tendentza, a former vice-president of the Shuar Federation of Zamora, had been missing since 28 November, when he was last seen on his way to a meeting of protesters against the Mirador copper and gold mine. After a tip-off on Tuesday, his son Jorge unearthed the body from a grave marked "no name".

Something like this is less usual in Ecuador than in Peru.

SARAYAKU AND YASUNI ITT IN ECUADOR[11]

In 2013, our hopes were disappointed by President Rafael Correa of Ecuador when he gave up the plan called "Yasuni ITT". I wrote this article "Yasunizing the world?" in *The Africa Report* (2 May 2013).

Arrhenius announced (in 1896) that by burning coal found underground, industrialized countries were releasing more and more carbon dioxide in the atmosphere and that this would increase temperatures. He could not know that in the twentieth century coal burning worldwide would increase seven-fold or that in addition to coal, oil and natural gas would be added; and the effects of deforestation. What happens is that the new vegetation and the oceans do not absorb all the carbon dioxide produced by the human economy. Fossil fuels can be likened to bottled photosynthesis from millions of years ago. […] In this sense the proposal to leave some of the oil, coal and gas underground is clearly reasonable. […] This proposal first came from places where the extraction of oil, coal or gas is doing great harm; for example, the Amazon of Ecuador and Peru, or the Niger Delta. In Mexico, oil has caused much environmental damage in Tabasco and Campeche, and in 2010 BP caused a major spill in the Gulf of Mexico. But there are also disasters caused by coal mining in Colombia, China and India and from the extraction of tar sands in Canada. Everywhere there would be local and global reasons for leaving fossil fuels underground.

In Ecuador, the organisation Acción Ecológica proposed in 2006 to leave 850 million barrels of oil in the ground from the ITT (Ishpingo, Tiputini Tambococha) wells located in the Yasuní National Park, down the Napo River on the border with Peru. The proposal was accepted by the then Minister of Energy and Mines, Alberto Acosta, and also reluctantly endorsed by President Rafael Correa. However, a clause was added. Ecuador would make a financial sacrifice for its own good and that of humanity. It would forgo the extraction of oil (which if burnt would produce roughly 410 million tonnes of carbon dioxide) thereby conserving the unique local biodiversity, and respecting Indigenous rights. The country requested foreign contribution equivalent to about half of the money that would have been earned, some US$ 3.6 billion in total, paid over a period of ten or twelve years. These contributions would be deposited in a trust fund jointly administered with the UNDP and formed on 3rd August 2010.

The offer was in place, the money was arriving slowly, but President Correa decided to give up, and open the ITT fields for oil extraction. Correa is not an environmentalist although he defended the Yasuní proposal for a while in international forums. He could have become a leader from the South in the struggle humankind is losing against climate change. He chose not to take this role. He is an economist, after all.

The idea of leaving the oil underground was born in the Niger Delta. Some speak of "ogonizar" rather than "yasunizar" because after 1995 and the death of Ken Saro-Wiwa, the Ogoni people managed to expel Shell for many years. There they say, "leave oil in the soil". From elsewhere: "leave coal in the hole", "leave gas under the grass", launching proposals similar to that of Ecuador. So much so that Acción Ecológica wrote to the Royal Academy of the Spanish Language in order to put the word "yasunizar" in the dictionary.

In Guatemala, the proposal was made not to extract oil from the Laguna del Tigre, a Ramsar site in the Petén. On the Colombian islands of San Andrés and Providencia (near to the Nicaraguan coast), the decision has been made to leave the oil underground in accordance with local protests.

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> In distant New Zealand, those who oppose the brutal open-pit mining of lignite know the word "yasunizar". […] There are local and global reasons for "yasunizing" and "ogonizing" the world".

There are now many local LFFU movements, "leave fossil fuels underground", as we saw in Chapter 16. In Ecuador, considering multiple criteria and not only economic gain, the non-extraction of oil in the Yasuní ITT emerged in 2007 as being possibly more beneficial for Ecuador while preventing the emissions associated with burning many barrels of oil as an active step in global climate change mitigation.

While we failed to secure the pioneering Yasuni ITT proposal, in another location not so far away, a community of Indigenous Kichwa people stopped oil exploration by themselves. This is the community of Sarayaku, one of the places where the use of the notion of Sumak Kawsay, *buen vivir*, came from (as shown in writings by Carlos Viteri) before it was included in the 2008 Constitution of Ecuador. The Kichwa people of Sarayaku had been appointed legal owners of their ancestral territory in 1992, and they strongly opposed the Block 23 oil exploitation project in 1996. They launched a campaign supported by environmentalists and other local associations against the facilities to be built by the Argentinian General Company of Combustibles (CGC). Back in the 1930s, Shell settled in that very area, triggering the Sarayaku people's resistance to oil extraction for the first time. In the following years, several oil companies tried to follow Shell in exploiting the ancestral territories: US Company Western Amoco in 1970, ldela Arco Oriente in 1989 and Argentinean CGC in 1996. In 2002, the CGC oil company started its seismic explorations, coupled with the militarization of the territory. Exploration meant that 1.5 tons of explosives were located in 465 different spots between 2002 and 2003.

The activism against the project was criminalized. Still the Association of the Kichwa Peoples from Sarayaku achieved international media attention when in 2003 they presented a petition to the Inter-American Court of Human Rights (CIDH) denouncing the Ecuadorian State damages against Sarayaku. The CIDH finally ruled in favour of the Kichwa people in June 2012. Today, there are new threats to the Sarayaku territory's integrity. Sarayaku's people are proud indeed of their national and international role.

BOLIVIA

Amayapampa and Capasirca, a Mining Conflict[12]

The environmental, social, economic and political history of Bolivia has largely been a history of mining. From genocidal and modern silver mining in the colonial era of Potosí (masterfully described by Horacio Machado 2018) to the exploitation of tin in the highlands and the formation of mining unions that have highly influenced the 1952 Bolivian revolution.

A typical mining conflict was the killing in Amayapampa and Capasirca in December 1996, in northern Potosí. Convinced that the capitalist exploitation of the mines only leaves empty holes, environmental pollution and land and rivers poisoned with mercury, the communities called on the Canadian transnational Vista Gold Corporation to leave the area and forget their attempts to seize gold exploitation from the Amayapampa mine. With this conviction, the company was expelled in 1996, with the cost of ten deaths among peasants and workers due to the repression of the Army during the presidential term of Gonzalo Sánchez de

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Lozada. In 2008, the company was acquired by Republic Gold. In March 2012, the president of the Mineral Corporation of Bolivia COMIBOL declared that the government would take over Amayapampa, because the mining company had tried for several years to start operations without success. Years later, the mine that cost so much blood hardly produces anything.

Takovo Mora's Prior Consultation on Oil Extraction[13]

The extraction frontier for oil and gas advances in Bolivia, and the case analyzed here took place to the east, in a Guaraní village in Santa Cruz. It is a small conflict that nevertheless symbolizes a general pattern that took place as the presidential mandates of Evo Morales succeeded each other. He acceded to his position after glorious episodes of social rebellion of the Bolivian people in the so-called "wars" against water privatization in Cochabamba in 1999 and against gas privatization in 2003.

The exploration of oil fields of the state-owned Yacimientos Petrolíferos Fiscales Bolivianos Chaco S.A (YPFB) in Guaraní territory in Takovo Mora led to a blockade of the Santa Cruz to Camiri highway at the end of August 2015. It ended with the violent intervention of the police: raiding homes and gassing people, among other abuses. Twenty-six people were apprehended and released in the following days. This act of disobedience began because the Guaraní community (of about 2,000 people) demanded compliance with the Law of Consultation that requires the consent of the Indigenous peoples affected. In the debate over the location of the four oil wells to be explored in relation to the Community Land of Origin (TCO) of the Takovo Mora Guarani, YPFB argued that the hydrocarbon activities in El Dorado field were carried out in private properties that are not within the TCO. Even if the land was private, consultation was required, as the extraction of oil would affect a wider TCO territory. However, President Evo Morales himself ratified that the exploration activities be carried out on private property. Also, the president of the Senate said: "The exploration activity is being done in private properties […]. Therefore, there is no consultation and no compensation".

The Bolivia Research and Information Center (CEDIB) of Cochabamba warned that hydrocarbon exploration with "zero" environmental impact was impossible because, regardless of the technology used, the work requires seismic exploration and drilling.

El Bala and Chepete: Hydropower[14]

The Madidi National Park and Integrated Management Natural Area are located in the northwest of La Paz department. It is considered the reserve with the greatest world diversity of flora and fauna, as well as ecological floors ranging from perpetual snow to the Amazonian plain. The area has traditionally been inhabited by Indigenous peoples such as the Tacanas, Tsimane, Lecos, Ese Ejja and Mossetenes who are grouped in the Central of Indigenous Peoples of La Paz (CPILAP). Since the 1990s, they have undertaken responsible community ecotourism, becoming their economic base. Pilón Lajas was declared a Biosphere Reserve by UNESCO's Man and Biosphere programme in 1977. It is also an oil and gas frontier (Chapter 27). It is part of a chain of other ecological preservation parks that extend to Peru.

This area is vulnerable to various "development" projects such as the El Bala hydroelectric project. The proposal in the 1970s considered a mega-dam 205 m high. However, in 1995, it was taken up as a national priority strategy presenting the proposal of a dam 169 m high, with a plant of 2,460 MW. It was not a viable alternative due to the enormous extension and volume

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that the lake would occupy. The Beni and the Mamoré Rivers eventually form the Madeira River in the Amazon of Brazil.

In 1999, the alternative of building two dams was presented, one in the narrow passage of El Bala and another in the mountains of Chepete, 40 km upstream, where the Beni River crosses the last foothills of the Andes. Together, they would generate 3,000 MW at a cost of US$ 6 billion. About 5,360 people would be affected, four Indigenous communities, the Madidi National Park and the Pilón Reserve. That is why the Indigenous communities have positioned themselves against this project. They have been joined by environmental groups such as the Bolivian Forum on Environment and Development, the Eco Bolivia Foundation, Conservation Strategy Fund, Ecoa, International Rivers and Amazonia without Dams. There was a river "roadblock" organized by Indigenous peoples. The Solón Foundation presented several studies. There are Italian and Chinese companies involved in the region. In the area to be flooded, there is an archaeological heritage of 4,000 years ago that has not yet been properly studied. The magnitude of the impact on human health that stagnant water would cause is not analyzed in the EIA.

CHILE

Chile belongs to the Andes and to the Cono Sur. Even before the 2019 riots and the new government, there was a relatively strong presence of ecological economics (through Manfred Max-Neef) and political ecology in Chile, with an institute founded by Manuel Baquedano and Sara Larraín as early as 1990. It was the intellectual cradle of the claims for the unpaid Ecological Debt from the North to the South and the initial home of the founders of OCMAL and the Latin American Observatory of Environmental Conflicts (OLCA) with Lucio Cuenca and César Padilla. OCMAL publishes inventories and maps that are at the root of the EJAtlas in a relationship with myself that dates back 30 years. I choose only three cases from Chile for this book, two on mining contamination and one on biological conservation.

Antofagasta: This Dust is Killing Me[15]

In Antofagasta, there have been strong complaints against black dust from transport of exported copper concentrates. Hence the direct-action movement in 2016 with the slogan *Este polvo te mata* – this dust kills you. This case was sent to the EJAtlas from the movement itself in Chile to make it more visible. After a brave fight and inventing new forms of action such as a *velatón* in the harbour (a vigil with candles), the struggle was lost.

Antofagasta has been severely contaminated with toxic waste, especially following the installation of a Zinc Concentrate warehouse at the International Terminal (ITA). According to studies by the Institute of Public Health, a high presence of lead and excessive arsenic was detected. There was a desire to build another warehouse to store and export copper concentrates from the Sierra Gorda Mining Company on the Luksic Group's FCAB Railroad. In this context, in March 2016, the Chamber of Deputies approved a report that included responsibilities, proposals and recommendations. Congressman Giorgio Jackson read a letter sent by Ricardo Díaz, spokesperson for the organization *Este Polvo Te Mata*. It represented the demands of Antofagasta's residents: "Every morning my car and the windows of my house are impregnated with a shiny and viscous black dust. The Medical Association proved that this dust has more than 16 heavy metals".

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The Institute of Public Health ratified that there were in fact 19 heavy metals associated with the emergence of nervous diseases, learning disorders and cancer. "Suddenly we realised that the number of people suffering from cancer was more than eight times the national average and we realised that the figures for autism in the region are the highest", lamented Ricardo Diaz. Consequently, it was reported that the shipment through Antofagasta would probably not be made. One crucial moment was the stopping of trucks by the movement. The interview with Ricardo Diaz reflects on the birth and actions of this social movement and his role in it:

- How many people actually make up the "Hard Core" of this movement (Este Polvo Te Mata - EPTM)?
  There are around fifteen people. No more than that.
- Do you meet regularly?
  We usually meet about once a week. And, there, we visualise and think about what to do, how to generate media impact. In the beginning, actually, that was the objective: to generate media impact, and to raise awareness amongst people.
- That is, to socialize a demand?
  Exactly. It was not only about the people who lived in that sector, it was understood as an environmental demand of all Antofagasta. When we made the first video, when we stopped the trucks, […] the video started to go viral. […] Then we got a Whatsapp message: 'The trucks are leaving today'. What do we do? So, I said, 'Let's go to the port'. Then we got to the port, we started lighting candles, we started a velatón, and […] people who think differently gather together.
- And that would be the environmental demand?
  Yes, it brings together people from the left, people from the right, people who even fight each other.
- Ricardo, do you think that, since the birth of EPTM, the original idea of the copper concentrate storehouse getting out from the centre of the city, as a goal of the movement, has been changed to date?
  I believe that it has been mutating, because the need has made us see that the basic problem has to do with the lack of territorial planning and the lack of rationality with regard to the production processes of the port. That has been mutating. We began the fight to get the copper concentrates out of the port. That's right… But then you ask yourself why was that installed in the first place? It was installed because the authorities didn't say anything. And why didn't they say anything? Because PLADECO with its Communal Plan didn't say anything about the port either. And why didn't they say anything? Because the Territorial Development Division of the Region does not work. So, you realise that the warehouse was the [tip of the] iceberg of a great disaster that we had here: that no one thinks of the city for the environment.
- Would you say, then, that the initial demand against the ITA has been overcome, and that EPTM is installed as a movement that fights for the integral environmental demand of the city of Antofagasta?
  Of course. Besides, when you talk about the "movement" you must understand that it is not a Coordination, nor a Grouping, it is not an Organisation that has a certain statute and certain regulations and that functions in a certain way. We began to see the issue of the children who were sick, and we began to realise that there were deficiencies in health in general. The important thing is to defend the city. And so different groups joined together, and at one point we called for the great march that took place in March of this year. And that great march was made by a group of groups. […] Some of them are interested in health. The fishermen with the interest of the contamination of the sea. There were some mining unions for their health. Many groups of former dockworkers, who are contaminated, who have cancer. So, in the end, the issue is "pollution – environmental health", but also the issue is "health in general".
- Does it have something to do with the "right to the city" in words of Lefebvre?
  Of course. The idea is that what has characterised EPTM, in reality, is its dynamism, which does not make it an organic, structured thing. It has been, basically, responding to the development

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of concrete activities. In other words, it has been mutating. In fact, I think that was precisely its strength. How do you dismantle social movements? They can be disarticulated if there is a leader, you sit him/her down at the table to negotiate, and there they die.

- Doesn't that happen in this movement?
  That doesn't happen here. Because, deep down, there is no leader here.
- But your figure is very noticeable, and it is clearly associated with EPTM.
  Yes, but I am only the spokesman.

In July 2021, after the political change in Chile, Ricardo Diaz was elected regional governor of Antofagasta.

Boliden in Arica: Lead Pollution and Corporate Social Irresponsibility[16]

Between 1984 and 1989, 20,000 tonnes of mining waste landed in Chile from the Ronnskar plant in Skellefteå, Sweden, owned by the Swedish company Boliden, which wanted to avoid the ban that would come with the Basel Convention, which in theory prohibits the export of toxic waste. The Procesadora Metalúrgica (PROMEL) in Chile was in charge of importing the waste with the aim of extracting the remaining gold and silver. However, because it did not have the technology, the waste was deposited outdoors in the city of Arica. The imports were allowed by the Chilean Ministry of Health. The waste included heavy metals like lead and arsenic. The imported contamination allegedly caused 90 deaths and affected 700–900 people directly.

Between 1989–95, the Housing and Urban Development Service provided basic housing to poor people, and it was not until 1997 that a workshop held by the Peace and Justice Service (SERPAJ) began to identify contamination and health damage in one of the housing projects, especially to children who by then had been born with hydrocephalus, spina bifida and Chiari disease (structural defects in the cerebellum). Adults, on the other hand, more regularly identified joint and bone pain, chronic cough, memory loss, chronic fatigue, cancer etc.

In 1997, SERPAJ and the neighbours asked for an analysis that was carried out by the Department of Chemistry of the University of Tarapacá. It revealed the existence of toxic minerals in the area. Within this framework, AFCONTA (Association of Families Contaminated by Lead) was created, which sought medical solutions to the problems of the affected people and to file lawsuits against both the Chilean state and Boliden.

From the Chamber of Deputies, a commission was created to investigate the lead case in Arica in 2003. The Municipality of Arica also created an Office of the Environment. There were several personal claims: in 2007 and 2009, the Supreme Court ruled in favour of some of the plaintiffs and ordered the State to financially compensate some residents. The compensation was only made to part of the population. Other complaints and mobilizations forced the Health Service to carry out blood tests and monitor those affected.

In 2013, a group of Swedish lawyers filed a lawsuit with the court in Skellefteå against Boliden. In a judgment in March 2018, the Court agreed that Boliden had been negligent in several areas, but the decision was still not in favour of the plaintiffs. The victims submitted an appeal to the Umeå court. In addition, various Swedish activists demanded justice in the case of Arica, and it focused public attention through media reports and the production of the documentary film "Toxic Playground". While PROMEL declared itself bankrupt, Boliden rejected any responsibility, and even attempted to sue the lawyers in a Swedish version of a SLAPP reaction. Boliden is also famous for its unpaid liability in the Annalcollar tailings dam failure in Andalusia.

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In December 2019, 97 countries once again prohibited the movement of toxic waste from developed to developing countries. Although it came a quarter of a century after it was first envisaged, the entry into force of the 1995 Amendment to the Basel Convention is nonetheless a success for international law.

Valdivia: Black-necked Swans and Cellulose[17]

This third case in the south of the country, with Mapuche involvement, ended with some success. By exploiting pine and eucalyptus plantations, Celulosa Arauco S.A. (CELCO) built a pulp and paper factory using highly toxic chemicals next to the riverbed of the Cruces River. A wave of protest started, as it is the essential water source for the whole valley and near the RAMSAR Carlos Anwandter Nature Sanctuary. OLCA complained: "We warned about the global impacts of this project, and especially about the consequences of the discharges both in its alternative (on the coast, with a pipeline to the Mehuin cove) and in the Cruces River".

A report contracted by the Chilean government to the Universidad Austral de Chile in Valdivia found that the company's pollution was responsible for rapid ecological change in the wetlands. The population of black-necked swans did not recover after 2004. An international commission with the WWF ratified the findings. Scientists in the pay of CELCO disputed the causality between the cellulose plant pollution and the swan population decline.

An alliance between neighbours, Indigenous peoples, the Citizen Movement Action Group for the Swans, the Lonko Council of Pikunwijimapu – a Mapuche organization, the Tralco Indigenous Community and the Steel Workers Trade Union of Valdivia filed lawsuits in 2004. One was a criminal investigation at the Prosecutor's Office in Valdivia and the other a legal petition to the Council of State Defence. In July 2013, a civil court found the company guilty of pollution.

ARGENTINA, URUGUAY AND PARAGUAY

Javier Rodriguez Pardo was one of the protagonists of the nuclear conflict in Gastre, Patagonia (Chapter 10). It was a victory for environmental justice, but he died in 2015. His role is acknowledged by activists and academics alike. Among the latter, Argentina and Uruguay have some of the best political ecologists worldwide.

Argentina is an urbanized, industrialized country with a peculiarity in its pattern of social metabolism: given its level of income, its use of biomass would be expected to be lower compared to the use of building materials and fossil fuels. Instead, in percentage terms it approaches India's although per capita it is much higher, and the reason is the exports of biomass. This was the pasture for cattle farming, and crops such as wheat and maize, then more and more soybeans. Like most countries in South America, Argentina follows a resource-intensive and export-oriented economic model with a persistent physical trade deficit absurdly combined with persistently negative terms of trade.

Many of its socio-environmental conflicts have been linked to land use, as also happens in Paraguay. For instance, appropriation of Indigenous land; and, more recently, the health impact of the use of glyphosate. But others are related to industrial pollution, as also happens in Uruguay. There are also conflicts on gas fracking in Vaca Muerta (Chapter 16), and also on copper and gold mining in the Cordillera, with a high rate of success in stopping such projects

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(Wagner and Walter 2021). A new institution called *asambleas autoconvocadas*, with a name unique to Argentina, was born around 2000.

Matanzas-Riachuelo River Basin, Buenos Aires

In the City of Buenos Aires, there were several serious epidemics in the years 1868–69 and 1871. There was a citizen movement to improve the health situation. One of the foci was the very high levels of pollution from the slaughterhouses. From there, the Legislature of the Province of Buenos Aires sanctioned a law that ordered the eradication of the polluting industries of the Riachuelo, which at that time were slaughterhouses that had very bad hygienic conditions; 3.5 million people lived in the contaminated area. For a few years, the Riachuelo was sanitized.

This is an industrial urban-conflict, where local activism and judicial decisions have improved a situation characterized by extreme industrial pollution with risks to health. This 60-km-long urban basin houses many industries releasing effluents into the river, which cuts through 14 municipalities in Buenos Aires. The contaminated territory is larger than the city of Buenos Aires itself.

Between 2006 and 2008, the Supreme Court issued historic rulings and ordered the clean-up of the Riachuelo, entrusting the Ombudsman, Greenpeace and four other NGOs with the creation of a collegiate body to monitor the environmental clean-up plan. The soil on the banks of the river contained zinc, lead, copper, nickel and chromium above recommended levels (Merlinsky 2013).

In 2013, an internal audit conducted by the Matanza-Riachuelo Basin Authority (ACUMAR) in 11 municipalities concluded that 70 per cent of the open dumps that had been eradicated had reappeared. As Elio Brailovsky indicates, the situation of the Riachuelo continued to be a main environmental problem of Argentina. ACUMAR assured that the ruling of 2008 was complied with by 20 per cent, referring to a single indicator (the number of homes built to relocate the population at maximum risk). As for water quality, they did not want to show the Supreme Court indicators with comparisons between years for levels of mercury, pesticides and bacteria.

There were the problems of the sewage waste without treatment, and the industrial pollution, for which ACUMAR should have ordered industries to conform to international parameters. But, according to Brailowsky, ACUMAR authorized the industries to throw legally in the river the same amounts that were clandestinely thrown before. They whitewashed the clandestine contamination, and the river never got better. The authorities of ACUMAR said that in these eight years, $5,200 million were spent but the Auditor General of the Nation could not explain what they were spent on.

Along 60 km, there are different situations. In the opinion of Gabriela Merlinsky,

> the turning point for Riachuelo-Matanzas was the intervention of the Supreme Court of Justice when it declared it had jurisdiction in the case promoted by neighbours, citizens and NGOs. By saying that it was a matter of State and relating it to article 41 of the National Constitution, which refers to the right to a healthy environment, and generating an institutional device (the Matanza Riachuelo Basin Authority – ACUMAR) so that this right is fulfilled, the problem became visible.

But there is no awareness at the level of the whole basin, according to Merlinsky (2013). Avellaneda has an interesting relationship with the river, because there were regatta clubs and

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there are recovered spaces. La Boca is certainly identified with the river, and it is synonymous with El Riachuelo. The people who live in Villa Jardín, in Lanús, live in the oldest settlement in Buenos Aires. In La Matanza there is an area that has a very interesting nature reserve. In Esteban Echeverría there is the Laguna de Rocha; many people did a lot for it to be declared a nature reserve.

Dock Sud Petrochemical Pole in "Villa Inflamable", Avellaneda, Buenos Aires[18]

In Avellaneda, in the Buenos Aires metropolitan area, complaints also arose about air, soil and water pollution because of the petrochemical industry, but so did denial, confusion and uncertainty about the extent of the dangers. The Shell-Capsa refinery is the most important plant in the area, but the complex includes another refinery, three oil and derivative storage, chemical product storage plants, a chemical product factory, a container dock and the Central Dock Sud thermoelectric plant. "Villa Inflamable" or, in English, "Flammable Village", is located in the district of Avellaneda, right on the south-eastern border of the city of Buenos Aires, adjacent to one of the largest petrochemical compounds in the country: Polo Petroquímico y Puerto Dock Sud. The Shell Oil refinery opened in 1931. Since then, other companies have moved into the compound.

The name "Villa Inflamable" dates back to 1984, when an oil ship exploded and produced what one elderly resident noted as the "highest flames I've ever seen". In this neighbourhood, around 6,000 people are exposed to industrial pollution in precarious homes built on top of soil contaminated with toxic waste. Specifically, children suffer from lead and chlorine poisoning.

In July 2004, a group of residents filed a lawsuit against the Argentinian Government, the Government of the city of Buenos Aires and 44 businesses for damages to their health suffered as a result of the pollution. In 2008, the Supreme Court ordered the ACUMAR to clean up the area. In 2011, ACUMAR established an integral environmental clean-up plan. The plan involves the reconversion of factories, the clean-up of rivers and riverbanks, garbage collection and treatment, water treatment, drainage works and slum redevelopment or relocation. But this clean-up is slowly done and no visible results are seen. However, according to the National Children's Defence Office, for Villa Inflamable there is no remedy possible. What has been done cannot be now amended, as so often happens with environmental damage. Women, as "mothers", have an active role in this, they are the ones who typically mobilize, calling lawyers to make appointments and travelling to government offices to demand aid.

This environmental injustice became famous after the study of Javier Auyero (a scholar living in the US) and Débora Swistun (an anthropologist and resident of Villa Inflamable) in which they introduce the concept of *Environmental Suffering* that they defined as a "particular form of social suffering caused by the concrete polluting actions of specific actors and on the factors that mold the experience of this suffering" (Auyero and Swistun 2009). People are waiting for both compensation for damages and relocation. Meanwhile, they are still being affected by the toxic environment. It is a case of slow, structural violence.

Cellulose Industry in Gualeguaychú, Uruguay and Argentina[19]

This case, upstream of Buenos Aires on the Uruguay River, is one of the many transborder cases in the EJAtlas: while the pulp mill is in Uruguay, the opposition has been stronger in Argentina.

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In 2006, the Government of Uruguay approved the building of two pulp mills in the city of Fray Bentos. The first was to be managed by the Finnish company Metsa Botnia, while the Spanish ENCE planned to build a second plant but later announced it was studying plans to set up a site in Conchillas, the south-west region of Colonia. The activities started in 2007. The two mills were expected to produce up to 2 million tons of cellulose pulp per year. On the Argentine bank of the river is the town of Gualeguaychú, crossed by the Gualeguaychú River, a tributary of the Uruguay River, which would suffer the direct consequences of the two pulp mills' activities. The construction was strongly opposed by the Uruguayan and Argentinian people. The bridge between Argentina and Uruguay was closed down for several years by the citizens movement on the Argentine side articulated by the Citizens Environmentalist Assembly of Gualeguaychú. The collective was founded in April 2005 and its mobilization lasted for a long time, with support from the authorities of Argentina. In May 2006, President Néstor Kirchner said that the defence of the environment and the struggle against paper mills were a "national cause".

By 2013, the Uruguayan government agreed to the paper mills' production. Concerned by the waste discharges' increase into the Uruguay River, the Argentine Government reacted to the announcement and social protests rekindled. Since the beginning, the Argentine Government opposed the project, feeding a long running diplomatic crisis between the two countries which was appeased after the Hague International Court settlement in favour of the Uruguay plant.

Environmentalists Stop Iron Ore Mining Project and Save President Mujica's Image in Uruguay[20]

Before travelling to the interior of Argentina, let's have a look at another attempt at Uruguayan extractivism: iron mining. President Pepe Mujica was a good president of his small nation between 2010 and 2015. But he was on the verge of joining the list of left-wing Latin American presidents who enthusiastically followed extractivist policies. In an article of January 2014, I wondered about the change in image that President Pepe Mujica might undergo. Born in 1935, he has well-deserved sympathies for his historical career as a jailed Tupamaro, his sense of humour and the modesty of his lifestyle. But his government was about to adopt megalomaniacal mining. He was seduced by the gigantic dimension and the money that would come from the project, which would extract and export 18 million tons of iron a year. He was about to sign a contract with the Zamin Ferrous company, of dubious reputation.

Meanwhile, environmentalists were calling for a referendum. The National Movement for Uruguay Free of Open Pit Mining held a press conference in January 2014 against the signing of an investment contract between the national government and Zamin. They questioned the constitutionality of the new Large-Scale Mining Act. Eduardo Gudynas, one of the main authors against "extractivism", was against this project that was to take place in the country of Eduardo Galeano, the author of the *Open Veins of Latin America*.

The government's idea was to cut legal corners and give permits before completing environmental impact studies. Permits would be divided up for the mines, the pipeline and later for the new big port. But the environmental movement argued: if the project was stopped for environmental reasons or because of municipal competencies, would Zamin then be able to sue Uruguay? The investment would be worth US$ 2 billion, with 4,000 ha of open pits, a pipeline to the sea of over 200 km and a dedicated port. The investment's useful life would be twenty years, and the environmental liabilities were not calculated.

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The government assured that part of the revenues would go to an intergenerational fund for infrastructure and education. In 2007, prospecting work began in the centre of the country, affecting two towns: Valentines and Cerro Chato. The fields are inhabited by families linked to the land for several generations. These are lands of extensive cattle raising in low, wooded hills. Large-scale open cast mining operations would mean the permanent displacement of the families along with the devastation of the original ecosystem. The Valentín Grande and Las Palmas streams would be dammed because of need for large volumes of water.

In 2011, President Mujica discussed the possibility of calling a referendum on the issue, but on the contrary, he promoted a new mining law. There was uncertainty about the damage to the fields from which the iron would be extracted from, with huge amounts of slag and tailings. In December 2013, a campaign was launched to collect signatures to achieve a referendum or plebiscite to ban open-pit mining. For the time being, the project was stopped. The environmentalists saved Mujica's image.

Monsanto and Glyphosate: Ituzaingó Mothers in Córdoba, Blockade at Malvinas Argentinas[21]

In 1996, a particular variety of transgenic soy was introduced in Argentina. Marketed as Roundup Ready soy (RR), it was genetically modified (GM) to resist Round Up, a potent glyphosate-based herbicide. The multinational company Monsanto, a specialist in agricultural biotechnology and seeds and the worldwide leader in GM food production, produced both the RR soy and herbicide. Soy cultivation increased quickly and there was no need for ploughing up the land, with "direct sowing" and weed elimination with aerial spraying of glyphosate. Syngenta (later bought by ChemChina), Monsanto (bought by Bayer) and other companies combining seed production and chemicals production were involved in this

Originally produced in the region of Pampa Húmeda, the soya monocultures expanded to the Northwest regions and to the North East. Production of RR soy, which covers over 17 million hectares of land in Argentina, caused several environmental and social problems such as the reduction of food production for domestic markets, displacement of peasants from the countryside, massive use of highly poisonous agrotoxins (polluting water supplies and surrounding lands) and widespread deforestation, which goes hand in hand with the expulsion of local and Indigenous communities from their lands.

The consequences on the health of the populations surrounding the fumigated fields were striking. Collectives were set up by mothers whose children's health had been severely affected (e.g. Madres de Ituzaingó in Cordoba). At stake was the whole structure of an economy based for decades on biomass. Local complaints prompted Andrés Carrasco, director of the Laboratory of Molecular Embryology at the University of Buenos Aires Medical School, to carry out in 2010 a laboratory study on the effects of glyphosate. This will be discussed again in Chapter 28 on "activists mobilizing scientists".

Meanwhile, the president Cristina Fernández de Kirchner announced with fanfare a multimillion-dollar investment by Monsanto, mainly for the installation of a GM conditioning plant in the town of Malvinas Argentinas, in the province of Córdoba. This announcement was made at the same time as a court case which was the result of complaints made by a group of women in a neighbourhood called Ituzaingó Anexo. There, a soybean planter businessman and an aeroplane operator were convicted, because toxic agro-chemical fumigations in areas

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of human habitation were seen as a criminal offence. The town of Malvinas Argentinas is 10 km from the Ituzaingó Anexo neighbourhood.

The Malvinas Argentinas plant began construction in January 2013, without an environmental impact study approved. Malvinas' neighbours began to worry. A group of residents blocked the entrance to the property, initiating the protests. They established links with environmental lawyers and with groups from other fumigated villages. They formed the Malvinas Lucha por la Vida Assembly and the mobilizations multiplied with a clear slogan: "We don't want Monsanto". In September 2013, the Assembly and the Mothers of the Ituzaingó, with the support of other organizations, decided on a blockade of access to the site to prevent the entry of construction material. The blockade turned into a permanent camp. The Assembly of Self-Convened (*auto-convocada*) Blockade was born there, and for years it prevented access, finally managing to stop the project.

Delta Pine Seeds in Paraguay[22]

In November 1998, with the approval of the Cámara Algodonera de Paraguay, the company Delta & Pine Paraguay (later owned by Monsanto) dumped 660 tons of expired cottonseed in Rincón-i-Ybycuí, a rural community located 120 km south of Asunción (capital of Paraguay). The cotton seeds were treated with high concentrations of toxic pesticides, including the organophosphates acephate and chlorpyrifos. Organophosphates are powerful poisons which attack the central nervous system. The label on the seed sacks stated that the acephate chemical compound (trade name: Orthene 80 Seed Protectant) "contains material which may cause cancer, mutagenic or reproductive effects based on laboratory animal data".

Extending over one-and-a-half hectares, the disposal site was covered with only a thin layer of soil, in a private plot of land near a primary school.

Some children were affected. The first direct victim was Agustín Ruiz Aranda on 28 December the same year. His death certificate states the following: "acute poisoning due to pollution caused by toxins of the Delta & Pine Land seed deposit". During the days after, medical testing of residents evidenced a high level of poisoning. Despite these findings, the Minister of Agriculture and the Minister of Health did not take action immediately. After five years of protests and judicial activism asking for justice and reparations to the victims, in July 2004, the court of Paraguarí convicted by criminal proceedings the owner of the private land and a Delta & Pine official to two years and 15 months jail respectively, further to the payment of a fine. The US company representative in Paraguay avoided the judicial sentence, fleeing days after the first alarm. This case is also relevant as one of the first convictions for an environmental crime from agricultural toxins in Latin America.

The Massacre of Curuguaty in 2012 in Paraguay[23]

Another rural conflict in Paraguay, on land rights and soybean cultivation, led in June 2012 to the killing of eleven landless peasants and six policemen in Curuguaty, a city in the north of Paraguay, as a consequence of a violent eviction of peasants who had peacefully occupied the lands of Marina Kue. The day before, the judge of Curuguaty ordered the takeover of Marina Kue as a property claimed by the company Campos Morombí in order to sow transgenic soybeans. Yet, the company was not entitled to those lands. Legal measures had been taken by

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peasants since 2004 to formalize their rights to the lands of Marina Kue. According to them, those lands were allocated by the agrarian reform.

On 15 June 2012, a large group of armed police entered the peasant campsite, and the conflict escalated from verbal confrontation to a violent dispute, leaving 17 dead victims and several injured. Unsurprisingly, the testimonies from the peasants and the police contradicted each other when describing the sequence of events. Several violations of human rights were reported, mainly the loss of life resulting from abusive state authorities. On the same day as the eviction, Miguel Correa, a 20-year-old student, was wrongly arrested when trying to see what happened to his friend in the hospital of Curuguaty. He was accused of murder and sentenced to 30 years of prison. He was released in July after Sobrevivencia (Friends of the Earth Paraguay) mobilized and spread a petition to demand justice for him. Oscar Rivas, one of its leaders, had been for some time the Minister for the Environment under President Lugo. Three days after the eviction, 63 peasants were criminally charged by the Public Prosecutor.

In October 2012, evidence was presented to the Public Prosecutor about the human rights violations against peasants, but it was not considered. The massacre of Curuguaty led to a human rights and political crisis in the country. It was a factor in the dismissal of leftist president Fernando Lugo and the electoral victory of the opposing party. The irregularities during this process were pointed out by different organizations, and some have suggested that the massacre was part of a planned strategy to carry out a coup d'état in the country. Lugo had previously attempted to limit the use of GM seeds. The following Colorado government favoured the cultivation of GMOs in soybean cultivation in the country.

On 11 July 2016, the final sentence was passed condemning 11 peasants to jail for a period of between four to 30 years following accusations over the death of six policemen. In response, the lawyers defending the condemned peasants filed an appeal and demanded nullity for the case. At the same time, there was no imputation regarding the death of 11 peasants.

In a context of high land distribution inequality and continued criminalization of protests for land rights, the conflict of Marina Kue represented a turning-point because of the brutality of police action and its political consequences. Agrarian reforms and political ecology occupied for a while the centre of politics, but not in a direction favourable to the poor and the environment.

Esquel, Argentina: Success of a Local Referendum against Gold Mining[24]

This was the first town in Argentina and perhaps the second one in South America (after Tambogrande, Peru) whose inhabitants' strong mobilization forced a municipal plebiscite that stopped a mining project and fostered regulatory changes in the municipality and province. (Figure 17.6). El Desquite mine is only 7 km from the city of Esquel, in the Patagonian province of Chubut. The city, the largest in the area, is located by the Esquel River and surrounded by the mountains La Zeta, La Cruz, Cerro 21 and La Hoya. The city name comes from a Mapuche word meaning "thorn" referring to thorny local plants and the thousand-year-old lenga and ñire forests (two of the Patagonian trees unique to the area). In early 2002, Meridian Gold bought the mine site of doré, a gold and silver alloy. Its exploitation was supposed to begin in January 2003, with two explosions a day, every day of the year, for ten years.

The local population was highly suspicious towards the information provided by the company and the government. The EIA was questioned. The inhabitants of Esquel started to

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Source: Dario Aranda

Figure 17.6 March "No a la mina" in Esquel in 2020

spontaneously gather, to debate and to share their concerns, knowledge and information about the consequences of mining and the use of cyanide. They finally organized by mid-November 2002 the self-convened Assembly of neighbours (*Asamblea de vecinos autoconvocados AVA*). The AVA brought together people from diverse backgrounds, qualified professionals but also people from marginalized districts, and some Indigenous people. They organized numerous marches and also networked with national and international organizations and institutions. In February 2003, the City Council agreed on some of the ordinances promoted by the AVA: it prohibited the use of cyanide in Esquel and called for a referendum on mining. The local referendum on 23 March 2003 resulted in 81 per cent of the votes unfavourable to the mine. The project was abandoned a few days later.

In 2006, Meridian Gold brought a court action in Buenos Aires against six members of the AVA for having openly disseminated a record of a Meridian staff meeting on the local radio revealing the company's links with provincial and federal politicians while they expressed their willingness to oppose the local referendum results. The company's unchanged plans to exploit sooner or later its concession remained a concern. Chubut's number of mining concessions kept on increasing. For instance, in May 2006, Esquel population had to mobilize once again against Minera Huemules.

Overall, Esquel's struggle became an outstanding example for other Argentinean municipalities opposing mining projects. By 2007, six provinces banned the use of cyanide in mines. The local struggles became a success at provincial level if not yet at the national level. By 2020, the struggles continue in Mendoza, Chubut, Rio Negro, Catamarca, La Rioja and other provinces.

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Famatina *no se toca*: The AVA Stops the Project[25]

This is another mining conflict up in the Andes. Famatina remains under the constant threat of mining projects, which have been successfully repealed by the efforts of the neighbouring communities. Famatina is the name of a mountain located in La Rioja, a province in northwest Argentina. Its peak reaches 6250 m; it has glaciers and contains an enormous water basin. It has historically been a mining area. In 2005, the Canadian multinational Barrick Gold reached an agreement with Yamiri S.A., a local company, for the exploration for gold extraction. The project involves an open-pit mine, characterized by large explosions and the use of millions of gallons of water and acids, which would contaminate the air, soil and water.

In 2006, citizen assemblies – "self-organized neighbours" (*vecinos autoconvocados*) of Famatina, Chilecito and La Rioja – were created and managed to stop the Barrick Gold project. In March 2007, in order to call attention to their message and keep a close eye on any attempt to restart the project, residents maintained a permanent vigil in the area of Peña Negra, the access junction to the mine along State Highway 38, at 1800 m. They allowed Barrick employees and machinery to leave, but not to enter. And they vowed not to abandon their vigil until Barrick Gold was gone for good.

With banners *"El Famatina no se toca", "No a la minería", "Podemos vivir sin oro pero no vivir sin agua"* and permanent meetings, this mobilization led the provincial Legislature of La Rioja to enact in March 2007 a law prohibiting open-pit mining. The struggle continued. In 2012, about 400 people permanently cut the route in the Alto Carrizal under the slogan "*El agua vale más que el oro. El agua y la vida no se negocian*". The exploration project had been taken over in August 2011 by Canadian company Osisko Mining that encountered as much resistance as Barrick. This prevented Osisko from proceeding. As the website No a la Mina stated: "In response, in February 2012, President Cristina Fernandez announced the opening of a public debate on mining, immediately after creating the Organismo Federal de Estados Mineros to block any real discussion on the subject". The website Noalamina became a popular source of information.

In July 2013, it was reported that "the provincial government of La Rioja rescinded its contract with Osisko in light of protests that have slowed development of the project since 2012". Osisko's contract to carry out the Famatina Project had been signed by the provincial, state-owned company Energía y Minerales Sociedad del Estado in August 2011 and gave the Canadian company a right to possibly mine part of the province of La Rioja. Locals, supported by groups like Greenpeace, had been protesting against the project since its inception. The year 2015 marked a new battle against the mining company Midais to which numerous communities reacted, especially from Angulos, Campanas and Pituil. After police repression of the demonstration on 15 October 2015, during which the population was wounded by rubber bullets, the province governor Sergio Casas announced the withdrawal of the project in November 2015. The local bishop acted as intermediary.

In 2017, local activists launched a campaign to create a national park to protect the mountains. However, a new junior company, SEARGEN S.A., advanced with exploration plans. New road blockades and mobilizations were organized by the neighbours to block the site. After ten years of struggles, the villages are full of murals. A local poet and musician, Ramón Navarro, wrote songs on the "valuation contests" displayed.

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Bajo La Alumbrera: A Large Copper Mine and a Failure of Environmental Justice[26]

This was the first large-scale metal mining project in Argentina. Bajo La Alumbrera is a copper, gold, silver and molybdenum deposit located in the northwest of the province of Catamarca. Minera Alumbrera was operated by Xstrata, and is currently operated by Glencore, which holds 50 per cent of the share package, while Canadian companies Goldcorp and Yamana Gold hold 37.5 per cent and 12.5 per cent respectively. La Alumbrera was denounced for pollution by federal prosecutors. After La Alumbrera started operations, other mining projects were rejected in Catamarca. The conflict is notable because of the attempt to use criminal justice, although without great success.

The exploration and exploitation rights belong to Yacimientos Mineros de Agua de Dionisio (YMAD), a company comprising the province of Catamarca, the National University of Tucumán and the national state. YMAD formed a joint venture with Minera Alumbrera to exploit the deposit and receives 20 per cent of the profits. It was denounced for drying up the Campo del Arenal, from where water is extracted, and for the contamination of water courses due to its tailings dam. In 2008, the vice president of the company was prosecuted for criminal contamination, being the first case in Latin America in which a mining executive reached this judicial instance. The evidence for this prosecution was not only the samples obtained by the National Gendarmerie, but also the data from the company's own environmental report. In 2016, the former vice-president was dismissed and the company's general manager was prosecuted for the contamination of the Salí-Dulce River basin with heavy metals. Another source of pollution of water courses has been the rupture of the mineral pipeline, affecting some communities. The unfulfilled promises regarding hired labour led some localities in Catamarca to mobilize in rejection of new mining projects. They also carried out selective roadblocks, slowing down trucks carrying supplies to the La Alumbrera project. In 2012, a roadblock carried out by Tinogasta residents was severely repressed by police forces.

There is a law that determines that part of the profits from this project must be allocated to the National University of Tucumán, and then to the rest of the national universities. In view of the continuous reports of pollution and the growing social conflict, some national universities rejected the funds, and the ethical aspects of receiving money from environmentally and socially questionable activities were discussed. The project had planned its mine closure. In 2014, Bajo El Durazno began operating under the same company. In 2018, the company announced the continuity of the project through underground exploitation. Civic resistance (neighbours' assemblies, road blockades) is shown in Andangalá and the popular assembly of El Agarrobo against mining projects owned by Xstrata-Glencore, meant to substitute the production from La Alumbrera. Local resistance insists on the value of local places, local water, and vegetation of Prosopis (*algarrobo*).

CONCLUSION: GROWING COMPLAINTS AGAINST "EXTRACTIVIST" ECONOMIES

This sample of cases could be easily enlarged: the extreme violence in southern Peru in the copper mining projects of Tia Maria and El Espinar, the Bagua massacre of 2009 in the Amazon of northern Peru, the hydropower conflicts in Colombia involving the many Embera

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Katio victims of the Urrá dam etc. Through all of those, a new political idea and movement has established itself: the anti-extractivist principle in political economy and political ecology. In many of these conflicts, we see action geared to "degrowth in practice" from the supply side.

The causes of the conflicts, their variety of participants and forms of action, and the outcomes appear on conflicts in coastal areas, the fishmeal industry, the defence of mangroves, the Galápagos fishery, the coastal wetlands (*bañados* as they say in Uruguay). Open cast mining of metals is a strong topic. There are also conflicts on coal, oil and gas extraction, including the Sarayaku case in Ecuador. The most frequent forms of organization are local campaigns with ad-hoc groups or assemblies. Sometimes, environmental struggles produce new institutions such as "popular consultation" or local referendums on mining introduced for the first time in Tambo Grande (Peru) and in Esquel (Argentina). There are personal and organizational connections among all these cases (Walter and Urkidi 2017). Policy changes are sometimes born of such struggles, as provincial anti-mining legislation in some provinces in Argentina, or the pioneering Yasuni ITT initiative.

The chapter also deals with biomass and land conflicts, often involving Indigenous peoples. Human health and glyphosate are themes of the so-called República de la Soja that reaches Argentina, Paraguay, Bolivia and Brazil. There are conflicts also on cellulose and paper pulp in Chile and Uruguay. There are multiple oil palm conflicts in Colombia, in Peru (in Loreto and Ucayali). Chapter 21 deals with the intersection between agrarian and environmental conflicts, and this will be the place for more such conflicts.

The ups and downs of presidents such as Lugo in Paraguay, Correa in Ecuador, or of presidential candidates like Yaku Pérez, have been linked to environmental conflicts. The political fight on the left between the "extractivists" and the "anti-extractivists" even reached President Mujica in Uruguay. The fragmentation in the left and the strong racist culture in Peru have prevented the rise of a CONAIE which in Ecuador is often the protagonist of environmental conflicts. The CONACAMI in Peru, as well as Tierra y Libertad (a green political party) have failed. But the people themselves occasionally reach environmental justice successes, as in La Colosa, in Colombia. A candidate for vice-president of Colombia in 2022 was the ecofeminist working-class Afro-Colombian Francia Márquez, who was elected.

The countries in this chapter have negative terms of trade, i.e. they export more tons than they import, and the ton of exports has a price much lower than the ton of imports (Samaniego et al. 2017; Infante-Amate et al. 2022). This is a historical structural rule. It has been characterized as an "extractivist" model not conducive to stable economic growth and that causes social conflicts at the points of extraction, violence against environmentalists and therefore lack of democracy. Quite often the companies leading this march to hell are foreign, from Canada, USA, South Africa, Switzerland or China. There are also local mining entrepreneurs like the Luksik from Chile and Buenaventura from Peru. Biomass exploitation is often carried out by local enterprises, but the commodities go to the export market.

We live in a world based on minerals and biomass. Food is produced by photosynthesis with additional inputs from oil, gas and fertilizers. Biomass production is not equivalent to human food: much goes to feeding domestic animals or burning in engines as ethanol or biodiesel. This is land intensive compared to fossil fuels. The exosomatic use of energy and materials (to use Alfred Lotka's term, 1921) varies very much between rich and poor humans. Some of this energy comes (still) from biomass, but much from minerals. Some minerals are more specialized as "energy carriers' – the fossil fuels, and some are used for building (sand and

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gravel), or for metals, or as fertilizers. "From the buildings we inhabit to the infrastructures that supply them, from the machines that move us around to the energy networks that animate them – all are based to a large extent on materials that are extracted from the earth's thin outer crust" (Peša and Ross 2021). Even much of what we eat depends indirectly on mining: phosphates and potassium salts, and some of the nitrogen – whose main feedstock is natural gas. Other atmospheric nitrogen has gone to produce the leguminous crops, for instance the soybeans exported from Brazil and Argentina. This is the materiality of political ecology and ecological economics. Both fields of study are flourishing in Latin America.

There are estimates predicting that enormous increases in metallic and non-metallic minerals will still take place. It is tempting for Latin American governments to follow the easy road of commodity exporters despite historically persistent negative terms of trade. However, a cultural and political movement in South America has been born against "extractivism" (with Maristella Svampa, Eduardo Gudynas, Horacio Machado, Gabriela Merlinsky, Lucrecia Wagner, Alberto Acosta, Mario Pérez Rincón…), emphasizing the struggle against ecologically unequal trade. In Colombia in 2022 under President Gustavo Petro, decreasing the exports of coal and oil might become official policy. This "anti-extractivist" movement of "degrowth in practice" from the supply side (that we have seen already in Chapter 16) is intellectually strong but politically still weak – it might grow in similar circumstances in many territories in Africa, South East Asia, in the Arctic and in some internal regions of India and China.

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18. Mesoamerica and the Caribbean: from Zacatecas to Neo Zapatismo

BACKGROUND

This chapter deals with a world region that I know well, making it even more difficult to choose a "sample within a sample". I shall move from South to North, from Central America to Sonora and Chihuahua in Northern Mexico, with an excursion to the Caribbean throughout 30 well documented conflicts (Figure 18.1). In many of the EDCs analyzed, there are overlapping social actors and issues. For instance, a conflict in Mexico against gold or copper mining can involve peasant activists who are simultaneously Indigenous and who hold ancestral water and land rights won again in the aftermath of Zapata's revolution of 1910. The material issues are simultaneously land grabbing and water pollution, as well as the impacts on public health because of cyanide or pollution from copper smelting.[1] Guided by this thought of overlapping issues, I start with gold mining cases.

THE SAN MARTÍN PROJECT IN THE VALLE DE SIRIA, HONDURAS[2]

The Valle de Siria lies 70 km north of Tegucigalpa, in the department of Francisco Morazán. The San Martín project is owned by the Entre Mares mining company, a subsidiary of Glamis Gold Ltd (US), and represents its most productive mine. In 1999, Glamis Gold purchased Rayrock Resources, Inc., and in 2002, it merged with Gold Corp. which has a reputation as one of the nastiest Canadian mining companies. The Honduran government authorized extraction of gold on 14,000 ha in the Siria Valley and the work began at the end of 2,000 with an investment of $45 million. Due to resistance from the people of the area, they only worked on 1,000 ha.

In 2003, in response to constant complaints about ecological and health damage from the local population, Cardinal Óscar Andrés Rodríguez said: "Entre Mares is brewing another natural tragedy". A local activist and expert has been Dr Juan Almendares. During the years of operation, the community denounced the evident environmental and social damage: disappearance of native forest, water shortage, pollution, relocation of villages, skin diseases. In the schools, the current issue was baldness. Girls with long hair struggled not to show the damage done to their scalp and boys used black polish to hide their baldness. In the face of this, the government was pressured not to renew mining permits and filed criminal appeals against the mining company. In March 2012, the Court of Administrative Litigation issued a ruling requiring the company to pay 35 million lempiras (US$ 1.78 million). By October 2012, the penultimate presentation of the study on the social and environmental impacts was made to the Committee of Experts for the San Martín Mine Closure Phase project.

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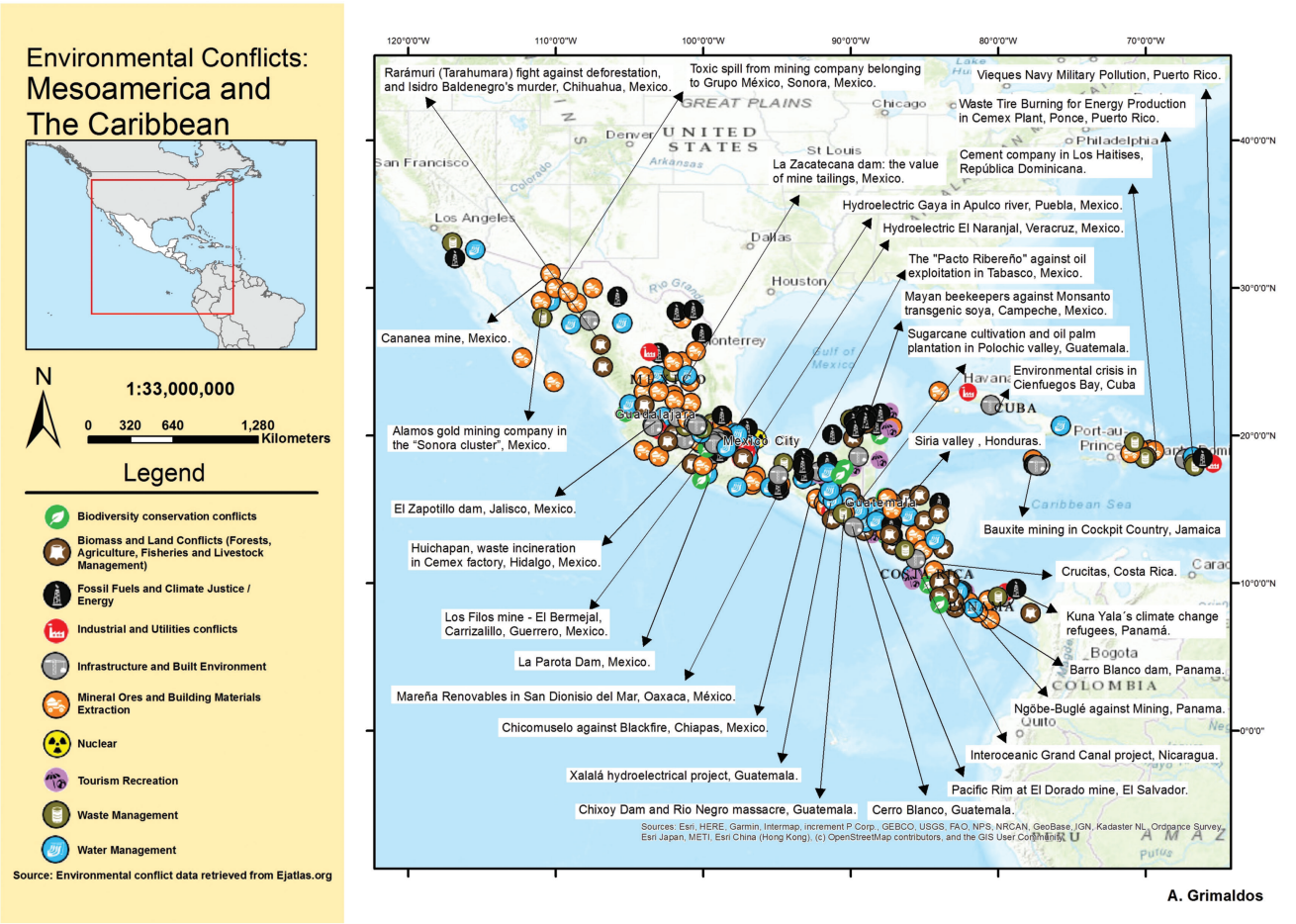

Source: A. Grimaldos

Figure 18.1 *Mesoamerica and the Caribbean environmental conflicts*

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In 2013, the new Mesoamerican Movement against Metallic Mining (4M), launched in El Salvador in 2012, provided new information. The operation of the San Martín mine also had a social impact. It divided the community to irreconcilable extremes, worsened intergenerational conflict, increased male-female domination relations, influenced the increase in alcohol and other drugs and undermined confidence in national and local democracy. Environmental defenders have been and continue to be subjected to repression: attacks, threats, judicial persecution. The San Martín mine did not produce economic or development benefits to its area of influence. The municipalities opposing the mining activity had a better performance in terms of human development indices during the period of exploitation. During the exploration and exploitation activities there were no mechanisms to guarantee that the community were consulted or received good information on the contrasting pros and cons of the project.

> The company is from Canada. The project was for 40 years, but in 10 years they closed down because of all the pressure and all the environmental problems, they deforested 14,000 hectares of forest. They are reforesting it, but it was a forest that was many years old… The contamination is from water, air and the release of these metals, it is not only people who have been working in the mine, but it is the consequences on the people who live around the mine,

said Ada Zuñiga, from the Valle de Siria Environmental Committee. Infant mortality is higher than the national average. Sonic pollution, dust pollution from blasting and machinery operation, pollution from mine spills, diseases caused by high levels of heavy metals in the blood leading to abortions, births malformations, cancer, leukaemia and other mortal diseases and conditions, health conditions in employees as a result of their work activity, exposure to risk situations and abuse of their labour and industrial safety rights… all these facts condemned the community to be a sick and declining society, with the future mortgaged and about to be finished off by poverty, social and environmental deterioration and disease. The mine has not admitted liability for these damages.

MINING PROJECTS IN COSTA RICA AND EL SALVADOR

l follow with two other gold mining projects in Central America and two Canadian firms, one in Costa Rica and one in El Salvador, both involving the ICSID (International Centre for Settlement of Investment Disputes) in Washington D.C. Both are cases of success for environmental justice. The gold mines were stopped in time, although the companies sued the respective states.

Crucitas, Costa Rica[3]

The Crucitas project is located in San Carlos canton, in the province of Alajuela in Costa Rica, on the border with Nicaragua. The San Juan River basin is known for its rich biodiversity (130 tree species per hectare). It is in a transboundary conflict with Nicaragua. The Crucitas mining project included several exploration concessions in San Carlos, where two gold concentrations have been found: one in the vicinity of the community of Crucitas and another in Conchudita. In November 2008, the company Infinito Gold carried out logging in areas it had taken over in concessions of approximately 60 ha. A study commissioned by the Attorney General's Office from Neotropica Foundation and Earth Economics estimated that

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the total value of the environmental damage and the cost of recovery of this area was of the order of US$ 674,000/ha. Similarly, the possible direct impacts of mining activity on water sources linked to the binational basin of the San Juan River were denounced.

The paths of conflict in the case of Crucitas have been fundamentally judicial, but with strong social and political pressure against the project. In 2008, the Costa Rican government of President Oscar Arias repealed a moratorium in force since 2002 that prevented mining projects. With the approval of Executive Decree 34801-MINAET, the project was declared to be in the public interest and the company proceeded to enter the area. In 2008, the Government of Nicaragua submitted a request to cancel the mining concession on the grounds that the river is binational and that its pollution would directly affect their populations.

In July 2010, a march by opponents of mining activity walked 170 km. In October, activists from the Northern Front Against Mining and the Coordinadora Ni Una Sola Mina carried out a 14-day hunger strike demanding the repeal of Decree 34801-MINAET. The mining project was finally declared illegal by the Costa Rican justice system in 2010. In 2011, the Supreme Court of Justice confirmed the decision in all its aspects. In November 2011, the Contentious Administrative Court ratified the ruling suspending the company's concession because it had failed to comply with requirements in the EIA. The court asked the Public Prosecutor to begin an investigation against the former president Arias for having signed the executive decree, and ordered that compensation be paid to the affected families.

Infinito Gold continued to file unconstitutionality actions and legal remedies against operational impediments. In 2013, it announced its decision to claim from Costa Rica some US$ 1,092 million for the breach of a concession contract. The claim was filed with the ICSID, CIADI in Spanish, an arbitration agency of the World Bank. This led to a major campaign against the company, ultimately successful.

Pacific Rim in El Salvador[4]

The intention of Pacific Rim Corporation to exploit a gold mine in Cabañas generated conflicts, increased social divisions and violence against the opposition, including murders of environmental activists. After arbitration at ICSID, the company finally had to leave. Pacific Rim's exploration activities implied that affected communities would have to leave their land. Possible damages were listed in an IUCN report called El Dorado, highlighting reduction of water availability, water pollution and impacts on agriculture and health.

El Dorado project is located in the municipality of San Isidro, department of Cabañas, 65 km east of San Salvador, and has one of the highest poverty rates in the country. Humid subtropical forests compose the area. After the exploitation of the El Dorado mine between 1948 and 1953, Mirage Resource Corp. began drilling to extract gold and silver in 1993. In 2002, Pacific Rim became responsible for the project and asked for legal concessions allowing the exploitation of the deposit. Local communities were never in favour. In fact, during the exploration activities, some negative impacts were already visible, such as the contamination of some watercourses, which affected the health of inhabitants and livestock. The Environmental Committee of Cabañas reported that ten springs of natural water went dry close to the explorative sites. Apart from the cyanide used for processing gold, Salvadorian investigators found concentrations of arsenic.

The company was alleged to have paid some Mayors in the region to foster "local activities with the objective of gaining local consent to the project". These activities divided and

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polarized the local population. After initial threats to defenders of the local population in the summer of 2009, at least half a dozen deaths among environmental defenders were attributed to the presence of Pacific Rim. The company never really acquired the property of the pertinent lands nor the authorization for its exploitation, the EIA was never approved.

At first, Pacific Rim tried to benefit from the Free Trade Agreement between the US and Central America. It brought El Salvador to the ICSID, thanks to a clause in El Salvadorian law (after that it was amended) that allowed companies to go to arbitral tribunals. The company was then acquired by Oceana Gold, an Australian-Canadian mining company involved in a bloody conflict in the Didipio mine in the Philippines (Chapter 3). The new company continued the arbitration suit for the profit they estimated they lost as a consequence of the permit denial. But ICSID decided in favour of El Salvador and eventually Oceana Gold withdrew.[5]

The local opposition to the project generated a national movement against mining in El Salvador. Hundreds of communities and people joined the Mesa Nacional Frente a la Minería Metálica (National Roundtable against Metal Mining), which gained international recognition and support, and made El Salvador the first country in the Americas to suspend metal mining. In 2008 and 2009, both the incumbent and elected Salvadoran presidents agreed to deny the extension of the exploitation licence to the Pacific Rim. After the wave of murders related to the company's activities, several lawsuits were filed before the Public Attorney of the Republic and the Attorney for the Defence of Human Rights in El Salvador. Appeal was made to the Inter-American Commission on Human Rights (IACHR).

In Geneva in June 2014, the civil-society Permanent People's Tribunal listened to the testimonies of the Mesa Nacional Frente a la Minería Metálica of El Salvador. The Tribunal recognized the actions of the transnational corporation as violations of human and peoples' rights. The PPT recognized the current shortcoming of international law, namely the impossibility of accessing justice and obtaining a remedy, acknowledging the necessity of a binding treaty on transnational corporations, and/or a peoples' treaty to hold transnational corporations accountable for their actions. Ten years later, in 2022, there is no sign of this "binding treaty" (*tratado vinculante*) that would hold transnational corporations accountable.

Sometimes we, the editors of the EJAtlas, wonder what a "success" in environmental justice means. In the EJAtlas it often means a project stopped but not always. Crucitas in Costa Rica and El Dorado in El Salvador were successes, and successes are needed to share around reinforcing the movement for environmental justice.

PANAMA

The following conflicts in Panama are with Indigenous groups. Some arose from copper mining and hydropower in Ngäbe-Buglé territory, resulting in extreme open violence. Another case has to do with claims of compensation for sea level rise in Kuna territory, which one can compare to Kivalina and Shishmaref in Alaska, or to some Pacific islands.

The Ngöbe-Buglé against Copper Mining[6]

The US company Dominion Minerals Corp. received a mining exploration concession without an EIA from the Ministry of Commerce and Industry in 2006. It was signed by Manuel José Paredes, who appeared as Chief Executive Officer of Dominion Minerals in February

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2009, two months after leaving his position at the Ministry. The company was provided with 11 exploration sites in 2007 in the Guariviara area of the Ngöbe-Buglé region, which has been coveted by Canadian and Korean multinationals, the US energy company AES and the government for the Cerro Colorado copper deposit and for the construction of hydroelectric projects. Dominion Minerals bought 100 per cent of the shares of the Cerro Chorcha project in April 2009.

The Ngöbe-Buglé are Panama's most populous Indigenous group, with around 220,000 people. They share a *comarca* but are two distinct people. In February 2012, the people blocked the Pan-American Highway, and the police caused many injuries and two deaths: Jerónimo Montezuma and Francisco Miranda. The Ngöbe Indigenous communities oppose the mining projects, located in the interior of their region or *comarca*. The opposition to mining and hydroelectric projects led to large protests against the legislation, arguing for Indigenous autonomy. One well-known leader was the cacica Silvia Carrera.

Their leaders and the government of Panama reached an agreement in March 2012 that bans mining in that territory and Panama requires community approval for hydroelectric projects. (Chapter 22 describes the conflict on the Barro Blanco hydropower dam involving religious beliefs.)

The Kuna against Climate Change[7]

"If we're not the ones changing the environment, why do we have to pay for it?", said Ariel González, secretary of the Kuna Congress. Climate change is a global threat that impacts small islands like those that make up the Kuna Yala archipelago. It is a phenomenon that can no longer be stopped and will force the Indigenous communities to migrate to the mainland, thus breaking the social fabric and losing the natural and ancestral heritage of the Kuna people.

In 1925, after long years of confrontations first with the Spanish and then with the governments of Colombia and of Panama, the Kuna Yala reached an agreement and decided to become part of Panama as long as its rules, tribal laws, traditions and culture were respected. In 1938, they were given the category of natural reserve. In 1945, they obtained their own constitution and, in 1953, the organization of justice. The Kuna Yala are one of the Panamanian Indigenous groups that initially lived on the mainland and moved or took refuge after the conquest of the Caribbean islands. Their main activities are agriculture, artisanal fishing and tourism. Kuna Yala is a semi-autonomous Indigenous territory. It has 200 km of Caribbean coastline and 2,500 km^2 of shallow-water marine areas.

With rising sea levels and temperatures, their main threats are the disappearance of the islands and the disruption of the marine ecosystems on which they are economically and culturally dependent. The Smithsonian Tropical Research Institute estimated that, since 1910, the sea level has risen by 15 cm and will continue raising by 1.5 mm each year. They concluded that sea level temperature has produced impacts such as the bleaching of corals on which a hundred species depend. Due to rising sea levels, the Indigenous Kuna Yala have been forced to extract coral reefs, used as filler material to increase the surface area of their islands. This action undermines a natural barrier, resulting in a greater impact from tropical storms.

The Panamanian government has not proposed an alternative to the Kuna region from where many families will have to escape their islands flooded or devastated by storms and

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hurricanes. Some Kuna families refuse to migrate. The General Kuna Yala Congress, together with the organization BALU UALA (an association of Kuna professionals), the Institute for the Integral Development of Kuna Yala and CREA (a Panamanian association for research, education and conservation) are implementing programmes on the islands to raise awareness, decrease the extraction of corals and educate about climate change.

GUATEMALA

Choosing a few cases of environmental conflicts in a country which is one of the most racist and violent countries in the world is difficult. Of the 31 conflicts recorded in the EJAtlas, there is at least one killed environmental defender in 19 of them, a world record. Arbenz's agrarian reforms were cut short by the 1954 coup in defence of the US companies and their plantation economy. This is Maya territory subject to coloniality and racism which reaches to Chiapas in Southern Mexico that Zapata's land reform also failed to reach.

The Chixoy and Xalala Dams[8]

One of the saddest chapters of Guatemalan history was written in Rio Negro. Hundreds of people were murdered to build the Chixoy Dam in Verapaz, a region that holds approximately 75,000 Achi-speaking Maya people. The hydroelectric project was initiated during the Guatemalan military dictatorship and the violent civil war between 1976 and 1983. When community members from Rio Negro opposed relocation and sought better compensation, the army and paramilitary forces in 1982 murdered 444 people, the majority of them women and children. The few survivors, only 23 families and a few young people, had to flee to the mountains and far away from the villages.

Financed by the World Bank and the Inter-American Development Bank, and built by Italian (COGEFAR), German (Hochtief), French (SISBORIS), Colombian and US companies, the dam forcibly displaced more than 3,500 people. An additional 6,000 families also suffered loss of land and livelihoods. Moreover, the dam and the reservoir submerged mass graves of the victims of the internal war. The victims claimed justice at the IACHR but the case was not settled for many years. Ironically enough, in 2005, the Guatemala Government announced a new dam project, the Xalala dam, by saying "it will be the same as Chixoy", assuming Chixoy to be a positive infrastructure. The survivors of the Rio Negro massacre who tried to raise awareness among the communities are now under threat because of the Xalala dam.

Persistent efforts by massacre survivors at the Chixoy dam to seek accountability led to one of the first international investigations, exhuming in 1993 the remains of 107 Maya-Achi children and 70 women outside the rural village. In 1994, Río Negro's survivors formed The Association for the Integral Development of the Victims of the Violence of the Verapaces, Maya Achí (ADIVIMA) to encourage exhumations of other massacre sites and the prosecution of those responsible. In 1999, they attended a regional consultation of the World Commission on Dams in São Paulo. The facts were recognized but no meaningful reparation for the violence, nor for the broader array of damages, materialized.

After years of struggle, the government finally signed a legal agreement in 2014 which compels the authorities to donate more than $US 150 million to the 27 Mayan affected

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communities. Along with money comes the formal recognition of the violence suffered by the Maya people and a public apology by the State. Indigenous human lives were given a low prize.

Ferro-nickel Mining by Hudbay in El Estor, Lake Izabal[9]

I followed this second case in person after a visit with Magali Rey Rosa of the organization Madre Selva. It is a ferro-nickel mining conflict in the territory of a Q'eqchi Mayan community. The protagonists are Canadian foreign companies and local people, one of whom at the end was honoured with a Goldman Prize. The conflict continues in 2022. The Fénix Project is located in the department of Izabal at the western end of the lake of the same name, about 150 km northeast of Guatemala City. Exploraciones Mineras Izabal y Explotaciones S.A. (Exmibal) began operations in 1965 when it obtained a 40-year concession (extendable for another 20 years) to explore and exploit nickel. These operations were halted in 1979 due to the fall in international prices of the metal.

In December 2004, Skye Resources Inc. completed the acquisition from Inco Limited of a 70 per cent interest in Exmibal, thereby resuming the project. In August 2008, Hudbay Minerals and Skye Resources announced the merger of the two companies, and the Fénix Project was thus handed over to Hudbay. In 2007, Skye Resources' environmental study was approved by the authorities, leaving it in a position to begin operations and build new infrastructure. The reactivation was accompanied by criticism from the peasant and Indigenous communities. In fact, that same year, the company was forced to partially and temporarily suspend the work as a group of inhabitants demanded the recovery of their ancestral territories.

In March 2011, a group of 11 Guatemalan women filed a lawsuit in a Superior Court in Ontario, Canada, against Hudbay Minerals and its subsidiary HMI Nickel Inc. The women alleged that they were complicit in the gang rapes suffered by women at the hands of their security personnel in January 2007 during forced evictions of members of the Mayan Q'eqchi' community living in El Estor. Hudbay Minerals said it would vigorously defend itself against such allegations of rape. The plaintiffs never accepted the legitimacy of the mining concession and land rights granted by the Guatemalan Government, arguing that it was granted without adequately consulting the Q'eqchi' community. They opposed the removal and resettlement of their homes and community. In 2006, the International Labour Organisation ruled that Guatemala had breached international law by granting the Fénix mining concession without first consulting with local Mayan people.

Two related lawsuits sought to hold Hudbay Minerals Inc. and a subsidiary responsible for the subsequent killing of community leader Adolfo Ich in 2009 as a result of a land dispute, and the shooting of local resident German Chub. In July 2013, the courts decided that the lawsuits would be allowed to proceed in Canada following a ruling that makes it possible for firms to face liability at home for crimes that occur overseas.

According to Hudbay Minerals, an agreement was signed in April 2009 to facilitate the voluntary return of the occupants to their homes in the nearby town of Las Nubes. While most of the squatters complied with the voluntary agreement and returned to their homes, a small number continued to occupy the mine.

Environmental threats include harm to the region's rich biodiversity. To mine nickel, sulphuric acid has to be used. This causes problems regarding acid mine drainage and contamination

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of the (ground)water. The effluents might be discharged in the ocean or in the Izabal Lake. Some communities complained about exploration drilling which caused erosion runoff that has damaged and polluted drinking water supplies. In 2010, no processing or nickel mining activities were taking place at the Fénix project. Hudbay was still in the process of determining how to proceed.

In 2014, it was reported that

> On April 4 a criminal trial will begin in Guatemala to seek justice for some of the countless acts of violence communities have faced – and continue to face – at the hands of these mining companies. On this day, Mynor Padilla, the former Head of Security for the mine under the ownership of Canadian company Hudbay Minerals and local subsidiary CGN, will be tried for the murder of Adolfo Ich Chamán.

In June 2014, it was announced that after 30 years of suspension and with an investment of $551 million, the Fénix Project resumed operations.

In 2017, Rodrigo Tot won the Goldman Environmental Prize as an Indigenous leader who led his community to a landmark court decision that ordered the government to issue land titles to the Q'eqchi people and kept environmentally destructive mining operations from expanding.

Polochic: Oil Palm and Sugarcane[10]

Not far to the west of Lake Izabal, a very violent land dispute on sugarcane and oil palm plantations took place in the fertile lands of Polochic valley of Q'eqchi' population. From 1888, the lands were privatized as farms and given to oligarch families of Germans, which employed Maya-Q'eqchi' as *mozos-colonos* for the production of coffee and livestock care. In 1978, the Q'eqchi' population suffered one of the first massacres of the civil war in Guatemala, in which 53 peasants died after claiming land access in the town square of Panzós. The conflict narrated below took place in 2010–11. Conflicts over land have been aggravated due to the expansion of oil palm monocultures since 1998 and sugarcane in 2005, property of the Maegli and Widmann families respectively, who occupy more than three-quarters of the fertile land. This also brought intoxications and eye diseases due to the aerial spraying of the sugarcane, as well as water and air contamination. Many Q'eqchi' communities were displaced to less productive areas. However, many continue sowing maize as a form of resistance and subsistence and do not hold any formal land rights. As in Miguel Angel Asturias' novel, the *Hombres de Maíz* grow corn for livelihood and fight plantations and cattle ranching.

In 2010, some families decided to occupy 13 farms that had come under auction after the economic collapse of the sugarcane mill, asking the government to sell the farms to them. They suffered daily threats of murder from the private security of the companies. At the same time, a negotiating table was set up with representation of the companies, communities, State and human rights institutions. While these meetings were being held in March 2011, 779 families from 15 communities were violently evicted by the army and the police (directed by the Widmann family). Their houses were burnt, crops destroyed, and the peasant Antonio Beb Ac was murdered. Months later, the peasants Oscar Reyes and Margarita Chub Che were murdered as well, and women, children and male peasants were shot by the private security.

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Source: Arielle Landau

Figure 18.2 Central America, Jamaica, Southern Mexico

This case was submitted to the IACHR, which replied in June 2011, forcing the government to assist the evicted families through four precautionary measures. In March 2012, the Indigenous Peasant and Popular March was organized, with over a thousand people who walked 200 km. The civilian population, with the support of organizations, demanded the government to respect the precautionary measures, to adjudicate and regularize the occupied lands, and to order the capture of those responsible for the murders and aggressions. The government committed to accomplish these demands.

In June 2012, the cases of violation of human rights of the Q'eqchi' communities were considered in the 14th Universal Periodic Review for Guatemala, from the Human Rights Council of the UN. In April 2013, Intermon Oxfam and La Via Campesina carried out the Crece- Vamos al Grano campaign, which collected 107,000 signatures delivered to the president of Guatemala to press him to give living means to families evicted. In October 2013, only 140 families were relocated on farms outside the Polochic valley without capability to cover their basic need to live. There were 611 evicted families continuing to live in the valley, suffering violence and living in extreme poverty.

Cerro Blanco, Transnational Mining Conflict between Guatemala and El Salvador

Due to the location of the gold deposit, in the Trifinio, a reserve shared by Guatemala, Honduras and El Salvador, and due to the risk of water contamination in Lake Guija in

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El Salvador, this project became a transboundary problem leading to cooperation of environmental defenders across borders. Goldcorp was to exploit the Cerro Blanco deposit in Jutiapa, with reserves of 1.3 million ounces of gold. Goldcorp is also present in Guatemala at the controversial Marlin mine and in Valle de Siria in Honduras. The Cerro Blanco Mine is located in Asuncion Mita, and has been a threat to human life, vegetation, wildlife and water since it was authorized in September 2007 by the government of Oscar Berger, who granted an exploration and exploitation licence for 25 years. However, the location of the site, in the Trifinio, proposed as a UNESCO Biosphere Reserve, could lead to international litigation. It was suspended in 2013 by the local, regional and international opposition.

Environmentalists feared that the mine would dump its contaminated water into the Ostua River flowing into Lake Guija and from there into the Lempa River, a main water source for three million Salvadorans. Several Salvadoran activists were twice kidnapped and robbed by the Guatemalan police as they headed to the capital to protest.

The local church in Guatemala defended the population against the project and joined the protests against state repression and violence. In January 2012, more than 5,000 people from 17 municipalities held a peaceful march in the municipality of Jutiapa, which ended with a mass officiated by Bishops Julio Cabrera Ovalle and Alvaro Ramazzini, historic fighters against mining in the country. In August 2012, the Minister of Environment, Herman Rosa Chavez, stated that El Salvador did not want to go to international bodies, via litigation, to get Guatemala to stop the Cerro Blanco mining project; they were looking for a negotiated solution. This same year, representatives of the Center for Research on Investment and Commerce said they had analyzed the water discharged by the mine and found high concentrations of cyanide, mercury, arsenic and lead, which are directly related to conditions such as cancer, kidney failure, central nervous system diseases and genetic alterations.

In August 2013, the project was adjourned. Until then, Gold Corp had invested US$ 150 million. In 2019, it was announced that Bluestone Resources was contemplating production in 2021 "with solid financial aspects driven even more by the recent increase in the price of gold". However, Guatemala was not a favourable location with very conflictive situations including Pan American Silver's Escobal mine (Chapter 4) and Hudbay-Solway Investment in the nickel asset in Lake Izabal.

THE CANAL OF NICARAGUA[11]

Going South, we now consider a state-sponsored development bad dream, the Interoceanic Grand Canal, to be built across Nicaragua, affecting Indigenous territories. The opposition movement was initially led by peasants. The waterway is to traverse Nicaragua from west to east, beginning at the mouth of the Brito River on the Pacific coast and then across Lake Nicaragua (105 km wide) finally reaching the Caribbean. The interoceanic canal would be able to cope with 416 million metric tons per year that represents almost 4 per cent of global maritime cargo. The project would also include two seaports, an international airport, a free trade zone, a residential area to house 140,000 residents, highways, a power plant and 41 depots for sediment dredged from rivers. The construction was to begin in December 2014 and be completed within six years. The idea of constructing an interoceanic canal in Nicaragua is not new. Since the nineteenth century, the US and France considered the idea, preferring the Panama Canal. The idea was resurrected in 2012 when the Nicaraguan administration approved a special law for its construction and created the "Authority of the Grand

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Canal", a special institution to oversee the construction and future operation of the canal. In June 2013, the Authority granted the construction concession to HK Nicaragua Canal Development Investment Co., a Hong Kong based company, in a tripartite agreement signed between Nicaragua, Russia and China. The new waterway would be 280 km long. The main advantage of the new route is its width of 83 m and depth of 27.5 m, which would make it suitable for very large ships. All this is not only going against hopes of dematerialization of the world economy but also against expectations of maritime traffic in the northern routes opened up by the loss of ice in the Arctic.

There was local opposition. Opponents such as the *Coordinadora de la comunidad negra creole indígena de Bluefields*, the Centro Humboldt and the Consejo de Ancianos del Caribe sur and Centro de Asistencia Legal a Pueblos Indígenas were concerned about land grabbing and the negative effects of the canal. A national network named Grupo Cocibolca was created to share information and organize mobilizations. Women have had a very relevant role in this, such as Mónica López Baltodano (politically opposed to Daniel Ortega) and Francisca Ramírez (one of the leaders of the peasant movement). They fear the environmental impacts on the biodiversity and protected areas, as well as the social impacts on the Indigenous and tribal people that would be displaced, mainly the Miskito, Ulwa and Creole.

Since the "Law of the Grand Canal" was approved, they presented petitions for judicial review to national courts and one to the International Human Rights Commission. In 2017, the National Court rejected the petition. Since April 2018, the movement against the Grand Canal, other environmental movements against the land grabbing in the Bosawás Protected Area, the student and feminist organizations strengthened their efforts against the government. Nicaragua has experienced a deep socio-political crisis that cost the lives of at least 200 protesters, including students, children and women, with over 1,000 wounded and around 5,000 arrested and criminalized protesters. The issue of the Grand Canal has been central to the protests against Daniel Ortega's government and the repression.

FIVE CARIBBEAN CASES

Bauxite Mining in a Maroon Community in Jamaica[12]

Bauxite is the source mineral of aluminium. In Chapter 16, we saw a conflict with JISCO Company in Jamaica. Here the Aluminum Company of America (ALCOA), the world's largest producer of aluminium, has been mining bauxite since 1963, converting Jamaica into the sixth largest bauxite producer in the world. Since 2004, prospected in Cockpit Country, a Maroon territory located in Trelawny in the northwest. The company's exploration licence expired in May 2006 and was expected to be renewed. However, communities of Cockpit Country, local and national NGOs claimed that there had been no formal consultations and that a mine would cause irreversible environmental impacts. They formed the Cockpit Country Stakeholders' Group (CCSG), struggling against environmental racism. "Maroons" are *cimarrones* in Spanish, the derogatory word for escaped African slaves.

Due to their political lobbying, street protests, judicial activism, as well as complaint letters and petitions, Jamaica's government withdrew the licence for ALCOA and the state-owned Clarendon Alumina Production Ltd's exploration in 2007. The leader of the maroon group, Sydney Peddie, commented: "We will be joining forces with all the influential people to

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Figure 18.3 The endemic Jamaican black-billed parrot

thwart this issue. It will not happen or else there will be war". Cockpit Country is a water reserve in Jamaica; 40 per cent of its fresh water comes from this area. It is also home to many maroons, as well as a habitat for endemic Jamaican birds (Figure 18.3). It is a historical site of struggles against the British colonists. In 1979, threats such as bauxite mining, agriculture and logging led to a proposal to declare it a National Park, followed in 1994 by a proposal to declare it a World Heritage Site. However, none of these met with success. In 2006, a petition was submitted to the prime minister asking him to take a stance against all mining activity in the area. In 2013, the CCSG developed a proposal asking for the definition of the total territory of Cockpit Country that belongs to the maroons with a boundary for a no-go mining area.

Cuba: The Bay of Cienfuegos[13]

Cuban environmental conflicts' history goes back to the loss of the Indigenous population after the conquest and the almost total deforestation in the nineteenth and twentieth centuries by the sugar industry. These were central moments of capitalist world-ecology. We include here several recent overlapping conflicts in the Bay of Cienfuegos. Located in the south of the island, there is contamination from oil and arsenic spills damaging the fishery, and from

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heavy industry. In 1960, the industrialization process began: development of oil refinery, food factory, fertilizers, construction materials, as well as tourist and port activities. The privileged geographical position made it the second most important port complex in Cuba. But the health of the ecosystem and human well-being are at risk.

An event was recorded on 29 May 2018 at the Refinería de Petróleos Cienfuegos S.A. Due to heavy rainfall, the crude storage pools overflowed into the bay. It was estimated that 12,000 cubic metres of oily water were discharged, occupying 70 per cent of the bay. In addition, a report by the UN Environment Program reported a total of four oil spills and one arsenic spill in 2001. The latter generated concern on the part of the local authority, which decided to permanently prohibit fishing. By 2013, Reinaldo Acosta Milan, director of the Supervision Unit of the Ministry of Science, Technology and Environment, said the bay was free of arsenic and only the consumption of shellfish and molluscs was to be avoided. However, other studies warned that this could not yet be determined and warned of possible contamination in various marine organisms.

These scenarios have generated a great impact on the local community, especially on artisanal fishermen. They denounced to the local media that their activity is at risk. They must use alternative activities to support their families.

Cemex in Los Haitises, Dominican Republic and in Ponce, Puerto Rico[14]

One famous conflict in the Dominican Republic is the fight against mining in Loma Miranda. For the sake of brevity, I focus on another case: the conflict caused by Mexico Cement, better known as CEMEX, a leading cement production company. Cemex got its bad reputation following the operations in the port of Barahona, today almost a cemetery because of bad environmental practices. In 2012, the Dominican Republic exported 1.37 million metric tons of cement. Some years ago, Cemex Dominicana was strongly lobbying the government to install a plant in the buffer zone of Los Haitises National Park. The project endangered the drinkable water reserves in the karstic formation subsoil. Various sectors of the country mobilized: young people installed a camp in the area in rejection of the initiative, trade unions declared their opposition, as did the scientific and environmental world. The administrative court decided against the company and suspended the installation of the plant. However, the Dominicans feared that the decision would be ignored

It is common for cement factories to burn waste. In 2002, another CEMEX factory, located in Ponce, Puerto Rico, began burning used tyres to produce energy and save costs. CEMEX purchased Puerto Rican Cement to keep expanding in the global market. Ponce is known for being exposed to different pollutants because of the industrial density. That's why the Environmental Quality Board placed an Air Resource Station to measure the quality of the air in this municipality. As a whole, Ponce has been in the range of acceptable air conditions, but the area where CEMEX plant is shows a high concentration of toxic emissions. The neighbours strongly complained.

In July 2006, the Environmental Protection Agency granted CEMEX a permit to produce energy by burning tyres. Eighty per cent of the costs in cement production are for energy. They proposed to the Solid Waste Administration that they would use 25 per cent of all waste tyres in the country, solving part of the problem the country had with tyre accumulation in landfills and tyre shops. CEMEX invested $21 million in machinery and emission control equipment. Different communities were concerned: burning tyres releases chlorine that when heated creates carcinogenic dioxins. CEMEX distributed a pamphlet explaining how they

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were going to manage the process but did not convincingly show how the emissions were going to be handled.

This caused protests. A spokesman from Acción Comunitaria Ponceña por un Ambiente Sano (APCAS) stated that they would exercise civil disobedience if necessary. Pablo Segarra, who was a member of the Environmental Board of the College of Medical Surgeons, also complained. Over 80 citizens and the APCAS demanded the Court of Appeals revoke the permits CEMEX acquired, which the Court did in 2008, demanding CEMEX be more explicit on the types of emissions and how they would control them.

Military Pollution: Vieques, Puerto Rico[15]

Since 1938, the US Navy occupied up to 70 per cent of the Puerto Rican Island of Vieques as a training ground for live-fire practice and a bomb testing site. Thousands of inhabitants were forcibly removed from their homes and relocated to the centre portion of the island. Protests finally led to the Navy's departure in 2003. Vieques has now become a national wildlife refuge, yet the pollution was difficult to clean up. By 2014, the US had removed more than 16.5 million pounds of munitions, and the clean-up was expected to run through at least 2025 and was budgeted at around $350 million. Political scientist Amílcar Barreto chronicled how "Portions of Vieques were transformed into an environmental nightmare and a health hazard to those who call this place home… a windfall for the military became a disaster for Vieques residents – *viequenses*" (Barreto 2002).

While resistance to military presence had always been a fixture, 19 April 1999 marked a precipitating event for mobilization in Puerto Rico and across the Puerto Rican diaspora. When Navy bombs were dropped near civilians, killing David Sanes Rodríguez, a mass outcry erupted. In 2000, several encampments of peaceful protestors were established, and more than 200 of these disobedients were forcibly removed by the military (Duany 2003). This was a catalyzing moment further unifying numerous Puerto Ricans in the US to demand an end to militarization on the island. Meanwhile, the military continued to bomb Vieques (McCaffrey 2002). In February, 150,000 people participated in the Peace for Vieques March in the capital of Puerto Rico. President Clinton offered $90 million to permanently continue Navy operations there but an informal referendum in July 2001 showed that 70 per cent of the population wanted the Navy to leave immediately. Later, President Bush stated that the Navy would halt military exercises and leave the island by May 2003. In 2005, Vieques was added to the US Superfund (CERCLA) list, which allocates funds for cleaning-up toxic waste.

The military abuse inflicted on the island had health consequences. Research from 2000 revealed that the cancer rate on Vieques was nearly 27 per cent higher than on Puerto Rico's big island (McCaffrey 2002). Indeed, studies found 34 per cent of residents with alleged toxic levels of mercury, 55 per cent with lead and 69 per cent with arsenic. The island also lacked a hospital to treat illnesses such as asthma and cancer. Even though the island was later presented as an ideal tourism spot, the toxic chemicals remaining tell a very different story. It is alleged that PCBs, napalm and depleted uranium make the island dangerous. By 2008, it was reported that thousands of unexploded bombs still existed on the island (McCaffrey 2008) and in the area's waters. The clean-up of this nature reserve area has been deemed complete even though there remains munitions debris, some potentially still live.

This is one case in the EJAtlas that raises concern about the socio-environmental impacts of military activities. The fossil fuels spent by aviation and navies, and also terrestrial armies,

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as well as the chemical and nuclear risks, deserve much more attention from environmentalists. When we read in this book the people's complaints against chemical weapons deposits in Russia, or against nuclear testing in Mururoa, the Marshall Islands or Semipalatinsk, or remember the pacifist women of Greenham Common in Berkshire in the UK, we have an inkling of a large field for research and action that should grow.

MEXICO

Entering from Guatemala to Mexico across the Usumacinta River, we begin with a case in Chiapas and continue to Campeche, Quintana Roo, Yucatan, Tabasco and then Oaxaca, Guerrero. Here again, I draw on my own memory of personal journeys since 1990, with close friends and colleagues like Víctor Toledo, Enrique Leff, Silvia Ribeiro, Gian Carlo Delgado, Sofia Ávila, Aida Luz López, Victoria Ruiz Rincón, Federico Guzmán, Yannick Deniau. I also draw on the newspaper *La Jornada* and Luis Hernandez Navarro.

The Transnational Usumacinta River: *nuestros ríos son la vida*

Ten years ago, on the border between Guatemala and Mexico, I attended a meeting on hydroelectric plants. I wrote an article for *La Jornada* translated here.[16]

> Five kilometres from Tenosique is the exit of the Usumacinta River canyon to the Tabasco plain. The river is big. A very beautiful place. In his book *Oro Verde*, Jan De Vos explained that one hundred years ago mahogany was taken out with oxen and forced labour and sent downstream for export from the Marqués de Comillas concession. We are on the Mexican side, on the other side is the Petén. I once visited Laguna del Tigre in the Petén (with Magaly Rey Rosa, in Guatemala) and observed oil extraction. Now I listen to the words of Guatemalan and Mexican activists reaching coordination agreements to defend themselves from the construction of hydropower plants. We are near Palenque, which is Mayan territory on both borders with ruins like Yaxchilan. In Guatemala there has been resistance in recent years against various projects located in the upper part of the Usumacinta basin. The company Hidro Santa Cruz has projects on the Qambalam River. During the protests one farmer was killed and several others were injured, the project was blocked, machines and offices were burned down. In Purulha in Baja Verapaz in August 2013, two sons of a resistance leader were killed. And in Xalalá, in Ixcán in the department of El Quiché, which is near Chixoy, there is a big project that is raising a lot of resistance.
>
> We slept with members of the MAPDER (Mexican Movement of People Affected by Dams and in Defence of Rivers) at the Christian hostel in Tenosique (Station 72). That hostel was full of young people from Central America waiting to board the freight train nicknamed The Beast. The train has no regular stop and no precise timetable, you have to get on the train that slows down at the abandoned Tenosique station. As we travel the short distance to the imposing Usumacinta in the morning, we are reminded of the massacre at the Chixoy River dam during the Guatemalan civil war. I also remember the assassination of Bishop Juan Gerardi in Guatemala when he tried to publish the data of a Truth Commission. Guatemala is a country of fear. And yet there are numerous popular consultations against mining projects and dams.
>
> In Mexico, six years ago there were terrible floods in 70% of Tabasco's territory that left the capital Villahermosa under water, apparently due to mismanagement of the Peñitas dam as part of the CFE's Grijalva hydroelectric complex. The government's promise to prevent flooding in the Tabasco plains with the construction of four hydroelectric plants (1959–1987) along the Grijalva River since 1957 to date, has not been fulfilled.
>
> At Boca del Cerro, in the Usumacinta Canyon near Tenosique, a large dam has been threatening for 40 years. The project would provide perhaps 420 megawatts of power with a 120-meter curtain.

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Figure 18.4 The states of Mexico

Various communities and places of ecological and archaeological value would be lost, signs of identity of great cultural value as the foundation of a confederation of Mayan nationalities. The Usumacinta and Grijalva rivers join watersheds in Tabasco, Campeche, Chiapas and Guatemala, breaking the political frontiers and increasing transborder contacts between the upper and lower parts of the basins. Resistance movements are re-establishing transnational connections. *Nuestros ríos son la vida,* our rivers are life, they say. Our rivers are indeed life unless stopped by dams. Mapder and Otros Mundos support REDLAR (Red Latinoamericana contra Represas y por los Ríos), trying to make the management of the Usumacinta on the southern border of Mexico better than on the northern border, where the Colorado River delta ran out of water for the benefit of the United States and to the detriment of the delta's inhabitants and the river's own life.

Mariano Abarca and a Canadian Barite Mine in Chicomuselo, Chiapas[17]

The Canadian company Blackfire was planning the world's largest barite mine in Chiapas, southern Mexico. Barite allows oil drilling without the risk of explosion by friction or gas pockets, since it does not produce sparks. Since June 2009, Mariano Abarca, a regional leader opposing barite mining and other minerals, maintained a sit-in at the town hall with other members of REMA (Red Mexicana de Afectados por la Minería) demanding the departure of Blackfire. The mine was in operation for nearly a year, after 24 months of negotiations to obtain the permits and make the accesses functional. In November 2009, Mariano Abarca was killed and the state authorities closed the mine temporarily. However, the company filed an appeal with the federal court. In April 2010, it ruled in its favour. Finally, the mine was closed after an appeal by the Chiapas government was accepted. As in other cases involving

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Canadian mining companies, there were inconclusive attempts to obtain justice in Canada, and demonstrations at the Embassy in Mexico as individuals apparently paid by the company itself were involved in the killing.

Abarca was shot in the head and chest by a man on a motorcycle. He had been violently and illegally abducted by the police in August, and again received death threats in the week prior to his death. In a November 28 email to supporters, Gustavo Castro, an activist with Otros Mundos AC in Chiapas, wrote: "[Mariano was] a dear friend, admired for his struggle against the Canadian mining company Blackfire, and a member of REMA-Chiapas. Yesterday we spoke to him on the phone and he told us he had filed a complaint against the company. Today he's dead". Seven years later, in 2016, Gustavo Castro again had the bad luck of being the first to report the death of Berta Cáceres in Honduras.

In August 2019, members of the Abarca family, along with a number of Mexican organizations, held a press conference in San Cristóbal de las Casas to mark the anniversary of Mariano's murder. The Canadian authorities exonerated the Canadian embassy from responsibility for its behaviour in the months leading to the death. Abarca had gone to the embassy to report threats and allegations of harassment against community members. MiningWatch Canada, which has been advocating on the Abarca family's behalf, said the decision was made "without a serious evaluation of the significant public interest in ensuring public oversight of the actions of Canadian public officials engaged with mining conflicts around the world".

The Yucatan Peninsula

The EJAtlas has more than one entry on the conflictive Maya Train project that president López Obrador has been so keen to build. Sometimes, the EJAtlas becomes local news. Thus, on 5 June 2019, Sandra Gayou Soto wrote in *La Jornada Maya*:[18]

> The Environmental Justice Atlas website has a record of 2,805 environmental justice cases, including five in the Yucatan Peninsula (…) the following appear:
>
> - The conflict in San José Tipceh, in Muna, with the solar energy mega-projects called Ticul A and B.
> - In Campeche, the conflict in Hopelchén with the Monsanto company, the planting of soybeans, and the effects on the environment and the bees, were recorded.
> - Also, in Campeche there is the dispute "for the maritime space between the oil industry and the fishing industry, Sonda de Campeche".
> - In Quintana Roo, the town of Xcalak stands out, which in spite of promoting tourism "the community is not able to obtain the necessary resources to subsist, the tourism sector has excluded them, taking all the profits from tourism activities"
> - Holbox is the last point pointed out in the region, devastated by the arrival of mass tourism and where the "La Ensenada project" was intended to be carried out.

The journalist added that the singer Manu Chao published the link to the EJAtlas on his Twitter account. We were pleased to hear that. Since then, we have increased the number of cases in the EJAtlas by one-third.

Monsanto Kills the Bees[19]

Monsanto caused serious damage to bee pollination and large extensions of forest because of the expanding monoculture of GM soy. Hundreds of beekeepers from Campeche and Yucatan

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filed three appeals before the Supreme Court of Justice of the Nation against Monsanto. Genetically modified soybean commercial plantations were grown in nine Mexican federal states mainly for the production of human-edible oil and animal food. From 2000 to 2009, production of Monsanto soybean GMOs was allowed for so-called experimental purposes. In 2010 and 2011, the experimental plantations became a 'pilot program' that allowed production of GMOs with or without containment measures (GMO Biosafety Law, 2005). In June 2012, the Mexican Ministry of Agriculture, Stockbreeding, Rural Development, Fishery and Food (SAGARPA) issued a permit to Monsanto for upgrading the soybean project on around 250,000 ha, from 'pilot' to 'commercial', without any containing measure. The Mexican Ministry of the Environment and Natural Resources (SEMARNAT) supported this decision.

Some 60,000 ha are located in the Yucatan Peninsula, one of the world's biodiversity hotspots (Tamariz 2013[20]). Bees are important pollinators, which gives apiculture outstanding socio-ecological relevance. From pre-colonial times, apiculture developed along with a variety of native and endemic bee species. Since the mid-twentieth century, apiculture in Mexico became an industry beyond traditional usages. The honey production of the Mayan area in the Yucatan Peninsula accounts for 45 per cent of the nation's honey, 90 per cent of which is exported to the EU. The glyphosate used in production of soybean and the pollen of GMO soybeans has a negative effect on the bees and on the production of honey. Moreover, the production of soybeans implied deforestation to give way to monoculture plantations causing biodiversity loss and decrease in the quantity of nectar used by bees to produce honey.

In order to ban transgenic soybean cultivation in Mexico, Mayan beekeepers, honey gatherers and exporters from the Yucatan Peninsula created a political network together with environmental and human-rights organizations, scientific and governmental institutions. The network organized meetings and workshops, exchanged information, experiences and research findings, and shared a common political strategy. Furthermore, some formed an activist organization called Sin Transgénicos and organized protests "Ma OGM" (No-GMO in Maya) attended by 2,000 people in Mayan ceremonial centres. The Mexican Unión de Científicos Comprometidos con la Sociedad supported the cause by sending a petition signed by 660 scientists to SAGARPA and publishing news and opinion-articles on the issue newspapers.

In June 2012, the members of the network applied for an appeal to ban transgenic soy cultivation in Campeche, Yucatan, Quintana Roo and Chiapas. The appeal considers the Constitution of Mexico and several treaties regarding labour rights, Indigenous rights and participation in decision-making such as Convention 169 of the ILO and the Mexican federal GMO Biosafety Law. It denounced SEMARNAT for making the decision without taking into account the opinions of the National Commission for the Knowledge and Use of Biodiversity, the National Commission of Natural Protected Areas and the National Institute of Ecology. In April 2014, the Second District Court applied protection standards on the rights of Indigenous peoples taking into account the essential function that beekeeping has to the culture, environment, economy and society of the local communities. Previously, it upheld a separate appeal by two Mayan communities from Municipality Hopelchen Pacchén and Cancabchén. In November 2015, in response to the network Sin Transgénicos, Mexico's Supreme Court ruled that the government must consult Indigenous communities before planting GM soybeans. In September 2017, Mexico's Food and Agricultural Service revoked Monsanto's permit to grow genetically modified soybeans in seven states, including Campeche and Yucatán.

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An important role in this struggle was played by Leydy Pech, who received a Goldman Prize in 2020.[21]

Pacto Ribereño – the Riparian Pact against Oil Exploitation in Tabasco[22]

In Tabasco we remember one socio-ecological movement in the 1970s. The "Riparian Pact" was established when an environmental problem generated massive political action, with broad peasant and Indigenous participation. With the boom of the oil market in the mid-1970s, the exploitation of crude oil in Mexico became one of the fundamental pillars of the economy as well as in the maintenance of the political system and its state party regime (the PRI), through the control of what would be the largest parastatal company: Petróleos Mexicanos (Pemex). The Pacto Ribereño based their struggle on the social principles of peasant struggle: the right to land and the right to participate in policy decisions that affected their lives, economic development and culture. The economic demands were based on an independent and extensive ecological impact study. At its peak, the movement blocked nearly 300 oil wells in central Tabasco between March and November 1983. There were complaints about water and land contamination, and also against gas flaring.

The Riparian Pact arose in August 1976, when the ejidatarios and small owners of numerous ejidos and municipalities met in general assembly. All of them had been affected by Pemex in the Barra de Tupilco, on the Gulf of Mexico, which caused the salinization of the bar, as also the Guayo, Tular, Cocohital Rivers, and contaminated the lands and freshwater wells. In the next months, more ejidos and rancherías joined, and by November 19 there were 39 rancherías and 19 ejidos more, totalling 7,000 peasants from the municipalities of Reforma, Juárez, Pichucalco, Cárdenas, Huimanguillo and Comalcalco.

The demand of the payment of 4,123 million pesos (about US$ 209 million) for Pemex's damage were calculated by the movement itself. The movement agreed that, if their demands were not met, they would carry out a simultaneous blockade of Pemex's activities in all the oil fields where the members of the Pact lived. Eventually, the complaints got enmeshed into a government 'paper wall' of legal procedures, generating dependence and at the same time the hope that the State would solve the problems, as long as loyalty and patience were maintained. A bureaucratic structure of "administration" of social discontent was thus created. Thus, a Commission for the Ruling of Claims of the State of Tabasco (CODIRET) was instituted. Faced with this strategy, in November 1976 the movement blocked several oil fields. Two days later, the government sent 2,000 troops in order to recover the facilities. Peasant leaders were imprisoned and accused of causing damage to the communication routes and large economic losses. At the beginning of 1977, mechanisms were also deployed to divide the movement, making minor payments of compensation selectively.

In May 1977, a reorganization of the movement was achieved and negotiations began, in which the government finally recognized Pemex's abuses. An agreement was signed on October 25th. The peasants were led to sign individual agreements, according to which the claims would be covered in 90 days if they were property other than the land. Otherwise, an expropriation procedure would be made and compensation would be paid. With this, the dispossession of ejido lands was carried out and the payments were not made. In August 1978, the Riparian Pact decided to block the well 83 "El Golpe", in Comalcalco, for more than seven days. The Mexican government then deployed a strategy of co-optation through one of its strongest arms of the time: the National Peasant Confederation, integrating some leaders into

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the apparatus. Thus, in November 1979, the Riparian Pact supported the candidacy of the ruling Institutional Revolutionary Party (PRI) for the municipal presidency of Comalcalco and published a statement repudiating the Communist Party.

However, the payments did not materialize and the environmental damage of the oil industry continued. A document sent by the ejido population of El Carmen to President López Portillo presented the arguments and demands:

> Our ejido consisting of 702 hectares has been totally destroyed by said company [PEMEX], locating wells, roads, ditches to put pipes and building buildings of different sizes. The waters […] are currently totally contaminated with layers of oil and residues, and gas flaring goes on day and night. The roofs and walls of our houses, the wire fences of our paddocks and pastures, everything is finished; the cattle die […]. We walk from one place to another letting the different authorities know, both agrarian and from the company Petróleos Mexicanos, so that we are compensated for all the damages they have caused to our interests. The company Petróleos de México is a large company that exploits the oil wealth of our country, but only to benefit certain people, we farmers always receive humiliation and poverty.

In 1983, there were already more than 19,000 lawsuits and payment of compensation started to be made, seven years after the beginning of the movement. It should be noted that, between 1973 and 1992, Tabasco extracted 660,000 barrels per day, generating a revenue of approximately US$ 130 billion. Five decades later, environmental damage in Tabasco continues, and so do some demonstrations and blockades by local populations.

Oaxaca: Windmills[23]

There are several communities on the coast of Oaxaca which have been struggling against wind energy. Pablo Neruda talked to the wind one hundred years ago, warning it of what had happened to its friend the water: "*Aire no te vendas. No, aire, no te vendas, que no te canalicen, que no te entuben, que no te encajen, ni te compriman, que no te hagan tabletas, que no te metan en una botella, cuidado*!" (Air, don't sell yourself. No, air, don't get sold, don't get channelled, don't get tubed, don't get compressed, don't get turned into pills, don't get bottled, watch out!).

It is rare that local rural communities of shepherds or peasants claim property rights on the wind. Rather, the complaints arise because the land is expropriated or grabbed to build windmills, roads and electricity towers. They have been documented in the EJAtlas and they allowed one pioneering article on worldwide resistance to windmills (Avila 2018). We are in favour of an electricity transition away from fossil fuels but we know there are socio-ecological conflicts against windmills in which to the livelihood argument of loss of access to land another argument is often added: the alleged threat to the life of local birds.

Indigenous communities in Oaxaca have famously and successfully struggled against large-scale private windmills despite the violence against them. Over the last 25 years, Mexico registered a fast development of large-scale wind farms in the Isthmus of Tehuantepec, in the south-west of Oaxaca. This region is considered to have wind power potential capacity of 33,200 MW. The territory comprises traditional lands of the Binnizá and Ikjoots groups (Zapotecos and Huaves in Spanish), most of them organized through communal land regimes and customary law. They are ancestral inhabitants, and their rights were reaffirmed as ejidatarios after Zapata's revolution and its subsequent land reforms. Indigenous communities in

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Source: Robin Canul/Radio ONU

Figure 18.5 Bettina Cruz jailed because of opposition to corporate windmills in Oaxaca

the area heavily depend on traditional livelihoods rooted to the territory, including fishing and farming activities.

The Isthmus is also part of the Mesoamerican Biological Corridor and one of the largest migratory bird routes. In 2015, the Wind Corridor in the Isthmus of Tehuantepec comprised over 15 private wind power projects, intended to supply electricity to private companies, while some are destined for public distribution in urbanized areas. Opposition started in 1994 and gained force as private projects (often by Spanish firms such as Iberdrola and Gamesa) spread out. Local organizations expanded through several political instances with the contribution of different external actors. They sued over illegal land leasing contracts and environmental impacts on construction and operation phases. Additionally, Indigenous communities made strong complaints against the privatization and dispossession processes over their lands and resources.

In San Dionisio, Juchitán and other places, some projects were stopped after the courts determined that companies must consult communities following ILO 169 Convention standards. Additionally, in February 2015, the District Court in the State of Oaxaca ruled to acquit leader Bettina Cruz Velazquez of charges made against her, after a flawed judicial process in which she was in and out of prison for some years (Figure 18.5).

Hydropower: La Parota in Guerrero, San Juan Tahitic in Puebla and Naranjal in Veracruz

La Parota Dam in Guerrero[24]

La Parota hydroelectric project finally was stopped after more than ten years of mobilization and judicial battles, criminalization of opponents and violation of human rights. The dam was

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to be 192 m with a capacity of 756 MW. It was to be built on the Papagayo River in Guerrero state, less than 50 km from the Acapulco harbour in the Pacific, at the cost of US$ one billion. It was first introduced in 2003 by the Mexican Federal Electricity Commission (CFE), and it would have permanently damaged the biodiversity of the area. Local residents, who would have suffered from the flooding and loss of their lands and homes, started a long struggle to defend their territory, organizing protest rallies and roadblocks.

In 2004, affected communities created the Council of Communal Land Owners and Communities against Construction of La Parota Dam (CECOP). They joined forces with MAPDER and held numerous protests and activities, sometimes meeting with violent police repression, which resulted in rights violations and two deaths. The CECOP also started a legal battle. In January 2006, a Mexican court declared that some of the consultation meetings held by the CFE were invalid.

In September 2007, a temporary injunction was ordered by a Mexican federal judge in response to a suit accusing the government and the CFE of illegally granting environmental clearance and a water concession for the dam, along with human rights violations and refusing to conduct an open and transparent approval process. However, the judge lifted her own restraining order against the project in November. Finally, 16 August 2012 saw the end of La Parota Dam with the "Acuerdos de Cacahuatepec" signed in Acapulco between members of CECOP and the Governor of Guerrero, Ángel Aguirre Rivero. The Governor would inform the president of Mexico, Felipe Calderón, that the local peasants and landowners refuse to sell their lands for building this dam.[25] Perhaps La Parota was only "postponed". One leader of the farmers' movement, Marco Antonio Suástegui, was arrested in June 2014. The CECOP released a press note and a letter of support was signed from many groups in and outside Mexico. Suástegui's brother was kidnapped, as he is also a well-known member of CECOP.

Hydropower in Apulco River, Puebla[26]

On 13 November 2018, Martín Hernández Alcántara introduced an article in the newspaper *La Jornada de Oriente* on environmental conflicts: "Nine cases from Puebla are registered in the Atlas of Environmental Justice (EJAtlas), which this month counted 2,610 environmental conflicts around the planet".

I would like indeed to summarize here all these nine conflicts, adding some more, but there is room only for one of them. Since 2013, people of San Juan Tahitic have been resisting extractivist projects, so-called death-projects, *proyectos de muerte* as they are locally known and also known (second-hand) in the international academic literature (Post 2022).[27] The Indigenous people developed a resistance struggle in defence of their territory that included the expulsion of representatives of the company Gaya, that entered their lands without permission. In May 2016, it was reported that the SEMARNAT rejected the Gaya Hydroelectric Project, which was intended to install a "mini" energy generator on the Apulco River, just 5 km from the community of San Juan Tahitic, in Zacapoaxtla. This was the second time that SEMARNAT, in charge of environmental preservation and regulating the use of natural assets, rejected the project.

On 1 June 2018, Adrian Tihuilit was shot in the head and thrown into one of the ravines off a dirt road that goes from Xilitla to San Juan. It was the second murder of an environmental and human rights activist recorded in 15 days in the north-eastern Sierra of the state of Puebla. Manuel Gaspar Rodríguez, a member of MIOCUP-CNPA, also received threats prior to the discovery of his body, found in a motel in Cuetzalan. Those murders caused consternation

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among the residents and those opposing the hydroelectric plant: "They are hunting us. His death shows that they are going against the activists who oppose the *proyectos de muerte*, the death projects".

The dam at Naranjal, Veracruz[28]

Noé Vázquez Ortiz was killed as he was preparing the opening ceremony of the annual meeting convened by MAPDER, a network of villages, Indigenous communities and environmental justice organizations in defence of rivers formed ten years ago in the area of the Parota dam but drawing on meetings in Guatemala and Honduras. He was brutally tortured and assassinated by four men on 2 August 2013 in Amatlán de los Reyes, state of Veracruz. He was collecting flowers, herbs and seeds in the Cerro de la Cruz for the ritual opening. According to MAPDER, the Ministerio Público de Amatlán (the public prosecutor) refused to accept the denunciation of the murder on the same day and Noé's family was not properly informed by the authorities. The activists also denounced that the security of the event was not guaranteed by the police forces, contrary to what the Governor of Veracruz had promised. There was little doubt that Noé was targeted for his years-long struggle for rivers and local communities and against large dam projects like the Naranjal dam on the Rio Blanco.

Noé was a craftsman, a defender of nature and culture and an active member of *Colectivo Defensa Verde Naturaleza para Siempre*. In a press release issued after his death, MAPDER explains that hydroelectric dam projects have increased since 2010 in Veracruz. So far, they have tried to install 112 private dams in the state. In Mexico, it's been calculated that between 1936–2006, 4,200 large dams have come up and displaced 185,000 people. Since 2011, the 370-MW hydroelectric project El Naranjal threatened the territory of Amatlán de los Reyes and seven municipalities, representing nearly 30,000 people. As a result of the protests, there was an atmosphere of intimidation. According to MAPDER national spokesman Cesar Ramirez, the dam construction lobby in the country is extremely strong and includes the CFE and CONAGUA (National Water Commission).

Despite the tragedy, the meeting was held. It had different purposes: from legal assistance and guidelines to discover the new tendencies in dam constructions, small hydropower and its risks. Also, the role of private companies under the discourses of energy self-sufficiency. From those meetings emerged the need to bridge actions not only against the dams, but also the mining industry. The movement strongly questioned the structural reforms in the energy sector and the high electricity prices.

In an interview with Radio Mundo Real, Gustavo Castro explained that the great challenge was now to face private corporations building dams rather than the government. Ten years ago, the World Bank and bilateral banks used to give funds to governments, while now private companies are given the right to generate their own power. This entails privatization of rivers and appropriation of Indigenous land. Moreover, the discourse in defence of dams has changed, in favour of so-called small barrages which supposedly cause no harm to the environment and to communities. Solidarity came from all over the world. As his people say, Noé has not been buried but given back to the land so that he can bloom again and give strength to the struggle. Years later, in the 2020s, the dam has not yet been built.

Gold Mining in Carrizalillo, Guerrero[29]

This is one of the most terrible conflicts in the EJAtlas. This community in the state of Guerrero suffers an extremely high degree of violence as a consequence of gold mining, first by the Canadian firm Goldcorp and now by LeaGold Mining with no end in sight.

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The "Los Filos" mining complex includes two open pits ("El Bermejal" and "Los Filos"); the so-called "Nukay Tunnel" of underground extraction, and a leachate yard (400 ha). The project extends over 2690 ha distributed among the communities of Mezcala, Carrizalillo and Xochipala. Carrizalillo's lands are distributed in small properties and in communal ejidos in a zone crossed by the Golden Belt, where foreign and national mining companies prevail. The community has a little more than 1,000 inhabitants who, before the arrival of mining, planted cornfields, produced and sold pumpkin seeds, raised livestock and produced mezcal.

First, Peñoles S.A. reached an agreement for the temporary occupation of the ejido lands, initiating a series of conflicts which persist from 2003 to date. In 2005, the Canadian company Goldcorp purchased the exploration results as well as the subsoil concessions, to start an open-pit mine called Los Filos. However, to begin operations, the company had to renew the agreements with its predecessor for the purchase and rental of land. In 2006, the mining of the El Bermejal pit began and the leachate yards started to be watered with sodium cyanide. The first "doré" bar was produced. In 2007, the conflict between the company and the community of Carrizalillo started. A permanent assembly of *ejidatarios*, local population and workers demanded an increase in the payment from the company. It was at that moment that they learned that the company had illegally bought the communal lands. The Unitary Agrarian Tribunal issued a ruling obliging the company to return and pay for the damages to the lands, while at the same time opening up a new possibility to 'improve' the previous agreement.

The peasant Ejido ordered the company to close down. This lasted for 83 days, during which various situations arose. First, 80 people were violently arrested by the police. A negotiation was opened with the companies to draft a new land lease agreement that increased from 1,250 to 13,500 pesos/ha per year. The lease agreement should also be done only for one year, to allow the community to gain experience and evaluate its annual achievements improving the conditions. Goldcorp's tremendous financial asymmetry with the Ejido was obvious: the company received $999.26 for every thousand dollars of gold sold, and the communities only 74 cents. Subsequently, the part for the villagers rose to $5.87.

However, there was no harmony between the company and the Ejido. A local census showed that the population spent about 27 million pesos because of their deteriorating health, while the company covered only a quarter of that expenditure. After 2010, because of heavy metals, the population showed respiratory diseases, skin diseases, eyes, and ears, cancer, gastrointestinal problems, and the number of pregnant women who had abortions and premature births increased. A census conducted in 2012 found that all families in the community had at least one sick member. Damages were documented with support from the REMA and the Mesoamerican Movement against the Mining Extractive Model (M4).

The Goldcorp Company's ugly reputation extends internationally. Carrizalillo also shows the intersectionality between metal mining and struggles for better public health. Thus, Carrizalillo appeared prominently in the sessions of an international Popular Tribunal for Health in July 2012 in San Miguel Ixtahuacán, Guatemala, where Dr Juan Almendares was active. A ruling was issued against Goldcorp, starting the international campaign "Goldcorp Makes Me Sick" and preparing documentation that would allow the affected people to demand accountability.

Damages include the disappearance of 14 water sources and the contamination of others. In the rainy season, each family spends between 1,000 and 1,500 pesos per month to purchase safe water, which triplicates in the dry season. The main water collection sub-basin of Carrizalillo, which occupies 77 per cent of its territory, has been destroyed. There is a constant growth of the leachate yard. The development of the mining project also caused a total destruction of the landscape. The forest and the hills were replaced by the two pits, each

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more than 2.3 km wide and 1 km deep. This implied the destruction of two protected areas: the 118th Priority Land Region, rich in plants of the genus Bursera, and the territory declared as an "Important Area for the Conservation of Migratory Birds". Areas of tangible historical and archaeological heritage evidence also were destroyed. The company's working conditions are another area of permanent conflict in contrast with the official discourse of a "socially responsible company". It is alleged that there have been several deaths of mine workers from cyanide poisoning.

Mexico City Conurbation Swallows Up Ejido Lands: Resistance at Xochicuautla[30]

I shall consider one of various conflicts that have arisen because of the great expansion of Mexico City. Together with Victoria Ruiz Rincón and Sara Mingorria, we published a comparative article on nine somewhat similar such conflicts recorded in the EJAtlas. Xochicuautla is at the extreme west of the conurbation. To the east, México reaches Puebla, and to the North the discarded airport of Atenco near Lake Texcoco. Between Atenco and Arco Sur lies the city of Mexico; further south Cuernavaca in Morelos with some doubtful "social housing" projects in La Ciénega and Cerro de la Tortuga. To the west, the road Naucalpan to Toluca where there has been resistance by an Otomí community because the four-lane motorway (Naucalpan-Toluca) would cut across their sacred territory and forest. *¡Xochicuautla no se vende, se ama y se defiende!* (Ruiz Rincón et al. 2019). The four lanes motorway, with a length of 39 km and a capacity of 30,000 vehicles per day, would cost US$ 370 million.

One day in 2007, while working on his land, Antonio Reyes, a member of the Supreme Indigenous Council of Xochicuautla, noticed a group of workers surveying his crops. When asked why they were there, they told him that Enrique Peña Nieto, then governor of the State of Mexico and later president of the country, had authorized the construction of the Toluca-Naucalpan highway. In this way, the community learned about the project to be built in its territory, and not through free and informed consultation. The Otomí Ñatho Indigenous community was then involved in a legal dispute with the state government for a decade because they were not willing to have "the veins of their Sacred Water Forest" cut off to build a toll road.

The community is still immersed in a legal struggle. In addition, the community has undertaken a dialogue to examine how the project could be developed to affect the ecosystem and cultural dynamics of the region as little as possible. IACHR issued precautionary measures and the Comisión Nacional de Derechos Humanos (CNDH) issued a recommendation in 2016 that recognizes the violations committed against their human and Indigenous rights. They insisted on not being an agrarian community, but an Indigenous one. This means that their titles do not come from the land reforms of the twentieth century, but are much older.

According to official data, the construction of the highway will directly destroy 600,000 m^2 of the Great Water Forest. The highway plans to pass between the Ciénegas de Chignahuapan and Chimaliapan, two lagoons belonging to the Ciénegas de Lerma, a natural area protected by state, federal and international law, cutting off the passage of hundreds of birds that travel daily between one lagoon and the other. Considered a sacred place by the ñañhú, ñuhú, mazahua and otomí Indigenous peoples.

In 2017, the company Autovan (a subsidiary of the Higa Group) began building the toll road. The absence of consultation led to a protest that the state authorities tried to suppress through threats, harassment and the unjustified detention of 22 people.

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Cemex Burns Municipal Solid Waste as Fuel in Atotonilco de Tula and Huichapan, Hidalgo[31]

The company Cemex that we have met already is responsible for cases of heavy pollution in Hidalgo, northeast of Mexico City. In fact, several communities in the states of Puebla, San Luis Potosi, Hidalgo and the State of Mexico affected by the cement industry are protesting, as the industry is poisoning entire communities across the country: the burning of waste in cement plants is a global issue. It is sometimes "greenwashed", like in Huichapan with solid waste burned as alternative to fossil fuel.

Hidalgo has an Environmental Protection Law that prohibits both the incineration of rubbish and the transport of waste not produced in the state; however, every day it received 15,000 tons of waste from Mexico City. The shipment to cement kilns was one main "solution" promoted by an agreement signed between CEMEX and the Mexico City government for the treatment of waste from the Mexican capital, following the closure of the Bordo Poniente landfill (the largest in Latin America) in December 2011. The government of Mexico City paid the CEMEX 300 pesos a day for every ton of rubbish transported and burned in its incinerators. Tyres, car batteries, electronic waste, pirate cassettes and disks, plastic, infectious biological waste, heavy metals and pesticides form a cocktail of toxic gases in the incinerators wreaking havoc on people's health.

The inhabitants of Huichapan organized themselves as "Ciudadanos Unidos por el Medio Ambiente" to resist this false solution and to build their own alternatives for waste management. The local community was supported by the Global Alliance for Alternatives to Solid Urban Waste Incineration (GAIA) and state deputy Sandra Ordaz Oliver, President of the Health Commission of the Local Congress. She committed to enforcing the ban on burning solid urban and hazardous waste throughout Hidalgo, as well as promoting a Zero Waste law including sustainable options such as reduction and separation of waste at source, reuse, recycling and composting.

In 2012, GAIA reported that the community of Huichapan achieved the closure by the SEMARNAT of the plant, after six months of peaceful mobilizations and legal actions. Environmentalists warned about the increase in cancer and pulmonary diseases in the community of Maney, as a result of the contamination from the incinerator, and even after it stopped. Biologist Jorge Tadeo Vargas, coordinator of the campaign, along with Mariel Vilella (from GAIA) told the newspaper *La Jornada* that according to surveys in Huichapan, 30 per cent of its population suffer from respiratory, cardiac, skin and cancer diseases.

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After the refusal to incinerate urban solid waste in the municipality of Huichapan, the company continued the same practice in the Atotonilco plant in Tula. This time, they were more discreet and tried to hide the evidence. The arrival of the solid waste took place in the early hours of the morning and the employees were forced to keep silent on pain of losing their jobs. In mid-2013, a group of citizens from the community of Boxfi alerted other citizens to the bad smells coming from the factory and the arrival of trucks with waste. These citizens, together with the municipal environmental organizations and again supported by biologist Tadeo Vargas (and GAIA) complained to the authorities. Together with colleagues from the states of Mexico, San Luis Potosi, Puebla and Hidalgo, they created the Front of Communities

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Against Incineration. They are opposed to building cement plants, ask for regulation of this industry, based on the knowledge of their negative impacts on communities and demand the non-incineration of waste in cement plants.

Zacatecas: A Mining Frontier from the Sixteenth to the Twenty-first Century

Few states in Mexico have, from my point of view, such an interesting history as Zacatecas, at the border between Mesoamerica (Central America, southern and central Mexico) and northern Mexico. Some of this history, from colonial times, is reflected in the case I include here. As in Potosí one smells capitalist world ecology.

The tailings dam (*presa de jales*) La Zacatecana: the values of toxic waste[32]

There have been numerous conflicting attempts to profit from the toxic mine tailings (mercury, silver, gold) in this dam in the Arroyo de la Plata, downstream of the city of Zacatecas, the ownership and safety of which is in dispute. The Arroyo de la Plata (the Silver Brook) is a stream of heavy metals. This case of La Zacatecana and El Pedernalillo lagoon was described as "the worst ecological tragedy in Mexico" by Buco Lepetic, a UN advisor who spent months studying the pollution in that community. If not the worst, it is one of the longest in time. Below the water lies a lot of mercury, as well as heavy metals such as lead and other waste from silver and gold mining, that have been arriving from the city of Zacatecas via the Arroyo de la Plata since the sixteenth century. In Zacatecas, for centuries, the tailings were dragged by the rainwater and deposited, before the construction of the dam that gave origin to the lagoon, in the basin of the Arroyo de la Plata. The quantity and toxicity of the tailings are a matter of dispute – local ejidatarios suspect that scientific studies are aimed at getting them evicted for the benefit of business interests.

The first form of contamination in La Zacatecana was caused by the dispersion of the residues of colonial mining. The waters and the tailings were dragged into the valley of Guadalupe; they were retained in the dam of what would become the ejido La Zacatecana and in the surrounding lowlands, as this was where the main stream flowed. Contamination originated in the method of obtaining the silver by amalgamation with mercury or quicksilver, and by burning.

The volume of metals deposited in the Zacatecana Dam gave rise to a myth that transcended the borders of the ejido. This myth could be supported by the reality of the Santa Teresa company's exploitation of the tailings a hundred years ago, and more recently by the ORCA mining company's 2005 Bankable Feasibility Study for the Laguna Silver Project. ORCA calculated that exploitation could take place in an average of seven years, and that the volume of mercury, gold and silver would be profitable. The ejidatarios finally rejected the project. Because quicksilver is a heavy mineral, it has been leaching towards the water table.

During the twentieth century, already during the Republican period, the second form of pollution was generated by the mineral residues deposited in the Guadalupe Valley. During the entire century, metallurgical and mining companies were established on the periphery of the dam, the ejido of Zacatecana and Pedernalillo, which were dedicated to the treatment of waste. The metallurgical industries dredged these lands, along with those of the dam, to exploit the gold, silver and mercury they contained. When the process was finished, they left heavy metal residues on the arable land. Finally, the last stage of the contamination in that

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territory was the arrival of the black waters coming from the city of Zacatecas through the same stream.

In Zacatecas, two other cases related to this one are "Industrial waste in Nuevo Mercurio" and "Environmental liabilities of Minera San Acacio, Vetagrande". In addition, other notable mining conflicts are included in the EJAtlas and analyzed by Federico Guzmán in his book: *Megaminería y 7 maldades del despojo territorial* ("Megamining and 7 evils of territorial dispossession") (2018).

El Zapotillo and Temaca, *Pueblo en Vilo* (A Village on the Edge) in Jalisco[33]

To the west of Mexico City is Guadalajara, the second largest city in the country, where I have taught and, with Beatriz Rodríguez Labajos, wrote the preface to an excellent book on environmental conflicts in the state of Jalisco (Tetreault et al. 2012). Here, I have selected the very long struggle of the town of Temacapulín against the El Zapotillo dam.

The project consists of the construction of a dam in Cañadas de Obregon for supply of water mainly to Leon and Guadalajara cities. The project is promoted by the CONAGUA and the Comisión Estatal del Agua (CEA). The original project was modified in 2008, doubling its capacity, with a reservoir (911 Hm^3, 105 m high curtain) distributing 3.8 m^3/seg to Leon, 3.0 m^3/seg to Guadalajara and 1.8 m^3/seg to Los Altos Region. The expected dam cost was US$ 1300 million, which doesn't include the pipeline nor the other necessary constructions.

I have visited Temaca several times. It is a case that can be definitively won during the six-year term of President López Obrador, although the cruelty has already been committed for a long time, keeping this town and its migrant "absent children" on edge. Dam projects, often announced a long time in advance, are a type of social torture for local populations because investments stop, outmigration begins. The ecologist and Environment Minister Victor Toledo visited Temacapulín in July 2019, promising that the project would be discarded.

This dam in the Altos de Jalisco would flood the town of Temacapulín, with about one thousand inhabitants, an eighteenth-century basilica and thermal water sources. For 15 years, Temacapulín has been fighting this project promoted by the Mexican government, and the governments of the states of Jalisco and Guanajuato. The El Zapotillo dam is being built under the justification of supplying water to the city of León in Guanajuato, the Guadalajara Metropolitan Zone and the region of Los Altos in the state of Jalisco. The construction company has been, at times, the Spanish FCC. The construction has not stopped despite the Ruling 93/2012 issued by the Second Chamber of the Supreme Court of Justice of the Nation, which obliges the authorities and construction companies not to exceed the height of the curtain beyond 80 metres. The case has achieved worldwide fame, and the curtain reached 100 m high.

Rarámuri (Tarahumara) against Deforestation: Isidro Baldenegro's Murder, Chihuahua[34]

The Sierra Madre Occidental is one of the most diverse ecosystems in the world, ranging from snow-covered peaks to four separate canyons, each deeper than the Grand Canyon. In addition to the tropical migratory birds which winter in the region, it is home to 26 endangered species including thick-billed parrots and spotted owls, as well as a number of native fish, reptiles and amphibians. This region is home to the Tarahumara, also called Rarámuri who

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to some extent resist resource extraction, violence and corruption. In fact, most of the region's old-growth forests have been logged.

Since 1973, the Centro Mexicano de Derecho Ambiental had registered eleven murders of environmentalists fighting illegal logging in the municipal territory of Guadalupe y Calvo, Southwestern Chihuahua. Isidro Baldenegro got the Goldman Prize in 2005. He was a subsistence farmer and community leader of the Tarahumara people in the Sierra Madre Mountain region. Like his father Julio, he spent much of his life defending forests from logging by *talamontes*. In 1993, he founded a grassroots EJO called *Fuerza Ambiental* and was named local secretary of communal property in 1999. In the following years, Isidro organized a march of 70 community members and ejidatarios to the city of Chihuahua to demand the definitive suspension of forest exploitation in Coloradas. On 23 September 2002, Isidro, at the head of the group, took over the offices of the state delegation SEMARNAT for more than 24 hours. He participated in the blockade of a highway in the Tarahumara mountains, which was used by logging trucks to transport felled trees. The following year, a protest headed by the wives of murdered community leaders led to a court ruling banning logging. But his efforts angered the powerful network of state officials, landowners and criminal bosses involved in logging. In 2003, he was imprisoned for 15 months on false charges of arms and drugs possession. His detention triggered widespread international condemnation from groups like Amnesty International, which eventually helped secure his release in 2004. In January 2017, he was murdered at 51 years old, in his uncle's home in the community of Coloradas de la Virgen, as his own father had been in 1986.

An editorial in *La Jornada* (27 May 2017) titled "Indigenous environmentalists, the most vulnerable", explains that the extractivist projects causing the death of so many Indigenous activists are not only processes of land grabbing for cattle raising, deforestation, timber extraction and the new wave of big or small mining projects, but also investments by organized groups in illegal cultivation of marihuana and poppy (for heroin), mainly for export. This is a continuation of an old history of exploitation of both "preciosities" and "bulk commodities" at the commodity extraction frontiers.

On 3 May 2019, Otilia Martínez Cruz and her son Gregorio Chaparro were also killed in the community of Coloradas de la Virgen, Chihuahua (Chapter 4). The Sierra Tarahumara has become a grave for environmental defenders. Otilia, 60 years old, was a relative of Julián Carrillo Martínez, who had started a legal case to request the annulment of forest harvesting permits, which the SEMARNAT had granted to mestizo settlers in the Indigenous territory of Baborigame. From 2013 to 2019, at least another ten Indigenous defenders of forests were killed in Baborigame because of their opposition to criminal bands that illegally cut the forests. Killings continue and the population is migrating to other areas.

Cananea and Buenavista del cobre: Grupo México Polluting Sonora[35]

To the west of the state of Chihuahua, the conflicts on copper mining considered here took place in Cananea in Sonora, near the border with Arizona. The strike of the Cananea mining company and the 1906 massacre, before the 1910 Revolution, are famous in Mexican history. In recent times, Sonora excelled in mining with the two most important copper mines in Cananea and Nacozari. This has resulted in large environmental liabilities; the San Pedro River is severely contaminated with heavy metals coming from Cananea. Talking about Germán Larrea (main shareholder of Grupo Mexico), Sergio Tolano Lizarraga, general secretary of

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the Cananea Miners' Union, does not mince words: "We are facing a businessman who does not respect the life of the workers, nor the inhabitants of the communities where they exploit the resources. We went on strike because of insecurity and unhealthy conditions. These acid leaks are pure poison. We here in Cananea have a high rate of deaths from cancer".

The Cananea mine operates in conditions that are leading it "deliberately to collapse". There is a high risk of workers developing silicosis. In 2007, one of the trade union sections went on strike for violations of the collective bargaining agreement, demanding improvements in health and safety and the restart of the operation of the hospital for the miners. Cananea has a long history of strikes due to labour demands on wage increases and better health and safety conditions. This is to some extent a case of working-class environmentalism. The tensions stem from Grupo Mexico's alleged strategy to improve its overall position at the expense of the workers and the environment.

In June 2010, the police took over the mine and managed to reopen it after a three-year strike. With its reopening, Grupo Mexico promised to invest some US $5 billion and create 6,000 jobs. *Paisajes Mineros* (UNAM, Morelia) writes: "In June 2013, the mining union said that none of the promises made by the company to re-open the mine were fulfilled, which is why the problems have only grown. Grupo Mexico […] refuses to invest in the health and welfare of their workers and city dwellers".

***

In Cananea, one of the mines belonging to Grupo México is Buenavista del Cobre. In 2014, Grupo México caused a great ecological disaster, and allegedly failed to fulfil its obligations to the victims. This disaster took place in the Bacanuchi and Sonora Rivers, where 40,000 cubic metres of acidified copper sulphate (sulfuric acid) leachates were dumped into the Tinajas stream. The Buenavista del Cobre mining company was responsible for the accident. Two years later, lawyer Luis Miguel Cano of the PODER association reported that "the cleaning of the river, the installation of water treatment plants with the technology to filter heavy metals, the construction of a clinic to attend to the affected people had not been carried out; however, they have not been sanctioned and no one was judged through criminal or administrative channels".

Compensation was established. Following evaluations by PROFEPA and the 50 irregularities found at the mine, Grupo Mexico paid a fine of Ps.23.5 million (US $1.5 million) and a trust fund of Ps.2 billion (US $125 million) to attend to environmental and social issues in the area. Three years later, in 2017, an appeal was won against the company. A ruling by the First District Court of the State of Sonora recognizes that at least the wells of Sinoquipe and La Labor present arsenic and manganese contamination at levels higher than those established in the WHO's guidelines for drinking water quality. "This ruling demolishes the official discourse of the government and Grupo Mexico, which caused the spill, according to which there is no longer contamination in the Sonora River", stated the Sonora River Basin Committee (CCRS). For this reason, the CCRS, accompanied by the Project on Organization, Development, Education and Research (PODER), filed a lawsuit for protection against the Institute of Security and Social Services of the Workers of the State of Sonora, the Secretary (ministry) of Health and the Mexican Institute of Social Security. The lawsuit points out that, in the scenario of uncertainty generated by the verification of contamination in wells, it is urgent to have a diagnosis of the populations' state of health to confirm whether they suffer or are going to suffer from any exposure or intoxication by heavy metals.

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The 2014 spill directly affected 22,000 people and indirectly affected another 250,000 in seven municipalities along the Sonora River, the CCRS said. A report in *Forbes* on 27 July 2017 echoes a UN group investigation corroborating the events:

> After three years, no one has been charged. The UN Working Group said that the Federal Attorney for Environmental Protection filed a criminal complaint, but Mexico's Attorney General's Office has not followed it up. The spill has been the subject of social protests and attempts in the Mexican Congress to rein in the mining industry. It is not the first major disaster involving Grupo Mexico. A month after the spill […] the company said it "regretted" the tragedy. At the time of the spill, Buenavista del Cobre was in the midst of a $3.4 billion expansion project. […] With a net worth that *Forbes* estimates at $14.6 billion, German Larrea is Mexico's second richest person.

Grupo Mexico is the third largest copper producer in the world with large investments in Mexico, Peru, Arizona and Texas. It is impossible to mention it and not remember its current involvement with the Tia Maria project in Arequipa that has caused several deaths of environmental defenders.

Alamos Gold in Mexico, Turkey and Canada[36]

Similar international reach applies, at a smaller scale, to the Canadian company Alamos Gold that operates or attempts to operate some very controversial gold mines in Mexico (Sonora and Morelos), and is also involved in a conspicuous conflict in Turkey. I wrote an article on the Los Alamos Gold company (for *La Jornada de Oriente*[37]) which I reproduce here in English. We had hoped to form an environmental movement reaching two distant countries (Mexico and Turkey), focusing also on Canada. We failed.

In Mexico

Alamos Gold has two mines in Mexico's Sonora region: El Chanate (very close to the US border) and Mulatos (in Sahuaripa, east of Hermosillo). El Chanate suffered a major cyanide spill in 2016 and Mulatos suffered a landslide in December 2018 in which some workers died. The landslide had been predicted since 2014. There was even a complaint to the National Commission on Human Rights for insufficient action to prevent it. Such accidents become the rule rather than the exception.

In Miacatlán, Morelos, there has been an ongoing fight against the company Alamos Gold in defence of the territory and the archaeology of Xochicalco, a pre-Hispanic monument. While the claims in Sonora are focused on the reparation and compensation for the damages already caused to workers and the environment, people in Morelos are preventively fighting against new mining activities. In August 2016, a meeting of the Morelense Movement against open cast mining was followed by a march. Banners included slogans such as: "We want beans, we want corn, we want the mining company out of the country" (*Queremos frijoles, queremos maíz, queremos la minera fuera del país*).

Two years after, once López Obrador became president, the members of the Morelense Movement against the Open Pit Mining Concessions initiated another protest under the name "Life and the Defence of the Territory". The campaigners demanded elected authorities to cancel mining concessions. This petition against Alamos Gold is ongoing.

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Alamos Gold in Turkey: Mount Ida

In 2019, the already famous case of Alamos Gold in Turkey took another dimension: it proceeded with planning activities of open-pit gold mining projects using cyanide on Mount Ida. The struggle against mining projects in this area has been going on for over ten years and local opposition managed to stop the project in 2013. The attempt to reopen triggered the mobilization of 10,000 people, uniting environmentalists, local and rural people and supporters of the opposition to Erdogan.

Cutting down many trees in Mount Ida to prepare the ground prompted the outbreak of protests. In protest, environmental activists set up a camp and tens of thousands of people marched through the mountain. This environmental protest in western Turkey shook the country's politics, with strong accusations against the government allowing damage to nature for a foreign company to profit.

The Kirazli mine, in the western Turkish province of Çanakkale, south of the Dardanelles, had been acquired by the Canadian company in 2010 for around $90 million. Çanakkale includes the peninsula called Gallipoli (in European languages), the site of a battle in World War I in the attempt by the Allied powers to weaken the Ottoman empire. Çanakkale and Gallipoli are names that imply a call for resistance, this time against a foreign company and without weapons of war.

Aside from the excessive logging, environmental activists also denounce that the company will use cyanide to leach gold. The mine is close to the Kazdagi National Park, a wooded area that includes Mount Ida, 1,774 m high, with rivers and water reserves which could be affected. The mayor of the provincial capital of Çanakkale, Ülgür Gökhan, who belongs to the Social Democratic Party opposing Erdogan, criticizes the mining concession, while the mayor of Istanbul, also in opposition, met with the Canadian ambassador to discuss the case, thereby displeasing the Erdogan government.

It is not only in Turkey and in Mexico where the pressure of public opinion should force Alamos Gold into a corner. The Canadian public should be more aware of what Canadian mining companies do abroad. If a triangular movement could arise between activists in Turkey, Mexico and Canada, the respective governments could take action more easily. Appeal could be made to Canadian EJOs concerned with the behaviour of Canadian mining firms abroad. The Minister for the Environment in Mexico, the brilliant ethno-ecologist and political ecologist Victor Toledo, resigned on 6 August 2020, after only one year as minister and he could do nothing to stop Alamos Gold concessions in Mexico which would have become big news in Turkey. The international campaign against Alamos Gold has not yet taken place.

CONCLUSION: ENVIRONMENTAL DEFENDERS FORM NETWORKS, BUT THEY ARE SUBJECT TO EXTREME VIOLENCE

The different conflicts we have summarized and briefly analyzed have much in common. The environmentalists are most often Indigenous peoples, peasants, villagers and citizens, sometimes industrial workers, medical doctors and scientists. Conflicts often involve peasant communities which sometimes are also Indigenous communities. The cases in Panama (mining and hydropower) involve Indigenous groups like the Ngäbe-Buglé, a pattern repeated time and again. Sometimes the main social actors are Afro-American maroons. Maya resistance in

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Guatemala and Southern Mexico in defence of their own land and water has been strong. The Huichol and the Wirikuta conflict appear in another chapter.

Central America and Mexico are a region of strong open violence against women and men environmental defenders. There have been some mass killings (as in Chichoy, Guatemala) but also dozens of individual assassinations of environmental defenders (Mariano Abarca in Chiapas, Noé Vásquez Ortiz in the hydropower plant "El Naranjal" in Veracruz, and so many others). Even recipients of the Goldman Prize, that one would expect to be protected by international fame, have been victimized such as the Rarámuri Isidro Baldenegro. Other famous victims appear in other chapters, like Betty Cariño and the Lenca leader Berta Cáceres. There are also more subtle forms of violence: like racism, internal colonialism, and also the "slow murder" of toxic products like heavy metals from mining waste, pesticides or mining and industrial pollution.

Sometimes, the conflicts end, provisionally, in international tribunals or in arbitration courts such as ICSID, as the crucial cases of Crucitas from Costa Rica and Pacific Rim from El Salvador. This is a World Bank tribunal, but civil-society international tribunals appear in this chapter, such as a Water Tribunal or a Health Tribunal. Networks of the environmentalism of the poor and the Indigenous appear in Mexico and Central America such as MAPDER and REMA, and the Movement 4M, active in water conflicts and in mining conflicts across the Mesoamerican region. Zapata fought already in 1910 for rights on water and land against the sugarcane factories at the time of Porfirio Diaz.

There are many mining conflicts involving famous Canadian and US companies but also the Mexicans Germán Larrea and Carlos Slim. Sometimes such conflicts are transnational (as between Guatemala and El Salvador). Apart from mining and hydropower, there are conflicts on biodiversity conservation and the use of biomass: against sugarcane and oil palm plantations, deforestation, for coastal protection, or against glyphosate that threatens the cultural bonds between Mayas and Melipona bees. There are also strong urban or semi-urban movements, for instance against burning of domestic waste or tyres in cement factories. Or defending peasant-Indigenous ejidos against the growth of the conurbation of Mexico City. There is at least one case (Vieques, Puerto Rico) of a rotund victory against military installations. And cases of resistance against new Chinese investments – such as the unrealistic Nicaragua transoceanic canal. Spanish companies appear in conflicts on wind energy in Oaxaca and in some dams (like El Zapotillo in Jalisco). It would have been easy to add more conflicts on gas fracking (as we saw in Cohauila in Chapter 16).

Mexican contemporary environmentalism was born from ethno-ecology as a scientific-practical discipline but also from the grassroots Pacto Ribereño against damage from the oil industry in Tabasco in 1976, from the resistance against nuclear energy in Patzcuaro and Laguna Verde, and against eucalyptus plantations (Paré, 1992), and from the defence of communal forests against *talamontes.* Some of these are included here. The fight against imports of transgenic maize is well known. In Mesoamerica, community bonds between people and the maize they cultivate have been particularly strong.

There is more communal and ejidal land in Mexico and in Andean America (because of land reforms in Bolivia, Peru and Ecuador) than in many other regions of the world. The "commons" is nothing new. In Mexico, because of Zapata´s agrarian revolution of 1910 plus Lázaro Cárdenas' legislation in the 1930s, a great part of the agriculture, forest and pasture lands is in communal property, not in private property. The name "ejido" is Spanish but ejidos gain their strength from Indigenous identities. The fights of the ejidatarios against

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land grabbing belong to the practice and vocabulary of the Mexican environmental justice movement. And also against water grabbing in rural and urban contexts: *no hay sequía, hay saqueo.* In other words: *Tierra, Agua y Libertad.*

Livelihood and health; sacredness of rivers, lakes, forests; communal Indigenous or peasant property rights; ecological worth of agricultural or "wild" biodiversity, such are the non-chrematistic values often deployed in the struggle against the growth in the social metabolism of industrial capitalism. Among the values deployed is also the pride in ancient history. Consider, for instance, Xochicalco in Morelos threatened by Alamos Gold. This was a political, religious and commercial fortress from the period of 650–900 that followed the break-up of the Mesoamerican states such as Teotihuacan, Monte Albán, Palenque and Tikal. In Mesoamerica, archaeological, historical, cultural values are among the most powerful among those displayed by local environmental activists in valuation contests.

Central America, the Caribbean islands and Mexico is a region of many old and new environmental conflicts. It is a frontier of extraction. Mexico is a country exploited by foreigners since the time of Zacatecas' silver in the sixteenth century, but it is also the country where the notion of "internal colonialism" was invented by Pablo González Casanova. It is a country of internationally famous authors in political ecology like Enrique Leff and Victor Toledo, and also a country with a "fake" Green Party, a sad though small political phenomenon unmentioned in this chapter.

I could have included Laguna del Tigre in Guatemala (and oil extraction), the fight on the airport of Atenco, pollution in El Salto in Jalisco and the Atoyac River in Puebla-Tlaxcala (an "environmental hell"), air pollution in the city of Mexico, the new project of the Maya Train in Mexico. These and many other cases are in the EJAtlas.

NOTES

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6. Ngöbe-Buglé against Copper Mining (Panama) (Patricio Chávez), EJAtlas.
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    Ida Mountain (Kazdagi) prospecting for gold, Turkey (Duygu Avci, Alper Akyuz, Begum Ozkaynak, Cem İskender Aydın), EJAtlas.
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19. Brazil and the Guianas: iron ores, tailings dams and land conflicts

INTRODUCTION: MAPS OF ENVIRONMENTAL INJUSTICES IN BRAZIL, AND THE USE OF THE WORD "EXTRACTIVISM"

The world movements for environmental justice do not always use the words "environmental justice" as introduced in the USA in the 1980s (Bullard 1993). Brazil is a country where the term is used. The many struggles in Brazil produced a most valuable map of environmental and health injustices promoted by Marcelo Firpo Porto, Tania Pacheco, Jean Pierre Leroy and Diogo Rocha, sponsored by FIOCRUZ, a research organization in the Ministry of Health.[1] We share with them the view that we cannot escape the materiality of political ecology, and attribute conflicts only to social causes such as bad governance or to capitalist profit making, capital accumulation, coloniality and racism. The changing configurations of social metabolism are the main causes of environmental conflicts.

A note on the use of the word "extractivism" in Brazil's political ecology is also necessary. Starting in the 1980s, the defence of the rural commons was made in the name of extractivism, what we would call "sustainable extractivism". An example is the union of *seringueiros*, rubber tree tappers, with Chico Mendes. The seringueiros did not destroy the forest; they preserved it against the cattle ranchers that burned it and turned it into pastures for the production of meat. Sustainable extractivism was opposed to unsustainable production. At the institutional level, after Chico Mendes' death in 1988, several large *reservas extrativistas* (extractive reserves, RESEX) were formed in the Amazon region.

Similarly, if mangroves are destroyed by commercial shrimp production, they could be defended by turning them into communal RESEX. There is then sustainable extractivism carried out by "ecosystems people", to use Gadgil's and Guha's term in India. This is a different use of the word extractivism than in the previous chapters: the "depredatory extractivism", described and theorized by Gudynas, Svampa, Alberto Acosta, Horacio Machado, meaning the unsustainable use of minerals or exhaustible fossil fuels, and the depletion of the biomass of forests and fisheries. Brazil's economy is based on depredatory extractivism (iron ore and soybeans for export on a very large scale) more than on the sustainable extractivism of Chico Mendes. Growth and changes in social metabolism, and socio-ecological conflicts are two sides of the same coin.

Sometimes, the Latin American definition of "extractivism" is seen as too limited, and there are "Northern" attempts at appropriation of the word for entirely new conceptual areas, from the digital and intellectual realm to the finance of urban speculation. I remain with the ecologically, materially grounded Latin American definition of Gudynas, Svampa, Acosta.

In this chapter, I take again "a sample from the sample", relying on my own knowledge of a country I visited many times and where I lived for one full year in the 1970s, teaching and learning at UNICAMP, in São Paulo. I have also added cases from the Guianas. The

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guidebook for our "toxic tour" will be the EJAtlas. The itineraries and stops could be multiplied with knowledgeable guides, friends and colleagues: Felipe Milanez, Beatriz Saes, José Augusto Pádua, Marcelo Firpo Porto. New abuses and conflicts are arising all the time at the commodity extraction frontiers. I shall start with a terrible case, the failure of the tailings dam in Brumadinho iron ore mine belonging to the Vale company in 2019 that followed on the failure of the tailings dam in Mariana in 2015 (both in Minas Gerais).

IRON ORE MINING IN MINAS GERAIS: CORPORATE SOCIAL IRRESPONSIBILITY

Brumadinho and Samarco[2]

In 2015 the tailing dams failure in the Samarco iron ore mine in Mariana (Minas Gerais) belonging to the Vale and BHP Billiton companies, caused outrage because of loss of human lives and heavy pollution in the Rio Doce. Only four years later, a larger human-environmental



Source: elabueloeduca

Figure 19.1 Map of the states of Brazil

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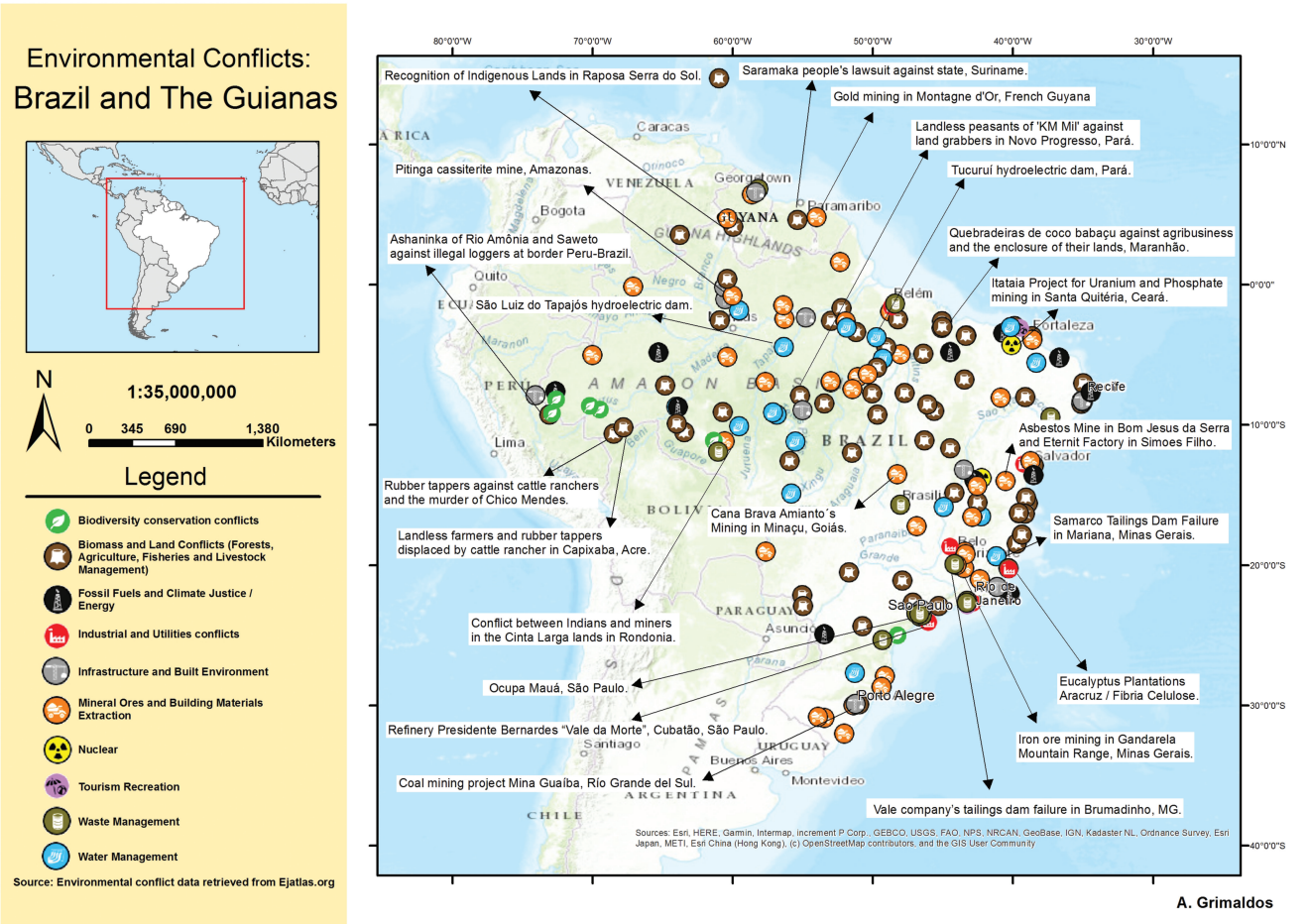

Source: A. Grimaldos

Figure 19.2 *Environmental conflicts in Brazil and the Guianas*

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tragedy took place not far away. *Não foi acidente. Foi crime* ("It was no accident. It was a crime"). On 25 January 2019, the *Articulação Internacional dos Atingidos e Atingidas pela Vale* announced: "This afternoon, two dams located in the Córrego do Feijão community, in Brumadinho, metropolitan region of Belo Horizonte (MG), collapsed". Nearly 300 people were killed in the foretold collapse of the tailing dams of the Vale mining company. Most of them were employees working or having lunch. On 31 January, Carta Capital emotionally wrote that

> murdered people are victims of a selective justice system that has so far failed to arrest Vale executives who had already killed in (the tailings dam disaster of) Mariana. And the murders were committed with cruelty. They killed without giving these people a chance to defend themselves, and by asphyxiation, they buried people alive in the mud.

Indeed, in 2015, another tailing dam collapsed in the nearby city of Mariana. It resulted in 19 deaths and hundreds of displaced. By 2022 there was still a court case in London against BHP Billiton for their involvement in the collapse of the Mariana dam in 2015, which released toxic mining waste 640 km along the Rio Doce. Krenak Indigenous people are among the claimants.

In Brumadinho an elegant guesthouse called Pousada Nova Estância was also completely swept away along with 38 staff and guests. Its owner was Marcio Mascarenhas, who had posted a strong complaint against the mine on Facebook one year prior to the catastrophe. However, as so often, environmental damage was not social-class neutral – the majority of those killed were employees and manual workers of the Vale company.

The Córrego do Feijão mine is one of four in Vale's Paraopeba complex. It produced 26 million tonnes of iron ore in 2017. According to Clara Paiva Izidoro, a spokesperson for the local movement Águas de Casa Branca: "We had already recognized that several dams were at risk and this is related to small seismic tremors that are happening in the region". Together with the Brazilian movement for those affected by dams (MAB) and other movements, they had carried out many actions against the granting of mining permissions, submitting petitions signed by tens of thousands. Another argument was the encroachment of mining on the Parque Estadual de Serra do Rola Moça. They were also appealing to secure the dam against failure. They were regularly dismissed by the authorities and the company.

On the contrary, the expansion of Vale's activities in Brumadinho had been approved in 2018, through a faster environmental licensing, in a single phase instead of the usual three. This was due to a reduction of environmental licensing stages, signed by the Secretary of Environment of Minas Gerais in 2017. The dams at Córrego do Feijão had their level lowered from six (highest risk) to four (lower risk). The Movimento pelas Serras e Águas de Minas denounced a conflict of interest of the Secretary. Moreover, other threatening tailing dams in the region include Conceição do Mato Dentro belonging to Anglo American. A legislative project to make regulation of tailings dams stricter in Minas Gerais after the Samarco (Mariana) disaster was stopped for three years in the legislative assembly. This text provided for an insurance fund and forbade the method of increasing tailings dams by *alteamento*, allowing the dam to go upwards by steps. This legislative proposal was vetoed.

The Vale company is responsible for directly killing many of its own employees in the Brumadinho disaster, on top of all the other disasters it has caused in Brazil and around the world. Its management is liable for criminal charges. We published an article on the Vale

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company around the world (Beatriz Saes et al. 2021, Chapter 27). Funnily enough, in the 2018 ranking of the Corporate Human Rights Benchmark (CHRB), meant as a guide for investors, Vale was among the top ten. After the Brumadinho disaster, the company was suspended for one year from the CHRB. However, already before 2019, the *Articulação dos Atingidos e Atingidas pela Vale* had denounced the danger of reducing costs in its operations, thus expanding the risks of accidents, at the company's shareholders meeting. It is reported that when Fabio Schvartsman became CEO in 2017, he suggested a motto for the company: "Mariana, never again". How Vale's terrible reputation on human and environmental rights translates into market value is not obvious.

Gandarela, Minas Gerais[3]

Compared to the previous tragedies, the following conflict was played on a lower key, and ended with what seems to be a provisional success. The Gandarela mountain range is not far from Brumadinho and Mariana and the capital of Minas Gerais, Belo Horizonte. The area contains the towns of Caeté, Santa Barbara, Barao de Cocais, Rio Acima and Itabirito. Gandarela presents the largest and best preserved *canga* ecosystem of the Iron Quadrangle (the mining region of Minas Gerais). This type of savannah has few remnants in Brazil, as it is often destroyed by mining. It is an important recharge area for aquifers and, therefore, coincides with great underground water potential which is important for the formation of river springs and also directly used for public water supply in the region of Belo Horizonte. For this reason, environmentalists even created the term Aquifer Quadrangle to oppose the official name Iron Quadrangle.

In 2009, Vale started planning for the Apollo iron mine project in this area of great ecological importance. The Gandarela Mountain Range would produce 24 million tons of iron ore per year for 17 years. Before the environmental licensing process, residents of the region, social movements and researchers prepared a proposal for the creation of the Gandarela Mountain Range National Park. The proposal was based on studies by researchers from the Federal University of Minas Gerais and the Federal University of Ouro Preto. It was sent to the official Chico Mendes Institute of Biodiversity (ICMBio), which finalized it in October 2010. They emphasized the importance of fauna, flora and water resources and proposed an area of 38,210 ha. The ICMBio proposal paralyzed the environmental licensing process of Apollo Mine at the end of 2010.

At the same time, diverse social movements opposing the implementation of the Apollo Mine, such as the Movement for the Preservation of Gandarela Mountain Range and the Movement of Mountain Ranges and Waters, organized several actions and petitions to the State Public Prosecutor, such as an event in April 2010 called "Viva Gandarela!" to call attention to the impacts of the Apollo Project. The event included an ecological walk followed by a "hug" for the Gandarela Mountain Range. One element in the resistance was the presence of paleontological caves used by giant *tatus (armadillos).*

Serra do Gandarela National Park was created by the Ministry of Environment. However, the established contours were more in the interest of mining than of the movements promoting its creation. Moreover, the villages in the Gandarela region and in the buffer zone of the park were threatened by tailing dams from other neighbouring iron ore mines, especially in the municipality of Rio Acima. A possible rupture of this dam could irreparably impact the Ribeirão da Prata, the main watercourse, and jeopardize the water supply for Belo Horizonte and its metropolitan area.

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For the time being, the alliance of urban environmental activists managed to stop the project. The contested values in this case are the production of iron ore for less than 20 years as an essential metabolic element for the steel industry and its monetary value, against the value of irreplaceable *cangas* as ecosystems, the risk to human health and the environment, the damage to water recharge and the paleontological value of tatu caves.

COAL AND OTHER MINING PROJECTS IN RIO GRANDE DO SUL[4]

The Guaíba Mine threatens nearby environmental reserves including the Jacuí River Delta and livelihoods of local farmers. It is part of a mining drive near Porto Alegre, a city made globally famous by the World Social Forums. As a response to the meetings of the economic and political world elite in Davos, the first and third were held in Porto Alegre in 2001 and 2003 when the Workers' Party (PT) was strong. Environmental issues were present – I remember a "tribunal" on the ecological debt with Ivonne Yanez (Acción Ecológica), and where I met Medha Patkar (Narmada Bachao Andolan). Marina Silva, who had fought alongside Chico Mendes (in Acre) and was a minister in President Lula's government, was at the time revered by the crowd. although the PT itself was never an environmentalist political party.

There was a moment in 1999 when it looked like the PT would be able to stop the introduction of transgenic soybeans in Rio Grande do Sul. I was then writing *The Environmentalism of the Poor* and realized that this was a brave and lost struggle. Whether the current mining onslaught will be stopped is more promising. As described by Marcos Todt in late 2019, there were four main mining projects to be stopped.

Três Estradas Project

"Pro-mining" Bolsonaro was supporting Australian company Aguia Resources Limited, associated with Canadian group Forbes & Manhattan, in its proposal for an open-pit phosphate mine and tailings dam in Lavras do Sul. The site threatens the Pampa biome, which is 85 per cent grassland. The region is home to more than 4,000 families and several Indigenous peoples. The National Human Rights Council recommended the annulment of the Preliminary Licence already granted to the project. Reasons include bribery. Two university-conducted technical reports found omissions and critical errors in the EIA.

Caçapava do Sul Project

The Pampas are also endangered by a copper, lead and zinc mining project by the Camaquã River in Caçapava do Sul, considered one of the seven natural wonders of Rio Grande do Sul. This project is proposed by Nexa Resources S/A. Besides water contamination risks, agriculture and livestock may also be affected at farms preserving cultural heritage. Nearby cities in the same hydrographic basin are currently resisting the project.

Retiro Project

In São José do Norte, Canadian-funded Rio Grande Mineração S/A has proposed ilmenite, rutile and zircon extraction in a region between Lagoa de Patos and the Atlantic Ocean that

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the Ministry of Environment designated as highly vulnerable. Ilmenite is an ore for titanium (Chapter 15). The project threatens agriculture and artisanal fishing activities in the region. Locals strongly oppose the project and have filed legal cases to the Federal Public Ministry of Brazil exposing violations of the right to information and public participation in the environmental licensing process. In 2019, the movement We Don't Want Mining in São José do Norte drafted a law banning mining in the region. The City Council passed the law and it was enacted by the mayor. The population continues to mobilize against the company.

The Guaíba Coal Mine

The opposition to the Guaíba coal mine is an obvious candidate to join the ranks of the world Blockadia or LFFU movements (Chapter 16). The Guaíba mine is a coal, sand and gravel mining project in the process of obtaining an environmental licence to be installed in an area of 4,373 ha in the municipalities of Charqueadas and Eldorado del Sul. The Brazilian company Copelmi, together with Chinese and US investments, aims to extract an estimated 166 million tons of coal over the course of 23 years. The mine would contaminate the entire Jacuí Delta region. The mine would open 1.5 km from the Jacuí River, responsible for more than 80 per cent of the water that reaches Lake Guaíba, which supplies Porto Alegre. The project also envisages the lowering of the water table, the diversion of the Pesquero and Jacaré streams, and evicting the farmers of the Apolonio de Carvalho settlement and other inhabitants. This settlement is responsible for one of the largest productions of organic rice in the region. Mining would start 3 km away from the site, and after seven years would invade the farming area.

The project was in the environmental licensing phase from 2014 to 2019. A public hearing to discuss the project was held in March 2019. The day before the hearing, the Rio Grande do Sul Environmental Protection Foundation (FEPAM) requested supplements to the EIA from Copelmi. Lacking were the alternatives on the location of the mine, clarification on the interference on the water tablet on the wells of the communities, evaluation of soil erosion and review of the study of the vulnerability of the aquifer. Environmental agencies were able to obtain a court order so that the public hearing would not occur before the technical completion of the studies, but FEPAM itself appealed and the hearing was held.

In April 2019, the Provincial and Federal Public Prosecutors sent a joint recommendation to FEPAM to hold at least one more public hearing. In addition, a request signed by councillors from Porto Alegre asked FEPAM for a public hearing to be held in Porto Alegre.

A Conclusion: the Mega-Mining Combat Committee

In response to possible social and environmental collapse in the region caused by the mining projects, the Mega-Mining Combat Committee in Rio Grande do Sul (CCM/RS) was founded in 2019. With the slogan "Yes to life, no to destruction", the initial goal was to raise awareness that the battle against mega-mining is not only environmental. It is an intersectional battle. The CCM/RS successfully unified around 120 organizations, including environmental and social associations, trade unions, groups of students, farmers and research groups. This mobilization empowered the movement and overcame political and hegemonic barriers that often marginalize environmental activism. The CCM/RS has since been protesting, promoting and participating in debates and objecting to the EIAs.

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By March 2020, the issue was whether mining remained a priority activity despite the alarm over the pandemic. Two years later, Marcos Todt wrote to tell us:

> that we were able to permanently stop two of the megamining projects they wanted to implement in Rio Grande do Sul! The Guaíba Mine, which would be the largest open pit mine in Brazil, 16km from downtown Porto Alegre, was adjourned definitively by FEPAM (environmental agency), and Nexa Resources "gave up" the development in Caçapava do Sul! That is, we have already defeated two of those four projects included in the article I wrote in The Ecologist (…)! The Committee to Combat Megamining in Rio Grande do Sul was fundamental to this (a short history of the Committee is in issue 59 of the journal Ecología Política).

QUEBRADEIRAS DE COCO BABAÇU IN MARANHÃO[5]

This is a women's movement against agribusiness and the enclosure of the commons in the state of Maranhão, 3,000 km north of Rio Grande do Sul. For over 30 years, they struggled for recognition and access to communal resources, facing pressures by ever-expanding soy, eucalyptus and cattle business. This conflict combines intersectional grievances and claims for environmental justice, agrarian justice and gender justice. An estimated 350,000 people (mostly women) of about 15 ethnic groups are involved in activities related to babassu (big coconut in the tupi-guarani language), making of *quebradeiras* one of Brazil's largest traditional groups living from the *sustainable extractivism* of forest products – an "ecosystem people".

Quebradeiras are the breakers of the babaçu coconut. It can be used in a variety of ways, ranging from vegetable oil, chocolate, bread, ice cream and cosmetics, to the manufacturing of footwear, thatches, timber and crafts, and the production of a highly nutritious flour, charcoal and more. Although it is often their only economically valued activity, quebradeiras consider babassu breaking not only as a profession but a central component of life and identity. They typically join their families at the coconut gathering and processing as young girls and continue the practice until old age, accompanied by singing and an honouring of the babassu palm as 'mother' that provides their daily rice, beans and farofa.

Maranhão's agricultural sector and land use is characterized by the dominance of industrial cattle farming, incentivized by economic policies and cheap agricultural credits in the 1970s, as well as by commercial monocultures of eucalyptus and soy, increasingly superseding rice and family agriculture since the late 1990s. Babassu, in contrast, is of declining economic importance, but has been practised by communities for centuries and still takes place in almost every municipality. Besides Maranhão, where 93 per cent of all babassu is collected, the babassu palm is also spread in Tocantins, Piauí and Pará.

Babassu *sustainable extractivism*, as a subsistence practice that relies on land as a common, is directly opposed to the unsustainable logic of modern industrial agriculture. It therefore not only has a crucial role when it comes to environmental preservation but also for the involved social actors, offering what is often the only available source of income for a significant number of women from historically subaltern, disadvantaged groups of society. In fact, babassu is closely linked to the issue of colonially inherited inequality in access to land.

Today, the larger part of the babassu trees are located within large fazendas (farms) and lands that have been bought or grabbed in the past and are now claimed as private property. This has led to an increasing enclosure of land and violent confrontations as communities'

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access to babassu trees is being more and more restricted. In many municipalities, *quebradeiras* encounter ranchers demanding payments for accessing the trees or completely preventing access through fences (many electrified) – a result of past public policies aimed at incentivizing cattle ranching, soy and eucalyptus plantations. *Quebradeiras* and other traditional communities also face other forms of intimidation, including death threats, violence and sexual assaults.

As some communities report, there were no problems in collecting babassu coconuts and no barbed wires in the past, whereas today *quebradeiras* have to rush to avoid being caught by the landowners' watchmen. Cattle ranchers, on the other hand, argue that the fences are necessary to hold cattle in vast areas. Owners of plantations can easily obtain environmental permits, including the authorization for deforestation, as long as they agree to afforest in other locations, avoiding net loss of native tree species.

There are areas reaching floodplains, for example the Monte Alegre *quilombo* in the municipality of São Luís Gonzaga, Coquelândia in the municipality of Imperatriz, the Santa Rosa community in Piauí, as well as the Baixada Maranhense microregion. Although floodplains and waters are recognized as public lands, fences have been partly built in the name of conservation but also by ranchers of water buffaloes, also affecting fishers. In Southern Pará, by contrast, *quebradeiras* face competition from large industrial charcoal producers.

Grassroots initiatives supported *quebradeiras* against ranchers as early as the 1970s, and communities also received support from the Catholic Church and NGOs, while collective organization of *quebradeiras* started in the late 1980s. By today, after decades of struggle and marginalization, this has led to improvements in rights and recognition, a process particularly shaped by the Movimento Interestadual das Quebradeiras de Coco Babaçu (MIQCB) in 1991.

A major success was the adoption of Lei de Babaçu Livre (Free Babassu Law) in Maranhão Lago do Junco municipality in 1997. The law basically guarantees free communal access to babaçu trees even if they are located on private land, and also prohibits the use of agrochemicals near the trees and their destruction. So far, 14 more municipalities have followed the example and Tocantins adopted a law on babaçu protection at state level. However, some farmers have aimed to repeal it. Only in a few areas are the established rights enforced. Despite these difficulties, the MIQCB continues to push for legislative initiatives at several scales, including a national law for free access to babassu (PL 231/2007) under discussion for many years. Moreover, the MIQCB became the central coordinating movement for cooperatives, associations, family producers and communities, and a public voice to denounce rights violations and the logging of palm trees, regularly organizing campaigns and street demonstrations. In doing so, they achieved certain political recognition over the years. The MIQCB collaborates with other NGOs and civil society and receives support from donors such as the EU and the Ford Foundation.

With increasingly violent confrontations, *quebradeira* mobilizations focused on the issue of land enclosures and illegal, electrified fences. Between 2015 and 2018, the MIQCB reported conflicts in more than 20 locations but the movement regularly received death threats after denunciations, leaving many communities in fear. In 2018, following a protest and the occupation of the Instituto de Terras do Maranhão through *quebradeiras* and *quilombolas*, state authorities also took action and started the Baixada Livre Operation to take down about 10 km of electric fence. However, the operation was not sufficient to free the whole area. In the beginning of 2018, the coordinator of the MIQCB movement Francisca Nascimento narrowly escaped an attempted murder in Piauí. Shortly after, a fisher of the Jacaré community

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was killed by an electrified fence. Later in the same year, two children were killed in Araioses allegedly by a rancher.

Quebradeira women have also become involved in wider networks for Indigenous, *quilombola* and traditional peasant rights in Maranhão. Their mobilizations are now linked to other struggles, for example for the recognition of *quilombola* lands or the opposition to development projects jeopardizing water resources. The grassroots movement has strengthened a new political identity among *quebradeira* communities, subsequently leading to an articulation of demands to overcome subordination to land-owning ranchers. This has most notably triggered the revindication of traditionally used land, for example via agrarian reform or the establishment of *sustainable extractivist* reserves. An established motto of the movement is: *Não existe babaçu livre com terra presa* (There is no free babaçu with privately seized land).

GOLD MINING IN MONTAGNE D'OR, GUYANE (FRANCE)[6]

Going to the northwest of Maranhão, through the Amazon River, we reach the Guianas lying between Venezuela, the states of Roraima, Pará and Amapá in Brazil and the Atlantic Ocean. These are the territories of Guyana (capital city, Georgetown), Suriname (Paramaribo) and French Guiana (Cayenne).

The Montagne d'Or mine is one of the largest open cast gold mine projects in the world. There is a strong dispute on this project. According to the social movements, the Russian mining company Nordgold was determined to launch the destructive project. Nordgold was established as Severstal Gold, a subsidiary of Severstal, owned by oligarch Alexey Mordashov. By 2017, President Macron and former Minister Nicolas Hulot appeared to take opposite views on the issue: Macron in favour and Hulot against. Guyane is to all effects a French colony in Amazonian territory.

Led by a Russian-Canadian consortium, this highly controversial project directly threatens two exceptional biological reserves. Environmental advocates and local associations are calling for its immediate halt. The project would be much larger than the often-clandestine small mines of most Guyanese gold prospectors: 2.5 km long, 500 to 800 m wide and 400 m deep. To access the mine site, an abandoned 125-km road from St Laurent du Maroni must first be rebuilt. The new road will open opportunities to additional illegal activities such as deforestation, illegal wildlife and narco-trafficking, clandestine gold mining posing a threat to Indigenous groups. Millions and millions of cubic metres of minerals will be transported and treated with cyanide to extract gold in 15 years. The cyanide ore processing plant will consume no less than 20 per cent of the power generated in French Guiana. Gold is a "preciosity" more than a bulk commodity (Chapter 26). Industrial requirements account for only 8 per cent of gold currently mined. The rest of gold goes partly for jewels or it goes into bank vaults.

French Guiana includes a still-intact part of the Amazonian Forest. The mining site is located in a protected area known as the Integral Biological Reserve of Lucifer Dékou-Dékou, created in 2012. It is reported to have 200 bird species, 39 bat species, 39 snake species, 39 amphibian species, 1,000 vascular plants and 110 protected and threatened species. The site also hosts rare or endemic plants and fishes. Moreover, procedures requiring recourse to the Advisory Council of the Amerindian and Bushinengue Indigenous populations were not respected. As a reminder, France adopted the UN Declaration on the Rights of Indigenous Peoples in 2007, although it has not yet ratified Convention 169 of ILO. The "Or de Question"

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collective (literally, "Gold out of Question"), an alliance of local and national NGOs, called on the government to cancel the project immediately. Among the precedents in Guiana, there was the failure in August 1995 of the tailings dam at the Omai Mine, spilling cyanide, heavy metals and other pollutants into the Essequibo River. In December 2018, after a petition by the Organization of the Native Nations of Guiana, the UN Committee on the Elimination of Racial Discrimination (CERD) reprimanded France for its human rights violations against the Indigenous peoples of French Guiana. A few months after the Committee issued its decision, the French executive announced that they had abandoned the mining project, a victory for all of those who opposed it, especially Amerindians.

Alexey Mordashov was sanctioned in 2022 by the EU because of his support for Russia in the Ukraine war, in his turn he launched an arbitration suit for €4 billion against the French state because he was prevented from mining in Guyane.

THE SARAMAKA DAMAGED BY HYDROPOWER: A PEOPLE'S LAWSUIT AGAINST THE STATE OF SURINAME[7]

Suriname is a former colony, acquired by the Dutch from the English. Near to the west of the Montagne d'Or, the Saramaka are one of the Maroon people, descendants of African refugees who escaped slavery in the Americas. They are numerous on the Caribbean coast and islands and characterized for signing treaties and negotiating their lands with some colonial authorities. Since the 1990s, Saramakas have been threatened by multinational logging and mining companies which were extracting resources with the approval of the State. There have been continuous negative effects associated with the construction of the 189-MW Afobaka Dam in 1960 (that flooded 50 per cent of the Saramaka territory), and concessions affecting Saramaka lands.

Due to the above, in October 2000, the Saramaka Authorities Association, Forest Peoples Programme, Twelve "Captains" (traditional authorities) and David Padilla (former Executive Secretary to the IACHR) asked the Inter-American Commission on Human Rights to declare the State of Suriname guilty of violating the rights of juridical personality of the Saramaka people. They additionally requested measures of reparation and the reimbursement of the costs and expenses incurred in processing the case at the national level and before the international proceedings. As in the Montagne d'Or case, indigeneity plays a double role. On the one hand, Indigenous people live in "remote" locations, which become commodity extraction frontiers threatening their habitats and survival. On the other hand, they are sometimes able to appeal to their own identities and to the international protection which they themselves have won collectively because of a worldwide "Indigenous revival" (Chapter 25).

In May 2007, the audience was celebrated in the International Court of Human Rights. Robert Goodland (a former officer of the World Bank who became an activist on retirement, Chapter 28), Richard Price and other international experts testified. The Court concluded that the State had violated the rights to property, to juridical personality and to judicial protection of the Saramaka people. In 2009, the Saramaka People won the Goldman Environmental Prize because of their legal victory. Even after this victory, according to the Forest Peoples Programme, the State of Suriname has not taken the steps to accomplish what the Court indicated in 2007. Contrariwise, the government has entered into activities that could jeopardize the survival of the Saramaka, such as mineral concessions including gold mines and logging.

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RAPOSA SERRA DO SOL, RORAIMA[8]

Going back to Brazil, this recurring conflict on land demarcation took place in Roraima, north of its capital Boa Vista and at the border with Guiana. After decades of repression and struggle for their rights, the Indigenous communities of Raposa Serra do Sol obtained recognition of their territory in 2005. Still, the defence of their land and human rights remains a hot matter. In 2018, president Bolsonaro threatened to undo the recognition, and by April 2020, the situation with the coronavirus led Indigenous peoples to block access to their territories.

The Indigenous people of Raposa Serra do Sol (the Makuxi, Wapichana, Tuarepang, Ingarik and Patamana communities) fought for 30 years in order to restore and protect their rights to ancestral lands, threatened by *fazendeiros* and *garimpeiros* (cattle breeders, rice producers and small gold miners). Land grabbing is coupled with military deployment and recurrent violent repression of the communities under the guise of establishing Brazilian army presence on its borders. The commodity extraction frontier is reinforced by the military presence at the political frontier. During the General Assembly of Tuxauas in 2002, the Indigenous communities' leaders pointed to the diverse activities penetrating their territory without their consent, amongst which they cited the illegal gold mining, landowners, the construction of a military compound in Uiramutà and an electricity grid. On top of that, two national parks (Monte Roraima and Serra Da Mocidade) prevent the Indigenous communities from having exclusive access to the natural resources. The Indigenous communities called in an open letter to the authorities for the official delimitation of their territory. This was done in 2005 by Lula's presidential decree; by doing so, it also granted Indigenous communities autonomy and implied landowners' evacuation of the area.

Still, the Roraima State government and the landowners appealed to the Supreme Court, contesting the delimitation of Raposa Serra do Sol as an Indigenous territory. By the beginning of 2009, the Supreme Court satisfied the Indigenous communities' land rights. Nevertheless, the decision was followed by 19 conditions restricting those very same rights. The national sovereignty principle is placed as a priority on top of Indigenous rights. In 2013, a gathering in Borro commemorated the Supreme Court decision of 2009. It was also the opportunity to protest against the proposed constitutional amendment (PEC) 215. The amendment would transfer the decision to demarcate Indigenous lands from the National Indian Foundation (FUNAI) to the Congress. The PEC 215 raised strong and nation-wide contestation. It was finally rejected by the end of 2015.

PITINGA CASSITERITE MINING COMPLEX[9]

The Pitinga mining complex, in the state of Amazonas, is another emblematic instance of Brazil's historical injustice against Indigenous population and the systematic downplaying of environmental pollution and the risks associated with tailings dams. The Pitinga mine, in the municipality of Presidente Figueiredo, is deemed to be the world's largest undeveloped cassiterite deposit, the most important source of tin. Mining operations controversially started in 1981 by Taboca S.A., initially a subsidiary of the influential Paranapanema mining group. Since 2009, it is owned by the Peruvian company Minsur. In addition, the mine bears large deposits of uranium, tantalum and niobium. The latest are extracted from coltan, mainly for the electronics industry.

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Interest in mining in the region started in the 1940s, but its isolation prevented extraction. The construction of the BR-174 highway was pushed forward in 1967 as part of a wider economic development strategy of the Brazilian military government. This caused violent conflict with the Indigenous Waimiri Atroari group (self-denominated Kinja). Work on the Balbina dam started and flooded a vast area of rainforest. During the construction works, large cassiterite deposits were found in the region, and with the road inauguration in 1979, miners linked to the Paranapanema group started to invade the Pitinga area, which was located within the demarcated Indigenous territory.

A decree issued by the military government in 1981 declared an area of 10,345 km^2 to be of public utility for expropriation. Meanwhile, Paranapanema started cartographic manipulations through lobbying within FUNAI and the National Department of Mineral Production (DNPM), leading to a second decree that dissolved 526,800 ha of the Indigenous territory to regularize mining explorations. Thus, Taboca started its operations while it was claimed that no more Indigenous population existed in the occupied area.

In the following era, Paranapanema held a de facto monopoly which obliged *garimpeiros* (informal miners) to exclusively sell them their production. In 1985, Taboca started construction of the Pitinga hydroelectric dam on the river to cover the energy demands of the mining operations. The company also started to seek agreements with Indigenous leaders to obtain access to areas in exchange for payments and gifts, leading to a new demarcation of Waimiri Atroari territory in 1987.

Since the start of its operations, Taboca has frequently been accused of impacting Indigenous livelihoods, in particular with the pollution of the Alalaú river, and for denying responsibility. Since the 1980s, Indigenous organizations like CIMI and COAIB as well as the Waimiri Atroari Resistance Support Movement pointed to the company's pollution of the Igarapé Tiaraju, a tributary of the Alalaú. Between 1987 and 1992, the situation was aggravated as dam collapses led to the release of cassiterite tailings, immediately affecting 600 people. Critics argued that Taboca has been systematically preventing public control. There was also uncertainty about the actual amount of mined material and an assumingly high loss of taxes. Moreover, Taboca was accused of having buried radioactive waste. Despite symptoms such as loss of teeth and hair, respiratory diseases, leukaemia and presence of leishmaniasis, authorities did not take action.

The Waimiri Atroari have repeatedly demanded compensation from the Paranapanema group. Particularly controversial was an access road built illegally in 1982 through Indigenous territory, connecting the mine to the highway. Paranapanema was obliged to compensate the Kinja community, but the Indigenous group remained unsatisfied and started a series of protests in 1996. Blocking the access road, a group of 110 armed Kinja claimed: "Who does not pay, will not pass". After one month, Paranapanema, whose shares started to fall, agreed to compensation payments – however still less than the demanded 0.5 per cent of the monthly value generated by the mine. The mine access was again blocked by Kinja members in October 2004.

Until 2006, tin ore was extracted exclusively from alluvial deposits which became more and more exhausted. In 2004, Paranapanema received financing of US$ 55 million from the Banco Nacional de Desenvolvimento Econômico e Social to initiate a transition to primary rock extraction. Then, tin, niobium and tantalum ferroalloy production increased significantly, and Minsur also considered exploiting uranium. Recently, the Pitinga hydroelectric and mining complex has caused new controversies concerning the stability of its dams. In

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November 2015, published videos showed leaks. However, Taboca issued technical reports and declared the dams safe.

Researchers are not allowed to carry out measurements in Pitinga, while authorities like the Instituto de Proteção Ambiental do Amazonas (IPAAM) have for a long time failed to assess the data provided by Taboca. Countrywide public pressure only increased after a major dam collapse in Brumadinho in January 2019. Already before, local researchers and the environmental commission of the Ordem dos Advogados do Brasil – Amazonas demanded better monitoring.

EUCALYPTUS PLANTATIONS OF ARACRUZ IN ESPÍRITO SANTO[10]

North-east of the states of São Paulo and Rio de Janeiro, along the coast where the Atlantic rainforest used to display its splendour, many areas have been lost to eucalyptus plantations for cellulose exports in the state of Espírito Santo. The Brazilian company Aracruz Celulose S.A, later called Fibria Celulose, is the largest producer of bleached eucalyptus pulp in the world. The company owns more than 320,000 ha of eucalyptus plantations in Espírito Santo State and has destroyed more than 50,000 ha of Atlantic rainforest. In the north of Espírito Santo, Aracruz seized 11,000 ha of Indigenous territory, driving 8,500 families out of their homes and restricting access to food and water. Local communities claim the recovery of their ancestral lands.

The Atlantic rainforest in the region completely disappeared after 40 years of eucalyptus plantations, and Indigenous movements of Guarani and Tupinikim peoples (together with *quilombola* peoples) struggled for years to protect and to get back their territories. The recovery of their land is coupled with the revival of traditional food production. Such struggles over the land provoke violent altercations and Fibria Celulose's guards have murdered locals.

Moreover, since April 2015, the commercialization of genetically modified eucalyptus was authorized in Brazil. This approval raised the movements' opposition in Brazil and worldwide, pointing to the increasing environmental risks such as water shortages and the quality of honey from bees. Other cases of eucalyptus conflicts in Brazil appear in the EJAtlas and also, more extensively, in FIOCRUZ's map of environmental and health conflicts in Brazil. Tree plantations are not true forests. The Brazilian struggles against the "green deserts" (Chapters 21 and 23) contain many lessons for similar conflicts against this invasive plant elsewhere in the world.

ASBESTOS IN BAHIA AND GOIÁS[11]

One of the most remarkable cases recorded in the EJAtlas is that of the mine São Félix do Amianto. It was opened between 1939 and 1967 in Bom Jesus da Serra and Poções, Bahia. The company Eternit belonged to Stephan Schmidheiny, who was sentenced in court because of the manufacturing of asbestos in a factory in Casale Monferrato, Italy (Chapter 20). The mine was operated by the firm SAMA and St. Gobain, and by the Swiss company Eternit, which years later still operated an asbestos factory in Simões Filho. There are many outstanding claims asking for compensation from workers from the mine and the factory. There is a Brazilian Association of People Exposed to Asbestos (ABREA) trying to denounce the blatant corporate social irresponsibility of the firms manufacturing asbestos for decades. It is

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a classic case of "late damages after early warnings", working-class and citizen environmentalism (Mazzeo 2018).

Brazil is reported to be still the third largest producer of asbestos used in manufactured products, building materials, and the automobile industry. The WHO classifies asbestos as a carcinogen and it was completely banned in Europe in 2005. By the end of the 1930s, the asbestos consumed in Brazil was imported. Exploration and exploitation began in 1940 when the Anonymous Society of Asbestos Mining (SAMA) owned by Saint Gobain (France) settled in Poções, in São Félix do Amianto. The mine operated until 1967. The same year, the company SAMA moved to Minaçu, where it began to explore the mine "Cana Brava" belonging to Eternit. Since then, Minaçu is known as the "capital of asbestos".

ABREA records that many people have died of respiratory diseases and cancer, especially mesothelioma. In the so-called "bed of dust", where the ore was separated, workers, including many women, were covered with dust. Evandra Vieira Brito, who lost her husband (ex-employee of SAMA) to cancer in 2009, remembers: "There were about 20 girls covered with dust. They all died vomiting blood". After asbestos was banned in Europe, a draft-law initiative was proposed to the Brazilian parliament in order to ban the extraction, industrialization, importation, transportation and storage in Brazil. Nevertheless, SAMA and the local government of Minaçu claimed that this was one of the best sources of local employment. According to a report by the Ministry of Health, 2,400 people have already died from asbestos-related diseases between 2000 and 2010. As the disease can arrive many years after the exposure, this number will only increase.

ITATIAIA PROJECT FOR URANIUM AND PHOSPHATE MINING IN SANTA QUITÉRIA, CEARÁ[12]

In 1976, a mineral deposit of uranium was discovered in the municipality of Santa Quitéria. In 2006, the federal government wanted to explore the deposit. The aim of the Brazilian Nuclear Industries (INB) was to extract uranium for energy and phosphate for the agroindustry. The uranium would be for the new nuclear energy plant in Rio de Janeiro (Angra III). In 2009, Brazilian Nuclear Industries and Galvani created the Consortium Santa Quitéria for the investment of the project called Mina de Itatiaia. Yara (Norway) joined the group. This mine is the largest reserve of uranium in the country and its economic viability depends on the associated phosphate exploration.

By the end of 2008, rural communities with support of the University of Ceará, agrarian and environmental justice organizations such as Vía Campesina, Rede Justiça Ambiental, Cáritas Brazil, Cactus Organization, Instituto Bioma, Movimento Sem Terra (MST), Articulação Antinuclear Brasileira (AAB), Coletivo Urucum, Brazil Human Rights Fund, Cáritas Diocesana de Sobral do Ceará and Comissão Pastoral da Terra (CPT) started a platform to oppose the mine. The main causes were the high health risk and the high level of water use in a water scarce zone. In 2011, the accident in Fukushima strengthened the opposition. The organizations mentioned created the *Articulação Antinuclear do Ceará* (Anti-nuclear network) to debate around the uncertain risks, social and environmental impacts of the mine, helping the mobilization of communities. As part of the Environmental Licence required, the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) called for public audiences to explain the project and offer different types of hypothetical benefits.

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Several master's theses from the University of Ceará analyzed the potential environmental risks of the project based on the environmental impact assessments produced by INB and Galvani. According to the activists, these analyses were sent to IBAMA, public prosecutor offices and a human rights office in Ceará. In September 2016, IBAMA issued technical advice against the project based on hydric non-feasibility, lack of mitigation measures in case of radioactive contamination and lack of government agencies' green light. This technical advice, however, was stopped by IBAMA's executive board. Social movements, NGOs, scientific networks and others jointly organized a campaign in March 2017 entitled "Anti-Nuclear Ceará: in Defense of Life, Water and Towards Environmental Justice". An open letter was written to IBAMA, asking to overrule the environmental licence process and calling for national and international support. The open letter points out that "Fortaleza inhabitants and the overall populations living along the roads through which the radioactive loads are to be transported remain unaware of the project's existence and have not been included in the project's discussions regarding the risks and impacts they are potentially facing". The project has not started, although by 2019 and 2020 there were rumours of mining in the area under president Bolsonaro.

SÃO LUIZ DO TAPAJÓS IN PARÁ: THE MUNDURUKU[13]

The demarcation of land for the Munduruku people and other communities stopped the São Luiz dam in the Tapajós River. This big victory for environmental justice challenged as well the future of other hydropower projects. On the Tapajós River, two major hydroelectric dams were under study; São Luiz do Tapajós and Jatobá dams would have a capacity of 6,133 MW and 2,338 MW respectively. The Brazilian government planned to invest 18 billion reals (around US$ 5.3 billion). As one of the central elements of the government's project to expand hydropower generation across the Amazon, the São Luiz do Tapajós dam was slated to be Brazil's second largest, after the controversial Belo Monte power plant. Together, the dams would flood 198,400 ha of land along the Tapajós, including large portions of the Amazonia and Juruena National Parks and the Itaituba National Forests. These dams would have significant impacts on Indigenous lands and communities throughout the Amazon. In total at least 40 more projects are on the way along the river, considered to be the "last frontier" of hydro expansion in the Amazon (Chapter 22, São Manuel dam).

EIAs were carried out by a consortium called "Grupo de Estudos Tapajós", made up of Eletrobras, Eletronorte, Cemig, Copel, Camargo Corrêa, and transnational corporations like EDF, GDF SUEZ, Endesa Brasil and Neoenergia (Iberdrola). According to Greenpeace, "the (President Lula's) government's Growth Acceleration Programme (PAC) aims to transform the Tapajós River into an industrial waterway and shipping hub, with the ultimate goal of allowing soybeans produced in Mato Grosso to be shipped to the Atlantic Ocean and onward to foreign consumer markets". Greenpeace also commissioned an independent analysis of the EIA report prepared by CNEC WorleyParsons Engenharia S.A. on behalf of the Grupo de Estudos Tapajós. The review found lots of flaws in the process and argued that the report on the EIA was in effect "a marketing tool that fails to inform society, in an objective manner, about the consequences of the project and minimizes predicted impacts".

Moreover, the political crisis at the end of Lula's presidency represented a time of instability and uncertainty over what was going to happen next. Added to this, a strategic development

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law, known as PLS 654/2015, was being debated in the senate. If approved, it could have significantly accelerated the licensing process, by reducing the environmental protections enshrined in Brazilian law, and eliminating the requirement for public consultation.

With an estimated population of 12,000 people spread across 128 villages, the Munduruku are the most numerous Indigenous group in the region. Other Indigenous groups also live there, as well as some 2,500 traditional riverside dwellers (*ribeirinhos*), along with more recent settlers and urban residents. The dam would flood a vast area, requiring the forced removal of Indigenous communities, an act that is strictly prohibited by the Brazilian constitution except in cases of epidemics or war. Women would also bear specific threats to their livelihood and lives, especially due to the sell-off of land by men, and by the immigration of outsiders for working in the construction sites. In fact, the dam would inundate around 7 per cent of the Munduruku territory, including a number of their sacred sites. The Greenpeace report also states that

> Although the 1988 Federal Constitution forbids the removal of indigenous groups from their land except in the case of a disaster or in the interests of national sovereignty, the report of the EIA […] ignores this, while quoting a law dating back to the days of the military dictatorship to the effect that "the federal government can intervene in indigenous areas to carry out public works of interest to national development". It also relies on a discredited map to downplay the extent of *ribeirinho* community land ownership in the area to be flooded.

In April 2016, IBAMA denied the environmental licence for the proposed São Luiz do Tapajós dam on the Tapajós River – a decision seen as a victory by the Munduruku and the environmentalists.

THE TUCURUÍ DAM IN THE TOCANTINS AND THE ASSASSINATION OF DILMA FERREIRA DA SILVA[14]

Tucuruí, also in Pará, one of the world's largest hydroelectric dams, has displaced many people since the 1980s leaving communities in an ongoing struggle for compensation and land rights. It continues to produce cheap electricity for the export aluminium industry, mostly in Barcarena and São Luís. The construction on the Tocantins River started at the end of the 1970s under Brazil's military dictatorship. With the construction of the Tucuruí transmission line, the plant became a major hydroelectricity provider for the Northern Amazon region. Further extensions of the dam continued until the 2000s.

Located about 350 km from the state's capital Belém, it caused the flooding of an area of 3,014 km^2 and displaced about 32,000 people, most of them *quilombolas* (afro-descendants), Indigenous people (Asurini, Gavião, Suruí, Parakanã, Xikrin, Guajará and Krikati groups), peasants and traditional riverside dwellers (*ribeirinhos*), who have since then been fighting for their territorial rights. Their struggle reveals the relations between infrastructural megaprojects and Brazil's conflictive agrarian and landless question.

After years of construction, the Tocantins River was eventually blocked with the inauguration of the dam in 1984 and is since then run by Eletronorte, with mixed-ownership controlled by Brazil's federal utility holding company Eletrobras. A case study on the social impacts of the Tucuruí dam by Fearnside (1999) reported a systematic overestimation of the plant's benefits by public authorities, while social and environmental impacts have rather been

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downplayed. Significant parts of the displaced population were not included in Electronorte's estimates of the affected communities and therefore excluded from the resettlement programme; the company arbitrarily provided some small cash payments but relieved itself from any further responsibility (like providing land).

The dam introduced the plague of Mansonia mosquitoes, also malaria increased. Riverside forests were flooded. There was a collapse of fishery and shrimp numbers, thus a decline in local food supply. While the dam brought an overall population increase, it especially affected Indigenous populations. The rerouting of the Transamazon Highway and establishment of resettlement areas caused further expropriation of Indigenous livelihoods and heavy deforestation.

In 1991, the Brazilian government was condemned for the impacts of Tucuruí by the civil-society International Water Tribunal held in Amsterdam. This brought international attention to the conflict. A 2001 follow-up study stated that access to information by the public had been restricted by Eletronorte while decision making ignored environmental studies and was influenced by military and foreign financial interests, ultimately serving the interests of multinational companies. Beyond the displaced people, nearby municipalities and agricultural producers also suffered from indirect impacts, for example, increased dryness from change in seasonal floods. There was an intensification of land occupation in the Tucuruí area – typically by displaced families trying to build a new existence – which increased conflict with Eletronorte and other large landholders. The occupations – who received support from the MST – included public land that was irregularly grabbed and deforested by large-scale ranchers and about 1,500 islands in the artificial Tucuruí lake. More than 25 years after being displaced, most communities are still waiting for compensation and lack basic public services. A study by Arrifano et al. (2018) found that "inhabitants of the Tucuruí Dam seem to show the highest levels of total mercury ever detected in human populations living near an Amazonian dam".

The hydroelectric dam and related mega-projects have brought forward the emergence of new social actors. As Silva (2009 and 2014) outlines, local movements such as the Commission of those Affected by the Tucuruí Hydroelectric Plant and the Movement of the expropriated people by the Tucuruí dam emerged in the early 1980s, one of the historical roots in 1991 of Brazil's Movement of People Affected by Dams (MAB). Supported by rural worker unions and the CPT, social mobilizations gave voice and new identity to marginalized local groups. Protests included frequent demonstrations, occupations of public administrations and a two-year-long camp at the entrance of the Eletronorte compound to demand alternative settlements and compensation for their destroyed economies and livelihoods.

Moreover, as is documented by the FIOCRUZ map, an association of island communities together with the local movements has been demanding the creation of the "Itaipava Extractivist Reserve" (RESEX) on the Tucuruí lake since the early 1990s. The government preferred a "sustainable development reserve", as it would allow future economic activities. It was finally left aside with the announcement of the expansion plans of the Tucuruí dam.

Mass mobilizations continued in the 2000s. For example, street demonstrations led by the MST, the MAB and Via Campesina resulted in a two-day occupation of the Tucuruí plant in 2007, forcing government representatives to hold talks with the MAB. Other protests were directed against public authorities like the National Institute for Agrarian Reform (INCRA), responsible for agrarian reform and resettlement. Such protests led to an increasing

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criminalization of activists, including MAB leaders (one of whom was condemned to 12 years in prison), but also won the support of other social movements.

Another notable example is the 2007 occupation of private land by displaced and landless communities and the MST movement, establishing a settlement named Salvador Allende. The MST considered the area as public land that had been appropriated through the practice of *grilagem*. After various armed attacks, some of the initially involved 480 landless families left the territory. In the following year, about 1,300 families occupied INCRA headquarters in Macabá. The MAB and the Federation of Workers in Family Agriculture supported the occupation. In 2012, the Salvador Allende settlement was officially regularized by INCRA and distributed in small agricultural lots to a number of families.

In 2013, the Federal Court of Justice granted state compensation to the Asurini community. Meanwhile, new protests took place; most notably, hundreds of people occupied the city council of Tucuruí to demand again the regularization of land and the realization of development plans for affected communities agreed in 2005. Thirty years after the first displacements, annual mass demonstrations still take place around the 14 March, on International Rivers Day.

The movement has been regularly confronted with acts of violence. In 2009, the head of the Rural Workers Union Raimundo Nonato do Carmo Silva, known as Raimundinho, was assassinated in Tucuruí. On 22 March 2019, the regional MAB coordinator Dilma Ferreira da Silva, her partner Claudionor Costa da Silva and her friend Hilton Lopes were brutally assassinated at Dilma's house in the settlement of Salvador Allende. According to first reports of neighbours, five people arrived at the house and music was played unusually loud. The murder was discovered the next day, when the bus stopped by the house to pick up Dilma to go to work at the local school. The UN High Commissioner for Human Rights and deputies in the Brazilian Congress condemned the killing, while the Bolsonaro administration did not issue any statement. Two days later, another three people were found assassinated in a nearby farm, owned by rancher and businessman Fernando Ferreira Rosa Filho. The MAB pointed to the international recognition of Dilma's activism and her lifelong struggle against multiple discriminations – as a Black, female, north-eastern, riverine and displaced person affected by one of the most conflictive giant dam projects in the Amazon.

GRILEIROS AND *POSSEIROS* IN NOVO PROGRESSO, PARÁ[15]

We now go back to the Tapajós River basin, south of Itaituba (Figure 19.3). The construction of BR-163 highway in the late 1970s traversed vast forested areas of Pará and Mato Grosso to connect Cuiabá with Santarém. It led to a rapid increase in land grabbing, deforestation, cattle and soy farming. The municipality of Novo Progresso has become a major gateway for cattle farming in the Amazon. Left without rights and power, landless peasants face ongoing threats and marginalization and are even incorporated in the expanding cycles of colonization and deforestation, which only benefit land grabbers and landholders. International meat giants such as JBS stand on the other end of the production chain and purchase more than half of the cattle that have been detected by studies as illegal. JBS describes itself as a multinational company of Brazilian origin, one of the global leaders in the food industry. With main offices in the city of São Paulo, it is present in over 20 countries.

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Source: Wikipedia

Figure 19.3 The Amazon basin

The municipality of Novo Progresso is situated in the Tapajós region in the isolated south-west of Pará, currently a venue of a number of controversial projects, including the announced building of a "grain railway", new highways and dozens of large dams, but also the proliferation of illegal gold mining (by *garimpeiros*) and systematic land grabbing and deforestation. Agricultural expansion in the region illustrates key dynamics between advancing deforestation and social conflict in the Amazon. The south-north BR-163 highway is one of the most crucial transport routes for Brazil's agribusiness. It led to an influx of so-called *grileiros* (land grabbers that falsify property titles) along with landless peasants (*posseiros*) and other farmers who came with authorization. For Brazil's military government, the colonization of the Amazon was a matter of national security and was accompanied by policies to incentivize soy cultivation and cattle

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farming, but also with a resettlement strategy for masses of poor people. The land reform never took place, and this later brought forward the rise of Brazil's landless peasant movement MST. Along the BR-163, soy cultivation and cattle farming continued to expand from Mato Grosso northwards. This trend was slowed down in the early 2000s. However, following the weakening of the forest code in 2012 and the increase in meat and soy prices, deforestation increased again.

The following account is similar to other events in Pará. Aluísio Sampaio, known as Alenquer, was a defender of landless peasants along the BR-163. He was brutally murdered on 11 October 2018 by people from Novo Progresso. The assassination of Alenquer happened some days before the election of Brazil's new president Bolsonaro, who frequently justified the use of weapons by landowners. During one of his campaign visits in Pará he praised military policemen convicted for killing MST 19 landless peasants in El Dorado in 1996 and promised to classify the MST as a terrorist organization. Alenquer was the head of the rural workers union Sintraff (*Sindicato dos Trabalhadores na Agricultura Familiar*) helping peasant families to become resettled. According to local media, the police had not undertaken investigations after a video released in 2017 in which Alenquer reported about three people having stolen land and planning his assassination – including a former mayor of Novo Progresso and Agamenon Menezes, a rancher and president of the local rural producers' union.

The dispute centred around the "KM Mil" area, one of the landless peasant occupations organized by Alenquer, situated at the 1000 km milestone in the BR-163. In late 2016, he accompanied a journalist and the researcher Maurício Torres to the occupied area to raise awareness. Land reform promises had not been fulfilled. Claiming these historical land rights, about 80 landless peasant families of the KM Mil community built up provisory shacks at the beginning of the forest and started to clear trees. They explained that they would have preferred to occupy already cleared areas but doing so would almost certainly put their lives in danger, as these lands belong to powerful landholders. With the support of their trade union, many *posseiros* felt they had some kind of protection. Mauricio Torres also interviewed Agamenon Menezes, the head of the rural producers' union accused by Alenquer, and reported about the practice of sending hired militias to get rid of "invading" peasant families. Menezes announced that the KM Mil occupation had to end, but in which way – violently or not – only depended on the community itself.

With their influence over public officials in IBAMA, *grileiros* can draw attention away from their illegal land thefts, and instead point to the deforestation caused by those without rights and power. Because of impunity, occupation and deforestation has incentivized over the last years. Land grabbers usually remain unpunished. Increasing scarcity in cleared land has moreover triggered "speculative clearance". Forests in federal land are being grabbed and cleared, have appreciated in financial value, and are then sold to ranchers and farmers. Contrary to the past, this new form of land grabbing has become separated from farming.

Purchasers are either large producers aware of the irregularity but powerful enough to defend the land, or small-scale farmers believing they have purchased regular land. Landless peasants, however, find themselves constantly in irregularity and pushed towards the margins of the forest with every new cycle of colonization. Most of the deforested land is used for grazing cattle. As only 30 per cent of landowners in Pará have a legal land title, cattle are often the easiest way to make immediate profit and declare ownership of the land. As shown in the documentary *Grazing the Amazon* (2018), ranchers enjoy widespread impunity with regard to violations of environmental crimes and "cattle washing". Brazil's largest slaughterhouses widely ignore regulations.

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CAPIXABA, XAPURÍ: RUBBER TAPPERS AND CHICO MENDES, ACRE

Leaving Pará and going west to Acre and Rondônia, I first bring up two agrarian and environmental conflicts from Acre, Brazil. One is very contemporary, in Capixaba, but in a way it started over one hundred years ago. The other one is the famous case in Xapuri of the rubber tappers' trade union.

Capixaba[16]

This agrarian conflict around the Seringal Capatará, a rural and forested area in the state of Acre, involves around 180 rubber tapper and farmer families and the cattle rancher Osvaldo Ribeiro. An area of 5,000 ha is under dispute and occupied by the communities. The *seringal* (rubber trees) are located in the district of Capixaba, close to the new highway BR 317 which connects Acre's capital Rio Branco with the Brazilian-Peruvian-Bolivian border and then goes to Cusco in Peru.

Rubber tapper families moved to the area decades ago without having official land titles. After the economic potential of rubber was discovered in the late nineteenth century, Acre and other parts of the Amazon soon became well-known centres of latex extraction. The rapidly extending rubber frontier was built on a system of semi-slavery, violently incorporating a large part of the Indigenous population and immigrants as workforce to create dependencies. The historical uprisings of rubber tappers in Bolivia nourished the ground for the Acre Revolution. However, the rubber economy faced a crisis after 1915 although World War II brought a short boom. The Brazilian government declared the prioritization of cattle ranching and agriculture in the 1960s. The arrival of *fazendeiros* (large-scale farmers, ranchers) gradually expelled rubber tappers and renewed the land conflict. Many *seringueiros* (rubber tappers) moved to more interior parts of the forests to become autonomous rubber tappers or small farmers.

In the Seringal Capatará, some individuals are reported to have already spent more than 50 years there, others less. Many never had schooling. Some were vainly waiting for resettlement after being expelled from their old home due to similar agrarian conflicts. Others are part of families that have lived there for generations. The start of the conflict in the Seringal Capatará can be traced back to the year 2004. Osvaldo Ribeiro illegitimately began to present himself as the owner and threatened them. The conflict simmered on until 2009, when new families came to the territory under dispute, understanding it as public land. They started a peaceful occupation in order to live in and from the forest. Destruction of food gardens, burning of houses, physical violence and death threats were reported. The workers' union *Central Única dos Trabalhadores* started to mediate the case and to support the *posseiros.*

In November 2011, INCRA declared that, as part of the land in dispute belonged to the federal government, the process was remitted to the Federal Court of Acre in January 2012. Osvaldo Ribeiro refused negotiations. Life threats against the squatters continued. In June 2013, people of Capatará protested and camped for two days outside the INCRA headquarters in Rio Branco. INCRA reacted by stating that the root of the conflict lay in the historically lacking administrative differentiation between public and private land. INCRA and the residents' association reached an agreement and the demonstrators left the headquarters, despite remaining sceptical (Figure 19.4).

The process was prolonged several times in the hope of an extrajudicial agreement between the parties and because some *posseiros* were confirmed as landowners by an INCRA assessment. The final court record has 1,652 pages and the process ended in May 2016 with a

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Source: EJAtlas

Figure 19.4 *Capixaba, Acre. "We want to really produce, and not destroy as the fazendeiros do"*

decision in favour of the cattle rancher. Only 15 *posseiros* families were recognized as owners. The community of Capatará reacted to the court decision with blockades of road BR-317, which initially led to the postponing of the eviction. In August 2016, the eviction was implemented. The military police used rubber bullets and gas bombs. However, despite the court decision in favour of the cattle rancher, no one knew where the area began and ended. Thus, while only 2,000 ha were authorized, the area evicted seems to have been about 5,000 ha. It is reported that up to 261 families were evicted, including some that have lived there for more than 25 years, kids that had been born there and a school that had been built by the residents themselves. Three months after the eviction, 150 families invaded the area in an attempt to return to their land. In fear of tensions, a special forces unit was sent to disarm both sides.

Apart from showing the violence inherent to the land rights situation in the Amazon, this conflict also exemplifies the clash between the old land use practices of rubber tappers and the clearly increasing pressure from agriculture and in particular cattle farming.

Xapuri, Chico Mendes[17]

Chico Mendes campaigned against ranchers to stop the deforestation of the rainforest. In 1988, he was shot and became a symbol for the global environmental justice movement. During the 1970s and late 1980s, the military government of Brazil, in an effort to fortify the economy, started to offer incentives to cattle ranchers in the rainforest. Rapidly, the

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deforestation became visible, affecting rubber tappers or *seringueiros* in Acre which, in 1976, organized themselves to save the forest and their livelihoods. One of the forms of mobilization by the protesters was the *empate* – a peaceful demonstration in which they bodily opposed the police, non-violently protecting the trees.

In the early 1980s, ranchers from Southern Brazil began to buy up huge tracts of Amazon land to clear them for cattle grazing. Frigorifico Bordon SA was one of the enterprises in this conflict. In all this process, Chico Mendes, a traditional rubber tapper in Xapuri became involved in the struggle. Initially, Mendes sent letters to the president describing the inhumane conditions imposed upon the rubber tappers. But his letters were ignored. At the same time, a highway was being built from Rôndonia state towards Peru, causing deforestation and loss of livelihood for thousands of *seringueiros*. The Environmental Defence Fund invited Chico Mendes to attend the Inter-American Development Bank annual meeting in Washington and to meet US Congress members.

The year 1985 marks the founding of the National Council of Rubber Tappers by Chico Mendes and other key union leaders. In 1986, the Xapuri Rural Workers' Union allied with the Indigenous people of Brazil. This alliance showed government officials the seriousness of the campaign's demands. In June, Mendes organized over 200 tappers for a march on the federal forestry office of Xapuri. They were evicted by the police. Starting then, the *seringueiros* leaders received death threats.

As a form of territorial resistance, trade unionists proposed the creation of the "Extractive Reserves (RESEX)", protected areas where the traditional populations would continue their sustainable extractive activities, with no risk of being expropriated. In the following years, the movement focused on recruiting rubber tappers for *empates* and rallying international support. Recognition of Chico Mendes with international prizes (United Nations Global 500 Environmental Prize and World Society Prize in 1987) spread awareness of the campaign.

On 22 December 1988, Chico Mendes was murdered by two ranchers (Darcy Alves and his father, Darly Alves de Silva). They were both sent to jail for 19 years. As a temporal sign of environmental justice success, the policy in the Amazon changed for some years and the RESEX model was legalized. With 980,000 ha, the first RESEX was named "Chico Mendes" and served as a home and refuge to 3,000 families. Today, there are RESEX along the whole Brazilian territory, but they are not always preserved.

THE CINTA LARGA IN RONDÔNIA: DIAMONDS[18]

Here, the long-lasting conflict is not the grabbing of land for cattle ranching or the appropriation of river water for the production of hydropower. The conflict is on bloody diamonds, against the pre-colonial Indigenous populations. Contacts between the national Brazilian population and the Cinta Larga Indians happened in the early twentieth century, when rubber gatherers entered their territory. The conflict intensified in 1963, when the first prospectors began to invade their lands and decimated the Indigenous population, like during the Massacre of Parallel Eleven. The miner Francisco de Brito and a group of gunmen raided a Cinta Larga village and massacred the Indians. Another slaughter occurred in 1968, when ten Indians were killed after attacking miners who invaded their territory. There have been many conflicts between the Cinta Larga Indians and groups of artisan miners interested in exploiting diamond deposits in their traditional lands, an area of more than 2.6 million ha. According

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to studies conducted by the DNPM (National Department of Mineral Production), this deposit has the capacity to produce at least one million carats of diamonds per year. Although mineral exploitation on Indigenous lands is illegal, it takes place.

In 1969, the Brazilian State, through FUNAI, tried to calm down the Indians and ensure continuity of mining. An Indian reservation was created to ensure the maintenance of the Cinta Larga territory, but the boundaries have been reduced several times. Out of the 5,000 Cinta Larga people inhabiting the region in 1960, less than 2,000 were still alive in 2012. They intensified actions to pull miners out of their lands, and began to explore the diamonds themselves and sell them to international smugglers. In 2003, it was reported that members of the Mining Center for Nature Conservation would be acting as representatives of the Mining Company of the State of Rondônia to negotiate diamond mining with the Indians. In the following year, a Federal Police operation arrested at least 15 people for illegal exploitation of diamonds, many of whom were State officials. Several Cinta Larga were murdered that year. As a reprisal, Indians killed 29 miners in a joint action with other ethnic groups.

Since 2010, the Indigenous leaders have decided to suspend the mining on their lands, relying on the support of the Federal Police. However, local people have not had their basic needs met. Occasionally, the FUNAI donates food baskets and many social projects intend to help them. Still, illegal diamond mining is spreading. A BBC report soberly concludes: "The riches of the land on which the Cinta Larga live have historically brought them misfortune. Before diamonds were discovered, rubber prospectors killed many of them for their land".

URBAN SÃO PAULO

We shall end this chapter leaving the Amazon region and going back to the South to explain some urban conflicts in the metropolis of São Paulo.

Cubatão: Urban Conflicts on Environmental Health[19]

During the 1960s, the municipality of Cubatão (São Paulo) developed into an important industrial park, prompted by a strategically appealing location and the inauguration of Petrobrás "Presidente Artur Bernardes" oil refinery in 1955. The development of the industrial park did not follow any sort of planning and norms, which led to a spread of contamination sources among the population and the surrounding Atlantic Forest and mangrove ecosystems. The grievances and claims came from local citizens and also trade unions.

During the 1970s and the 1980s, the levels of contamination of air and water and its impacts in Cubatão were calamitous. It affected both land and water fauna whose numbers in the region dropped drastically, as well as further degradation of the forest due to acid rain. The impacts on human health were also felt: perinatal death rates with anencephaly, neurological disorders, altered haematological data and respiratory problems. The topographic conditions and the wind patterns in the Cubatão Valley contributed to a slower dispersion of polluting particles.

In the late 1970s, the situation was so severe that it raised international attention. The UN declared the Cubatão a "bad example" of industrial development. The region soon became known as the Valley of Death. In 1981, the State Government and the polluting companies created a workgroup called Valley of Life. The consortium issued a report proposing to move

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the population out of one of the most affected areas and to expand the industrial complex. It said nothing about contamination levels or corporate responsibility. Neighbours, communities, workers' unions and religious groups criticized the report and demanded stronger actions against the polluting companies. At the same time, they started relating contamination with other issues such as poverty, lack of services and proper housing. One of the outcomes of this organization was the creation of *Associação das Vítimas de Poluição e das Más Condições de Vida de Cubatão* (AVPMCVC) – The Association of Contamination Victims and Inadequate Life Conditions.

Because of community and media pressure, State authorities created the State's Environmental Council in 1983, which drew the Action programme to control contamination at Cubatão. The World Bank, the State of São Paulo and the industrial sector financed the programme, whose implementation was handed to the Companhia Ambiental do Estado de São Paulo. It included a study of contamination sources, emission reduction goals, sanctions, reforestation measures, and community participation. This last aspect contributed significantly to the popular support of the plan. In only a few years, contamination levels dropped considerably in Cubatão, even if current levels are still unsatisfactory.

Brazilian justice fined several companies over the years. A group of workers of Rhodia – a fertilizer producer belonging to the multinational Solvay – organized under the Association Fighting Pollutants (ACPO). They took legal action against the company for breaking a memorandum signed in 1995 that stipulated regular follow-ups of workers' health status and their reintegration in the company. Two years earlier, Rhodia had been forced to suspend its activities due to extreme contamination of soil and water. According to ACPO, the company was not respecting the memorandum and was not taking responsibility for health impacts on employees. This is a famous early case in the annals of working-class environmentalism in Brazil against "corporate social irresponsibility", and lack of liability by the Rhodia company.

A more recent study (2013) stated that current levels still carried health risks to the population, while the WHO stressed the importance of constant monitoring of emissions. Cubatão was designated by the UN as a Symbol of Environmental Recovery, allegedly with 98 per cent of the level of pollutants controlled, a worldwide example as the city that was reborn from the shadows of pollution. In 2017, a local court ruled that 24 companies in the industrial park, including Rhodia and Petrobras (owner of the refinery), would have to pay compensation corresponding to the costs of decontamination. Only a couple of months earlier, a fire in the fertilizers factory of the Vale company caused a smoke leak containing ammonium nitrate and sulphuric acid, thus showing that there is still risk of accidents. There were no victims.

The Squat Ocupa Mauá in São Paulo Prevents Evictions between 2007 and 2017[20]

Affordable and dignified housing has grown in concern everywhere. Many people have gone to São Paulo to find a job. Many failed, and those who have one cannot always afford decent housing. It is estimated that São Paulo has a housing deficit of 830,000 dwellings, an estimated 15,000 people living on the streets, more than 200,000 vacant buildings, and an unemployment rate of 14 per cent. In 2019, there were over 21 million people living in the urban area. In November 2017, 20,000 homeless Brazilians took to the streets to demand affordable housing in the city. Having trouble finding a place to live, many citizens see squats around the city as solutions to offering them a home.

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One of these squats is the Ocupa Mauá, located in the Luz area. This area has fallen into decline after floods, poor planning and rising drug and crime problems. Since 2003, the city council planned that the area be used for social housing for low-income families. The Ocupa Mauá came into being on 25 March 2007, when squatters took over the abandoned Hotel Santos Dumont. Home to 237 low-income families (approximately 1,300 people, including 200 children), it has been both a community and part of a larger social movement fighting for housing. Recession, inequality, and political polarization fuelled the squatting movement to expand, and there are around 80 organized squats in the city. However, since 2010, the neighbourhood was caught in a polarized debate over the problems of drugs, and the neglect and violence issuing from this, as well as the "Nova Luz" gentrification project, which would demolish several buildings, including the Mauá Occupation, to revitalize the area by encouraging real estate speculation and intensifying services.

The city attempted to buy the Mauá-building to use it for social housing, but failed to meet the price tag demanded by its owners. In October 2017, the residents of the Ocupa Mauá faced eviction. This deadline was postponed to November, as negotiations between the city and the building owners continued. Following a petition organized between the Mauá residents and the Catholic Agency for Overseas Development and signed by 4,000 people in England and Wales, enough pressure was put to agree to a peaceful solution. Forced evictions and possible police force were avoided, and the process of the official purchase of legal rights over the complex began. This militant squatting community persisted.[21]

CONCLUSION: A TOXIC TOUR OF BRAZIL MAKING SOCIO-ECOLOGICAL CONFLICTS MORE VISIBLE

There is a Brazilian saying, *isso é para inglês ver*, which means to make believe, to go by appearances. It is attributed to the slave trade mostly from the Gulf of Guinea to Brazil, some decades after the British had forbidden such trade in 1830. The slaves were hidden to avoid inspections. This book, although written in English for an international audience, is not written "for the English to see". Nothing should be hidden; on the contrary, the EJAtlas wants to make socio-ecological conflicts visible, finding the historical sense of these struggles for a worldwide movement of environmental justice. Brazil contributes greatly to the practice and theory of such a movement, to its vocabulary and its iconography, and my purpose is to elicit some of these teachings. For the Africans, the South and SE Asians to see, for all the subaltern and downtrodden people everywhere to see. One way of making conflicts visible is that practised by the local campaigns themselves when they join in wider organizations and the diverse *articulações* or networks. As the participants in the conflicts we have urban and rural inhabitants, women and men, of different backgrounds. We have many peasants and landless peasants, including Amazonian *ribeirinhos* who are fisherfolk. We have. numerous surviving Indigenous groups and also *quilombolas*. We have an assortment of citizens and neighbours, local EJOs (and a few times international EJOs), trade unions, scientists and professionals, religious groups of great relevance (such as the CPT, motivated by Catholic Liberation Theology). Among the organizations, lasting or ephemerous, Friends of the Earth exists but is negligible (in Brazil) but we have MAB (the movement of *atingidos por barragens*), the AAB (anti-nuclear), the ABREA (anti-asbestos), the MST (the landless movement) together with Via Campesina (international) and peasant unions. We could have included other protagonists

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in the tour, like traditional *caiçaras* (ocean fishermen) or the *garimpeiros* (artisanal miners, working for themselves or for bigger entrepreneurs). There is a Rede de Justiça Ambiental, influenced by the original USA movement against environmental racism of the 1980s. Also we notice the participation of Brazilian local movements in the International Rivers Day on 14 March and in the International Peasant's Day on 17 April which commemorates the killing in 1996 in Eldorado de Carajás.

This trip started looking at emblematic environmental conflicts Starting from Minas Gerais, as if we were tourists keen to see first the baroque churches of Ouro Preto and the early colonial gold mining villages, we have done a zig-zag tour of Brazil. In Minas Gerais, with such a sweet rolling landscape, there are iron ore mines developed by the Vale company. We have seen the recent horrors of Mariana, Brumadinho and the struggle at Gandarela, next to Belo Horizonte. Continuing this journey, we went to the South first, to Rio Grande do Sul and recent mining conflicts near its capital, Porto Alegre, and then to the north, to Maranhão, the Guianas and Roraima. We looked at the women's defence of *coco babassu* and to mining conflicts, and also at some of the big dams in the Amazon, as well as land grabbing conflicts involving landowners, peasants and Indigenous populations, and also had a look at recent urban squatting in Mauá, São Paulo, where we remembered industrial pollution in Cubatão.

It was Ignacy Sachs, a Polish-French economist, who introduced the notion of "eco-development" before 1972 (later officially substituted by "sustainable development" in 1987 by the UN Brundtland Commission). In his memoirs, he remembers beautiful trips to the Peruvian Amazon, in Ucayali. He wrote at one point that Brazil could be a rural paradise but it was becoming an urban hell. He wrote this when São Paulo and Rio de Janeiro were growing at 8 per cent per year, in the 1960s and 1970s, with enormous *favelas*. A drastic drop in the birth rate, the ups and downs of the economy and the congestion and pollution of the big cities put a brake on this urban expansion. In fact, now Amazonia is a rural hell. Brazil has been the country with the highest number of documented killings of environmental defenders (not per capita but in total) since Global Witness started reporting in 2012, with 342 lethal attacks in total. Most of them are in the Amazon region. Only some of them appear in this book.

Some parts of Brazil's large cities are indeed urban hells but some rural areas have also become hells of environmental, racial and social iniquity. This goes back 500 years to the links to coloniality and racism, to slavery and to the plantation economy based on the destruction of the Atlantic Forest. The *bandeirantes* are now represented by the cattle ranchers and soybean and sugarcane planters in Mato Grosso, Pará, Rondônia, thousands of kilometres to the north and north-west of São Paulo where the original *bandeirantes*, coffee planters and *fazendeiros* came from. Today, they encounter, as they did then, some Indigenous groups and they proceed to dispossess them and often massacre them. The Cinta Larga in Rondônia, the Guarani and Tupinikim in Espiritu Santo and the Munduruku in the Valley of the Tapajós River are some of the Indigenous peoples that have appeared in this chapter. We shall find in Chapter 25 the Asháninka at the political frontier with Peru. There are also in Brazil protected *quilombola* territories of the former escaped slaves, the Maroons.

In north-west Brazil, in Acre, we remember the story of Chico Mendes (the *seringueiros* struggling for *sustainable extractivist reserves*) against the cattle ranchers who destroyed the forests. Today's similar story is the Capixaba settlement, not far from Xapurí where Chico Mendes lived. He is one major Latin American hero among hundreds of environmental defenders whose names we sometimes know through the EJAtlas and the Global Witness inventory, while others remain nameless.

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We have recalled instances of conflict in this chapter about iron ore, coal, uranium, bauxite, tin, niobium and tantalum, ilmenite, asbestos, phosphates, industrial pollution, urban housing, diamonds, hydropower, logging and wood extraction, eucalyptus plantations and soybeans, and deforestation for cattle ranching for meat exports. This is the materiality of ecological distribution conflicts. Land grabbing is a new international term but an old reality in Brazil. The *grileiros* practice *grilagem* by falsification of property titles and by violence. One such case in this chapter is (ironically) named *Novo Progresso*. A landmark case took place in Eldorado de Carajás in Pará on 17 April 1996, the mass killing by the military police of 19 landless farmers who were squatting on a private ranch. There are also cultural aspects and many different valuation languages displayed, from money making to ecological values, Indigenous rights to sacredness. But money is often more powerful.

We could also insist (with Beatriz Saes and Roldan Muradian) on the role that ecologically unequal trade plays in the exploitation of nature and people. We started the "tour" in Brumadinho. The Vale company responded to the low price of iron ore after 2012 by extracting more of it. Brazil exports around 400 million tons of iron ore per year. The risk of tailing dam failures is large. In Chapter 28, the damage from Alunorte in Barcarena is described. We could have emphasized the role of Brazilian firms, such as Petrobras and Odebrecht closely linked to the PT (Lula's political party), in extracting fossil fuels, building public works around Latin America and corrupting politicians. I remember being in Dakar, Senegal, at the 2011 World Social Forum where invited foreign guests were ferried from the hotels by Petrobras buses. I felt guilty but sheepishly said nothing.

NOTES

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9. Pitinga cassiterite mine, Amazonas, Brazil (Max Stoisser), EJAtlas.
10. Eucalyptus Plantations Aracruz / Fibria Celulose, Brazil (Lucie Greyl), EJAtlas.
11. *ABREA (Associação Brasileira dos Expostos ao Amianto).* Uma tragédia socioambiental de proporções ainda ignoradas.
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12. Itatiaia Project for uranium and phosphate mining in Santa Quitéria, Ceará, Brazil (Grettel Navas), EJAtlas.
13. São Luiz do Tapajós hydroelectric dam, Brazil (Daniela Del Bene), EJAtlas.
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15. Landless peasants of 'KM Mil' against land grabbers in Novo Progresso, Pará, Brazil (Max Stoisser), EJAtlas.

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20. Working-class environmentalism

INTRODUCTION: THE MYTH THAT WORKING-CLASS PEOPLE DO NOT CARE ABOUT THE ENVIRONMENT

Because of the urgency of climate change policies, the so-called Just Transition (JT) has gained presence in the debate in the US. It offers solutions for the 'environment vs. jobs dilemma', the conflicting demands of economic production and ecosystem protection. The term JT emerged from the 1970s North American labour movement to become a campaign for a planned energy transition that includes justice and fairness for workers in the fossil fuel industries, thereby avoiding the collision between working-class movements and the environmental movements (Wilgosh et al. 2022). At present, trade unions often feel that they cannot afford to be "green" unless they have an assurance regarding the jobs that would be lost in a transition from coal to other forms of energy. In 2012, the withdrawal of coal subsidies in Spain was followed by a miners' general strike and the left of the political spectrum still showed their support for this environmentally unfriendly sector whose contribution to employment had shrunk. Employment in coal mining in Europe and the USA has decreased because of use of natural gas in electricity production, and because the techniques had shifted to open cast mining. The identification of the political left with coal-mining trade unions is part of social history of Great Britain and other countries.

Nevertheless, the points of conflict and also the points of coincidence between environmentalism and the trade union movement inside and outside the US are much older. Trade unions have long protected the rights of exploited workers and are protagonists of struggles throughout the world linking grievances on low wages and bad conditions of work to health issues. Much before there was a discussion on JT, there was a working-class environmentalism often centred on issues of health and safety at work, in particular in "company towns" holding mines, plantations and factories. Mining trade unions have fought against black lung (pneumoconiosis, silicosis) (Juan Liu 2021); industrial trade unions have denounced lead poisoning; farmworkers unions have fought against DDT, DBCP, chlordécone, malathion, etc. sometimes with the help of militant scientists, doctors and journalists (Barca 2012; Navas et al. 2022). Throughout this book several relevant instances of working-class environmentalism appear. In Tamil Nadu, we read about the claims against Unilever from workers and neighbours at Kodaikanal because of poisoning with mercury (Chapter 9). We also know the cases of Radio Corporation of America in Taiwan (Chapter 5), the asbestos in Bahia and Goiás, chemical pollution in Cubatao (Sao Paulo), Brumadinho iron ore tailings disaster in Minas Gerais (Chapter 19) and the Mitsui Miike coal mine disaster in Japan (Chapter 2).

In absolute terms, the number of industrial workers has never been larger than today, as also the number of accidents at working time. Related to environmental health conflicts (Navas et al. 2022), there is a vigorous working-class environmentalism evident for decades. In Spanish, the intersection of conditions of wage work, health and environment was recognized

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in the provisions for *seguridad e higiene* in labour regulations or collective contracts, similar to those of other countries. The words "security and hygiene" have an old-fashioned ring but the health risks at work, not only in industrial manufacturing but also in underground mining, plantation agriculture and energy production, have been growing.

This chapter critiques the myth that working-class people do not care about the environment. This is different, however, from saying that the waged working class are the main protagonists of the environmentalism of the poor and the Indigenous. Local environmentalist groups, peasants and Indigenous peoples are more present in socio-ecological conflicts than the trade unions. However, a pioneer of environmental history, Samuel Hays, specialized in urban environmental history and on the links between labour history and damage to health in urban contexts. He was the author of "The Response to Industrialism 1885–1914" (1995), and of two famous books: "Conservation and the Gospel of Efficiency" and "Beauty, Health and Permanence: Environmental Politics in the United States, 1955–1985".

In my own book *The Environmentalism of the Poor* (2002), some pages describe the working-class and agrarian alliance in Rio Tinto, Andalusia, complaining against the "smoke" from the smelting of copper pyrites that ended with a massacre of workers and peasants on 4 February 1888. It is one of the most salient conflicts against pollution from sulphur dioxide from copper smelting, that brought together mining workers (from an anarcho-syndicalist union), peasants and farmers, as well as their families. The present Rio Tinto company got its name from that investment in Huelva province. A trade union leader who managed to escape to Argentina, was Maximiliano Tornet (Chastagnaret 2017) (Figure 20.1).[1]

This transversal chapter contributes to the research on "working-class environmentalism", as a sub-variety within the environmentalism of the poor (Guha and Martinez-Alier 1997) as opposed to the so-called "post-materialist" environmentalism identified by Inglehart (1995). The research on working-class environmentalism has grown with authors such as Stefania Barca, Karen Bell (2020, 2021), Silpa Satheesh (2020, 2021) and Grettel Navas et al. (2022), who are sceptical about the "jobs vs environment" dilemma. They research social realities reinforcing "red-green" alliances between radical trade unions and environmental activists. There are hundreds of cases in which mining, industry but also agricultural workers and their families, have remained quiescent for decades while they lived in "company towns" or mono-industrial towns, absorbing large amounts of toxic waste in their bodies, but which have later joined claims for reparations and have been active as environmental defenders. Some types of working-class occupations, such as urban waste pickers who sometimes have formed trade unions, have indeed placed environmentalism at the centre of their grievances and claims.

In this chapter, we shall start with a case of badly exploited labour in a cobalt mine in Morocco, then lead in the blood in La Oroya, in Peru, followed by a clash with a Chinese company in a coal mine in Zambia. Then we shall describe the dilemma of "jobs vs environment" in the ILVA steel making factory in Taranto in Italy, followed by asbestosis in Casalemonferrato, also in Italy and other cases in America, South Africa, Kazakhstan and Algeria.

COBALT MINING IN BOUAZAR AND WORKERS' STRUGGLE, MOROCCO[2]

Cobalt is a metal used in the transition to electricity requiring batteries for storage. Thus, its price has been increasing. R. D. Congo has the largest known cobalt reserves, followed by

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Source: Wikipedia Commons

Figure 20.1 *The street named after the trade union leader Maximiliano Tornet in the village of Rio Tinto, Huelva, Spain*

China and Canada. Morocco is the twelfth biggest cobalt-exporting country because of its Bouazar (or Bou-Azzer) mine, 120 km south of Ouarzazate in the Sahara Desert. Morocco produced about 2,000 metric tons of the mineral per year in the last few years. In June 2020, the German automaker, BMW, announced its plans to buy cobalt for its electric vehicles from Moroccan mining company Managem in a five-year contract worth around €100 million. This is because of increasing demand and criticism of horrible working conditions in Congo. BMW said the deal would supply a fifth of the cobalt it needs for its electric cars production.

Meanwhile, 1,200 miners are working under very bad conditions in Bouazar, more than 600 m below the surface, without any safeguards against the risk of landslides. The unrest and strikes that took place in 2011 show one of the aspects of environmental justice: recognition of the trade union and participation in whatever collective agreements between the workers and the firm might be agreed upon. Recognition of the trade union is rarely an objective for its own sake – it is instrumental to reinforce the bargaining forces over the economic and environmental distribution of costs and benefits.

The Bouazar Cobalt deposit, situated about 34 km from Taznakht in the Ouarzazate governorate, was discovered in 1928 and 1931 and the exploitation of the mine started in 1942. In addition to cobalt, other secondary minerals including gold are being extracted by Compagnie de Tifnout Tiranimine (CTT), the exploiting company. This royal holding suspended its activity in 1983, resuming it four years later. Workers were offered their former job, this time

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through an employment agency, and a cycle of precariousness thus continued. They work in atrocious conditions. Deaths resulting from industrial accidents, landslides or electrocution are reported. The management denies all responsibilities associated with the rights of workers, allegedly manufacturing false certificates concerning the causes of death. In addition, workers do not get any compensation for the risks they are taking. Silicosis, a typical mine disease, is widespread due to lack of proper personal protection. With the complicity of the company's doctors, CTT often rejects the responsibility and refuses to pay the costs of treatment. First, the worker with ill health is assigned work at the surface. When his disease develops further, he is thrown into the street without any compensation. He is also expected not to protest or make any noise about his dismissal.

The careless exploitation of the mine also affects the limited water resources of the region. As a matter of fact, the mine uses (with no charge) vast amounts of water to operate, polluting and depleting the groundwater that is used for drinking, cleaning and irrigation.

As a response to this exploitation, and inspired by the surrounding protests in the region, miners staged a first two-hour strike and a full strike in April 2011. "Such an action was unthinkable", remembers one of the striking workers, later removed by the company. Sixty workers then launched a new union, affiliated with the Democratic Confederation of Labour (CDT). These miners worked for two subcontracting companies: Top Forage and Agzoumi. As job security is low, workers claimed the right to weekly breaks and paid holidays, compensation for working accidents, registration to social security and stable contracts.

After the new union was launched, the management started a campaign of repression combined with attempts to bribe the leaders, relocating the union activists to new jobs at distant places to separate them. Others were arrested by the police and stopped from entering the mine. In the face of repeated provocations, in May, workers and some trade union activists did a protest outside the headquarters of the Democratic Confederation of Labour, organized a march with the local branch of the CDT and went on several strikes, some lasting 72 hours. In October, almost 300 miners started a strike of 48 hours with occupation of the mine pit as a reaction to the failure to reach an agreement with the mine management. Workers also denounced the firing of 24 miners. With the support of the CDT, a general strike started after the arrest of eight workers, three of whom were condemned to five months in jail and a 5000 Dh fine.

This rebellion went on for about a year and a half, without many results. It ended with small gains: the distribution of protective masks for underground miners and delivery of professional cards. Some miners were suspended, others fired (Figure 20.2).

LA OROYA, PERU: LEAD IN THE BLOOD[3]

We will now look at two mining conflicts in Peru (Neyra 2020) not included in Chapter 17 in which trade unions have been deeply involved. They also present the dilemma "waged jobs vs environment and health". These are both cases of "company towns" showing that one cannot disentangle wages and conditions of work from health and other livelihood issues. In Marxist terms, a false development of "forces of production" (more mining and smelting of copper and iron ores, in the two cases under review) accompanies the undermining of what Stefania Barca has called "the forces of reproduction".

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Source: EJAtlas/Green News

Figure 20.2 "Your Majesty, Our Rights?"

The Spanish conquerors and friars of the sixteenth and seventeenth centuries organized campaigns of *extirpación de idolatrías* (literally, extirpation of idolatry) looking for and destroying remaining sacred images and places (*huacas*) in Peru. La Oroya and its smelter and chimneys could be a twentieth-century temple to the devils, the *supaykuna* of the mining industry that Peru built up since the 1920s. It has passed from one transnational company to the other over the decades. Supported by human rights organizations including Amnesty International, the National Platform of People Affected by Toxic Metals in Peru was created in 2017. Yolanda Zurita is a leader of that platform; she is from La Oroya and her own family suffered irreversible health damage. La Oroya is a city of about 33,000 inhabitants, located in the central mountain range in Junin. It is 176 km from Lima and is located at an altitude of 3,750 m.

The La Oroya metallurgical complex was built to process copper extracted from the Peruvian highlands. It began operations in 1922, in charge of the US Cerro de Pasco Mining Company until 1974. Recent owners of the La Oroya complex include Centromin, the state-owned company that operated the smelter from 1974 to 1997, and Doe Run Company, a subsidiary of the US-based Renco Group which faced sharp questioning from the community due to the continuous contamination from the refinery and smelter, slag deposits. La Oroya smelts and exports metal concentrates. Because metallurgical activity has been the main source of employment for a century, they have been exposed to high levels of air pollution from the

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toxic emissions, which include lead, cadmium, arsenic and sulphur dioxide. In mid-2000, La Oroya was identified as one of the ten most polluted cities in the world. Studies indicated that most children had elevated levels of lead in their blood. The percentage reaches 100 per cent in La Oroya Antigua, the area of the city closest to the complex.[4]

Because both the private company and the Peruvian State failed to comply with their obligations to prevent environmental impacts and respect human rights, in 2005, the Interamerican Association for Environmental Defence and other organizations asked the IACHR for protection measures. In August 2007, the IACHR ordered the State to adopt measures to protect the health, integrity and lives of a group of residents of La Oroya. Some parents of affected children attempted to file a class action lawsuit in the US. The various studies on the effects of metallurgical activity on the health of the inhabitants of La Oroya have been criticized as part of a campaign against the city. Part of the population considered that pollution and gas emissions had already decreased before 2009, defending the company's activity because it was the main source of employment.

In 2009, the government decided to halt operations at the La Oroya metallurgical complex due to financial and environmental non-compliance by Doe Run, which has large environmental liabilities also in the US. In 2013, the company announced that it would stop this smelter, citing rising regulatory costs. Pollution in La Oroya decreased when Doe Run left.

SHOUGANG IRON MINE, MARCONA, PERU: *ENTRE EL HIERRO Y EL MAR*[5]

A documentary film by Maga Zevallos shows the working conditions and environmental conflicts in Marcona, Peru. The Chinese company Shougang operates iron ore deposits located on the southern coast 530 km from Lima, in the province of Nasca in the Ica region. Plans are to increase the volume to 20 million tons of iron concentrates per year. Over the years, strikes have been followed by dismissals of union leaders, protest marches and promises of new industrial but also social investments. It is foreseeable that the site will become a desolate and polluted mining-industrial ruin like so many others. The director of the documentary, *Entre el hierro y el mar* (Between Iron and Sea), explores the relationship between mining and development, in a country that promotes extractive industries as one of its main economic activities. This is a "company town": the company is the main source of wages for the men, while the environmental and health damage are suffered by women, men and children. The local fishermen suffer the consequences. The pitiless business of mining for export went on during the Covid pandemic of 2020.

The documentary gives voice to local authorities and the inhabitants, who narrate what it has meant to live with the Shougang mine since the 1990s, with critical issues such as the territorial dispute, housing for workers, health conditions, absence of public policies and the violation of labour rights. The issue of jobs vs. environment appears clearly. This was one of the first Chinese investments in Peru. The documentary highlights Marcona's non-mining potential, such as fishing and the protected natural areas such as San Fernando and Punta San Juan's reserves, home to the largest breeding colony of Humboldt penguins in Peru, but also sea lions, guano birds and the majestic condor.

Shougang operates two projects in Peru, the Cobriza copper mine, the sixth largest in volume in the country, and the Marcona iron ore mine acquired in 1992 for US$ 118 million.

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Shougang has appeared in the international press as a dismal example of Chinese corporate behaviour in extractive projects. Shougang Hierro Perú S.A.'s metallurgical mining complex comprises three areas: the mine, from where, after the crushing process, the ore is stacked and then transported to San Nicolás by a conveyor belt approximately 15 km long and with a capacity of 2,000 tons per hour. In this area there is the Crushing Plant and the Magnetic Separation Plant: here the ore continues its grinding and concentration process through cyclones, magnetic separation and flotation, separating the sterile ore from the iron ore, which is then divided into two types of products, one called high grade iron concentrate for sintering and the other used to feed the Pelletization Plant, after going through a filtration process. The pier has a length of approximately 330 m, with the capacity to receive ships of large tonnage in its deep waters. The mining and processing of iron ore leaves large tailings and slag, and also a lot of energy is required for the exported materials. The mining camp and administrative offices are located in San Juan de Marcona, with a population of more than 16,000 inhabitants.

There have been numerous strikes and some strikers were killed by police gunfire. Thus, in 2012, Shougang faced a one-month strike called by the workers' union, in order to improve wages and working conditions. The union also denounced the poor conditions of waste management, which is discharged into the sea, polluting the waters and endangering marine life and the work of local fishermen.

COLLUM COAL MINE, ZAMBIA[6]

Working-class environmentalism by Zambian coal miners was confronted by violence to protect the activity of another Chinese company at the Collum Coal Mine, which was opened in the district of Sinazongwe in 2000. The company is privately owned, run essentially by five brothers of the Xu family from China's Jiangxi Province. Before clashes occurred between miners and owners in 2010 and 2012, the national Environmental Management Agency had issued several citations to Collum for severe air and water sources pollution. The Agency stated that Collum had paid the fines but refused to invest in more environmentally friendly techniques. Reports of labour difficulties and alleged beatings of workers by their local bosses were also made. Strikes had already occurred in 2006 and 2008. In 2009, an outbreak of cholera hit the mine. In 2010, villagers complained that coal effluents had been polluting rivers and lakes. Drinking water was declared unfit for consumption and sanitary conditions at the mines were criticized.

In October, hundreds of miners gathered outside a shaft to protest for higher wages. The situation escalated when the Chinese supervisors started shooting, wounding at least 13 miners. The injured were later paid settlements reaching from US$ 5,000 to 11,000. Charges against the supervisors were then dropped by the government of Zambia. Collum blamed the miners' union for the violence. The tensions between local miners and Chinese owners persisted and escalated once more when a protest took place in August 2012. During this turmoil, a Chinese manager was killed and 12 miners were taken into custody as suspects by Zambian police. The incidents sparked criticism and bad publicity for Collum. In February 2013, the government of Zambia seized the Collum mine, citing labour and safety violations and tax non-payments. The Zambian government would then operate the mine until a "suitable investor" was found.

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The protests shed light on the safety, environmental and labour conditions at Chinese mines in Zambia deemed to be worse than at other foreign-owned mines according to a 2011 report by Human Rights Watch. Zambian authorities acknowledged that Collum mine had failed to consistently provide employees with protective equipment or have emergency medical treatment facilities underground. Nevertheless, in April 2015, a spokesman for the Zambian presidency declared: "The government has decided to give back the mine to the Chinese firm after assurance that necessary measures have been taken to improve the operations".

ILVA IN TARANTO, ITALY: *AMMAZZA CHE PIAZZA*[7]

Save jobs or save the environment? Women and unwaged workers might have a different point of view from male waged workers. The company ILVA belongs to the Riva Group and one of its iron and steel plants is based in Taranto – a city that to some extent is a "company town". The plant is mainly dedicated to the processing and production of steel; it was built in 1960 and entrusted to Italsider for management.

In 1905, a joint venture of the Group Elba, Terni and the Roman family Bondi was signed and the company ILVA was formed. In 1921, the Banca Commerciale Italiana managed to take over the property and ILVA and all previously acquired iron and steel industries became property of the state, with factories in Genova-Cornigliano, Naples-Bagnoli and Taranto. After World War II, following the growing demand for steel, it was necessary to open a new plant in the city of Taranto. The 1980s, however, marked a deep crisis in the steel sector; the Riva family acquired the Taranto plant in 1995, named it ILVA again and led to its complete privatization. The plant became the cause of one of the major Italian environmental conflicts.

It was placed at the centre of a long and controversial debate on the protection of labour and the right to health. The first conviction for violation of the anti-environmental pollution rules came in 2005. In 2012, the Public Prosecutor's Office of Taranto ordered a freeze on all of the Riva family's Italian assets, including bank accounts and family's shares in Alitalia, the Italian airline, worth about €70 million. In addition to seizure of some facilities of the plant, some group managers and politicians were arrested.

The prosecution argued that the plant's level of pollution caused the deaths of thousands of people and unscrupulously contaminated the environment. However, the first order of seizure was followed by the issuance of seven government decrees that stopped the judiciary, although surveys established that all limits for dust and pollutant were exceeded. Epidemiological reports confirmed that the increase of deaths and of cancer was due to the ILVA environmental disaster. The seizure of the plant in July 2012 increased collective awareness with respect to the health risks. However, an internal clash arose; on the one hand, there was the attempt to protect health; on the other hand, the aim was to preserve the waged jobs of so many workers that made up 75 per cent of the economy of Taranto, in terms of jobs and GDP.

Waged work is not synonymous with useful, often unpaid work at people's homes or for the community. Some of these other workers, mainly women, were active in the mobilization some years before. In fact, in 2000, a group of former industrial workers, women, environmentalists and farmers, began to oppose the policies of ILVA. The *Comitato Donne per Taranto* (Women for Taranto) asked for epidemiological studies and a cancer register. Complaints were lodged and the first demonstrations were organized. The *Comitato Altamarea* managed

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to gather 20,000 citizens who requested clean air and manifested against the inactivity of the mayor of Taranto. The boys and girls of *Ammazza che piazza* put a lot of effort into cleaning and regenerating the green spaces in the city. Individual activists such as the founder and president of Peacelink asked for the analysis of a piece of cheese and he discovered the high values of dioxin contained in it; an ecologist examined the sea bottom presenting petitions to the Public Prosecutor's Office. Finally, a farmer forced to kill his cattle was able to show that the pollution could only come from the ILVA plant.

Therefore, the case reached national interest. However, the factory owners intimidated workers by threatening redundancies and dismissals due to the possible closure of the plant. Among the workers, some who decided to denounce irregularities and the lack of safety in the factory were fired. The unions did not take a clear position, asking the company to avoid layoffs and the Public Prosecutor's Office to maintain the productivity of the plant. Moreover, in December 2013, the European Commission intervened on the issue, opening an infringement procedure to the directive about industrial emissions.

According to environmental historian Stefania Barca,

> nowadays it sounds so familiar, almost natural: the mutually exclusive demands and apparently opposing agendas of labour and the environmentalist movement. But in fact, this artificial division is a crucial neoliberal strategy to divide two of the most powerful social movements of the industrial era, whose alliance could call into question the very essence of the capitalist "treadmill of production". It is thus essential that […]they become aware of the revolutionary potential of a common political project. (Barca and Leonardi 2018)

THE MARIKANA MASSACRE AT LONMIN PLATINUM MINE, SOUTH AFRICA[8]

The platinum mining corporation Lonmin, based in the UK, 25 per cent of which is owned by Glencore, had been denounced for its activities carried out in Marikana, Rustenburg, since 2004. Lonmin's activities exceeded the limits of emission of dust, sulphur dioxide and calcium sulphide and caused water pollution. South Africa is a main producer of platinum.

Lonmin's labour policies and practices had been strongly challenged by mine workers. In August 2012, 3,000 miners went on strike peacefully demanding higher wages. On August 16th, 34 workers were killed and up to 78 were severely injured in clashes involving the South African Police Forces and Lonmin's security guards, in what is often called the Marikana Massacre. It constituted the most lethal use of force against civilians by South African security forces since the end of the Apartheid era. The tensions around the massacre intensified once it was known that many of the victims were shot in the back and far from the centre of the confrontation.

A second strike, the longest in the history of South Africa, took place at the beginning of 2014, pursuing similar demands. This strike ended almost half a year later, when the workers signed a three-year settlement that partially increased the wages of the lowest paid miners. Lonmin had subsidiaries in the British Virgin Islands and Cayman Islands, avoiding taxation and engaged in transfer pricing, which also allows them to evade environmental liabilities and refuse the payment of appropriate wages. This has been tolerated by the government. The deployment of the national police force in the Marikana Massacre also evidenced the support of the government for the mining industry.

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Under national and international public pressure, the government set up the Marikana Commission of Inquiry (Farlam Commission). It sat from August 2012 and only concluded its work in March 2015. Among the participants were the families of the 34 deceased striking miners, together with the Association of Mineworkers and Construction Union (AMCU), who presented their testimonies. After three years of proceedings, which included a temporary withdrawal by the representatives of the families, President Zuma received the final report in March 2015. However, he delayed its release, which led to a public campaign to pressure him to do so.

Women in Marikana played a leading role demanding justice for the families affected by the massacre, and, since 2012, took regular actions to evidence the failures of both Lonmin and the government to provide housing and basic services to workers and their families. Members of the community have researched, monitored and publicized the pollution and environmental effects. Women have marched on the police to demand justice, have organized a local crèche and agricultural cooperative, and, in August 2014, organized a site inspection and public speak-out to highlight to the wider public the deplorable living conditions in Marikana.

In a hearing that was held in Geneva in June 2014, the civil-society Permanent People's Tribunal (PPT) listened to the testimonies of Joseph Mathunjwa, President of the Association of Mineworkers and Construction Union and Primrose Sonti, from the women's organization Sikhala Sonke. The tribunal also documented and recognized the actions of the transnational corporation as another example of violations of human and people's rights. Along the same line, the PPT recognized in this widespread practice the current shortcomings of international law.

By 2019 Lonmin was taken over by Sibanye-Stillwater, one of the biggest gold miners in South Africa. Sibanye-Stillwater also acquired in 2016 Rustenburg Platinum Mines from Anglo American as well as Aquarius South Africa, the owner of Kroondal platinum mine.

ZHANAOZEN OIL STRIKE AND MASSACRE 2011, KAZAKHSTAN[9]

The oil fields of western Kazakhstan, where the 2011 strike wave erupted, are the most significant source of the elite's wealth, and an important source of supplies for the international oil market. Kazakhstan is the second-largest oil producer after Russia among former Soviet countries. The state oil company Kazmunaigaz operates the largest oil field, Tengiz, together with American and Russian companies Chevron, ExxonMobil and Lukoil. The huge Kashagan field, offshore in the North Caspian Sea, is being developed jointly by Kazmunaigaz and big European and American companies. Chinese oil corporations play a significant part in onshore projects, and their influence has grown since an oil pipeline to China was completed in 2006. Total (from France) is also present in Kazakhstan. In the strike wave of 2011 in the oil and gas sector, the main theme was not so much "environmental" as the lack of recognition of labour unions.

In May 2011, thousands of workers from Kazakhstan's oil and gas sector started three separate labour strikes at companies operating in the petroleum sector in the western part of Kazakhstan. The strikes were directed against the three big government-owned companies operating in the area – Ersai Caspian Contractor LLC, KarazhanbasMunai JSC and OzenMunaiGas. Strikers were mainly demanding higher wages. The companies declined to examine the workers' demands. Local courts even declared all three strikes illegal because

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of the workers' alleged failure to comply with national legislation defining the requirements to conduct legal strikes.

Throughout the months of the strikes, more than 2,000 workers were fired altogether. Meanwhile, in Zhanaozen, around two dozen of UzenMunaiGas' workers also started individual hunger strikes demanding higher pay. The company refused those claims as "unfounded". Later that year, UzenMunaiGas brought the strike to an end on 16 and 17 December 2011, when clashes broke out between striking workers and police on the central square of Zhanaozen. Shops were looted and several buildings were set on fire. When the police opened fire, there were at least 12 confirmed deaths. A state of emergency was declared in the city and an investigation ordered.

During the next months, oil workers and other supporters who allegedly participated in the unrest were persecuted through criminal charges by governmental forces. In total, by March 2012, 37 oil workers had been tried for charges of organizing or participating in the protests. In June 2012, 34 of the defendants were convicted, of whom 13 were sentenced to prison terms.

ASBESTOS IN CASALE MONFERRATO, ITALY: A CASE OF CORPORATE SOCIAL IRRESPONSIBILITY[10]

Asbestos is a set of minerals from the group of inosilicates. The exceptional heat resistance of the fibre favoured a massive spread; it was mainly used to coat or replace flammable materials. In 1901, Ludwig Hatschek patented cement-asbestos that for its high resistance was then named Eternit. A year later, Alois Steinmann, bought the licence for its production and, in 1903, started to produce it in Niederurnen at the Schweizerische Eternitwerke AG factory.

In 1907, the 94,000m^2 Eternit plant of Casale Monferrato (between Turin and Milan) was created by Italian engineer Adolfo Mazza. It employed 1,000 people in the 1950s, rose to about 2,000 in 1965 and stabilized at around 1,000 until the 1980s. Everything was done by hand in a highly dusty environment. The struggle of the workers and citizens can be summed up in three phases. The first phase goes back to the 1960s when, facing heavy working conditions, low wages and very few trade union rights, workers reported problems related to the work environment to claim and obtain a higher salary. In 1961, trade union agitation resulted in complete closure of a bridge and clashes with security forces and arrests. Despite this, the company continued to minimize health risks.

The second phase of the struggle took place between the end of the 1960s and 1977. With the "Hot Autumn" of 1969–70, with many large strikes in the factories of Northern Italy, the engagement of trade unions (especially the CGIL) about the Eternit cases was stronger. In Casale Monferrato, the struggles were oriented to health protection in the face of lung diseases. In 1977, there were the first scientific data on environmental impact and installation of the first vacuum systems with filters to contain the dust and prevent its spreading throughout the territory. In 1981 began one of the most emblematic civil cases, filed by 80 workers. In 1986, all establishments of Eternit on the Italian territory closed down.

A year later, Eternit France proposed to reopen the factory but the Chamber of Labour (supported by medical and environmental groups) strongly opposed this, proposing instead the reparation of damages. The third phase saw the birth of the Association of relatives and victims of asbestos in 1988. These were years of struggle for asbestos ban, large demonstrations

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and sit-ins against the institutions. Numerous complaints were made to the Magistrature of Casale in the late 1980s and in the 1990s. Epidemiological investigations were kept in storage for a few years.

It is estimated that there were 23 million tons of materials of asbestos cement disseminated throughout Italy. The diseases caused by the inhalation of asbestos dust are characterized by long latency periods (up to 30 years), and among them are asbestosis, lung cancer and pleural mesothelioma. In Casale Monferrato, there were 3,000 cases of occurrence of asbestosis and pleural mesothelioma among former workers at the Eternit plant and ordinary citizens, and the confirmed victims are 2,200. This was a clear case of "slow murder" or "silent death".

It took a long time but in March 1992 the state enacted Law 257 prohibiting the extraction, importation, processing, use, marketing, treatment and disposal, as well as the export of asbestos and products containing it in the national territory. The site of Casale Monferrato, with its total population of 85,000 inhabitants, became a very large contaminated area requiring remediation of soil, subsoil and/or surface water and groundwater to avoid environmental and health damage, therefore classified as a Site of National Interest. The project included the reclamation of the so-called *polverino,* removing covers of cement and asbestos. The remediation measures began in 2000 and were only completed in 2006.

In 2009 began the trial of Stephan Schmidheiny, former chairman of the board, and Louis de Cartier de Marchienne, director of the company in the 1960s. They were held responsible for mesothelioma deaths occurring among employees and citizens of Casale. In February 2012, the Court of Turin sentenced them to 16 years of jail for "intentional permanent environmental disaster" and "voluntary omission of accident prevention", forcing them to compensate about 3,000 plaintiffs. In June 2013, the punishment was "partially reformed" and increased to 18 years. But, in the appeal of November 2014, Schmidheiny was acquitted. In May 2019, the Turin court sentenced him to four years in prison in one of the asbestos-related death cases in Italy. Schmidheiny, who would deserve a Nobel prize in Greenwashing, was chairman of Anova Holding AG and was named Principal Advisor for Business and Industry to the Secretary General of the 1992 UN "Earth Summit" in Rio de Janeiro. He created the World Business Council for Sustainable Development. The concept of "corporate social irresponsibility" is developed further in Chapter 27.

IN ALGERIA, OIL AND GAS: LABOUR AND CIVIC CONFLICTS WITH SONATRACH[11]

Somewhat different from the case of Ain Salah (Chapter 27), where there are water issues for gas fracking in the midst of an oasis in a desert, here the Algerian conflicts are related to opposition to oil and gas exploration and extraction (including fracking), frequently also linked to demands of employment for young people.

Much energy is exported from North Africa (and the Gulf of Guinea, Chapter 14), and there is relatively little employment and local economic benefits in this industry. Moreover, the importing countries welcome such cheap and essential bulk commodities while they prevent human immigration. Oil and gas are welcome and people are not. This tension has geopolitical international dimensions, but there are also local conflicts. One of the places where the oil and gas industry has seen local complaints in Algeria is Hassi R'Mel. This is Algeria's largest natural gas field, discovered in 1956 alongside the Hassi Messaoud oil field, and has been

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operated by state-owned company Sonatrach ever since. Production of natural gas started in 1961, and Algeria became the first country to export liquefied natural gas (LNG) in 1964.

Workers and unemployed youth have been largely unsatisfied with the working conditions and practices of Sonatrach in Hassi R'Mel, as well as with their respective company trade unions. Since 2010, they have been protesting their working conditions and the generally high unemployment rate by organizing hunger strikes, blockades and boycotts. In 2010, a group of young unemployed people went on a hunger strike for a week in order to protest unemployment and against favouritism in employment procedures. At the end of 2011, almost 2,000 workers of Sonatrach living in the Hassi R'Mel region went on a hunger strike and decided to boycott all the reunions and activities of their company's trade union. They were demanding a 50 per cent salary raise. After a lot of protests, a salary agreement was finally concluded between the general directorate of Sonatrach but was not enough for workers.

In 2013, another group of Sonatrach workers went on a hunger strike to demand better working conditions. To support their colleagues, more than 400 resident workers of Sonatrach living in Hassi R'Mel staged a protest outside the company's production directorate administrative complex. The conflict between Sonatrach and local resident workers as well as unemployed youth groups continues, as concessions made were deemed to be unsatisfactory.

Algeria is the sixth-largest gas exporter in the world, with more than 90 per cent of its pipeline exports going to Spain (34 per cent), Italy (27 per cent), and other European countries. It is also the third-largest source of gas imports to the EU, accounting for 14 per cent of gas imports and 10 per cent of total consumption. By pushing for long-term exports of gas in a context where the Algerian public is excluded from decision making and benefits are largely reserved for the regime's elite, the EU is pursuing a "gas grab". As Hamza Hamouchene (2016) puts it in a report for the Rosa Luxemburg Foundation:

> Words like "cooperation", "integration", as well as expressions such as "tapping Algeria's huge unexploited reserves" and "diplomatic energy action plan" are all euphemisms for the EU's aggressive attempts to grab more Algerian gas while ignoring the Algerian people's will and, in the case of shale gas, their grievances and preoccupations regarding their water and environment.

The geopolitics of gas exports from Russia to Europe make these conflicts still more relevant. It is obvious however that the workers in Sonatrach, and the migrants and their families risking their lives across the Mediterranean, are of a different social class than the directors of Sonatrach and the governments and electrical companies in Europe that burn the gas.

COCA-COLA VIOLATES LABOUR RIGHTS, COLOMBIA[12]

Coca-Cola arrived in Colombia in 1940 through several bottling companies jointly under the name Indegasa S.A. This was bought in 1995 by Panamco Beverages Inc., although Coca-Cola kept 25 per cent of the shares. Likewise, in 2003, Panamco was acquired by Coca-Cola Femsa S.A. Through this subsidiary network, as in multinationals of such size, Coca-Cola keeps the property of the brand and the control of production but avoids some responsibilities. Coca-Cola has been the target of a lot of criticism for the environmental impacts of their actions, among which are the waste and contamination of large quantities of water and the high concentrations of sugar in their drinks. But the biggest controversy in Colombia is related to the constant violation of labour rights.

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The workers of Coca-Cola are represented by the union Sinaltrainal, which was founded in 1982 to group the workers of several transnational corporations. By then, Colombia was already considered one of the most dangerous countries for trade unionists, who are often killed. The conflicts between the company and the trade union members started at the beginning of the 1990s. In 1996, violence intensified when the paramilitary entered the headquarters of the union in Carepa and started a fire on the same day that the local general secretary of the union was assassinated in the factory.

The protests of the workers regarding the labour abuses, such as extension of the workday, forced subcontracting or massive layoff of workers, have been answered with assassinations, death threats, illegal detentions and criminalization of members of the union. In conclusion, the objective of the administration of the transnational company has been to prevent union affiliation, for which they have developed campaigns for the stigmatization of the members of Sinaltrainal and have militarized the repression to protest. Here again, there is a case of lack of recognition, previous to the acceptance of claims by the trade union on labour or environmental issues. Nancy Fraser, Alex Honneth (1995, 2001), David Schlosberg (2007, 2013) and others have often remarked that environmental or social justice implies recognition, participation and a fair distribution of different sorts of costs and benefits (environmental, cultural or economic). Recognition of trade unions and participation in negotiations (and respect for signed collective agreements) is instrumental in achieving a more just distribution. Killing trade unionists, breaking up strikes by bringing scabs in, and similar methods for dealing with labour unrest, are direct attacks on recognition and participation in order to avoid the discussions on distribution of stable jobs and better wages.

Coca-Cola benefited from the political instability of Colombia. The transnational not only profits from special Free Economic Zones or favourable accords. For instance, in 2004, with the consent of the Ministry of Labour, the statutes of Sinaltrainal were revoked to impede the affiliation of new workers. The Constitution of Colombia was infringed. Furthermore, the absence of an effectively independent judicial power hindered the prosecution of the crimes committed against workers. In fact, out of the 11 cases of Coca-Cola workers who have lost their lives in the conflict, the perpetrator has been condemned only in one.

Moreover, the deeply rooted armed conflict in which Colombia has been immersed was used by the anti-union sectors. In several instances, the company and the State have blamed the workers for being active in politically illegal activities. This is what in the Philippines goes under the name of "red-tagging". Coca-Cola supported the State security forces. The workers of Sinaltrainal have had to defend themselves against uncountable accusations, lawsuits, trials and even detentions. In 2001, a lawsuit against Coca-Cola was presented before a judge of the District Court of Miami, US, demanding a compensation of up to US$ 500 million for the assassination of three workers. The Court rejected the lawsuit against The Coca-Cola Company over matters of jurisdiction. Soon after the initial verdict, the union tried to launch a global campaign to boycott the company's products.

On the other hand, both sides of the conflict attempted to involve the International Labour Organization. In 2007, Sinaltrainal presented a complaint to the Committee of Freedom of Association, who gave a series of recommendations to the Government and the company to secure the rights of the workers. More recently, the European Centre for Constitutional and Human Rights – together with the *Colectivo de Abogados José Alvear Restrepo* and the *Central Unitaria de Trabajadores de Colombia* – submitted a Communication to the Office of the Prosecutor of the International Criminal Court where several cases of the

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assassinations of members of Sinaltrainal were included. Furthermore, the Inter-American Commission of Human Rights dictated on numerous occasions precautionary measures to protect some of the union members. In a hearing in Geneva in 2014, the Permanent People's Tribunal (PPT) underlined once again how Coca-Cola systematically violates human and peoples' rights. Along the same line, the PPT recognized the current shortcoming of international law, namely the impossibility of accessing justice and obtaining a remedy, as well as the need to achieve a binding treaty on transnational corporations, in order to hold them accountable for their actions.

YELLOWKNIFE GOLD MINE AND ARSENIC POLLUTION: INDIGENOUS AND WORKING-CLASS ENVIRONMENTALISM[13]

Gold was first discovered by prospectors in 1896 in the Yellowknife region of North West Canada, a bit south of the Arctic Circle. The area was considered inaccessible, until the arrival of commercial aircraft in 1935. The gold boom began. By 1937, Giant Yellowknife Gold Mines Ltd was created, but came to a standstill. World War II meant a shortage of men to work. Soon after the war, Giant Mine officially opened and production moved into full swing. Eventually, production reached seven million ounces of gold. However, this also led to a legacy of contamination, and also to bloody episodes of class struggle in 1992, when several workers were killed by a bomb meant to frighten scabs during a lockout. Royal Oak Mines managed the Yellowknife mine. The trade union of Smelter and Allied Workers refused pay cuts, and also complained of lack of safety. The company locked out the union and flew in strike breakers.

All this took place in a territory originally belonging to the Yellowknives Dene First Nation, who are now active in the attempts to clean up the arsenic trioxide waste. Gold at Giant Mine was found in specific minerals called arsenopyrite ore. To release the gold, the ore had to be roasted at extremely high temperatures, releasing arsenic-rich gas, a highly toxic by-product that in the early days was released directly into the environment. This was partially addressed in 1951, with the installation of a Cold Cottrell Electrostatic Precipitator. Further waste reducing innovation was then added to the site. Scientists and government agencies agreed to store it in underground chambers, as if this was an appropriate, long-term solution. They believed that, when Giant Mine closed permanently, the natural permafrost would re-establish around the storage vaults and seal in the arsenic trioxide.

Giant Mine was in full operation for about 50 years, during which it produced 237,000 tonnes of arsenic trioxide waste. Yellowknife provides an excellent example of delayed working-class environmentalism. "By the 1970s, workers and residents in Yellowknife were increasingly suspicious that the arsenic released as a by-product of gold mining was responsible for the recently perceived rise in local cancer rates. Yet their convictions were dismissed by government officials". The Yellowknives Dene First Nation became allies in this struggle.

There are very large environmental liabilities. Giant Mine was owned by different companies over the years. In 1997, a technical workshop was held to discuss managing the arsenic trioxide waste stored underground at the mine. By 1999, however, the company went into receivership. The courts transferred Giant Mine to the Government of Canada, represented by Indigenous and Northern Affairs. Ore was no longer processed after 1999. However, in that year, Canada sold the mine's assets to Miramar Giant Mine Ltd. As a condition of the sale,

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Canada acknowledged Miramar would not be liable for the existing state of the mine. This meant Indigenous and Northern Affairs Canada became a caretaker for the site, including the arsenic trioxide stored underground. Miramar Giant Mine Ltd ended its obligations under the Reclamation Security Agreement in 2005. At that time, Giant Mine officially became an abandoned mine site.

However, the area is still contaminated with arsenic. While the gold produced might have been worth two billion dollars, the costs of the remediation and the compensation to the Yellowknives Dene nation and other victims might be estimated already at one billion dollars. As in many other cases, the environmental liabilities (to the extent that they can be estimated in money terms) are larger than the revenues obtained. The industrial capitalist system is a system of cost-shifting, as K.W. Kapp wrote in 1950 when the Giant Mine was coincidentally getting into full swing.

ESSENTIAL WORKERS: DELHI URBAN WASTE PICKERS' UNIONS[14]

Urban waste pickers (Demaria 2023) are to a large extent self-employed workers, often working indirectly for formal or informal firms that recycle part of the waste collected. Waste pickers have sometimes formed unions to assert their rights to the materials they recycle and to ask for better conditions of work and improved hygiene. In 2020, on Global Waste Picker Day (1 March), a Barcelona Research Group on Informal Recyclers – in collaboration with the EJAtlas, the Global Alliance of Waste Pickers and WIEGO (Women in Informal Employment: Globalizing and Organizing) – released a thematic map of about 80 socio-environmental conflicts in the global South related to informal recyclers, whose livelihoods are put at greater risk due to a policy shift towards waste management privatization, including incineration that limits their access to recyclable matter.[15] WIEGO is a network focused on empowering the working poor, especially women, in the informal economy.

In the Covid pandemic of 2020–21, the concept of "essential workers" was used around the world for doctors and nurses, food distribution workers, urban waste disposal workers… not necessarily the best paid or most prestigious occupations. If confinement was required, these workers were entitled to move around to save lives and clean up the waste. In Delhi, a public art mural project was created with the help of communities from the Street art NGO St+Art, The Fearless Collective, Chintan and Engendered Art Gallery. The murals depict images from waste pickers' daily lives featuring women working across the backdrop of Delhi's monuments (Figure 20.3). Their lives matter.

In 2019, Delhi generated about 11,000 metric tons of garbage every day, from which about 3,000 tons were brought to Ghazipur, and the rest to Okhla (South Delhi), Bhalswa (North Delhi) and a newer landfill in Narela Bawana (North Delhi). In Sukhdev Vihar, near Okhla, residents filed a case in the Delhi high court against the Okhla waste-to-energy plant. The report claimed that an untested and unapproved Chinese incinerator technology was being used. The case was transferred to the National Green Tribunal (NGT) in January 2013. Representatives from the Delhi government failed to appear before the tribunal. The Uttar Pradesh government also objected to the waste-to-energy plant which is running within the 10 km eco-sensitive zone of the Okhla Bird Sanctuary without the approval of the National Board for Wildlife. Waste recyclers grouped in a union were against this incinerator that

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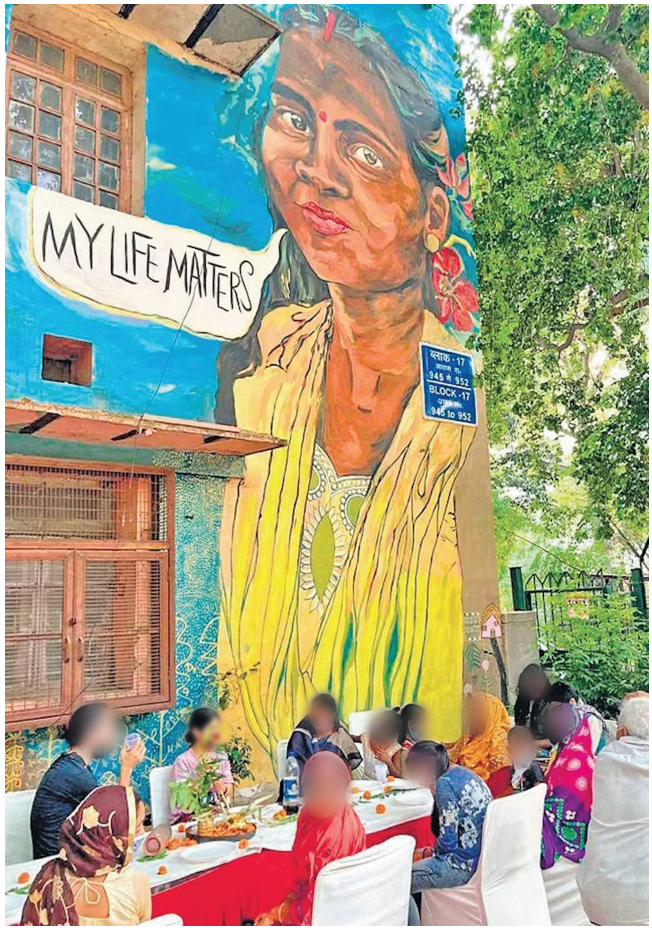

Source: The New Indian Express, 21 October 2020

Figure 20.3 *Waste pickers in Delhi, commensality at a dinner in their honour in Covid times*

would deprive them of the means for their livelihood. There was also a confluence of urban middle-class dwellers concerned about risks of dioxin and nature conservationists.

Metabolic contestations in cities in the global South – and waste conflicts in particular– involve struggles over values and livelihood as well as health and well-being (Demaria and Schindler 2015). There has been an increased role for the private sector in the various stages of waste management in cities. Delhi has been at the forefront of this shift and this brought out conflicts over collection and disposal of waste. It was argued that the informal sector should be incorporated into an efficient and equitable waste management system that is also environmentally sustainable and does not damage the recyclers' health. Instead, the incinerator in Okhla is now in operation.

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The case of Okhla ran in parallel to that of another smaller incinerator in Ghazipur. In India, industrial incineration of urban domestic waste is quite new. On the other hand, the case is also similar to cases in cities in which unions of urban waste recyclers successfully oppose privatization and incineration of waste defending their livelihoods while rightly claiming that their task provides environmental benefits. In Delhi, trade unions have been actively demanding continuing access to urban waste faced with privatization and incineration, such as All India Kabaddi Mazdoor Mahasangh, Safai Sena, Delhi Kabaddi Mazdoor Sangh and Green Flag. These unions organize rallies and demonstrations, and their demands have targeted local officials and private firms. Their effectiveness is however limited.

Demaria and Schindler (2015) quote several comments of waste pickers typically understanding the conflict as a struggle for their livelihood: "Since we don't have any other work, we are forced to do this filthy work. We are forced to pick up this waste. Still the government is trying to force us out. They want to produce electricity by burning our livelihood". "The work of the waste-to-energy plant is to burn things. They know that [inert and organic] waste never burns. They are trying to burn things [recyclable material] from which we earn our living. Therefore, we are opposing the waste incineration plants". They know that the "metabolic configuration" of the waste might make incineration more difficult, and how the companies deal with this. Nevertheless, waste-to-energy plants are perhaps to become the cornerstone of Delhi's waste management system. Apart from the two operational plants in Okhla and Ghazipur, more are planned. While waste pickers' main objective is to maintain access to waste, middle-class residents envision a metabolic configuration and waste disposal methods that insulate them from waste and from the risks of incineration.

The NGT heard the Okhla WTE case from 2013 to 2017. During its course, the bench made several observations regarding the risks the plant poses to public health, the environment and the violations in the environmental clearance's terms and conditions. However, the tribunal ruled in favour of the incineration. In other words, who has the power to allow or exclude valuation languages different from cost-benefit analysis or sustainable development? Shouldn't the precautionary principle prevail? Which is the metric used to compare costs and benefits to different social groups and interests, to different generations, indeed to different species?

CONCLUSION: WORKERS' TRADE UNIONS AS SOCIO-ENVIRONMENTAL DEFENDERS

In writing this book I am often in known territory, as I have visited a few of the sites of the conflicts and/or I have written or read about them. However, sometimes I find entries that I had never read before or I had forgotten about, and I am shocked at the different forms of violence that they show. One of them is the entry on the Bouazar cobalt mine belonging to the company Managem controlled by the Moroccan royal family's holding company, Al Mada. One senses a lot of structural, slow, daily violence in the available description, and lack of political power from the exploited workers. Trade unions have long fought for recognition, as in several of the conflicts in this chapter (in Algeria, Kazakhstan and elsewhere). Recognition is previous to the substantial claims on distribution, as happens also with peasant and Indigenous communities. Killing trade unionists is a direct attack on recognition and participation in order to avoid the discussions on distribution of stable jobs and better wages.

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Claims for recognition of trade unions and the ad-hoc organizations looking for redress usually occur before reparations are discussed. In the Collum coal mine in Zambia, there was on the contrary a lot of open violence – a sudden explosion of working-class activism that encountered very violent repression. The iron ore mining conflicts of the Shougang company in Marcona, Peru, illustrate sadly well the dilemma "waged jobs vs. the environment and human health" as also the conflict on the steel factory in Taranto. In the asbestosis case in Casale Monferrato the concepts of "silent violence" or "slow murder" are central. Working-class environmental conflicts are often linked to health issues (Navas et al. 2022).

What do we mean by "working-class"? Some categories of participants in environmental conflicts listed in Figure 1.5 (Chapter 1) are clearly "working-class", though not always waged workers. They are industrial workers, members of trade unions but also landless peasants, farmers, fisherfolk, informal workers, artisanal miners, pastoralists and urban waste pickers. They could be members of social movements and EJOs. Any individual person may belong to more than one such category, perhaps two or three.

Environmentalism has not been a main concern of the waged working class. This is shown in the EJAtlas where peasants, farmers, Indigenous peoples, neighbours and citizens are more frequent. However, history shows abundantly that working-class trade unions, and in general working-class culture, was not and is not only concerned with remuneration of waged work. The role of the CNT (*Confederación Nacional del Trabajo*) in the short-lived revolution of 1936 in Spain (depicted for instance in some pages in Orwell's *Homage to Catalonia*) or the role that trade unions still have in the British Labour Party, show that they can and do become involved in all spheres of life, including politics. So, the answer to the question, "Do trade unions and in general the working-class become first-line actors in environmental conflicts on the side of defence of the environment?", is yes, but only sometimes. In a majority of the conflicts recorded in the EJAtlas, the industrial working class and the trade unions are nearly absent.

In the Fordist period in the West (1945–75), which was also the period of triumph of the ideology of development in the ex-colonial countries and of consolidation of the Soviet Union, the environmental challenges to "economic growth" were not so crucial as today. The concentration of CO_2 in the atmosphere was increasing but this was not yet important news until the 1980s. M. King Hubbert had warned about "peak oil" but was disregarded. Rachel Carson had also warned in 1962 about the perils of DDT but this remained a marginal preoccupation. There were no common strategies and actions between environmentalists and labour movements. "Environmentalism" meant the "cult of wilderness". Of course, there was awareness of risks to health from new chemical technologies and nuclear energy, and alarm at the pressure on emblematic species. But "third world" movements over water use, forest access or pollution burdens and manifestations of "ecologically unequal exchange" only began to see themselves as "environmentalist" in the 1980s and 1990s, with the Environmentalism of the Poor.

Working-class or "blue-collar" environmentalism existed but it was scarcely noticed. "Blue-collar" seems to come from the worker's blue overalls. In Spain, *El Mono Azul* was the title of a periodical published on the Republican side during the Civil War of 1936–39 under the auspices of the Alliance of Antifascist Intellectuals for the Defence of Culture. Blue overalls and Red politics came together. Also, Blue and the Red-Black of the anarchist flag came together. Recently, in Canada and the US, there are attempts to organize Blue–Green Alliances, combatting the widespread notion that environmentalism costs jobs, advertising in favour of "the job-creating potential of environmental solutions".

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In the proposals on "just transitions" away from fossil fuels, the cooperation of trade unions based on promises of millions of "green jobs" is often sought after. However, working-class people often criticize raising taxes on fuels such as diesel – as with the "yellow vests" in France in 2018–19. The perceived unfairness led to refusal of such environmental policy by disempowered rural, working-class people. The demonstrators quite often said that they were aware of climate change but the taxation adopted was wrong. In fact, the *gilets jaunes* held a variety of opinions on the environment.

How to bring together "Blue" and "Green"? One crucial issue is to perceive that capitalist profits do not come only from the exploitation of waged work. They come from the surplus from nature, and from the depredation of nature. They come also from unpaid domestic work. However, the "waged jobs vs the environment" trade-off is seen as a point of tension in the relationship between trade unions and green movements across the globe. Blue-collar workers do not want to sacrifice jobs to the environment. Can we assume that the rule is that working-class people are concerned with jobs, wages and work conditions, and are uninterested in environmental issues and values? In the EJAtlas quite often claims for reparations for damages to health appear in the cases involving working-class participants (Navas et al. 2022). This is because waged jobs and salaries can be obtained not only at the cost of the natural environment but also at the cost of human health and the necessary material means of life, such as water, air and uncontaminated food. The human bodies of workers and their families are part of nature. The materiality of political ecology includes those bodies, whether healthy or ill.

More cases of working-class environmentalism from Asia (women in textile factories in Bangladesh or workers dangerously dismantling ships on beaches in Asian countries, for instance) could be added. In conclusion, I come back to one of Stefania Barca's articles with the title "Environmentalists and workers of the world, unite!",[16] inspired in part by her youthful memories of the Italian Communist Party and her own lived experience in the United States, Brazil and Europe. She asks for a common strategy of two of the most powerful movements of the industrial era: the environmentalist movement and the working-class movement. She acknowledges that this alliance is difficult because of the "waged jobs vs. environment" dilemma, but many possibilities are open. And she would certainly agree that Feminism is an even more powerful social movement, and not leave aside peasants and Indigenous peoples. Anti-racist, anti-colonial movements and sexual freedom movements (closely allied to Feminism) also count among "the most powerful of the industrial era". They are growing.

After 1871 and the Paris Commune, the verses of the International proclaimed (in the original French), *C'est la lutte finale / Groupons-nous et demain / L'Internationale / Sera le genre humain.* Not only the industrial proletariat, a new and growing social class, but all or most of humankind, *le genre humain*. The International remains a rousing song but it was a failed political attempt to bring together Marxists (who moreover in 1914–18 split into social-democrats and Leninists, and other groups), Anarchists (who were expelled) and pro-peasant Russian populists. The workers of the world did not quite unite, particularly because German and French socialists went to war in 1914, killing each other instead of proclaiming an indefinite general strike for peace on the first day of the war. And, outside Europe, many workers were subject to coloniality and racism.

Since the end of the 1980s I have often written about the "environmentalism of the poor", which I now call more often the "environmentalism of the poor and the indigenous" (Indigenous participants appear in about 40 per cent of the conflicts recorded in the EJAtlas).

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The protagonists of the environmentalism of the poor and the Indigenous are not so clear-cut in social class terms as the "proletarians of all lands". They include many other groups of people apart from the waged (or unemployed) industrial "working class": peasants and farmers, landless labourers, fishers and pastoralists, urban waste pickers, local and international environmentalists, Indigenous and other ethnically discriminated peoples, local neighbours and citizens, scientists and professionals, and even religious groups.

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21. Agrarian justice and human ecology

BACKGROUND: SOCIAL METABOLISM, ENERGY FLOWS AND AGRARIAN STUDIES

Here is another thematic chapter on peasant environmentalism. The metabolic view of agriculture, forestry, pastoralism and fisheries opens up many new perspectives on socio-ecological conflicts. Here I shall focus on only a few: CAFOs, pesticides in agricultural plantations, deforestation, eucalyptus and oil palm plantations, "carbon capture", land and water grabbing, also some conflicts on the electrical transition and hydroelectric dams.

The "eco-modernists" argue that humans should protect nature by developing technologies decoupling economic growth from environmental impacts. This is recognized also in the UN Sustainable Development Goal number 8 that calls for economic growth everywhere, as if this was "sustainable". Eco-modernism is another name for "the gospel of eco-efficiency", a political current indifferent to the value of "wilderness" and strongly opposed to "the environmentalism of the poor and the indigenous". "Eco-modernism" is not new to agrarian studies. Technical improvements are supposed to increase crops and simultaneously help the environment. In 1840 Liebig lamented that large-scale commercial agriculture sending products to distant markets did not return the nutrients to the soil. He was alarmed by the possible exhaustion of guano deposits from Peru (because of the high rate of extraction in that commodity frontier in 1840–80), and he proposed the introduction of chemical, factory-made fertilizers that would provide nutrients to the fields of Europe. He had himself researched some of the biochemical cycles. When we take energy into account (Georgescu-Roegeny 1971, 1975), the "circularity gap" of modern industrial urbanized economies based on fossil fuels becomes much larger. We could say, *Kreislaufwirtschaft ist eine Illusion.*

Liebig was an "ecomodernist" pointing out to the "metabolic gap" in the nutrient flows in agriculture (Foster 2000) and he wanted to mend it. Many years after the introduction of Chilean nitrates in 1880, the fantastic boom of the fertilizer industry in the early twentieth century and the Haber–Bosch process discovered in 1914, we now complain of excessive nitrogen in water tables, eutrophication of water bodies and at the same time the gradual exhaustion of phosphorous deposits. We also learnt (Odum 1971; Pimentel et al. 1973) that modernized agriculture relying on increased fertilizers and other inputs of fossil fuel energy meant a decrease in the EROI of agriculture (Martinez-Alier 2011; Yasin 2022). Agriculture is a system of conversion of sun energy and other inputs of energy including human work into the kcal content of crops and other by-products such as milk, dung and straw. Podolinsky in 1880 was one of the first authors to quantify the energetics of agriculture as a system open to the entry of sun energy and other inputs, gaining Vernadsky's admiration for it (Vernadsky 1924; Martinez-Alier 1987, 1990). Food provides the kcal that humans need per day (about 8 to 10 megajoules) and that allows them to work. Unfortunately, Podolinsky's calculations did not meet with Engels' approval (Fomičev 2014) – as discussed again in Chapter 30. We now realize that the EROI, i.e. the efficiency of this transformation of energy, declines the

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more capitalized agriculture becomes, and this illuminates the "Biofuel Delusion" or "The Fallacy of Large Scale Agro-Biofuels Production" (Giampietro and Mayumi 2009).

The metabolic view of the agricultural economy has become well known after 1970 (González de Molina and Toledo 2014). We can speculate on what Marx would have thought of declining EROIs and increasing HANPPs (Krausmann et al. 2013). It is impossible to say. What we know is that the outstanding Marxist writers of the early twentieth century (Kautsky in *The Agrarian Question* and Rosa Luxemburg in *The Accumulation of Capital*) did not put the quantitative study of social metabolism at the centre of their preoccupations.

The discussion of the EROI of agriculture supports the Narodnik positions of the Via Campesina (Martinez-Alier 2011), bringing together the "agrarian question" and the "socio-ecological question". Can you imagine the sensation if a fourth or fifth draft of Marx's letter to Vera Zasulich were to be discovered (Shanin 1983), saying "Dear Vera Zasulich, I have been thinking of agriculture as a system of conversion of energy, and how the positive EROI of peasant agriculture is an argument favourable to your Narodnik views"? But perhaps it was still too early (Franco 2019). The opposition between, on the one side, the Chayanovian view of the persistence of the peasantry (Georgescu-Roegen 1960) and, on the other side, both the mainstream economic view and the Leninist view on the obsolescence of the peasantry, cannot really be interpreted as an opposition between ecological and economic thinking. Chayanov could have been a proto-ecological economist; but he was not – perhaps his early death (as a victim of Stalin) gave him no time to properly study the energetic and material metabolism of agriculture. An ecological argument in defence of the peasantry could have been made, as Netting did later (Martinez-Alier 1995c).

CAFOS IN EUROPE AND THE USA

A definition of CAFO is a concentrated animal feeding operation with more than 1,000 animal units (which equate to 1,000 heads of beef cattle, 700 dairy cows, 2,500 pigs weighing more than 55 lbs, 125,000 broiler chickens or 82,000 laying hens). The opposition to CAFOs adds novel factors to the "agrarian question" centred on the ownership of land, the forms of land tenure and use and exploitation of labour, the persistence or disappearance of the peasantry and the land reforms. New questions are: Should we consume so much meat? Are we blind to animal suffering? Are we worried about the impact on human health that such concentrations of animals bring about? How is the HANPP increased by the feedstuffs for so many animals and how does this impact on the biodiversity? Are the excrements from animals being recycled? Here we are more in the terrain of Food Regimes (McMichael 2013) than of the traditional Agrarian Question. The environmental and human health issues gain relevance (Weis 2013).

The political ecologist Paul Robbins (2019) famously praised CAFOs as impressive enterprises of milk and meat production. In a debate on CAFOs in the journal *Political Geography,* Paul Robbins took the side of the eco-modernists while Gómez-Bagghetum took the side of Degrowers.[1] There is a third side to the debate: Environmental Justice, which goes together with "Degrowth in practice" as when CAFOs are stopped by activists for very material reasons. I remember the opposition to the project in Inner Mongolia (Chapter 6) in 2013 by the COFCO Group for creating the "Technology Model Zone for Raising a Million Heads of

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Pigs" on land expropriated from local herders. There are also conflict cases from Mexico against hog farms. We shall consider cases in France, Spain and in the country of origin of the CAFOs, the USA. These conflicts are not only NIMBY conflicts (no CAFO in my backyard), they become NIABY conflicts (Not in Anyone's Backyard), focusing on land and water use and pollution over wide areas, as well as on air pollution, excessive use of antibiotics and sources of zoonotic viruses.

The Farm of One Thousand Cows, France[2]

In the North of France, a first CAFO was validated by the authorities but the population and some organizations were strongly against it. The history of this project is that of Mr Ramery, a local construction industry mogul, who decided to bring together several large dairy farms in a single 1000 cow + 750 calf farm linked to the largest anaerobic digestion unit in Europe. The strong opposition by the ad-hoc resistance group Novissen (a local residents' and farmers' opposition group), and the Confédération Paysanne (the French branch of the Via Campesina) stopped the project in 2020 after ten years of struggle. Imports of GMO soybeans were one of the factors in the opposition (Figure 21.1).

Novissen is an acronym of *Nos Villages Se Soucient de leur Environnement (Our Villages Care About Their Environment).* By 2021, it was announced that "The Farm of a Thousand Cows" was over. It was to be located in Buigny-Saint-Maclou in the Somme; it closed its doors after heated controversy between environmental activists and economic interests.



Source: EJAtlas

Figure 21.1 NOVISSEN against the "usine à mille vaches"

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In Noviercas, Soria, Spain[3]

Neighbours from Noviercas, a village of 155 inhabitants, located in the province of Soria oppose the construction of a macro-farm for milk production. According to the Hacendera Association (a community-based organization against the project) it would be the largest farm on the European continent, with 24,000 animals that will be milked 24 hours a day. In France, as we have seen, the government prevented the installation of a "farm of a thousand cows". The Noviercas village council approved the plan but there are local concerns on the environmental, socioeconomic and animal welfare damage that this CAFO will produce including the enormous consumption of water, the possible contamination of aquifers by slurry and dung from cows (or by waste generated from anaerobic digestion), as well as the impact on climate change from the release of large amounts of greenhouse gases.

Economically, opponents fear that many small family businesses will disappear and more jobs will be destroyed than created. At the country level, the macro-farms may plummet the price of milk thus threatening hundreds of producers throughout Spain. They call it "predatory livestock" production. The CAFOs in Spanish territory would be located in regions of low population density, the so-called "empty Spain". A movement arose with a coordinating body at Spanish level with participation of Greenpeace with the slogan *ni en tu pueblo ni en el mío*, i.e. it is not a NIMBY although there is not yet a global anti-CAFO movement.

The USA is a Land of CAFOs[4]

Meat consumption in the US rose from 144 pounds in 1950 to 222 pounds per person in 2007. Consumption of beef rose from 44 pounds in 1950, to 66 pounds in 2007. Perhaps this was a peak for economic and human health reasons. Livestock production also changed from hundreds of thousands of independent farmers to a few thousand mega-farms. Factory farming is facilitated by policy changes pushed by the largest agribusinesses, farm bills artificially lowering the cost of livestock feed; the Environmental Protection Agency (EPA) largely ignoring factory farm pollution; and the Department of Justice allowing the largest meatpackers to merge into a virtual monopoly. This led to the rise of CAFOs. I choose to focus on rural Michigan where Lynn Henning exposed socio-ecological injustices and was awarded the Goldman Environmental Prize in 2010.

Michigan previously had a long history of small family farms who are now outcompeted by CAFOs. Michigan's livestock and dairy industries are well-connected in the state, with ties to the Department of Agriculture and footholds in nearly every county. CAFOs promise jobs but end up using machines instead of skilled manual labour and give employment to migrant labour camps instead of locals. They also take business away from local communities. CAFOs have impacted the property values of homes and farms adjacent to them, with declines of up to 70 per cent in some rural counties. Furthermore, these industries have dire environmental consequences.

CAFOs can house thousands of animals in confined spaces with no natural vegetation, either in outdoor pens or in huge windowless structures. In a CAFO, high-pressure sprayers remove waste from the floors using powerful chemical solvents. The runoff is then channelled into huge open pits or vats on the CAFO's property. This toxic brew of faeces and urine, chemical agents, pesticides, hormones, bacteria, antibiotics, blood and even decaying carcass parts is left to ferment for weeks, creating noxious fumes and dangerous chemical

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compounds like methane. The waste is then trucked or piped to nearby fields, where the substance is sprayed as fertilizer, seeping into groundwater supplies and running off into local streams and rivers. Remaining family farmers, economically stretched to near collapse, are often paid by CAFO operators to allow them to spray their fields, creating toxic conditions on their property.

Soy and corn farmer Lynn Henning began finding manure leaking into the water shortly after CAFOs arrived in her rural community in Clayton, Lenawee County. Her mother and father-in-law, in their eighties and living within 300 m of a CAFO, were diagnosed with hydrogen sulphide poisoning resulting in irreversible brain damage. Twelve CAFOs were within 10 miles of her home. Between them they housed about 20,000 dairy cattle and 10,000 hogs. Some of these CAFOs were set up by a company in the Netherlands that recruited local farmers there and helped them relocate in Michigan, promising them plenty of land and less costly environmental regulations than in the Netherlands. The rest were owned by locals who decided to scale up after the Dutch dairies moved in. One elderly couple who lived across from a CAFO called Henning to tell her they were considering suicide. Their well was contaminated, they couldn't go outside, couldn't open their windows. They had to wear face masks. Their children wouldn't visit because the stench was so bad, and they couldn't sell their house because no one else wanted to live there.

In 2000, someone reported a CAFO for discharging manure into a creek. The owner wrongly blamed Henning for calling in the complaint. To find out more about the accusation, she started filing federal Freedom of Information Act requests. Reaching out to neighbours, fellow farmers and EPA enforcement officials, Henning gathered as much information as possible about CAFO pollution spills, their locations and points of origin. Regularly driving a 125-mile circuit to track CAFO operations, Henning began to understand the practices causing the pollution of the area's waterways. Educating herself and others about regulatory practices, aerial photographing, and water sampling, Henning, deeply rooted in the land, emotionally engaged and well-connected to those around her, began calling on state and federal authorities to hold livestock factory farms accountable to water and air quality laws. In 2001 she became a water sentinel for the Sierra Club. With other concerned neighbours she formed an EJO, the Environmentally Concerned Citizens of South-Central Michigan (ECCSCM), and they brought CAFOs to justice. Though almost entirely self-taught, she and the ECCSCM eventually compiled more data on these local operations than the state agencies responsible for regulating them. Henning brought her data and tools to state regulators to encourage them to take stronger enforcement action. In 2008, for the first time in its history, the government denied the permit for a proposed CAFO thanks to Henning's findings. As a result of her activism, Henning and her family were subjected to harassment and intimidation. Despite these threats, Henning continued to help farming communities mitigate the effects of pollution from factory farms and worked as a field representative for the Socially Responsible Agricultural Project (SRAP). In 2015, together with the SRAP she launched a national initiative called the Water Ranger program, training those affected by CAFOs to become citizen scientists. Moreover, with the help of Light Hawk, a volunteer group of pilots, Henning and the ECCSCM supported citations that state and federal agencies issued against CAFOs for violations of the Clean Water Act, resulting in fines and lawsuits. The movement against CAFOs became known and it spread out.

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PESTICIDES AND PLANTATIONS:[5] DBCP, GLYPHOSATE, ENDOSULFAN AND OTHERS

Banana plantations not only export large amounts of K (potassium) that do not come back to the fields, but also "virtually" export large amounts of water used to grow them. They also use pesticides such as DBCP that have damaged workers and their families (Navas 2022) in Central America, Ecuador and the Philippines… or chlordecone in Martinique and Guadeloupe, two French territories (DOM-TOM) in the Caribbean. Contemporary agrarian conflicts on health and environment are often marked by long periods of debates on causal links, and also by the "circle of poison", i.e. the banning of pesticides in rich countries while they continue to be used overseas. Such conflicts are also characterized by the lack of environmental liability of companies.

Glyphosate has become a well-known word, the active ingredient in Monsanto's top-selling herbicide Roundup. Employed by aerial spraying on GMO soybean plantations in Argentina and elsewhere, it has given rise to movements by grassroots groups supported by some health professionals. The Mothers of Ituzaingó in Cordoba, Argentina, was at the vanguard of this movement together with the network of Pueblos Fumigados (Fumigated Towns). The Encyclical *Laudato si* and its Argentinian author, Pope Francis, state (paragraph 135) that "discussions are needed in which all those directly or indirectly affected (farmers, consumers, civil authorities, scientists, seed producers, people living near fumigated fields, and others) should take part". We know where the word *fumigated* comes from. Glyphosate has been forbidden in 2022 by president Gustavo Petro for eradication of coca fields in Colombia.

Modern plantation farming implies increasing use of pesticides. The use of Endosulfan in cashew plantations in Kerala is another documented instance (Chapter 9). "Slow murder" and "silent killer" were terms used by Sunita Narain, terms similar to Rob Nixon's "slow violence" (Navas 2022). Rachel Carson's book of 1962 against DDT (*Silent Spring*) was followed by complaints by landless workers in California. In Chapter 24, the case of McFarland in California is analyzed. The migrant workers fought for their bodies, not for their territories. Also, malathion (an organophosphate pesticide used in cotton plantations) was denounced and did damage for many years.

Kidney Disease in Sri Lanka and Nicaragua: Silent Killers and Slow Murder[6]

The following cases in the EJAtlas exemplify situations of massive human kidney failure in plantations of sugarcane and rice. Thus, in Sri Lanka kidney disease emerged mainly amongst males of the age group 30–60 years engaged in agriculture. High prevalence of Chronic Kidney Disease (CKD) became an environmental health issue of national concern in the North Central province and North Western province. Here again people defend their own body more than their territory. More recently this epidemic was found in the Southern province near Hambantota as well. The affected area covered approximately 17,000 km^2 and with a population of about 2.5 million. The presence of high levels of fluoride, widespread use of agrochemicals, presence of cadmium, lead and arsenic, as well as uranium in soil and water are postulated as contributory factors. The prevalence of the disease is mostly among paddy farmers and agricultural labourers. The lack of availability of dialysis facilities in nearby hospitals makes it difficult for the poor to get treatment. Also, in most cases, people find

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they are sick at a very late stage. Scientists suspect the illness is caused by a combination of dehydration from hard labour in tropical heat and exposure to toxins. A study conducted in Sri Lanka in 2013 by the World Health Organization detected both cadmium and glyphosate, as well as other pesticides and heavy metals, in the environment of affected areas, and in kidney patients' urine. The CEJ (Centre for Environmental Justice in Sri Lanka) and other EJOs launched campaigns for awareness. This disease is not confined to Sri Lanka.

In El Salvador, Nicaragua and other Central American countries there are reported cases of CKD in agricultural plantations affecting tens of thousands of workers. In the community of Chichigalpa, on Nicaragua's Pacific coast, CKD mainly affects young men who work in the sugarcane plantations. Some attribute the disease to the use of pesticides and fungicides containing toxic substances (such as glyphosate) and to extreme working conditions (high temperatures, excessive physical exertion, dehydration, hours in the sun without the right to shade). The diagnosis coincides with that of Sri Lanka.

The emergency situation led the communities to form organizations such as the Chichigalpa Association for Life (ASOCHIVIDA) made up of former workers and widows of former workers of the San Antonio sugar mill (founded in 1890) owned by the Pella Group, producers of the famous "Flor de Caña" rum and also ethanol. The affected communities held demonstrations against the sugar mill asking for compensation and help to buy medicines and treatments for the sick. The demonstrations were strongly repressed. In January 2014, the national police killed Juan de Dios Cortés while he demonstrated to demand compensation for his illness. The community was divided, with some of them demonstrating in favour of the sugar mill in order to save their job. As Grettel Navas points out, while there was a technical-scientific discussion among universities around the world, in Nicaragua the men were still "working to die".

TREE PLANTATIONS ARE NOT FORESTS

Carbon Capture in Uganda[7]

Local peoples often defend forests against logging. Famous cases in the 1970s and 1980s were the Chipko movement in Uttarakhand in the Himalaya, and Chico Mendes' defence of isolated rubber trees in the forest in Acre, Brazil. But what we discuss here is different. The excessive production of carbon dioxide by the burning of fossil fuels has caused other land conflicts. On the one hand, the attempts to "capture" CO_2 in tree plantations (in REDD schemes, causing social and political conflicts); on the other hand, the growth of windmills and solar panels to substitute for fossil fuels, a new "plague" of "green" land grabbing. In this section, I give examples from Uganda on "carbon capture" in tree plantations.

The FACE (Forests Absorbing Carbon Dioxide Emissions) foundation was created in 1990 by four major Dutch electricity companies. It had controversial pine-planting projects in the highlands of Ecuador. It also had projects in the west and east of Uganda with turbulent histories including human rights abuses at Kibale National Park and at Mount Elgon National Park. The Mt Elgon project involved the planting of 20 native tree species over a total area of 27,000 ha, sequestering 700,000 tons of CO_2 over its 17-year tenure. In 1992 and 1993, and again in 2002, forest dwellers and peasants were evicted under the World Bank's Forestry Rehabilitation Project co-financed by the EU.

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Even more controversial was the performance in 1999 of the Norwegian company "Green Resources" that acquired a 50-year licence to 2,670 ha of land in the government-owned Kachung Central Forest Reserve in Northern Uganda. Local inhabitants were violently forced off their land while others were denied access to grow food and graze animals. Furthermore, pollution of the land due to the use of agrochemicals in the plantation was reported. On 3 November 2015, the Swedish Energy Agency announced that it was freezing future payments to Green Resources, following a programme on Sweden's TV4 Kalla Fakta about the problems caused to local communities. Green Resources is a Norwegian company already mentioned in Chapters 12 and 13 with a total of 45,000 ha of plantations in Mozambique, Tanzania and Uganda, converting grassland, savanna and small-scale cultivated land into tree plantations. Uncertainties remain about the potential of tree plantations to really sequester carbon (Figure 21.2).

Industrial Tree Plantations – Eucalyptus and Others

Tree plantations are much older than REDD schemes – one main reason for their existence is the appetite of the wood, pulp and paper industries but there are also rubber plantations and other types of tree plantations, i.e. extensions of land uniformly devoted to one or a few species, geared to the international market. A great book by Carrere and Lohmann published in 1996 introduced the slogan "Plantations are not true Forests". They are typical extractivist industries causing hundreds of conflicts (many of them documented by the WRM network). Their metabolism is the biophysical basis of such conflicts. With J.F. Gerber and Sandra Veuthey (2009), we wrote that industrial tree plantations were rapidly expanding worldwide and notably causing a growing number of conflicts between companies and local populations. We combined elements of political ecology and ecological economics to understand the languages of valuation deployed in tree plantation conflicts in Southern countries. Combining fieldwork on a Cameroonian rubber plantation and an Ecuadorian eucalyptus plantation with the study of social metabolism, we found that both conflicts arose because of land and biomass appropriation, ground clearing, pollution from agrochemicals and water shortage, and



Source: Oakland Institute

Figure 21.2 Uganda: carbon offsets

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they were expressed as conflicts on valuation. In the Cameroon case, resistance was mainly sporadic and individual, while in Ecuador, a grassroots organization was able to articulate rural demands in a structured way.

In the Aracruz Eucalyptus Plantations, RGS, Brazil[8]

The action had this name in Portuguese: *Mulheres Em Ação, Eucalipto No Chão!* Women in action to cut down the eucalyptus (Figure 21.3). It took place on 8 March, International Women's Rights Day, 2006. Around 3,000 women from the Via Campesina occupied the Aracruz Celulose's eucalyptus nurseries located in Barra do Ribeiro (Rio Grande do Sul). Two months earlier, the company, with the assistance of the federal police, promoted the eviction of Indigenous people in the state of Espírito Santo. The occupation in Barra do Ribeiro was in solidarity with these evicted Indigenous people and a protest against the "green deserts" (Chapter 19). Organized women were reported to have destroyed millions of eucalyptus seedlings aiming to denounce the social and environmental consequences of the advance of the monoculture of eucalyptus in their lands and to condemn what they called "green latifundia" or "green deserts". Women from the Via Campesina, jointly with the Landless Workers' Movement (MST) complained against this monoculture because of the land grabbing, the large use of water and the use of chlorine in the bleaching process of the eucalyptus pulp, which causes health damage. Eucalyptus have also come to be seen as an invasive species in Portugal and Spain (Chapter 23) and elsewhere; they take up water and facilitate fires.



Source: Via Campesina

Figure 21.3 Woman from Via Campesina

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In West Bengal[9]

In another conflict on eucalyptus that took place in West Bengal in India, Indigenous villagers chopped down around 6,600 young eucalypts on a 6-ha state forest department plantation. The residents claimed that the land was theirs and that they wanted it back. This was a small-scale conflict, when the villagers of Khorikashuli, West Medinipur district, comprising mostly Lodha tribals, complained because they grew multiple crops on this land, which provided them with enough food for at least six months a year. One activist said: "In 2001, officials asked for land along the fringes of our fields. Then they took our thumb impressions on some papers and by 2004 they took over all our land". The eucalyptus plantation started in 2004 as a fake-Joint Forest Management scheme funded by the Union Ministry of Environment and Forests. Under the scheme, every family in the village would receive 25 per cent of the cash earned from selling the trees after harvests ten years later. But the villagers said that they cannot afford to wait that long. "Eucalypt doesn't give us food".

The Indigenous peoples were thus reclaiming their territory under the provisions of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. That the act, which recognizes the land rights of forest communities who do not have documentary proof of ownership, had not been implemented yet, did not seem to faze them. The land in question was originally a mahal forest owned by rich landowners or local royalty. The West Bengal Private Forests Act, 1948, was the state's first attempt to assert control over south Bengal forests. However, after 1953 no survey was ever conducted.

In Karnataka: Pluck and Plant Satyagraha[10]

Here is another locally famous case in the 1980s in Karnataka, also in India, the KPL conflict. In 1984, the government of Karnataka made an agreement with Harihar Polyfibres (of the Birla family), a rayon producing company. The new company Karnataka Pulpwood Limited (KPL) was owned 51 per cent by the government and 49 per cent by Birla. The project (which would occupy almost 30,000 ha) overlooked the claims of the local villagers who depended on these lands to meet their basic needs. The move evoked widespread protest from local villagers and several EJOs. The Samaj Parivartana Samudaya, a Dharwad-based NGO, with the support of other organizations and eminent personalities such as Shivaram Karanth, Justice DM Chandrashekhar and Kadilal Manjappa led the "Save the Common Lands Movement" to reclaim their lands and rights. Initially, the campaigners sent petitions to local government officials and met the then chief minister with a plea to cancel the KPL agreement. But when these efforts did not yield the desired results, on 14 November 1986 (the anniversary of the KPL) they held a series of protest meetings and demonstrations in several places.

In December 1986, a PIL case was filed in the Supreme Court by Shivaram Karanth, Anil Agarwal (of the CSE in Delhi) and others. The Supreme Court issued a stay order on 24 March 1987 to maintain the status quo with regard to the possession of land. However, the KPL continued its operations. Meanwhile, the local people launched a *satyagraha* on 14 November 1987, which is now popularly known as the Kunsur satyagraha with a novel form of protest, termed the Kitikho-Hachiko (Pluck and Plant) satyagraha. Led by drummers, waving banners and shouting slogans, the protesters uprooted eucalyptus seedlings before planting in their place species useful for fruit or fodder. Due to a sustained struggle for over seven years, 72 legislators from various political parties brought effective pressure on the

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government to close the KPL. On 3 October 1991, the government wound up the KPL. There was a connection to the Chipko movement: in 1990 on Independence Day, 15 August, the respected Chipko leader Chandri Prasad Bhatt led a pluck-and-plant satyagraha in Hirekerur taluka of Dharwad.

Oil Palm Plantations and Refineries: The Total Refinery in La Mède, France[11]

Oil palm plantations expand to the confines of the earth (Figure 14.2), the EJAtlas collects over one hundred conflict cases mainly in SE Asia, the Gulf of Guinea and in tropical America. Palm oil companies try to "green" their image through the RSPO (Roundtable on Sustainable Palm Oil). In the conflict against Total's palm oil refinery near Marseille, we look at palm oil from the consumer's point of view at the end of the commodity chain far from the damage done at the plantations. Here the agrarian question and the socio-ecological question (the land grabbing, the working conditions, the loss of fertility of the soils with monocultures of oil palms) mesh into the food regimes question (is the palm oil used for edible foods or for biofuels?). The media in France try to forget Areva's and Total's actions or Bolloré's feats in the Françafrique. This is the rule. The consumers in the Northern importing countries usually claim ignorance of what happens in the South. There are sometimes exceptions to this rule, as in the boycott against the palm oil refinery in Marseille.

In 2015, the Total company announced "green" plans to transform the refinery located in Châteauneuf-les-Martigues, near Marseille. This La Mède complex hosts these operations: HVO biodiesel, biojet, Avgas and AdBlue production; a logistics and storage hub for petroleum products; a training centre; and a solar farm. Production capacity for 500,000 metric tons of biofuel per year based on large imports of palm oil is contested by Greenpeace and others because of induced deforestation in Indonesia and other exporting countries.

In October 2019, Greenpeace activists blocked the entrance to the refinery that uses controversial palm oil to produce biofuel. Environmentalists say vast areas of rainforest have been logged or set ablaze in recent decades to make way for plantations. In addition to releasing vast amounts of carbon dioxide, this has threatened the habitat of orangutans and other endangered species (in Indonesia) and the livelihoods of local peoples. About 50 Greenpeace activists arrived outside the biorefinery in La Mède at around 6 a.m. on 28 October 2019. They placed two large orange containers in front of the entrance and a protester chained himself to both containers, which held enough supplies for the activists to remain at the site for several days. Banners read "Deforestation made in France" and "Emmanuel Macron complicit". Indeed, Total acts often in concert with countries' presidents because of the nature of its business (Chapter 27).

Several environmentalist groups contested in court the prefectural authorization to operate the La Mède refinery. The appeal was filed in July 2018 by Greenpeace, France Nature Environnement (both Provence-Alpes-Côte d'Azur and Bouches-du-Rhône), the League for the protection of birds and Friends of the Earth. The EJOs stressed that the EIA "did not mention either a detailed supply plan, or the disastrous effects of palm oil on the environment". In April 2021 it was reported that Total had been ordered by a French court to review its impact study on the use of palm oil at its refinery, although the company retained its operating licence.

Fighting against Deforestation in the Amazon: Loreto and Ucayali, Peru[12]

As we saw in Chapter 4, one of many hundreds of deaths caused by resistance to illegal logging and land grabbing in the Amazon was that of Zé Claudio and Maria do Espírito

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Santo. In their case, they were not defending *seringais* but *castanhais*. They saw themselves as "sustainable extractivists" in Pará, Brazil, opposed to the false production (unsustainable extraction) of timber, cattle and soybeans. As in Brazil, the Amazon territory of Peru is subject to deforestation. Sometimes this is because of new cocoa and palm oil plantations deep inside Amazonia. Some environmental defenders are criminalized and sometimes killed. The Melka Group, led by the Czech-American businessman Dennis Melka, owns 26 companies including Cacao del Peru Norte dedicated to cocoa and oil palm plantations. Another similar business group is Romero, a powerful economic conglomerate which has invested since 1979 in palm oil plantations in the Amazon of Peru.

In the Amazon there are Indigenous inhabitants and also poor settlers. The Melka Group uses various methods, ranging from corruption, fraud and land grabbing from settlers to the purchase of land by false settlers to later reacquire these lands, in violation of national environmental legislation. Thus, conflicts multiply between populations, authorities and the Melka Group. It is estimated that some 13,000 ha of land has already been deforested. The Group had allies in the regional governments, which determine the areas to be exploited and the protection areas. In 2013, Indigenous and international organizations filed complaints against the company, as did the Indigenous community of Santa Clara de Uchunya (Ucayali), home to more than 760 citizens of the Shipibo-Conibo people, who saw more than 5,000 ha of their land sold by the regional government of Ucayali. In the hamlet of Bajo Rayal, district of Nueva Requena (Ucayali), company workers slashed and burned nearly 1,000 ha of primary forests, pastures and farmers' crops. In 2015 the Ministry of Agriculture (Minagri) ordered a halt to such activities but the Melka Group continued to operate. In October 2016, the company Plantaciones de Pucallpa withdrew from the RSPO table (table on sustainable oil palm production) and also decided to abandon oil palm production. This was due to the complaint filed by the Shipibo community of Santa Clara de Uchunya together with some EJOs.

In May 2016, the Constitutional Court ordered a precautionary measure against Minagri and the regional government of Loreto for the lawsuit filed by the NGO Kene to stop the company Cacao del Peru Norte. Protest marches were held to prevent the company from being favoured by the court. As a result of the lawsuit against Cacao del Perú Norte (now Tamshi SAC), the court fined a group of directors with 15 million soles and imprisoned them for eight years for trafficking and deforestation, a decision that was not ratified, but the State subsequently appealed the non-ratification. The case remained open. On the other hand, in a *slapping* case the company Tamshi SAC accused environmental defender and forestry engineer Lucila Pautrat of defamation in May 2020. In March 2021, the Criminal Court of Lima sentenced her to two years in prison (suspended for one year for a fine of 50,000 soles). She was subjected to what is internationally called a SLAPP, one instrument in the business' armoury to silence critics by burdening them with the cost of a legal defence in a lawsuit (Chapter 27).

WIND ENERGY AND HYDROPOWER CONFLICTS IMPLYING LAND CONFLICTS[13]

We could mention other land conflicts, such as for instance on the destruction of mangroves by shrimp farming or other encroachments that arise from the land requirements for open cast coal and metal mining, oil and gas pipelines, for urban sprawl or for the military. They are covered in other chapters. But I want to focus on a novel kind of conflict, for the land requirements for wind energy. Sofia Avila (2018) wrote a pioneering article on the political ecology

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of windmill conflicts based on several cases registered in the EJAtlas. She included a conflict in Gujarat, India caused by a large-scale investment of the Suzlon company deployed on the coast and wetland of Kutch, displacing pastoralists and threatening wildlife. India kicked off its programme of wind energy in the 1980s when the Government set up the Commission for Additional Sources of Energy (CASE). India is in transition to a coal-based economy but other sources of energy are also increasing. The country is said to have a potential of harnessing 48,500 MW at 50-m height and 102,788 MW at 80-m height from wind projects. Gujarat has the highest potential, 10,609 MW at 50-m height and 35,071 MW at 80-m height.

The Little Rann of Kutch is a Wild Life Sanctuary for the so-called Wild Ass, and authorities tried to ban the entry of migrating cattle herds and salt panning activities triggering a strong social resistance by the local marginalized salt farmers, cattle breeders and fishermen. In contrast, wind power companies like Suzlon are allotted land for setting up wind farms dispossessing common lands of Indigenous people. Large-scale wind farms pose a danger to grasslands and scrublands, which have little if any protection from the law. They also threaten birdlife. In windmill conflicts we see sometimes alliances between local inhabitants needing land and conservationists worried about birds, i.e. alliances between "the cult of wilderness" organizations and the local poor and Indigenous environmentalists.

In 2001, the Gujarat State Government implemented a local plan for "development" for the Kutch district. Since then, vast tracts of wasteland, coastline and grassland areas in Kutch have been allotted to Indian and foreign corporations. The area affected by windmills belongs to villages surrounding the Little Rann of Kutch. The barricading of land by industrial units and building of roads blocked the traditional migration passages which the pastoralists and their herds used. This has resulted in increasing marginalization of traditional communities, "ecosystem peoples" with natural resource-based economies. It has increased social, structural violence in the region.

Companies such as Suzlon, Vestas and NEPC have established hundreds of wind power production units across the Little Rann of Kutch. The biggest wind farm is built by Suzlon Company, surrounding the Little Rann at Amaliyara, Sinoi and many other villages. By 2014, the company completed the installation of 1,100 MW of windmills at this park and planned to complete the 2000-MW Kutch wind park. This power would be equivalent to two very large coal-fired or nuclear energy plants. Enthusiasm must be tempered by the ample land (and material) requirements for the windmills themselves but also for the building and maintenance of roads and the electricity transmission towers and lines.

India's Ministry of Environment, Forest and Climate Change (MoEF&CC) assumed that, because wind farms produce renewable energy, no EIA of these projects was required. However, organizations like the CSE lobbied the Government to bring wind power projects under the EIA mandate. The most visible impact that windmills and the transmission lines have on the natural world is their impact on bats and birds, including vultures. Rich in marine life, the Gulf of Kutch is the breeding ground for endemic prawn species. Many migratory birds and flamingos come to this wetland. Wind power also impacts negatively on the pastoralists' livelihoods. At best these wind farms generate a few low wage security jobs for local villagers, as they are outsourced to private security agencies.

Agua Zarca and Berta Cáceres[14]

Finally, I want to reinforce the awareness of the conflicts on the land and water requirements for hydroelectricity (that we have seen in other chapters as well) through the well-known

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murder of activist Berta Cáceres in Honduras in 2016. She fought against a small hydropower project. The case was briefly described in Chapter 4 (Tran et al. 2020, 2021). The company DESA was created to build the Agua Zarca hydroelectric scheme with external financing by European banks, using the waters of the Gualcarque River regarded as sacred by the Lenca. Berta Cáceres was a leader of peasant, Indigenous and environmentalist movements at the same time. Her death had global resonance, partly because she had recently been awarded a Goldman Prize. Hydropower is supposed to be sustainable energy (driven by sun energy and the water cycle) but almost all dam projects imply the taking up of land and water, and the displacement of people (Del Bene et al. 2018). Per MW of electricity, hydropower is often more land-intensive than nuclear power or even CFPP, although biomass energy as ethanol or bio-diesel is even more land-intensive. Dams have been seen as apolitical or post-political, impartially built by liberal or neoliberal capitalists, fascists (like General Franco in Spain), social-democrats like Nehru or Soviet-socialists. Often, they have been and are strongly opposed by the local people.

The Agua Zarca project was a small hydropower project in a small country which is marginal in world politics but it had a great negative cultural and livelihood impact on the Lenca people. The keywords of this conflict are Indigenous territory, sacred site, hydropower, CDM, ILO convention 169, criminalization and murder of activists. They all intersect between the agrarian question and environmentalism. The murder became memorable for the global movement for environmental justice. Berta Caceres' assassination has been well documented internationally in a book by Nina Lakhani (2020), an intrepid journalist with the *Guardian*. When she was killed, the Mexican activist Gustavo Castro, who almost died together with her, said: "Berta helped make Honduras visible. Until then, its social movement, political struggles and resistance were largely unknown to the rest of the region". She had herself travelled in the region and had been in international meetings.



Source: Tinaral, Wikimedia Commons

Figure 21.4 Mural representing Berta Cáceres

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The project caused the killing of Berta Cáceres (1971–2016) and other Indigenous environmentalists defending their territory. The commodities in question were water, land, electricity and also, in this case, impudently, carbon offsets. The Lenca would do a favour to the world by allowing production of electricity from hydropower at the cost of loss of their own land and sacred river. This electricity would in theory substitute for fossil fuels. They (or rather the government of Honduras or the building companies) would get some "carbon credits" in the international Clean Development Mechanism. This is another CDM absurdity, described as "carbon colonialism" in the Uganda case in this chapter.

CONCLUSION: HUMAN ECOLOGY OVERLAPS WITH AGRARIAN AND LAND STUDIES

Socio-ecological conflicts are certainly not extra-terrestrial, although some geo-engineering experiments might take place in the upper atmosphere trying to stop incoming solar radiation to compensate for the enhanced greenhouse effect. Extracting industrial minerals from the moon might also happen. Leaving this aside, it is obvious that environmental conflicts imply disputes on access to land, water and breathable air on planet Earth. But such disputes are the effects, while the causes are the growth and changes in the social metabolism, and the technologies used when expanding or deepening the commodity extraction frontiers to get energy and materials. Land and water appear as two main commodities in dispute in the conflicts registered in the EJAtlas. To get more biomass production, you have to get land, water for irrigation, and pesticides to eliminate competitors. To get more fish, you need bigger boats and more energy – that eventually will eliminate some fisheries. Similarly, for extraction of minerals you need land, water and the legal or illegal possibility of disposing of tailings and noxious gases into the biosphere. To get hydropower and wind power you need to occupy land and displace people.

The old Narodnik slogan in Russian and other Slavic languages, *Zemlya i Volya*, "Land and Freedom" (*Tierra y Libertad* in Spanish anarchism and in Zapata's Mexican revolution of 1910) may inspire struggles of peasants, landless workers and Indigenous peoples defending themselves against land and water grabbing, against air pollution. Zapata's opposition to the water-guzzling sugar mill industry in Morelos that sparked off the Mexican revolution in defence of Indigenous land and water commons could have put forward the slogan *Tierra, Agua y Libertad*. We now enlarge the slogan to *Tierra, Agua, Aire y Libertad* thinking of so many conflicts on air pollution, and also on windmills (Avila 2018; Temper et al. 2020). Paraphrasing Amartya Sen, economic development should not mean losing the freedom to use land, water and clean air. "Land and Freedom" meant that access to land ("the land to the tiller") went together with the practical freedom of having a secure place to live and to grow food thereby escaping from domination and exploitation by landlords. Access to water overcoming social class or caste monopoly is a requirement for human freedom and a necessity for plants and animals. Contamination of air, or its appropriation by the wind energy industry, is a more modern social injustice that must also be included in the slogan "Land, Water, Air and Freedom".

In the past, agrarian studies avoided environmental issues by separating what is economic and social (such as land reform) from human ecology and the study of social metabolism. This started to change in the 1980s with ethno-ecologists, such as Victor Toledo's work on "the

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ecological rationality of peasant production" (Toledo 1990) and with the political ecology of Brookfield and Blaikie (1987), among other contributions. Now there is a rush to connect agrarian struggles to climate justice but, as shown in the conflicts documented in this chapter, the "environmentalization of the agrarian question" (Yasin 2022) is a wider issue than climate change.

The "agrarian question" referred in political economy to the unequal distribution of land property, the demands for land reform, the trapping of the peasantry in non-capitalist relations of production, their emancipation, the political attitudes of rural people with respect to economic policies such as free trade (as in the recent claim, "let's keep agriculture out of the WTO"). However, the old political economy of the peasantry (as reflected for instance in the *Journal of Peasant Studies* founded in 1972) left aside for many decades the study of energy and material flows in the countryside, as also the biology (e.g. seed selection) and the chemistry (e.g. fertilization) of rural production. To political economy we must add human ecology to obtain political ecology. The painstaking researches by a few anthropologists of the 1960s such as Roy Rappaport counting the kcal spent and obtained by "primitive" hunter-collectors and agriculturalists were sadly left aside. The agrarian struggles led by peasants, landless workers, pastoralists, fisherfolk link with the growth and changes in the social metabolism (and their effects on climate change, loss of biodiversity, soil degradation, local toxicities). Thus, agroecology practised by peasantries reunites the old "agrarian question" and the new "socio-ecological question".

Regarding agrarian-environmental conflicts on land, water and air, and leaving anecdotal evidence aside, we ask in the perspective of a theory of movements for environmental justice:

- Who are the main protagonists of such conflicts? Farmers, peasants, pastoralists, fisherfolk representing the environmentalism of the poor and the Indigenous? The activists that appear in conflicts in this chapter sometimes belong to organizations like Greenpeace, or to Friends of the Earth International (Iike CEJ in Sri Lanka) or to the Via Campesina but more often they are members of ad-hoc, ephemerous organizations. Sometimes the activists belong to religious groups or are professionals. Very often they are WEDs, women environmental defenders. A very small number indeed might even get a Goldman Prize – although this does not necessarily stop the violence against them. Most of them are normal local people, men and women, farmers, peasants, labourers, citizens and neighbours affected and concerned by potential or visible damage. Often the protests (as with CAFOs or against eucalyptus plantations, in this chapter) precede the local organizations.
- Which repertoires of contention are displayed in such struggles? For instance, direct action blockades but also letter writing, judicial activism, public consultations, hunger strikes… And which forms of violence are used against socio-environmental activists and local inhabitants? Not only open violence including killing of activists, not only "slapping" threats, also racist violence and the "slow violence" of toxics (Navas et al. 2018, 2022). Which are the roles of public or private national companies, or transnational companies? Of the police and the military?
- What are the outcomes? How often are middle or small farmers and peasants expropriated or cornered by corporations (as in land grabbing for new plantations), how often are small-scale fisherfolk displaced by transnational fishing fleets? How often are investment projects that convert communal land, water and air away to commercial use stopped by local socio-environmental activists?

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- Can we easily elicit the valuation struggles in such conflicts on land, water and air? Which social values are displayed, such as, for instance, livelihood values, sacredness, ecological values, archaeological and other cultural values? How often is money compensation offered, and it is really *equivalent* to other values which are sacrificed?

NOTES

1. Robbins, P. (2018). Is less more… or is more less? Scaling the political ecologies of the future, Keynote at POLLEN.
2. The CAFO-like "farm of a thousand cows", France (Gabriel Weber, Joan Martinez-Alier), EJAtlas.
3. Macrogranja (CAFO) para la producción lechera en Noviercas, Soria, Spain, EJAtlas.
4. CAFO pollution in Lenawee County, Michigan, USA (Dalena Tran), EJAtlas.
5. Pesticides and childhood cancer, California, USA (Sara Orvis, UMich), EJAtlas.
6. Agrochemical pesticides and kidney related diseases, Sri Lanka (Centre for Environmental Justice Sri Lanka and Paula Camisani), EJAtlas.
   Agroquímicos e insuficiencia renal, San Luis Talpa, El Salvador (Astrid Martinez, CESTA), EJAtlas.
   Epidemia de Insuficiencia Renal Crónica (IRC) en las plantaciones de caña, Nicaragua (Grettel Navas), EJAtlas.
7. FACE Project: Rehabilitation of Mt. Elgon and Kibale National Park, Uganda (Patrick Bond), EJAtlas.
   Forest plantation by Green Resources in Kachung, Uganda, EJAtlas.
8. Women against the expansion of eucalyptus (Grettel Navas), EJAtlas.
9. West Bengal eucalyptus conflict, India (J.-F. Gerber), EJAtlas.
10. KPL conflict, Karnataka, India (J.F. Gerber), EJAtlas.
11. Total palm oil refinery in Marseille, France EJAtlas.
12. Deforestación en Loreto y Ucayali por Grupo Melka, Perú (Raquel Neyra), EJAtlas.
    Deforestation by Grupo Romero in Amazonia with oil palm plantations, Peru (Raquel Neyra), EJAtlas.
    Santa Clara de Uchunya against palm oil plantation, Perú (Thomas Younger), EJAtlas.
13. Suzlon Energy wind farms in Kutch District, India (Sofía Ávila and Joan Martinez-Alier), EJAtlas.
14. Proyecto Hidroeléctrico Agua Zarca, Honduras (Grettel Navas and Daniela Del Bene), EJAtlas.

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22. Religious groups as environmental activists

INTRODUCTION: SACREDNESS MAY BE DEPLOYED AGAINST THE COMMODIFICATION OF NATURE

One can easily think of secular cultural values, such as those of the UN Universal Declarations of Human Rights of 1948, or as embodied in the Constitution of India of 1949 largely written by B. R. Ambedkar. However, while not all cultural or social values are religious, it is difficult to think of religious values which are not embedded in culture. Religious values overlap with cultural values.

Organized religious participants are usually absent in environmental conflicts. Moreover, the main activists and academic personalities of political ecology are "secular", not affiliated with any religious denomination but often with attachment to spirituality. However, among the 3,600 cases recorded in the EJAtlas in January 2022, about 430 featured "religious participants", with greater frequency in Latin America and Southeast Asia. In coastal South India some Christian groups are active, as also in the Philippines. Buddhists are present in the rest of Asia. There are other religious beliefs present in environmental conflicts such as Yoruba religion in Afro-American populations in Brazil and elsewhere. Moreover, there is another cluster of Christian participants in South Africa. In Latin America, Catholic Liberation Theology is very much present. This chapter focuses both on organized religions and on Indigenous belief systems, overlapping with Chapter 25 that deals with "Indigenous revival and resistance at the extraction frontiers around the world".

IN ASIA

Excluding Dalits from Water Sources in the Name of Religion[1]

We start by remembering the many counterexamples where religion is used to exclude poor people from access to nature, such as high-caste Hindus who consider rivers as sacred and simultaneously exclude Dalits from water use. A famous episode in Dalit-liberation history was the Mahad Satyagraha or Chavdar Tale Satyagraha called by Dr B.R. Ambedkar on 20 March 1927 to allow so-called untouchables to use water in a public tank in Mahad, Maharashtra. If Dalits used the water, then high-caste Hindus would perform sacred rites to purify it. Such beliefs and customs are alive in today's India.

Simultaneously, in contrast, in India there are also heroic Hindu religious defences of rivers against pollution and sand mining to the point of death in hunger strikes. For instance, as reported in the *Guardian* by Michael Safi on 12 October 2018, an environmental defender (with both secular and religious identities) died on the 111th day of a hunger strike to pressure the government to clean the Ganges River.

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> GD Agarwal, a former professor of environmental engineering at one of India's top universities, died in hospital in the north Indian city of Rishikesh… Doctors told local media he had a hernia, high blood pressure and a coronary artery disease, all of which were exacerbated by the fast. Agarwal, who also went by the monastic name Swami Gyan Swaroop Sanand, had been fasting since 22 June to protest against the government's inaction in cleaning the Ganges. The 2,525 km Ganga is worshiped by most Hindus as a goddess, but for vast stretches is heavily polluted by the discharge of untreated sewage and industrial waste.

There are other instances of such religious and environmental actions in defence of rivers. Thus, in June 2011 Swami Nigamananda Saraswati died after a four-month fast in protest against reckless sand mining and stone crushing on the banks of the Ganges, near Haridwar, a pilgrimage site in Uttarakhand. Millions of pilgrims visit this holy place to dip in the Ganges during Kumbh Mela to wash away their sins. A few days before Swami Nigamananda died, the Uttarakhand government ordered a ban on sand mining following a directive of the Uttarakhand High Court that expressed concerns over the degradation of the river's ecology and the area used for Kumbh celebrations (Sharma 2012).

Sacred Groves in India

In India there are also many examples of Adivasi communities displaying religious values when they defend small common forests, known as "sacred groves", which according to world expert Madhav Gadgil (2018)

> are patches of primeval forest that some rural communities protect as abodes of deities. Such "ecosystem people" draw their livelihoods from nearby resources and value nature for the ecological services it provides. Colonial resource extraction devastated the ancient network of sacred groves in India. Thousands survived, however, and some are being newly established because of the ecological benefits that communities derive from them.

In other regions of Asia there are forests which are sacred to local populations: the *karchall mabhuy* of the Katu people of Central Vietnam, the *leuweng kolot* of the Baduy people of West Java, the *fengshui* forests of southern China, the *mauelsoop* and *bibosoop* of Korea, and more (Coggins and Bixia 2022).

Adivasi populations in India have their own religions, so tribal sacred groves have little to do with the official and invasive Hindu religion. Gadgil narrates a visit to a famous village, Mendha Lekha, in the Gadchiroli district, Maharashtra:

> It was the middle of March in 2014. We were sitting under a mahua (*Madhuca longifolia*) tree in the hilly, forested heartland of India, breakfasting on locally grown rice, bean sprouts and fish curry. From time to time the fleshy, sugary petals of mahua flowers showered down on us, so we ended our meal with a refreshing sweet dish. My hosts were Gond tribals, residents of Mendha village who had declared a quarter of a century earlier that they, and they alone, would manage the region's rich natural resources. As a field ecologist, I had been working alongside them ever since. On that day I was looking forward to visiting the seven patches of forest they had identified for setting up as new sacred groves, covering more than 12 percent of their 1,800-hectare community forest.

The defence of the commons and of nature by religious values does not need affiliation to any organized religion such as Hinduism, Buddhism, Judaism, Christianity or Islam. It merges with the cultural values as in India in the defence of "sacred groves", rivers and lakes (as the

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Niyamgiri Hill in Odisha, Chapter 8). In most human societies, the difference between purely natural entities and anthropomorphic or zoomorphic religious beings is not clear cut. Snowed mountain tops are worshipped as Apus in the Andes, as also in different regions of Asia. In the Andes worship might imply some days of collective work, as a ritual *minga*, cleaning up the irrigation channels bending down the slopes down to the valleys.

Buddhist Monks against Eucalyptus in Thailand[2]

The Buddhist organized religion has been sometimes as rude and cruel to other populations as Hindus, Christians and Muslims have been. But there have been socio-ecological movements that have shown Buddhism at its best, as in Thailand in the 1980s against the Green Isan and Khor Jor Kor eucalyptus projects. Resistance peaked in the late 1980s and early 1990s. The "Isan Khiau" or "Green Isan" (Green the Northeast,1987–92) and the "Khor Jor Kor" (1990–92) were campaigns launched by an alliance of the pulp and paper industry, the Royal Forestry Department and the Army aimed at "regreening" North-eastern Thailand by planting eucalypts. The second project was even more brutal than the first one: it included the eviction of five million residents as part of an effort to plant around 1.4 million ha of eucalypts. It was described as "a pinnacle of state-directed authoritarian forestry" (Pye 2005).

The former monk Phra Prachak Kuttjitto led villagers in the Buriram province in opposing eucalypt plantations. Among the tactics used was that of "ordaining" trees to prevent them from being cut down by wrapping tree trunks with strips of monk's robes, saffron in colour. Villages were surrounded by troops, houses dismantled, leaders detained and Phra Prachak Kuttjitto arrested. The project resulted in one of the biggest demonstrations in Thai history, targeted at the military junta. The junta was finally forced to back down in 1992. After continuing protests, the government scrapped the military's eviction programme, suspended "reforestation" with eucalypts and imposed a ceiling of 8 ha on commercial tree plantations.

In 1994, local opposition to a eucalypt-planting Royal Forest Department (RFD) development programme in Roi Et became very strong; villagers chopped down over 300 ha of eucalypts in order to replace them with community-conserved forests of native species. Throughout their campaigns, north-eastern villagers and their NGO allies researched and publicized multi-purpose native alternatives to eucalypts which are responsive to the diversity of food, construction, medicinal and ecological needs of different localities, launched supplementary plantings of native trees on degraded sites and posted new areas as community forest (Carrere and Lohmann 1996).

Buddhist Monks in Mining Conflicts in Tibet[3]

In other conflicts, Buddhist monks also appear in defence of the environment and the poor, as the Buddha himself (who refused caste hierarchy) would perhaps have done. The EJAtlas features about 50 conflicts where Buddhist clerics have a positive role as on the Nyamjang Chhu dam in Arunachal Pradesh, close to the Tawang monastery (Chapter 11).

Nearby, there are several mining conflicts in Tibet (on the Chinese side of the border) where Buddhist monks have been active. On 22 November 2010, there was a protest to disrupt mining works from a government mine near Lingka Monastery, in Tamo, a town located in the copper rich Shethongmon district west of Lhasa. The protesters, the monks from Lingka Monastery and the general public in Tamo, blocked the mining works. The officials of the

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mining department and local government attempted to cajole them to continue the extraction work, but the population continued to express their opposition to mining from 22 November till 18 December. The local government of Shethongmon sent riot police to disrupt the demonstrations, which led to verbal confrontation between the police and the protesters. The police, who were outnumbered by the protesters, tried in vain to be gentle to disperse them. Later, a large contingent of public security bureau and armed personnel were sent to crack down on the protesters. Consequently, many Tibetans were severely beaten and 15 Tibetans, including 5 monks of Lingka monastery, were arrested by the Chinese police. Several others were injured, as reported on the website of the Tibetan government in exile. Prison terms of four to five years were given to 49-year-old Sangpo, who was the abbot of Lingka monastery, along with five other monks. Moreover, the head of the village was sentenced to two years in jail for dereliction of duty on the day of the protest.

Other Protests against Mining in Palyul, Tibet[4]

While the previous mining conflict took place to the west of Lhasa, the following one was located far to the east, in Sichuan. It took place in the same year, 2010, although complaints against mining still continue in 2021. The location is Baiyü County, Garzê Tibetan Autonomous Prefecture in China's Sichuan province. Palyul is the Tibetan name. This area is a Buddhist region filled with monasteries and is known for its strong identity and for being at the centre of dissent for years (Figure 22.1).

The mining project proposed by the Shanghai based firm Kartin would devastate arable land and increase pollution. Nearby counties have suffered earthquakes and landslides which locals attributed to mining and excavation for public works. Therefore, the residents asked for more geological inquiries and tests. On 13 August 2010, a group of approximately 100 local Tibetans, led by village head Tashi Sangpo, met outside a local government building to protest against increased gold mining in the area. The village leader had previously written to the local authorities expressing concerns over mining by the Kartin company, the impact on the environment and the influx of many Chinese workers severely degrading the fertility of their farmland and affecting the local grassland habitat. He called for an end to the expansion of mining and for compensation for the local community. According to exiled Tibetans, the protest arose because local authorities sought to increase the number of mining sites. Some of the protestors were detained, but they refused to leave until they received a response, so there were pickets in front of the government office for three days.

In the evening of 17 August 2010, Chinese security forces began to remove the protesters by using gas to leave them unconscious and load them into a truck. Several Tibetans began scuffling with the police, who responded by indiscriminately opening fire, killing three or four Tibetans, including the protest's leader. Around 30 Tibetans were wounded by bullets, and several others were detained. Two policemen were also reportedly injured as well. Additional security was sent to quell unrest, the roads were blocked and residents had their movements restricted.

Tibet is one of China's largest national sources of gold and precious metals and the Chinese authorities started surveying and mining Tibet in the 1950s. According to "Tibet Outside the TAR" there has been an expansion of mining activities in the area by the prefectural authorities in the early 1980s, and official sources described Payul's Changtai Gold Mine as one of the prefecture's "backbone enterprises". Moreover, there's a policy

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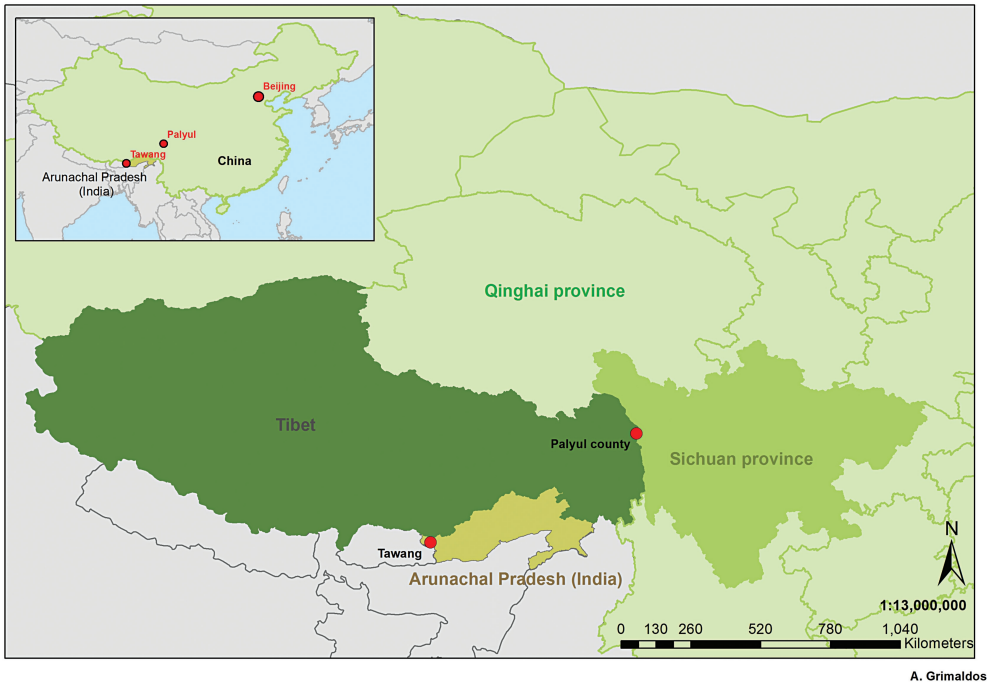

Source: A. Grimaldos

Figure 22.1 *Palyul county: Monasteries and environmental conflicts in Arunachal Pradesh (India), TAP, Sichuan (China)*

encouraging Chinese immigrant miners as much as local Tibetans in order to develop the rural town and village organization. Poor governance over mining has in some cases exacerbated environmental impact as local people's interests are subordinated to those of officials and the state.

Placer Dome and Barrick Gold's Liabilities for the Marcopper Mine's Disasters, Marinduque[5]

In a Pastoral letter in 2019, Catholic bishops in the Philippines criticized "the continuing destruction of our common home" and called for "ecological conversion" amid "climate emergency". The letter recommended concrete ecological actions. These are not empty words because some Catholic bishops have been active in environmental conflicts, risking their lives in a country characterized by extreme violence against environmental defenders and also by armed Maoist and Islamic insurrections in some areas. Here I include one more example of their role in environmental conflicts beyond those mentioned in Chapter 3.

Over many decades Placer Dome (from Canada) caused many disasters on the island of Marinduque. In 1981, Marinduque became a diocese and received its first Bishop, Raphael Lim. The local Catholic Church is reported to have been the most consistent local organization supporting all villagers affected by mining on the island through its Social Action

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Centre. Flooded villages, toxic rivers, ill residents, children dying: the fight for justice goes on. The first mapping and drilling operations for the Marcopper mine date back to 1956. Mining operations started in 1969 through the exploration of the Mt. Tapian ore deposit, containing copper concentrate, as well as gold and silver. At that time, the mine was co-owned by Placer Dome Inc. and its minority partner, the Philippine dictator Ferdinand Marcos.

Between 1975 and 1991, it was estimated that more than 200 million tons of mine tailings were discharged into Calancan Bay, which covers fishing grounds of 8,000 ha. Complaints over leukaemia, kidney problems and other diseases have increased since 1981. In 1996/7 tests showed high levels of heavy metals in the blood of patients. Moreover, local residents had been protesting as the waste dumping into the water bodies heavily affected the food security of fishing villages. In 1988, the Pollution Adjudication Board ordered Marcopper to stop waste dumping into the bay. However, Marcopper convinced the government that dumping was indispensable for the operation, and was allowed to continue if paying a pittance. When the Tapian reserve was depleted in 1990, Marcopper continued mining in the San Antonio copper reserve, 3 km north. The old Tapian pit was then used as a waste discharge disposal.

The first major disaster happened in 1993, when the Marcopper tailings dam in the Maguilaguila creek collapsed and flooded nearby villages and the Mogpog River, which then suffered from recurring floods due to siltation. The colours of the river have ranged from peach to brown to red, toxic green or violet. Several houses were swept away. Livestock, crops and farmland were destroyed, the river was heavily polluted and two children were drowned. The second disaster occurred on 24 March 1996, when a massive tailings spill from the Tapian pit escaped through the badly sealed drainage tunnel and no less than 2 million tons of tailings subsequently flooded the Makulapnit and Boac Rivers; 700 families were most directly affected and the surrounding terrestrial and aquatic environment was heavily contaminated. A UN mission team visiting the area declared the situation an environmental disaster. After the spill, thousands of residents needed to be evacuated and suffered isolation, hunger and diseases. Many children were found to have toxic blood levels of lead and cyanide, of which some died later on.

The year after, Placer Dome divested from Marcopper and left the Philippines. But decades after, the region and Calancan Bay continues to be heavily silted by the mining spills, and fish and agriculture continue to be contaminated with toxic metals. In 2001, there were still more than 800,000 m^3 of tailings in the river, while the drainage tunnels were still at risk of further leaking. Supported by the group Upholding Life and Nature (ULAN), Calancan Victims, filed a suit for damages at the regional court. In 2005, the provincial board of Marinduque filed a case in Nevada against the mining giant (that was acquired in 2006 by Barrick Gold Corporation), claiming compensation for damages, as well as environmental clean-up efforts and funds. Between 2011 and 2014, mediation and settlement processes occurred; however, no outcome was achieved.

Local pressure for the Marinduque government to refile the case mounted after the Nevada state Supreme Court threw out the case against the Toronto-based Barrick Gold Corp because of *forum non conveniens* on 11 June 2015. Canada was a better place for a lawsuit against Barrick Gold. The Catholic Church stepped in, as environmentalist groups lobbied for the Marinduque council to pursue the case in Canada. But the outcome must be catalogued as "failure in environmental justice".

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Laudato Si, Paragraphs 51 and 52

This is a good place (between mining conflict cases in the Philippines and Indonesia) to quote two paragraphs from Pope Francis' 2015 Encyclical on the issues of *ecologically unequal trade from South to North* and the *ecological debts (or liabilities) from Northern countries and companies to the Global South* (Hornborg and Martinez-Alier 2016). Inspiration comes from the many meetings in Latin America, the Philippines and South Africa between environmentalists and Liberation theologians around the year 2000 and from the Jubilee South campaign. But a deeper origin lies in the painful experiences which priests and bishops have witnessed.

> 51. Inequity affects not only individuals but entire countries; it compels us to consider the ethics of international relations. A true "ecological debt" exists, particularly between the global north and south, connected to commercial imbalances with effects on the environment, and the disproportionate use of natural resources by certain countries over long periods of time. The export of raw materials to satisfy markets in the industrialized north has caused harm locally […]. There is a pressing need to calculate the use of environmental space throughout the world for depositing gas residues which have been accumulating for two centuries and have created a situation which currently affects all the countries of the world. The warming caused by huge consumption on the part of some rich countries has repercussions on the poorest areas of the world, especially Africa, where a rise in temperature, together with drought, has proved devastating for farming. There is also the damage caused by the export of solid waste and toxic liquids to developing countries, and by the pollution produced by companies which operate in less developed countries in ways they could never do at home […]: "We note that often the businesses which operate this way are multinationals. They do here what they would never do in developed countries […]. Generally, after ceasing their activity and withdrawing, they leave behind great human and environmental liabilities such as unemployment, abandoned towns, the depletion of natural reserves, deforestation, the impoverishment of agriculture and local stock breeding, open pits, riven hills, polluted rivers and a handful of social works which are no longer sustainable".
>
> 52. The foreign debt of poor countries has become a way of controlling them, yet this is not the case where ecological debt is concerned. In different ways, developing countries, where the most important reserves of the biosphere are found, continue to fuel the development of richer countries at the cost of their own present and future. The land of the southern poor is rich and mostly unpolluted, yet access to ownership of goods and resources for meeting vital needs is inhibited by a system of commercial relations and ownership which is structurally perverse. The developed countries ought to help pay this debt by significantly limiting their consumption of non-renewable energy and by assisting poorer countries to support policies and programmes of sustainable development. […] We must continue to be aware that, regarding climate change, there are differentiated responsibilities. As the United States bishops have said, greater attention must be given to "the needs of the poor, the weak and the vulnerable, in a debate often dominated by more powerful interests". We need to strengthen the conviction that we are one single human family. There are no frontiers or barriers, political or social, behind which we can hide, still less is there room for the globalization of indifference.

In Indonesia: Manganese Mining[6]

Indonesia is a country of many religions, with a Muslim majority. Here we describe one conflict in a manganese mining region in the south-eastern part of the country, next to East Timor combining the use of local spirituality and Catholic religion in the defence of local livelihoods and the environment against manganese mining in Manggarai, East Nusa Tenggara. There in the 2000s, Indigenous groups joined forces with Catholic groups, working towards a ban on

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mining in Manggarai and to prevent renewals of existing mining permits. Land grabbing of Indigenous territories through violence, coercion, legal harassment and privatization has long been an issue throughout Indonesia since Dutch colonial times. This is evident in the case of PT Manggarai Manganese (PTMM). Economic growth enters into conflict with Indigenous values prioritizing the community and the environment, and also undermines biodiversity conservation values.

Recent Liberation Theology in the Catholic Church brought forth a spirit of human rights and environmentalism, Catholicism and Indigenous religions united in their support against mining. Religious groups such as the Indonesian Franciscan Congregation Commission on Justice, Peace and Integrity (JPIC-OFM), Societas Verbi Divini (SVD), the Ruteng Catholic diocese, the Congregation of the Missionary Sisters Servants of the Holy Spirit and others mobilized together with environmental groups against government impunity towards mining companies such as PTMM. They wrote petitions warning the public and local government, after 2015 drawing upon Pope Francis' Laudato Si.

In fact, in January 2009 the Department of Forestry stated that the company was committing a criminal act. Nevertheless, in March a district administrative court ruled in favour of the company. Regent Timur Yoseph Tote issued the Decree No.HK/109/2019 on 7 December 2009, granting PTMM, among other companies, with manganese mining and exploration permits in various protected forest lands and the island Komodo National Park (that holds coral reefs, whales, manta rays and Komodo dragons).

The land marked for exploration features 20 springs supporting irrigated rice fields and impinges upon Indigenous land belonging to the Manggarai and other groups. This land is a vital water source and a place where Indigenous groups practise traditional rituals. Miners have blasted away and destroyed much of this forest and its springs. Ever since, downstream Manggarai villages have suffered water shortages and crop failures. The manganese mines cause widespread suffering among Indigenous peoples living nearby, because of miners dumping rocks and tailings onto agricultural land, and ocean pollution making fish no longer safe to eat. Manganese produces an illness known as "welders' illness".

PTMM employs the evicted Indigenous peoples as labourers. The women and men who work at the mine must squat in the sun for nine hours a day, separating the black manganese from white rock. Working six days a week with no health benefits or holidays, they are said to take home $1.20/day after transportation costs.

Although PTMM's permits expired on 7 December 2013, the local government threatened to evict over 700 Indigenous Tana Ai and Golo Lebo families accused of living on PTMM's property. Some community protesters report having their homes pelted with stones, being followed and receiving death threats. Various Catholic groups stepped in to help local communities affected by the mining fostering a strong and distinctly religious movement. The movement is strictly non-violent, and peaceful protest strategies include celebrating Mass at mining sites. NGO Cultural Survival also runs an ongoing letter-writing campaign in support of the movement. Catholic priest Father Simon Suban Tukan was beaten and badly injured by police on 13 September 2014, when he and dozens of other locals blocked PTMM from entering Tumbak village. VIVAT International-Indonesia and an umbrella group of NGOs known as National Solidarity for People in NTT urged the National Commission on Human Rights (Komnas HAM) to conduct an investigation.

In response, throughout mid-October 2014, hundreds of priests, Catholic students and activists staged the largest-ever demonstration against mining in three different locations:

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Labuan Bajo, capital of West Manggarai; Ruteng, capital of Manggarai; and Borong, capital of East Manggarai. For the first time, these protests were directed at the local government. In January 2015, the mobilizers met with legislative members in Ruteng to demand a ban on mining. According to Father Simon, "mining activities have destroyed the earth of Manggarai and the whole of community life, from ecology to kinship. Mining companies have destroyed forest and water resources and have divided family ties by money. The mine's site is often overlapping with community lands leading to the practice of evictions". As of 2018, Australian-owned PT Gulf Mangan Grup signed an agreement with the East Nusa Tenggara government to construct a smelter near Bolok village. Moreover, the government issued more than 100 new mining permits to mine even more of the region's gold and manganese, as well as copper and marble.

IN THE AMERICAS AND IN AUSTRALIA

Brazil, Amazonia: São Manoel Hydroelectric Dam[7]

As we saw in Chapter 19, in Brazil the Catholic Church has been active in many socio-ecological conflicts, particularly in the Amazon region through the CPT, the Comissão Pastoral da Terra. A Map of Land Conflicts was launched some years ago by the CPT, inspired by the FIOCRUZ map. The Articulation of the CPT gathers the nine regional offices in the Amazon. The support for the environment by Indigenous peoples appealing to their own religious beliefs is also widespread. Sometimes they get support from the Pastoral da Terra as in the resistance against a dam in Mato Grosso, in the Tapajós basin for hydroelectricity and commodity exports through new waterways. This is the São Manoel dam, implemented at all costs, destroying Indigenous sacred sites and a pristine river ecosystem.

In July 2017, 200 Indigenous people occupied São Manoel Dam, over whose construction they had not been consulted – violating ILO Convention 169 and the Brazilian Constitution of 1988. For four days, the protesters – the majority of them women of the Munduruku group – held rituals claiming their rights to preserve their culture and environment. São Manoel Dam is operated by the consortium Empresa de Energia São Manoel (EESM), which is formed by the Portuguese company EDP, the state-controlled company Furnas (part of the Eletrobrás group) and the global hydropower giant China's Three Gorges. With a capacity of 746 MW, the plant is one of six recent hydroelectric projects on the Teles Pires River and its tributary Apiacás. These six dams also come with plans to develop a waterway for soy export from Mato Grosso to the Atlantic Ocean ('Hidrovía Teles Pires-Tapajós'). In total, 43 large dams were recently announced for the entire Tapajós basin. Like São Manoel Dam, they were pushed also by increasing energy demand in the region from expanding gold and bauxite mining.

São Manoel Dam faced criticism for its expected adverse impacts on fish and turtles in the river, and its location just 700 m from the Kayabi Indigenous Territory. This provoked a number of confrontations with the Kayabi, Munduruku and Apiaká Indigenous groups who saw their culture, environment, cosmology and food supply under threat. The dam was placed on an Indigenous sacred site called Dekoka'a (Morro do Macaco, or 'Monkey Hill'), shortly after construction works at the Teles Pires Dam further upstream had already destroyed the sacred site Karobixexé, which also involved the removal of about 270,000 archaeological artefacts from the two dam locations.

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A Kayabi leader described the impacts on the local community as follows: "All this is a terrible sadness for our people. This region is sacred to us. Now, along with the land being flooded, they've dirtied our water. The fish have disappeared, too. People are getting sick with diarrhoea. Everyone is worried about their health". Moreover, in 2016, families near São Manoel Dam became affected by an oil spill that was supposedly caused by EESM.

The 2010-founded Fórum Teles Pires emerged as an important public voice and network uniting over 30 social organizations, academics and Indigenous and riverine communities affected by infrastructure projects. It regularly revealed the flaws of public agencies and companies in (not) complying with their legal requirements to compensate for damages and safeguard Indigenous rights. Moreover, Fórum Teles Pires criticized EESM for a lack of transparency, for strategically using disinformation in public to silence the voices of affected communities and for exerting pressure on them to renegotiate already agreed compensations.

Court rulings were overturned by judges willing to apply a "safety suspension", an instrument created during the military dictatorship to reverse judicial decisions that cause damage to the public economy. After the dam's occupation in 2017, EESM judicially attempted to ban Indigenous people from demonstrating and entering the property, which also included the sacred site Dekoka'a. Framing the Munduruku as a "threat" to public order, the group was kept away from the site with the support of the National Force and even with the use of tear gas bombs.

In late 2017, after the Munduruku had been unsuccessfully calling for a meeting with officials, São Manoel Dam received its operating licence from the president of Brazil's environmental agency IBAMA. According to environmental researcher Philip Fearnside, this decision resulted from increasing political pressure on IBAMA leading to an easing of the procedure. In 2018, a number of civil society organizations publicly alerted about the risk of conflict in the Teles Pires region and condemned the ongoing intimidation of opponents of São Manoel Dam: "Instead of agreeing to dialogue, the federal government dispatched the National Force to the building site to repress the Indigenous mobilization carried out mainly by women and children".

With the São Manoel and Teles Pires dams becoming a new reality, in recent years the mobilizing Indigenous groups – most notably, the Munduruku – demanded compensation that would improve their social rights, for example, the creation of a regional Indigenous university, access to healthcare, the preservation of sacred Indigenous sites and the Munduruku culture, and the official demarcation of the Sawré Muyubu land as Indigenous territory. They continued to demand the devolution of sacred funeral urns and other artefacts removed during construction works. The Munduruku have been successful in the São Luiz do Tapajós hydroelectric dam (Chapter 19), but not in this case.

North-East Brazil: The Quilombo of Acupe, Santo Amaro, Bahia and the Ritual of Nego Fugido[8]

In the *quilombolas* of Brazil as in Colombia's *palenques*, and in the wider Caribbean area, one can find the use of Yoruba religion, imported with slavery and displayed in some instances in the defence of the environment. In Brazil it is present in the *terreiros* of cities. Yoruba is a language used in candomblés, in religious chants, in greetings to the *orixás* and in the names people receive after initiation. The goddesses and gods, such as Iemanjá, are elements of nature. In the times of colonial slavery, the runaway slaves, the Maroons, took refuge in

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natural environments to escape death at the hands of white colonialists. Much remains of these traditions in today's ecological struggles (e.g. Cockpit country in Jamaica). The Maroons combined different spiritualities (most often of African origin) with their anti-colonial and anti-racist politics (Ferdinand 2022).

As Felipe Milanez and Monilson dos Santos Pinto explain (2017), "Nego Fugido" in Acupe (meaning "escaped Nigger") is a complex ritual. It represents the struggle for freedom with origins in the slave system and currently enhanced by the advance of extractivism in the globalized economy. It is a yearly performance attended by a large public, representing the insurgency of the environmental justice movement against human and ecological exploitation. The ritual of the Nego Fugido is not simply a traditional popular festival. The Maroons of America carry in their history proclamations of freedom and defence of the natural environment against the cruelty of slavery in sugarcane and cotton monocultures. The ritual of the Nego Fugido revives the battles of Black people against slavery, carried out by the *quilombola* community of Acupe in the Bahian Recôncavo. It reconstructs the history of abolition in a way contrary to the official narrative: instead of receiving freedom from Princess Isabel's hands, Nego Fugido is the Black protagonist of his freedom with a rebellion that ends with the defeat of the colonial army and the imprisonment and sale of the king of Portugal.

It was the arrival of sugarcane in Recife and the Recôncavo that inaugurated the expansion of the "commodity frontier" in the South American continent, together with silver in Potosi (with Indigenous *mitayos*) and gold in Minas Gerais. Regarding the origin of Acupe, the griôs say that when slavery was officially abolished in Brazil in 1888 the enslaved Black people of the Acupe sugar mill went to live in Vai-quem-quer ("whoever wants to go"), a quilombo near the mangrove swamp. Before this, the slaves could choose between staying at the mill or riskily running away and going to live at the edge of the mangrove swamp. According to the griôs, the owner of the mill Francisco Gonçalves became famous for the violence with which he treated his slaves. After abolition, they all abandoned him and went to live in Vai-quem-quer, which housed rebellious slaves responsible for revolts and attacks on other plantations and mills. The Africans mercilessly transported to America came with their religion – in Brazil and the Caribbean they often kept their religion, while in the United States their religions were lost in favour of varieties of Christianity.

The "negos fugidos" of many coasts of America took refuge in their quilombos and palenques in the mangroves, as happened in Esmeraldas, Ecuador and in the Colombian Chocó. Vai-quem-quer is a symbol of resistance to the slave economic system and a bastion against unequal capitalist exchanges, of reaffirmation of the Black people. This is what the ritual of Nego Fugido represents. Vai-quem-quer today is the name of a street in Acupe through which the slaves of the Nego Fugido ritual run on the days of their performance of street theatre in the month of July. The population, of approximately 8,000 people, continues its resistance because with the discovery of oil in the Baía de Todos os Santos in 1941, a profound reorganization of the Bahian economy and new processes of subjugation of the Black population of the Recôncavo began. The agro-extractivist system of sugarcane for export was replaced by extractivism of oil and minerals. The subaltern population of Acupe resisted and resists on the front lines of this world-system of commodity extraction and toxic waste disposal.

In 1958, socio-ecological oppression intensified with the installation of the French mining company Peñarroya Oxide, through its subsidiary Companhia Brasileira de Chumbo (Cobrac), at the city of Santo Amaro. "Chumbo" means lead. In order to access the sea to export the

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lead ingots produced from the ore mined in the city of Boquira, the mining company located itself on the banks of the Subaé River, which cuts through Santo Amaro and descends towards Acupe to flow into the bay. Cobrac's activities continued until 1993, when it finally closed down after a long struggle by the affected communities. The factory polluted the region with lead particles emitted by the chimney, with slag deposited in the open air, with the use of slag in the paving of streets and schools in the municipality and the release of effluents into the Subaé River. A 2003 report by the Association of Victims of Lead, Cadmium, Mercury and Other Chemical Elements Contamination (AVICCA) recorded 89 widows due to contamination and 560 severely damaged children.

The history of struggle and social and political mobilization in Acupe is centuries old. From the traumatic experience of slavery, the performance of Nego Fugido emerges as a real or mythical past evoked by the inhabitants of Acupe, victims of socio-environmental racism.

The Wixárika in Mexico: Wirikuta and Tatéi Haramara[9]

Consider now some Mesoamerican and Caribbean conflicts. The current conflicts confronting the Wixárika (huichol) in Mexico against land grabbing and mining definitively have religious content. In the Wirikuta case, there has been strong, peaceful and successful resistance to silver and gold mining in sacred land belonging to the Wixárika people. In 2011, the federal Government granted Revolution Resources Corp mining concessions to launch a new "Universe Project" in an area that overlaps by more than 42 per cent with the Wirikuta Natural Reserve, nearly 60,000 ha.

This was added to the La Luz project, which was approved in 2010 in benefit of First Majestic Silver Corp. This project involved 22 concessions and affected 6,327 ha, 70 per cent of which also fell within the Reserve. The Reserve hosts the Wirikuta/Wixárica community and a number of sacred sites and resources used by this community. The projects, which contemplate open extraction techniques, will threaten the community's traditional activities as well as water quantity and quality in the area. Additionally, the area will also be impacted by industrial agriculture firms that have started massive tomato cultivation. There has been resistance by the local Indigenous community and much support at national level.

One of the organizations involved in the resistance was the Unión Wixárica de Centros Ceremoniales from the states of Jalisco, Durango and Nayarit. There was support from international organizations such as Amnesty and Business and Human Rights, but not from the Catholic Church and its "Liberation Theology" branches, contrary to what happens in many other Latin American cases.

While the Wirikuta conflict is occurring in San Luis Potosí, the next Wixárika conflict takes place in Mezquitic, on the border of Jalisco and Nayarit. In October 2019, the Jalisco State Human Rights Commission (CEDHJ) prepared a diagnosis that indicated that the Wixárika Indigenous community currently has 14 active conflicts, in general because of mining industries violating their human and Indigenous territorial rights. In this case, there are 12 villages settled in an area of 25,000 ha within the municipality of Mezquitic, Jalisco, an area that is in dispute because Jalisco accuses the government of the state of Nayarit of its illegal annexation. This conflict originated since the creation of Nayarit as a federative entity but became relevant in 2008 when the conflict arose between the community members of the different Wixáritari communities in the state of Jalisco, and cattle ranchers and farmers from

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Source: Tracy L. Barnett, the Esperanza Project

Figure 22.2 Tatei Haramara

Nayarit. It became more visible when in 2018 the Congress of the state of Nayarit decreed the annexation of the communities of San Andrés Cohamiata, Santa Catarina Cuexcomatitlán and San Sebastián Teponahuaxtlán, from the state of Jalisco.

The annexation amounts to more than 20,000 ha. Tatei Haramara, also known as Isla del Rey (King's Island), is located in this extension, a sacred place of 100 ha that is part of the World Network of Sacred Natural Sites issued by UNESCO and a Natural Protected Area declared by the government of Mexico, where rituals and dances of ancestral relevance for the Wixárika culture are performed. This is not to the taste of farmers and ranchers from the state of Nayarit, who use this land for grazing and cultivation (Figure 22.2).

The Barro Blanco Dam in Panama: Ancient Petroglyphs that Hold Sacred Writings[10]

The government of Panama ordered a hold on this hydropower project for violating the EIA on 10 February 2015, after many years of opposition by the Movimiento 10 de Abril and the Ngöbe-Buglé communities. Despite protracted resistance expressed in a language of Indigenous religious culture, the Barro Blanco dam of about 29 MW was finally built. The project is located in the districts of Veladero and Bella Vista, Province of Chiriqui, and uses the waters of Tabasará to generate electrical energy.

In 1981, the very first dam project on the river, Tabasara I, was meant to supply energy to the Cerro Colorado copper mine (Chapter 18). This project was ultimately cancelled after being rejected by the local community. In 2007, the dam concession was given to Honduran-owned Generadora del Istmo, SA (GENISA) and renamed the Barro Blanco dam project. In 2008, GENISA consulted a non-Indigenous town near the affected area. Later, when the EIA was approved, GENISA began to apply for carbon credits under the Clean Development Mechanism established under the Kyoto Protocol. The local inhabitants became indirect victims of climate change to which they had historically not contributed at all.

The Ngöbe-Buglé, the largest Indigenous people group of Panama, took to the streets in February 2012 to demand that all concessions granted without their approval be cancelled. The Barro Blanco Power Plant project violates the laws that define the Ngöbe-Buglé's regional

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territories, water rights and the self-determination of Indigenous people. These protests, which blocked the Pan-American Highway for over a week, stemmed from the refusal of legislators to prohibit all mining and hydroelectric concessions within the region of the Ngöbe-Buglé. Violent repression by President Martinelli against the Ngöbe protests left three of them dead (including Jerónimo Rodríguez Tugrí) and more than a hundred wounded. Communications were cut and human rights were severely violated.

On 23 March 2012, Onesimo Rodriguez, a Ngöbe Indigenous Panamanian opposing the Barro Blanco hydroelectric dam project, was killed. The project continued despite a long-awaited United Nations report on the illegality of the dam. The dam would raise the level of the Tabasara River, flooding Ngöbe lands and villages. "Diplomatic" peace negotiations between the government and the Ngöbe-Buglé occurred. A compromise agreement between the two parties resulted in the passing of Special Law 11, in force since April 2012, which cancels mining concessions and prohibits future mining. It also states that any future hydroelectric projects the government plans in the territory must be subject to approval by Indigenous authorities and a referendum of the area's residents.

However, the Barro Blanco dam has gone ahead, overcoming ancestral rights, religious values and rituals, and practical livelihood needs. The Indigenous population were displaced. Destroying forests and villages, the reservoir also submerged boulders covered with petroglyphs important to the Ngäbe culture. Some Ngäbe-Buglé practise Mama Tata, a syncretic Indigenous-Christian religion. Their ancestors' wisdom is encoded in the boulders.

San Miguel de Copán, Honduras[11]

Copan is one of the most famous sites of Maya culture. In San Miguel, many centuries after the European conquest and once the Christian religion had been imposed and syncretized with the ancient beliefs, there was one more episode of defence of the environment headed by a bishop of the Catholic Church and with the acquiescence of the local population.

In 1999, in the old agricultural community of San Andrés de Minas in the Copan department, Greenstone Resources Limited of Canada obtained a concession. In a short time, residents were relocated and the town centre flattened. The relocation of San Andrés was devastating for the community. The people lost their traditional family farm plots. Only a handful got jobs in the mine. The community also lost its central plaza and meeting place. Long-standing relationships and traditional village governance structures broke down. The old buildings of the village of San Andrés were demolished. Neighbouring villages complained and alerted the authorities about cyanide spills in the Higuito River. The bishop, Luis Afonso Santos, known as a fighter for human rights, asked the government to intervene against the mining company.

By 2000, Minosa Mining bought Greenstone. Minosa established a cyanide heap leach pad only a short distance from the village of San Miguel. Residents of San Miguel soon began to experience skin disorders that come with contaminated water, and their farm animals began to die. There were several major spills of tailings into a nearby river, affecting communities downstream. In 2005, the mine changed hands once again to British Columbia-based Yamana Gold, which sought to expand the mine. By spring of 2006, people from four different communities were displaced, and the original group from San Andrés faced relocation a second time. The bishop lost the battle against foreign gold mining companies.

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The Desecrating Rio Tinto and BHP Corporations, in Arizona USA and in Western Australia[12]

Two contemporary conflicts started by the terrible Rio Tinto and BHP mining companies evidence the meaning of the word "desecration": "to treat a sacred place or thing with violent disrespect, to deny its sacred value". A further meaning could be: "to give a money value to a sacred place or object".

There are several copper mining conflicts in the state of Arizona. In Chapter 25 we describe how local tribes halted the Canadian Hudbay Minerals' company plans for copper mining in Santa Rita Mountains. In this parallel case, environmentalists and Apache groups strongly opposed Resolution Copper, owned by British-Australian mining companies Rio Tinto and BHP. The 2014 copper mine project on Oak Flat (Chi'Chil Bildagoteel) would occupy a sacred site for Apache people where they pray, collect water and medicinal plants for ceremonies, gather acorns and other foods, and honour those buried here. This is located 60 miles east of Phoenix, near a mining town called Superior. The tailings facility would be located on National Forest Services property. This mine would be "likely over time to result in measurable reductions in flows in Devil's Canyon and Queen Creek and the long-term loss of some seeps and springs in the Superior area", said the draft EIA statement. Storing the toxic waste would pose a risk to groundwater and streams. Local communities besides tribes would be affected too. The mining would also disturb the habitats of endangered species like the Western yellow-billed cuckoo and the Southwestern willow flycatcher.

Men, women and children of the San Carlos Apache tribe camped out at Oak Flat for more than three months, with its four crosses representing the entire surrounding sacred area. The mine is also involved in a controversial land trade between the US government and Resolution Copper Co. Under that exchange, the Forest Service would trade Oak Flat Federal Parcel for eight parcels elsewhere in Arizona owned by the mining company. The Apache lost many battles but never lost relationship to this specific place, Oak Flat. By January 2015 over 104,000 people had signed a petition to President Obama, "We the People Stop Apache Land Grab". By 2022 it seems however that the project will go ahead. The mining technique would involve panel caving, a form of block caving which is highly destructive. This method involves vertical shafts and tunnel construction through drilling and blasting, causing copper ore to collapse into giant funnels known as drawbells. The ore would then be moved to an underground crushing facility. The crushed ore would be hauled halfway to the surface and put into a conveyor system to be shipped to a processing plant.

The resistance against Resolution Copper, known as *The Apache Stronghold*, has been a multi-pronged effort with allies across political, grassroots, artistic, non-profit and media spheres. The occupation of Oak Flat in 2014 cascaded into a movement around the country, including solidarity marches, presence of Bioneers (a network founded in Santa Fe, New Mexico), public speak-outs against the land exchange, media production and lobbying. On 17 March 2018, a member of *The Apache Stronghold* arrived at Oak Flat to find the four sacred crosses intentionally destroyed, one example of the intimidation strategies.

The Pilbara is a large and thinly populated region in the north of Western Australia. It is known for its Aboriginal Banjima people, its ancient landscapes, the red earth and its vast mineral deposits.

Exactly here, the mining giant BHP Billiton wanted to expand its South Flank iron ore mining project. It so happens that Rio Tinto is also mining in the area (Brockman mine) and

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in May 2020 it blasted a sacred site that showed 48,000 years of continuous human occupation and provided a 4,000-year-old genetic link to present-day traditional owners. The cave in Juukan Gorge in the Hamersley Ranges, about 60 km from Mt Tom Price, was one of the oldest in the Western Pilbara region and the only inland site in Australia to show signs of continuous human occupation through the last Ice Age. Protests against such barbarity made companies apologize (too late) and reconsider decisions (Figure 22.3).

Mining company Rio Tinto received ministerial consent to destroy or damage the site in 2013 under Western Australia's Aboriginal heritage laws, which were drafted in 1972 to favour mining proponents. On 26 May 2020, Rio Tinto destroyed the Juukan Gorge cave with detonation explosives. The traditional owners – Aboriginal people – strongly opposed the mine on their sacred landscapes, especially because the mining project takes place near 86 heritage sites. Three hundred peaceful protesters gathered outside Rio Tinto's Perth headquarters to protest against the destruction of the significant Indigenous sites. The protesters argued that Rio Tinto had exploited the weakness of Western Australia's Aboriginal heritage legislation and then blamed the facts on misunderstandings between the company and the custodians of the site – the Banjima people.

The company stated that there was no record of the Puutu Kunti Kurrama and Pinikura Aboriginal Corporation (PKKPAC) asking to stop mining in the area until mid-May 2020, when the blasting was already loaded. But the PKKPAC director stated that the company was very aware of the damages the project would lead to.



Source: Richard Wainwright/EPA

Figure 22.3 Pilbara, Australia, 2020

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After this, in June 2020 BHP came up with the plan of blasting more Aboriginal sacred sites to expand its South Flank mine in the same Pilbara region. This was stopped on 10 June 2020; the Australian government established a moratorium on any further work already granted under Section 18 of the Aboriginal Heritage Act. That legislation, however, does not give traditional owners the right to appeal. In fact, Western Australia approved BHP's application to disturb 40 culturally significant Aboriginal sites as part of a mine expansion only days after the Rio Tinto company destroyed sacred caves in the area.

By 12 June 2020, Rio Tinto faced protests from the public and even from investors. Jean-Sébastien Jacques, Rio Tinto CEO, apologized for the company's destruction of the caves: "We are very sorry for the distress we have caused the PKKP in relation to Juukan Gorge and our first priority remains rebuilding trust with the PKKP", Jacques said in a statement, referring to the Puutu Kunti Kurrama and Pinikura (PKKP) people. Following this event, Jacques resigned from his position. Rio Tinto has had a lot of socio-environmental liabilities in its history, not least in Bougainville not far from Australia (possibly a new independent country). It appears frequently in this book and deserves a special place in research on Corporate Social Irresponsibility.

IN THE STREETS OF ISTANBUL, TURKEY[13]

Religion is embedded into culture in all countries and societies. Organized religion has justified many atrocities, answered by atrocities from other organized religions. Religion has also caused many helpless victims, as at the beginning of Christian colonization of the Americas with campaigns plainly termed *extirpación de idolatrías* meant to locate and destroy the sacred *huacas* – more or less like Rio Tinto and BHP Billiton in Western Australia. But there are often cases where local clerics support villagers against mining, hydropower and tree plantations. Such local clerics are sometimes Islamic mullahs. But in countries with Islamism as state religion we have not found much organized Islamic support for environmentalism.

Nevertheless, it is remarkable that at the Gezi Park movement in 2013 in Istanbul, which was led by secular, environmentalist and feminist anti-Erdogan groups, one section of the crowd identified with Islamism and publicly celebrated Iftar with a collective dinner (Figure 22.4). Iftar is the evening meal with which Muslims end their daily fast at sunset in the month of Ramadan. The so-called "Anticapitalist Muslims" arranged this famous earth table dinner held on Istiklal Avenue when Ramadan coincided with the Gezi Park movement which (to put it briefly) started in defence of the trees of a small urban park (Özkaynak et al. 2015; Mert 2019).

CONCLUSION: RELIGIOUS PARTICIPANTS SOMETIMES DEFEND NATURE AND THE POOR

The conflicts under review in this chapter are caused by the search for water and hydropower, biomass in the form of eucalyptus and sugarcane, minerals such as copper, manganese, iron ore, lead, silver and gold at the extraction frontiers. In Gezi Park the struggle was on the preservation of a green urban environment. Such eminently material causes interact with social class and caste affiliation, gender and Indigenous identities, nationalist movements

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Source: Muhsin Akgün

Figure 22.4 *Fasters celebrate Iftar at an "earth table" on Istiklal Caddesi Avenue in Istanbul, 9 July 2013*

and feelings of sacredness. The complaints of the local people sometimes adopt a religious language, and their cultural traditions overlap with religion and spiritual values which do not necessarily mean organized religions. "Sacred groves" in India are tribal institutions of ancient forest peoples. There are other instances of environment conflicts where organized religions and their clerics become active, with geographical concentration around Christian and Buddhist activists. As we have seen in Chapter 7 on the Arctic and shall see again in Chapter 25, the most ecologically pristine areas are often commodity extraction frontiers where Indigenous people live. They often count also among the most sacred places in the religions of the oppressed.

This chapter has selected cases where there is a religious defence of the environmentalism of the poor and the Indigenous related to water sources, forests and mountains. Sacredness can be deployed against such commodification of nature, against business-driven sand and gravel mining, metal mining, fossil fuel extraction or deforestation, but it can also be used in defence of traditional social hierarchies for the exclusive use of nature. As in the Hindu tradition against Dalits that Ambedkar denounced, or when the words "nature *sanctuary*" are used for "militarized" biodiversity conservation (Chapter 11) at the cost of expelling local Indigenous peoples.

Sometimes I am a dreamer, and I can "imagine there's no countries […] nothing to kill or die for, and no religion too. Imagine all the people living life in peace". However, as a materialist political ecologist, I hope for peace but I know there are religions and nationalisms.

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Sometimes, environmentalism can be supported by religion, but not always. Let's stick to the facts because at the level of ideology there is nothing to stop Hindutva politicians in India preaching that their scriptures show the greatest respect for Nature that characterizes their Gods (Sharma 2012), or Christians to quote from Matthew's gospel that environmental products and services are provided by their God: "the birds of the air: they neither sow nor reap… yet your heavenly Father feeds them". Many Indigenous and traditional communities and other subaltern peoples around the world have spiritual and religious feelings of identity with nature. They all have in common the religious languages displayed by some of the protagonists, sometimes as members of organized major religions and sometimes not. Some major religions are strongly anthropocentric and preach the exhortation of Genesis, translated into English as *Be fruitful and multiply and replenish the earth and subdue it, and have dominion over every living thing*, which Lynn White (1967) saw as an anti-ecological principle absent in Buddhism and other religions. Maria Lacerda de Moura (1887–1944), a Brazilian anarchist, feminist and atheist, published a book in 1932 with the title, "Love one another (more), and do not multiply (so much)" (Chapter 29).

Rather than on metaphysics, in this book we focus on social metabolism and socio-ecological conflicts as two sides of the same coin. In the conflicts, there are several kinds of participants on the side of the environment. The poor and the Indigenous, the local activists, the peasants and the citizens predominate, but there are also trade unionists, scientists and professionals, and *sometimes* religious participants. Only sometimes. They might be Christians, Buddhists, Hindus, Islamists or believers in Yoruba deities or in other ancestral, tribal religions. We must understand the motivations of such participants. As in Brazil with Leonardo Boff, in the Philippines the influence of Liberation Theology among Christians has been important (Holden and Jacobson 2007; Holden 2013). Some of the WED killed recorded in the EJAtlas were Christian nuns. At other times, the environmental actors belonged to other major religions, or their culture expressed feelings of identity with nature or parts of nature. This ontology is called «animism», when people attribute sentiments and agency to particular animals, plants, spirits, and forces of nature like the rivers or the winds. This is indeed common.

NOTES

1. Singh A.A., Mahongnao, M., Demaria F. and Krishna, V.V. (2014). Illegal sand mining conflicts in India, *EJOLT* Factsheet No. 010, 4 p.
2. Green Isan & Khor Jor Kor projects (and other state plantations), Thailand (J.F. Gerber), EJAtlas.
3. Copper mining in Tamo, monks and citizens protest, Tibet, China (Myriam Bartolucci), EJAtlas.
4. Gold mining site in Palyul county, TAP, Sichuan, China (Myriam Bartolucci), EJAtlas.
5. Marcopper Placer Dome mining disaster, Marinduque Island, Philippines (Arnim Scheidel), EJAtlas.

   Katarungan. (2015). Church urges Marinduque Government to pursue class suit in Canada, 11 September.
6. Manganese mining in Manggarai, East Nusa Tenggara, Indonesia (Dalena Tran), EJAtlas.
7. São Manoel Hydroelectric Dam, Mato Grosso – Pará, Brazil (Max Stoisser), EJAtlas.
8. Lead contamination in Santo Amargo, Bahia, Brazil (Diogo Rocha), EJAtlas.
9. Wirikuta silver and gold mining, Mexico (Sergio Villamayor), EJAtlas.

   Despojo de tierras a indígenas Wixárikas entre Mezquitic, Jalisco y el Nayar, Nayarit, México (Federico Guzmán), EJAtlas.

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10. Barro Blanco dam, Panama (Daniela Del Bene, Joan Martínez-Alier), EJAtlas.
11. Mina de oro San Andres en Copan, Honduras (Patricio Chávez), EJAtlas.
12. Proposed copper mine on land sacred to the indigenous Apache of Arizona, USA (Ksenija Hanaček), EJAtlas.

    Septoff, A. (2015). Oak Flat/Apache Leap: The world's two biggest mining companies want to mine sacred lands, a public campground, and a popular rock-climbing destination, *EarthWorks*, 28 January.

    Rio Tinto / BHP's iron mining destroys sacred Aboriginal sites, Western Australia (Ksenija Hanaček), EJAtlas.
13. Taksim Square and Gezi Park construction works, Turkey (MB, KG, BT), EJAtlas.

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23. The Iberian Peninsula: transboundary conflicts

INTRODUCTION: SOCIO-ECOLOGICAL CONFLICTS IN PORTUGAL AND SPAIN

After three thematic chapters (on working-class, agrarian and religious participants in environmental conflict), we continue with two geographical chapters: the Iberian Peninsula and the USA.

In 2022, the Atlas of Environmental Justice counts 3,800 ecological distribution conflicts registered and described in different parts of the world. The country with the highest number of registered cases is India, with 350 conflicts. It is followed by Brazil, the United States and China. Spain and Portugal are (counted together) in tenth place with 97 cases for Spain and 18 for Portugal, both somewhat over-represented in relation to their population due to the relative ease of contact we have.

The physical balance of trade is very favourable to the Iberian countries – as the rest of Europe, Spain and Portugal import many more tonnes than they export. Oil, gas, phosphates and many other commodities are imported, and their socio-environmental effects are "externalized" to other countries, particularly to Africa. However, internally there are also old and new mining conflicts and some fossil fuel extraction and land-grabbing conflicts. Those related to waste disposal, public works, tourism infrastructures and nuclear power plants predominate in comparison to others, though there are also important conflicts with hydroelectric plants and eucalyptus plantations.

The nuclear energy problem is once again on the rise throughout Europe 40 years after the conflicts over their construction since the risk of accidents in these NPP is increasing, although the economic interests of the companies do not allow their definitive closure. This is the case of Garoña (which is now closed) and also of the Almaraz NPP in Extremadura. One of the main themes of this chapter is transboundary conflicts, not because they are unique to the Iberian Peninsula but because they deserve a special mention and analysis as a category of environmental conflicts. For instance, the main rivers in Spain (except for the Ebro River) go to the Atlantic and, therefore, to Portugal before reaching the sea. Dams, siphoning off water and polluting rivers in Spain affect Portugal, as was exemplified in 2017, when Portugal filed a formal complaint with Brussels over Spain's plans to use the increasingly scarce water flow in the Tagus River for nuclear waste treatment.[1] A transboundary issue that revived in 2022 because of the Russian invasion of Ukraine is the stopped MidCat gas pipeline that would link Catalonia with France, allowing an Algerian gas flow into Europe.

The registered cases in the EJAtlas are shown in Figure 23.1, of which we take a sample in this chapter. Other "transversal" chapters in this book (for instance on WED killed and on agrarian conflicts) contain Spanish cases such as the death of Gladys del Estal in Tudela in an anti-nuclear march or opposition to a CAFO in Novierca.

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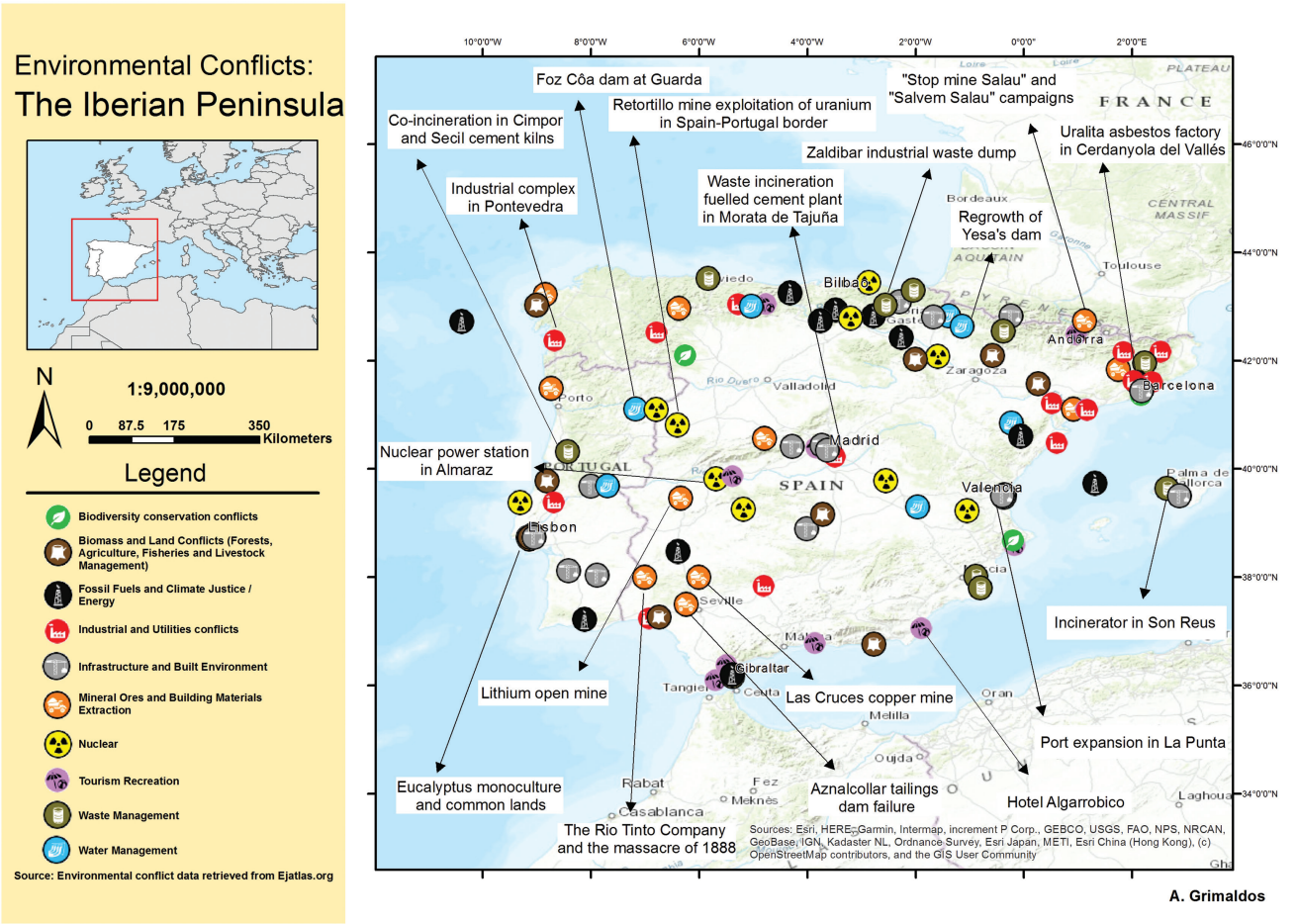

Source: A.Grimaldos

Figure 23.1 *The Iberian Peninsula, conflicts in Spain and Portugal*

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Sometimes, as I am Catalan, I am asked why we have not included more cases from Catalonia. New conflicts arise all the time, for instance, in 2021 on the expansion of the Barcelona airport, where environmentalists (with support from the global Stay Grounded network) argue in terms of climate change, local biodiversity and avoidance of noise. To the alleged under-representation, I answer that there is one person in Catalonia for approximately every thousand in the world. The EJAtlas is a good sample of socio-ecological conflicts around the world but biased towards some world regions. For Catalonia it has two cases per million, while the world has only 0.5 cases per million inhabitants. It would be easy to add other cases by consensus among environmental groups (air pollution in the city of Barcelona, urban planning in the Costa Brava), and collect the 30 most relevant environmental conflicts in Catalonia, reaching four relevant conflicts per million inhabitants. Somebody should then write a book.

The registered cases in Catalonia are as follows:

- GM maize – in Lleida and Aragon
- Vall Fosca (tourism), Pyrenees
- Salvem Salau, transborder mining conflict, Pyrenees
- Cercs, first a coal power plant, now a waste incinerator
- MAT, high voltage electric line from France
- Pork industry
- Potassium mining, Llobregat River
- Bullfighting
- Ateneu 9 Barris, Barcelona (asphalt factory)
- Montcada i Reixac, waste burning at Lafarge cement factory
- MIDCAT, gas pipeline to France
- Flix, industrial pollution Ercros
- Ebro River water transfer
- Ascó and Vandellós nuclear power plants
- Asbestos plant, Cerdanyola del Vallès
- Petrochemical complex in Tarragona
- Quarries overexploitation in the Baix Camp (Tarragona)

LOS EUCALIPTOS SON COMO EL ESTADO ("EUCALYPTUS TREES ARE LIKE THE STATE")[2]

The chapter starts with conflicts on eucalyptus fires and cellulose manufacturing. The title of this section comes from an article in *La Voz de Galicia* (15 April 2018) by Adolfo Cordero on the eucalyptus trees as an invasive species taking water and fertility from the soil.

> Despite being the wettest region in Spain, Galicia has turned into a wildfire hotspot in recent years; nearly 40% of fires in the country between 2001 and 2015 broke out here. Experts have pointed to the increased presence of eucalyptus as one of the causes. The area covered by eucalyptus jumped from 28,000 ha in 1973 to more than 300,000 ha in 2018.

It does not matter so much that eucalyptus are "exotic" (from Australia), the problem is about the properties they have. "Eucalyptus trees are like the state" because they take everything

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away and give nothing in return. The phrase comes from an anthropologist, A. Tegbaru, who heard it from a peasant in Thailand. Larry Lohmann quoted it and I included it in my book *The Environmentalism of the Poor*. This is where Adolfo Cordero found it.

Similar commodities, somewhat similar reactions in very distant countries. In Portugal and Spain, the "plague" of the eucalyptus trees is furthered by the pulp and paper industry. Eucalyptus conflicts are present in the Featured Map composed of the Portuguese cases in the EJAtlas[3] due to Lúcia de Oliveira Fernandes and her colleagues. One of the entries has the title "Celtejo's SLAPP against Arlindo Marques".

Celulose do Tejo, S.A. started a SLAPP against Arlindo Marquês, an activist. This is a "Strategic Lawsuit Against Public Participation". The 90-page indictment contains items from social media, news and interviews that Celtejo considers defamatory. The intimidation tried to curtail the constitutional right that citizens have to freely express their opinion and the duty that all citizens have to defend the environment, according to Article 66 of the Constitution of the Portuguese Republic. Speaking on 22 December 2017 to Radio Portalegre, Arlindo Marquês, an active member of the proTejo movement, said he had highlighted the "pollution of the Tagus as an act of citizenship". This prison guard turned environmentalist, known locally as 'the Guardian of the Tejo', accused Celtejo's management of trying to silence him with its defamation case. Arlindo Marquês said he would continue to denounce pollution in the river Tagus, arguing that Celtejo should compensate those families who had their livelihood taken away by a polluting company in the Vila Velha de Ródão area.

In November 2017, Marquês said, "We all know that the culprit is the pulp mill", referring to the effluents from Celtejo, which produces Bleached Eucalyptus Kraft Pulp (BEKP) for paper production. Portugal's Animals and Nature political party, PAN, had already filed a complaint with the Public Prosecutor's Office for Celtejo's pollution in the Tagus River after municipal councils complained that the situation was utterly appalling. Celtejo and other factories polluting the river are committing environmental crimes every time they flush the waste. PAN also accused the Ministry of the Environment of indifference. By 2020, the *guardião do Tejo* had won the dispute, and the company withdrew the lawsuit against him. He continues the struggle against pollution and for a legal minimum flow in the river (retained by Spanish dams) allowing the fish to live and reproduce.

EUCALYPTUS MONOCULTURE, FOREST FIRES AND COMMON LANDS IN PORTUGAL[4]

With over 800,000 ha covering a quarter of Portugal's forest area and 9 per cent of its territory, Portugal is the country with the largest area planted in eucalyptus in Europe and ranks fifth worldwide. This process began during the fascist regime of 1933–74. At that time, 7,638 communal land parcels (*baldios*) that together totalled 408,000 ha and guaranteed the traditional rights of the commoners (such as grazing and collecting firewood and fuel) came to be managed by the state Forest Services, which implemented the state's afforestation policies.

After the 1974 revolution, the commoners and the state jointly managed communal lands. Even so, the commoners' assembly and municipal councils did not have a say in the regulations that would soon be adopted on tree planting. This situation arose because most communities did not have the technical skills necessary to manage the forested lands and their communal structures had been severely weakened during the years of dictatorship.

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In the 1980s, three key processes occurred simultaneously. First, the Forest Service underwent a series of reforms claiming capacity to manage the forest lands. Second, some of the private pulp and paper companies were nationalized and consolidated as one group called Portucel. Third, many commoners delegated local management to the parishes (municipal authorities), thereby abdicating their direct control of the land. The pulp and paper industry and their eucalyptus suppliers were the ones to benefit the most from this situation. Already in 1990, 35 per cent of the area planted in eucalyptus was owned by pulp and paper corporations and 65 per cent by private owners and commoners who had signed long-term rental contracts.

In 1989, hundreds of farmers met in Armada (Ponte de Lima) to protest against the parish's decision to rent their common lands to Portucel for a 29-year period. That same year, in Valpaços, the olive oil-producing region of Trás-os-Montes, farmers rebelled against the eucalyptus plantations replacing the olive trees. Over 2,000 people – mainly the local population of four parishes together with some ecologists – engaged in direct action and managed to pull out 3,000 eucalyptus seedlings. The police reacted strongly and attacked the protesters. Later on, in 1995, the "Federação Nacional dos Baldios" (National Federation of Common Lands) was created to support the movement of the commoners. Then, in January 2012, the "Plataforma pela Floresta" was created, made up of environmental groups, activists, intellectuals, and scientists from all around the country (Figure 23.2).

In September 2014, the Portuguese government announced a change to Law no. 68/93, which regulates the management of communally owned uncultivated lands. The purpose of Law no.



Source: Quercus and EJAtlas

Figure 23.2 Portugal, campaign against eucalyptus

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72/2014 was to facilitate the entry of external agents and promote a rental economy on the common lands. It penalizes local communities for the lack of management of the lands by extinguishing the common lands and integrating them into the property of parishes and municipalities. This scenario was aggravated by the new legal regime (Law no. 96/2013) that permits unlimited plantations of any kind of tree species in plots of less than two hectares. This proposal gave rise to protests in which 5,000 people – mostly farmers – gathered in front of the parliament in Lisbon to defend the commoners' right to remain the legitimate owners of the *baldios*.

On 17 June 2017, the forest fire that ended with the highest number of victims (64 dead and 254 injured) and caused the most damage (more than 500 houses) in the history of Portugal raged through the country. It began in the Pedrógão Grande parish (Leiria district) and spread to the neighbouring parishes. On 15 October 2017, fires broke out again in the centre and the north of the country destroying numerous houses and industrial buildings, cutting off access to several roads and causing 45 deaths.

In 2017, the Council of Ministers of Portugal had approved reforms to the forestry code. The reform proposes a new afforestation regime, the attribution of new powers and a greater capacity to intervene in municipalities, and the creation of a Land Bank. In November 2017, the Government approved a new regime that prohibits eucalyptus trees from being planted in burned areas previously occupied by native species in order to preserve biodiversity. A new awareness of the damage from eucalyptus monoculture had perhaps arrived, too little and too late. In 2022 again, forest fires (not only of eucalyptus, but also of other species) furthered by heat waves from global climate change, raged in Portugal and Spain across the border in Ourense, Zamora and Cáceres.

CELLULOSE AND CHEMICALS IN PONTEVEDRA, GALICIA[5]

The Pontevedra River in Galicia hosts several very polluting industries which have dumped their waste into the river for many years. These industries are ENCE, a pulp mill and biomass energy producer since 1963, and ELNOSA, a chemical company which produces chlorine-derivatives. In 2002, the ENCE company recognized that its production was polluting the river. Six managers were sentenced to prison, and a fine of €433,000 was imposed for breaching the law on waste dumping, as reported by *El Pais* (15/06/2011). It appears that the sentence was never enforced and the fine was never paid.

These companies were supposed to leave the estuary by 2018. The Spanish government, however, extended the permission to stay for 75 additional years, further affecting the shellfish collectors. Currently, it is alleged that the shellfish caught by the river has a label C category. While the ENCE company claims that significant environmental improvements have been undertaken in its installations, opposition to this company and to ELNOSA continued for many years. Several organizations, grouped under the umbrella of the Asociación por la Defensa de la Ría de Pontevedra (APDR) have been trying to stop the pollution and to recover the affected areas, launching campaigns against the companies; they brought the companies before the Courts of Justice (and won) and they organized multiple demonstrations against the decision of extending the permission beyond 2018.

On 24 November 2013, about a thousand people demonstrated in Pontevedra against the decision of extending the permission to be in the Ria de Pontevedra. As *La Voz de Pontevedra* (24/11/2013) newspaper reported:

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> The official statement of the mobilization […] was read by the writer Carlos Solla, who made an ironic mention of the environmental and social consequences of the location of the Ence Elnosa industrial complex… He pointed out that this situation had marked a generation that he jokingly called *os nenos do mercurio* ("the children of mercury") and made a plea for the departure of both industries from the immediate surroundings of the estuary.

The platform was formed by political parties, social and neighbourhood groups, as well as environmental groups.

RETORTILLO AND ALMARAZ: URANIUM MINING AND NUCLEAR POWER

Nuclear Power Station in Almaraz[6]

The Almaraz nuclear power station on the Tagus River is getting old and dangerous. It is in the province of Cáceres (100 km from Vila Velha de Ródão). There are renewed protests both in Spain and Portugal.

In the 1970s the initial purpose in Spain was that of building two large nuclear power stations in Extremadura, much beyond the electricity needs for the region. One, Valdecaballeros, was stopped by a grassroots popular movement in the late 1970s with some support from elected politicians. The other, the Almaraz NPP began to be built in 1972 under Franco, when protests were difficult to organize. The first reactor started operating in 1981 and the second one in 1983.

According to Ecologistas en Acción, between 2007 and 2010 the resident or visiting inspectors had notified the CSN (Nuclear Security Council) of 75 incidents. It is a PWR (Pressurized Water Reactor) with two reactors with approximately 1045 MWe each. The water in the small dam of Arrocampo is often too hot, with damage to biological systems. Now that the end of Almaraz's "lifespan" is approaching there is a renewed concern, which is taking the form of a transborder movement in Spain and Portugal, the Movimiento Ibérico Antinuclear. This movement is concerned also about potential transboundary hydropower conflicts. The Almaraz NNP is cooled with water from the Tagus River, which flows to Portugal's border and finally to Lisbon. This turns the problems of Almaraz into an international issue, since the operation of the plant affects the river, both in its normal operation and in a hypothetical accident.

The plant was marked by a long succession of incidents, unscheduled shutdowns or refuellings that allegedly affected essential elements of its safety. In addition, more than 4,000 design modifications were made during its lifetime, some of them major. This was argued in a report by Paco Castejón, of Ecologistas en Acción, one coordinator of the Movimiento Ibérico Antinuclear. Transfrontier protests with the slogan *Fechar Almaraz. Descanse em paz*, have taken place in Cáceres. This is a conflict waiting to grow, as the Spanish government keeps giving extra time to old and dangerous large nuclear power plants.

Retortillo Uranium Mining Near Spain-Portugal Border[7]

Mine exploitation of uranium deposits and a project of construction of a factory of uranium concentrates in the Salamanca province was opposed by very active municipalities and two local EJOs. Salamanca has a long history of successful opposition to uranium mining, and

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this is the last episode for the moment. The ENUSA and the Berkeley Resources company had signed an agreement in December 2008 according to which Berkeley would report about the viability of the exploitation of uranium in the villages of Villavieja de Yeltes and Retortillo, near the frontier with Portugal. In October 2011, Berkeley signed an agreement of cooperation with both village councils about the mine exploitation and regarding a project of construction of a factory of uranium concentrates. Berkeley has deeply divided the local inhabitants' opinions with the promise of offering local people between 100 and 200 jobs. On 25 September 2013, the Junta of Castilla y León accepted a favourable EIA to the uranium mining project. On 5 March 2014, the Nuclear Spanish Safety Council informed Berkeley that the company submitted an incomplete dossier because the waste was radioactive and must be treated as such, but finally, Berkeley obtained the authorization as first category radioactive installation, which implies the highest potential radiological risk.

Later, in April 2016, the Spanish National High Court admitted the administrative appeal against the authorization of the project as first category radioactive installation. The EJO "Stop Uranio" filed a complaint with the Salamanca Public Prosecutor Office, since Berkeley may have committed an environmental crime punished by the Spanish Criminal Code in the article 325 when logging some holm oaks illegally.

During the last years, the local residents of the towns encompassed in the county of Ciudad Rodrigo have been opposing the project of the uranium mine. They created an EJO called "Stop Uranio" and they are working with "Salamanca Antinuclear" and Ecologistas en Acción. They organized many open-air meetings and demonstrations and brought legal and judicial appeals against the Spanish and Castilla y Leon governments. Berkeley has allegedly been stalking some environmental activists, infringing on their fundamental rights to speak out and to inform.

One of the remarkable risks of this project was the negative effect it might have on the market price of local varieties of livestock: wild rage pigs or morucha meat. Moreover, cork holms and other types of oak may be affected. Finally, the project is located near the frontier of Portugal, which would affect some types of wildlife and natural habitats protected by European laws – Special Protection Areas for Birds (SPAB) and Site of Community Importance (SIC) – and would pollute the Douro River that supplies water to two million people as the Yeltes River that is a tributary of Huebra River, flows out to the Douro River.

On 12 July 2021, the Spanish Nuclear Safety Council (CSN) issued a negative report on the request for a construction permit for the uranium mine project and the mineral processing plant that the Berkeley company was trying to open in Retortillo. With this pronouncement, the Ministry for Ecological Transition cannot grant authorization, since the CSN's opinion is binding. However, by December 2022 the vice-president of the regional government of Castile and Leon was still courting Berkeley's investment for US$ 80 million.

HYDROELECTRIC DAMS IN PORTUGAL[8]

The Portuguese government launched a National Program of Hydroelectric Dams (PNBEPH) in 2007. The 12 new dams correspond to 4 per cent of electricity production in the country from all sources. As part of a national strategy for renewable energy, hydropower would combine with wind power, and the combination of pumped storage systems would play an important role in preventing wind power from being wasted during the night. Environmental

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organizations, academics, researchers, and civil society movements came together to protest against this plan. Their main criticisms were the disregard for public participation in the decision-making process and the lack of consideration of the cultural and environmental values of the sites to be flooded. These counter-movements were undoubtedly empowered by the successful fight against the Foz Côa dam, where local communities and protest movements stopped the construction of dams that would have endangered the country's cultural heritage. However, the fight against the Sabor dam did not succeed in halting the project. Home to a diversity of fauna and endangered species, it was the "last wild river" in Portugal. The coalition "Plataforma Sabor Livre" (Free the Sabor River Coalition) carried out protests, sent complaints to the European Commission and boycotted the biodiversity fund managed by Energias de Portugal (EDP), the concession holder. However, it was not enough to stop the construction, and the dam became operational in 2014.

The Douro and the Tejo Rivers come from Spain, as do other rivers. The construction of the Foz Tua dam in the Alto Douro wine region, recognized as a world heritage site by UNESCO also faced strong opposition. Founded in 2013, the Platform "Salvar o Tua" (Save Tua River Coalition) received international attention. It filed various lawsuits against the project, organized information campaigns and created artistic and cultural projects to achieve greater visibility. In 2013, the coalition submitted to parliament a petition called "Manifesto for the Tua valley". In 2015, this manifesto, which had more than 7,300 signatures, was discussed in parliament. Some of the signatories travelled to protest inside the plenary. In addition to these cases, there were also conflicts involving the Ribeiradio-Ermida dam on the Vouga River, and another four hydropower plants in Gouvães, Padroselos, Alto Tâmega and Daivões.

The broader movement challenged the claim that the dams were being built in the "national public interest". NGOs and citizens' groups mobilized against new mini-hydropower plants on the Mondego and Paiva Rivers and were able to stop them. The main reasons were the failure to comply with licensing and contract procedures, the failure to meet the requirements on a minimum water flow in the Paiva River, incompatibility of the fish ladders built in the Mondego River and the broader changes they would bring, including the expropriation of people's houses. In early 2016, the PNBEPH was revised downwards. Only four dams would be built. Authorities cancelled the Girabolhos and Alvito dam projects and postponed the decision on the construction of the Fridão dam for three years.

Preserving the so-called "minimum water flow" is an argument found in the last 20 years in a multitude of conflicts against hydropower in the EJAtlas, contrasting with the old-fashioned vision that water getting freely to the sea was wasted.

ITOIZ AND YESA IN THE EBRO BASIN[9]

There are also numerous conflicts on dams and water transfers in Spain, some of them overlapping with the conflicts in Portugal. Here I shall include brief descriptions of only two well-known struggles in the upper part of the Ebro River, the Itoiz and the Yesa dams. The lower part of the Ebro River, apart from the opposition to water transfer and the defence of the Delta, houses also the conflict against the chemical industry in Flix and the nuclear power plants (2,000 MW) at Ascó.

The Itoiz dam is located in Navarra, on the Irati River in the Ebro basin. The cost was over €165 million, and the purpose was to give water to the city of Pamplona and irrigate 57,000

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ha through the Canal de Navarra (177 km). Its capacity is 586 hm^3. In 2002, it was filled after ten years of struggle to prevent it. In the eviction of the population there were 53 arrests. The Itoiz reservoir is part of the "National Hydrological Plan", which has been strongly criticized both by the people and by infrastructure and environmental experts. It has been opposed by the organization Nueva Cultura del Agua. Locally, the group called "Solidari@s con Itoiz" (Solidarity with Itoiz) opposed it, as well as Greenpeace and other NGOs.

In 1995, a group of Solidari@s cut the cables of the dam, still under construction. The National High Court, in one of the many legal proceedings and appeals, declared the project null and illegal. Some of those arrested were sentenced to prison terms of up to 16 months. There has been much discussion about the geology and seismicity caused by the dam itself regarding its safety.

There was also a long fight against the dam at Yesa (Huesca, Aragon) with strong police repression in October 2012. The dam of Yesa was constructed in 1959. It displaced 1,400 persons and caused the abandonment of the villages of Tiermas, Ruesta and Escó. In 1985, the "regrowth" of the dam appeared as an issue. An additional 2,400 ha would be flooded, including the village of Sigüés and the best lands of Artieda and Mianos. There was strong local opposition. In May 2016, it was reported that in Saragossa a criminal court case had opened against the so-called *Los 8 de Yesa*; eight local people were charged with crimes of resistance to authority, public disorder and aggression to the police because of a protest in Artieda in 2012 against the "regrowth" of the dam. One of the young people charged was Jorge Luis Bail, later member of the Spanish Parliament from Podemos.

WASTE INCINERATION IN CEMENT FACTORIES: CIMPOR AND SECIL CEMENT KILNS, PORTUGAL, AND OTHER CASES IN SPAIN[10]

These are cases in Portugal similar to those in Spain in Montcada i Reixac (Catalonia), Cordoba (Andalusia), Toral de los Vados (León) and Morata de Tajuña (Madrid). Air pollution and high rates of cancer are allegedly found around cement plants burning waste for powering the industry as we saw in Cemex factories in Mexico, and as we shall see from the success of Uroš Macerl who got a Goldman Prize in 2017 for stopping this practice in a Lafarge factory in Slovenia (Chapter 28).

In 1986, shortly after joining the European Union, Portugal chose to adopt co-incineration technology in accordance with Directive 94/67/CE. In 1996, it created the Institute for Waste and began to define the strategy for industrial (hazardous and non-hazardous) urban waste. The priority was to "add value" to industrial waste by using it as fuel or raw materials. Therefore, burning the waste in cement kilns became a "perfect solution": it meant using less fuel for cement production and misguidedly allowing for the reuse of dangerous waste.

In 1996, two national cement companies, Secil and Cimpor, in association with French-based Suez Lyonnaise des Eaux, created a consortium named Scoreco. In July 1997, Scoreco conducted a study on the types of waste that could be burnt in cement kilns. Protests took place between 1997 and 2000 in Maceira and between 1998 and 2002 in Souselas because of the air pollution. A study in Souselas reportedly shows an incidence of tumours and respiratory diseases in members of the local community. In 1998, a coalition of EJOs and local institutions in Coimbra called the Committee for the Struggle against Co-incineration (*Comissão de Luta contra a Coincineração*) was created. They prepared scientific arguments to justify

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the demand for an epidemiological study, obtaining 50,000 signatures for a petition for the suspension of the project, organizing street demonstrations and coordinating efforts with Greenpeace and local institutions. In 1999, the government created an independent scientific commission to analyze the process. In 2000, it changed the location of the plant from Maceira to Outão. Protests in the new location continued for two years. The choice of location was controversial, as it is inside the Arrábida Nature Park. In December 2001, the newly elected government cancelled the co-incineration plan and began to develop a new strategy for waste management. Later, waste was still burned in the cement kilns of Maceira and Outão (owned by Secil) and Alhandra (owned by Cimpor), but no further conflicts have developed.

Waste Incineration Fuelled Cement Plant in Morata de Tajuña, Madrid[11]

This big cement company reduces production costs by burning cheap urban waste. The city council ordered an air quality study. The cement plant Portland in Morata de Tajuña is the biggest in Spain and one of the biggest in Europe, at about 35 km to the south of Madrid not far from the domestic waste incinerator of Valdemingomez. In late 2012, possibly as a result of cost-saving measures due to the steep decline in cement production in Spain since 2008, the company asked permission to change or supplement the fuel they were using from petroleum coke to different sorts of waste (tyres, plastic materials, meat and bone meals, sewage sludge and domestic waste). The company got permission to use co-incineration.

Opposition appeared against this project at local and regional scale, defining it as an environmental justice conflict. As reported in the newspaper *El País* (21 May 2013):

> The plant already burns wood pulp but is waiting for the government to authorize the partial substitution of fossil fuel by waste, such as sewage sludge and tyres that would otherwise end up in the landfill. However, the neighbours are opposed and claim that the burning of waste in incinerators puts their health at risk.

The concern of these groups was the potential consequences for human health and the environment related to the uncertain risk of toxic emissions. Several petitions and street protests were organized; these groups were also coordinated with other national and international groups working against waste incineration.

The *Diagonal* journal reported in June 2013 this statement from Lorenzo Mora, president of the *Asociación de Vecinos de Morata de Tajuña* (Residents' Association): "We, the residents of this municipality, oppose this incinerator and the burning of this waste because it will have very severe effects on our health". Although the company assured all measures had been taken, data produced by the municipality talked about an increase in dioxins, furan and heavy metals. Nevertheless, the permits were granted by the environmental authorities. The cement factory itself (belonging to the FCC company) was reported to be in a financially precarious situation at the time. Here, we have a case in which an environmental conflict does not arise from an increase in the social metabolism of the economy, but, on the contrary, a lack of demand for cement is leading to cost-saving measures.

In 2014, it was announced that the Spanish Platform against Co-Incineration of Waste in Cement Factories would have its fifth meeting on 8 March. For environmentalists such as Ecologistas en Acción, burning waste for fuel is not a good idea. They claim that producing less waste and recycling it is preferable, as it saves more energy than is riskily produced by burning the waste.

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There is nothing specifically Iberian in the growth of waste disposal conflicts (among which we should include the excessive amount of carbon dioxide emissions and other GHG). For instance, there have been numerous conflicts on incineration of urban waste in China, as also conflicts on the export of waste from the North to the South. Industrial waste is generated in much larger quantities than domestic waste.

Zaldibar Dumpsite (Basque Country)[12]

On 6 February 2020 at 4:40 p.m. the technical director of Verter Recycling telephoned the Basque Government's Department of the Environment to report that the landfill in Zaldibar (Vizcaya) had collapsed. The landfill collapsed along 300 m of slope, with a width of 150 m, until it came to a halt over the three lanes of the highway linking Bilbao to San Sebastian. Four months later, the huge tongue of industrial waste still trapped the bodies of the worker Alberto Solaluze and the subcontracted technician Joaquín Beltrán. A human and environmental catastrophe that, according to *El Mundo* on 6 June 2020, dragged on because the excavators only managed to sift 8 per cent of the total collapse and the investigation of causes was judicially postponed while the Basque Government pointed the finger at the company and was angry with the inspections by the European Union.

The private facility located on a hill next to Ermua generated tax revenues of half a million euros a year and provided cheap "management" of tons of steel and paper mill waste. The landfill accumulated materials with 4,200 tons of asbestos within the 511,000 tons of waste received in 2019. As *Econoticias* (5 March 2020) pointed out, the figures are eloquent. The Zaldibar landfill had an authorized capacity for a useful life of 35 years. This translates into an average of some 118,000 tons of waste per year. However, over the last two years, more than one million tons of waste were dumped, vastly exceeding the authorization granted by the Basque Government.

The very rapid pace at which the landfill was being used and its location on the side of a hill were causes of the environmental catastrophe of February 2020. They prevented the landfill from being properly compacted and its stability from being guaranteed. But to this must be added the diversity of industrial and construction waste accumulated, which generated a serious problem without an easy solution. The organic matter, coming from industries such as pulp and paper, produced methane gas by anaerobic fermentation. Fires appeared in the landfill, making visible the chemical processes taking place inside it. These reactions generate combustion of materials producing toxic and carcinogenic substances. The levels in the area's atmosphere reached 50 times higher than usual as they were emitted along with the rest of the combustion gasses.

The Spanish economy generated 131.1 million tons of solid waste in 2017, 2.3 per cent more than in the previous year. Of that amount, most of it (57.9 per cent) came from industry and construction, and 53.9 per cent of it went to landfills, according to data from the INE (National Statistics Institute). Thus, a company such as Verter Recycling 2002, operating the Zaldibar landfill, obtained spectacular economic results associated with a dizzying rate of filling up the landfill and accepting almost any type of waste. It obtained the Integrated Environmental Authorization from the Basque Government in 2007, which was renewed in 2013 with the modification that allowed the inclusion of waste containing asbestos.

Almost 2.8 million tons were stored by this company belonging to a family clan – headed by José Ignacio Barinaga – with only six workers on staff and which had subcontracted Joaquín Beltrán to manage the continuous arrival of industrial waste. Since the afternoon of 6 February, the Basque Executive assumed the emergency work first and the search and

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stabilization of the landslide, later. The catastrophe mobilized many of the 60,000 neighbours living in the municipalities of Ermua, Eibar, Elgeta, Zalla, Markina and Zaldibar who, grouped in the Zaldibar Argitu platform, repeatedly demanded not only the unearthing of the corpses of the buried workers but also political responsibility from the Basque Government for the lack of control of the landfill (Figure 23.3). The Basque Government budgeted an expenditure of €9 million to meet the costs incurred in the first four months, and on 5 June it issued a first invoice for €3.4 million to the company Verter Recycling. José Ignacio Barinaga's company is facing two alleged offences in court and three administrative proceedings opened by the Basque Government and the Biscay Provincial Council as a result of the collapse that occurred two days after its workers detected cracks in the landfill mass. The European Union was also willing to investigate and probably to fine.

Son Reus (Mallorca)[13]

The incinerator of Son Reus in Mallorca is classified as an incinerator with "energy recovery". It was built in 1992 by the private company TIRME (shareholders Urbaser, Iberdrola, FCC and ENEL), which was given the right to waste treatment in Mallorca by the island's government until 2041. The incinerator started to operate in 1997 and had an initial capacity of 300,000 tons per year. In 2007, this capacity was extended to 730,000 tons per year, but



Source: Gara

Figure 23.3 *Zaldibar: working conditions, health, liabilities*

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there is not enough waste on the island to make it work at full capacity. The economics of overcapacity dictate that if not enough waste is sent to incineration to pay off the investments, incineration fees must increase unless there is imported waste for incineration.

The Son Reus incinerator burns 84 per cent of all municipal waste generated on the island (recyclables and compostables too). Therefore, the efforts of several "zero waste" municipalities (15 per cent of Mallorca's population), which reached a recycling quota of more than 75 per cent of the total waste are basically useless. The island's incinerated waste generates over 100,000 tons of ash and dregs, causing serious environmental impact and a public health issue. Nevertheless, future EU politics may change the situation: The Resource Efficiency Roadmap established that no waste that can be recycled or composted should be incinerated by 2020. This may create higher prices for residual waste on the island or pressure to import waste.

Several EJOs have been fighting against incineration, including GAIA (Global Alliance on Incinerator Alternatives), GOB (Grup Balear d'Ornitologia), Amics de la Terra, Greenpeace and Zero Waste movement. Greenpeace asked Mallorca's council for a new waste management plan that includes a date to close the Son Reus incinerator and highlights reduction, reuse and recycling. The Zero Waste movement asked the European Commission to intervene to cap the incineration overcapacity. The current legislation gives all incentives to do the wrong thing and Mallorca is a clear example of it. Despite several actions of resistance, a shutdown or downgrading of the incinerator has not been achieved yet.

INFRASTRUCTURES

There are many examples of conflicts in the Iberian Peninsula on damage from the sand and gravel extractive industries, the cement industry, the construction of motorways and the AVE (the high-speed trains), airports and also ports, so it is difficult to decide where to begin. I have selected two cases, the expansion of the port in València in a rich agricultural area, and the Hotel Algarrobico in Andalusia.

La Punta, València[14]

The city of València is located in an area of fertile land (called l'Horta de València, meaning València's orchard). Since the 1960s, all types of urban development have taken place at the expense of l'Horta. La Punta is one of València's districts, located south of the city. In the 1990s, this was the largest agricultural land remaining near the city of València. This district was very peculiar; there were no stores, and no streets, the old rural roads were still the main connections between the houses. There were 22 so-called *barracas*, the traditional Valèncian farmhouses, and it was an area adjacent to the Albufera Natural Park. The majority of the population was older, their lives intimately linked to horticulture.

In 1993, there was a new urban development plan for València called ZAL (Logistics Activities Zone), promoted by the Ministry of Public Works, the regional government, the València City Council and the Port of València. This plan changed the status of 75 ha of fertile Valèncian land from untouched green belts to land for building The project involved the destruction of over 100 farmhouses and the eviction of over 200 families. From that moment on, the neighbours decided to organize themselves for the defence of l'Horta

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against urban sprawl and investments in "logistics". Many sectors of Valèncian society joined the active resistance to prevent evictions, while there were also legal petitions and large demonstrations against this urban plan. In 2009, the High Court of Justice certified that the Plan was illegal. In 2013, the Supreme Court of Justice ratified the previous judgment of the High Court of Justice in which the Plan was declared null and void. However, justice was too late in this case. The 75 ha of fertile land were already destroyed, all traditional farms in the area were demolished, and families were displaced. The port expansion never happened, either. By 2021 another conflict appeared on the expansion of the port in the northern part of the city.

Between 2017–20, the conflict was reactivated in La Punta. For the third time, the Autonomous Government of València initiated a procedure for further "development" with a Special Plan for the ZAL. The "Plataforma per L'Horta" responded with a manifesto calling for a process of citizen participation to decide what future was to be given to the land of La Punta. The money already invested couldn't be taken as an excuse and demanded the reparation of the injustice carried out, insisting on another way of doing territorial policies.

The public sector considers that La Punta is urban land and that they have executed the urbanization works. On the other hand, the citizen Platform considers that urbanization was not carried out legally because the lands of La Punta are currently categorized "Undeveloped Land of Special Agricultural Protection AG-1". Moreover, decisions should be subject to a public participatory process taking into account several proposals on the table from recognized professional urban planners, biologists, ecologists and representatives of civil society organizations. This conflict, in synthesis, confronts two models of development. One is an expansive conurbation with environmental problems, and the other rescues proposals deeply rooted among the population, including elements of restorative justice. A lot of the damage has been done and cannot be now amended, although by April 2022, there was a new High Court decision agreeing with the opposition to the ZAL (Figure 23.4).

Hotel Algarrobico, Almería[15]

This is another instance of the environmental destruction of the Mediterranean coast – not by urban sprawl and industry but by tourism: an illegal 21-storey and 411-room tourism facility built on one of Spain's few remaining unspoilt Mediterranean beaches, within the Cabo de Gata Nature reserve. Algarrobico Beach lies on Spain's south-eastern coast, close to the city of Carboneras (Almería province). The beach is of singular beauty. In 1985, the city council of Carboneras adopted rules according to the Urban Territory Laws of Andalusia. that defined the landscapes of Algarrobico as building land. Two years later, the National Park Cabo da Gata-Níjar was created, covering coastal areas in the region but not the Algarrobico beach. The year after, the Coastal Law was established, prohibiting constructions on protected land within 100 m of the sealine while the city council of Carboneras approved Hotel Algarrobico. In 1994, Cabo de Gata-Níjar Park was stretched to include the Algarrobico Beach. Shortly after, however, the government published private documents changing the status of Algarrobico Beach to unprotected building land again.

In 2001, Azata del Sol. S.L., a firm buying and selling real estate, applied for a licence to build a hotel on Algarrobico Beach. Two years later, Azata del Sol. S.L. acquired the licence and began building the hotel. Despite the Coastal Law's 100 m prohibition, the hotel was constructed 47 m from the sealine, with pools and surrounding walls closing the distance to the

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Source: Per l'Horta, 30 September 2017

Figure 23.4 Demonstration against the ZAL in La Punta, València

sealine to only 14 m. The Environmental Ministry of Andalusia then initiated the formalities for the expropriation.

The local ad-hoc environmental organization "Salvemos Mojácar" (Let's Save Mojácar) started lobbying against the hotel, which led to a halt in the hotel's construction work. The organization started to press for the demolition of the hotel which by then was practically built. The Andalusian Court ordered Azata del Sol. S.L. to allow for the demolition of the hotel in exchange for €2.3 million. Azata del Sol. S.L. responded by demanding a much larger sum, €200 million. The Government would not offer more than €40 million. In the following years (2007 until 2017), the government persistently proclaimed the need to protect Algarrobico Beach. Meanwhile, Greenpeace actively painted (both narratively and physically) the Azata del Sol S.L Hotel as illegal, stressed the demolition of the project, organized petitions against it and occupied the building.

By May 2020, Greenpeace requested the High Court of Justice of Andalusia to process by "urgent means" the procedure in which it must decide whether to order the immediate demolition of the hotel. In 2021 this request was refused and in December 2022 the Supreme Court also refused to order the demolition of the El Algarrobico Hotel. This "useless monstrosity" (*inservible mamotreto* as Greenpeace calls it) has become a symbol of the destruction of Mediterranean coastal landscapes by the tourist and the building industries.

INDUSTRY: URALITA ASBESTOS FACTORY IN CERDANYOLA DEL VALLÈS [16]

In 2019, it was announced that the association of asbestos victims of Catalonia (AVAAC) would inaugurate a memorial dedicated to the Uralita factory workers affected by asbestos

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and to all the victims of this product. The monolith would be located at the crossroads between the towns of Ripollet and Cerdanyola, the so-called 'ground zero' of asbestos in Catalonia. Cerdanyola del Vallès is a town 10 km from Barcelona where, from 1907, asbestos-cement materials (or fibre cement) were first produced in Spain. Asbestos was presented as a modern, miraculous, and indestructible material, which contributed to industrial development. The Cerdanyola fibre cement factory, first Manufacturas Roviralta (1907), then Manufacturas Eternit (1933) and, finally, Uralita S.A. (1946), produced asbestos-containing materials until 1997, when it was definitely closed down. The consequences were illness and death. As so often in cases of working-class environmentalism characterized by "slow murder" or "slow violence", it took a long time before there was any collective movement of protest and request for reparation of damages. In 1970, Joan Frisach died of asbestosis, the first recognized victim in Cerdanyola. Manuel Teruel was the second in 1976. These were followed by others.

The company and the doctors denied the cause and effect between asbestos and lung cancer. The 1960s and 1970s were years of impunity and corporate cruelty. In 1977, the most important complaints of Uralita workers were made through workers' trade union Comisiones Obreras (CCOO), which were collected in a book published shortly after the death of General Franco in 1975. On 22 March 1977, a report from the Provincial Labour Delegation of Barcelona asked to "suspend work" at the Cerdanyola factory, given the "very high risk of toxicity" and the "three cases of deaths due to respiratory cancer".

The behaviour of the company and the health authorities can be summarized as late and slow recognition, including cases of concealment of the diseases caused by asbestos. The company was condemned by courts for non-compliance with occupational health and safety regulations. Compensation payments were scarce and sporadic. The workers have not always denounced the cases, and many have died without receiving any moral satisfaction or any economic compensation. Uralita in Cerdanyola had some characteristics of a "company town".

Importantly, apart from the factory workers, there have been non-occupational or environmental victims who acquired the disease by living close to the factory or by being relatives of contract workers. Belatedly, in 2003, the *Asociación de Afectados por el Amianto en Cerdanyola y Ripollet* was founded and filed a lawsuit against the company. Andreu Gené was recognized as an environmental victim of Uralita in 1978, and Filomena Martínez in 1985. They both died of pleural mesothelioma.

In 2000, the INE published that 158 people had died in Spain because of asbestos, while, according to trade unions CCOO and UGT, there had been 500 deaths. Other information states that "between 1989 and 1998, a total of 1,647 people died in Spain from mesothelioma". Information from UGT and CCOO in 2004 gave the figure of 1,500 deaths. The estimate for the next 30 years in Spain is 40,000 to 56,000 deaths due to asbestos. In Cerdanyola, with 4,000 workers over the 90 years of existence of the Uralita factory, 1,500 people might have been affected by asbestos inhalation.

Every year over 150,000 people are deemed to die in the world from exposure to asbestos. It is still present in hundreds of products. More than 40 countries continue to allow the use of asbestos and continue to extract two million tons per year, which will foreseeably cause millions of deaths in the coming decades. A real massacre. There are other asbestos cases in the present book (in Italy and Brazil) and in the EJAtlas waiting (so to speak) for a specific book on these industrial environmental health conflicts (Sanchez 2009; Cárcoba 2000; Puche 2017).

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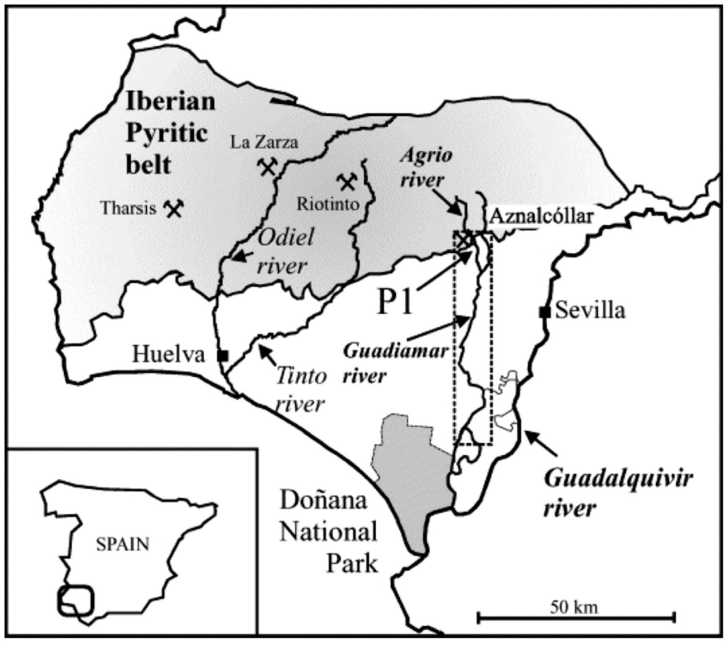
COPPER MINING IN ANDALUSIA: AZNALCÓLLAR, RIO TINTO AND LAS COBRES

Aznalcóllar (Boliden)'s Tailings Dam: Lack of Environmental Liability[17]

On 25 April 1998, the tailings dam of the pyrite mine in Aznalcóllar (Seville) burst. The company responsible for the dam was Boliden. As a result, there was a significant discharge of acidic water and highly toxic sludge containing heavy metals. The discharge overflowed onto the banks of the Agrio and Guadiamar Rivers along 50 km, affecting a surface area of 4,600 ha. The sludge invaded the outer part of the Doñana National Park and flowed into the Guadalquivir River, and finally reached the Atlantic Ocean in Sanlúcar de Barrameda. The consequences were 30 tons of dead animals, highly contaminated aquifers, and a world record of sudden heavy metal concentration in aquatic birds (Figure 23.5). After having spent millions of euros, several public administrations managed to leave the contaminated area relatively clean. On the damaged area and on the surrounding expropriated land, the natural protection Green Corridor between Sierra Morena and Doñana was created.

When the tailings pond at the Aznalcóllar mine ruptured, it discharged more than six million tons of toxic mud and acidic water. The mine produced zinc, silver, lead and copper concentrates extracted from a pyritic deposit and also contained arsenic, cadmium and thallium. A typical tailings dam or containment dike had been built, progressively enlarged to increase its capacity. On the day of the disaster, the dam containing the waste broke. The upper and



Source: Domènech et al. 2002

Figure 23.5 The Aznalcóllar tailings dam failure and the Rio Tinto mine

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middle reaches of the Guadiamar River were affected by the sludge, and the lower reaches by acidic water. A wall was hastily built to prevent the expansion of the waste in the areas adjacent to the river, in this case, the Doñana National Park and the marshes. The Doñana National Park is world-famous.

The main affected areas were the crops and fruit trees on the land adjacent to the dam, which were devastated. On the other hand, the animals and plants that were in the Guadiamar River and that used it as a means of feeding were also fatally hit. This led to a reaction by the Junta de Andalucía (the regional government), which was the expropriation of the damaged land. This was the first large-scale case in Spain of expropriation due to an ecological disaster, and a plan for the rescue, recovery and conditioning of the entire basin was implemented.

In 2001, Boliden abandoned the mining operation, and the authorities demanded €90 million to clean up the sludge. In 2002, the 21 technical people allegedly responsible were acquitted, and then the Junta de Andalucía sued the company Boliden, but the Court declared itself incompetent. In 2004, the Spanish Supreme Court ordered Boliden-Aprisa to pay some €45 million in compensation for the damages caused. Boliden announced that it did not intend to pay because the accident was due to an "external factor". In 2013, the Junta approved the decree that was theoretically going to allow the reopening of the mine. This decree was appealed before the Constitutional Court. In 2014, the Andalusian Parliament and Government, with the support of the parliamentary parties and trade unions, supported the reopening of the mine. In Andalusia, the rate of unemployment is high.

On the other hand, Ecologistas en Acción, SEO/BirdLife and WWF believe it is a scandal that Boliden escaped without facing up to criminal and civil liability, that the investment in the decontamination and subsequent regeneration as an ecological corridor of affected areas was paid for by the central and regional administrations, and that reopening the mine should be "an unacceptable risk" for the Doñana National Park.

The Rio Tinto Massacre of 1888[18]

In this area of rich copper pyrites of Seville and Huelva provinces that reaches Southern Portugal, there was an early violent encounter between the Rio Tinto company and socio-environmental defenders. Today, under the name Rio Tinto there are Rio Tinto plc, which is listed on the London Stock Exchange, and Rio Tinto Limited, which is listed on the Australian Securities Exchange. The Rio Tinto company experienced various changes in ownership, but its name signals from its beginning much damage around the world.

The Rio Tinto Company was formed by investors in 1873 to mine ancient copper workings at Rio Tinto near Huelva. In 1888, the protests against air pollution led to a massacre carried out by the Spanish Army. The burning of pyrites still continued for a few years. There was much "manufacturing of uncertainty" regarding the cause of health and environmental damages, although the production of sulphur dioxide in the calcination process was perfectly known at the time.

As mentioned in Chapter 20, on 4 February 1888, a peaceful demonstration of 12,000 people shouting "Down with the fumes" gathered in the town hall square of Rio Tinto. The demonstration ended in tragedy. An army fusillade killed some 200 people. They were women, men, children, old people, peasants, miners and neighbours, accompanied by a brass band. They came from all corners of the mining area of Huelva. They were united in the League against the Calcinations and in the incipient trade union organizations. They demanded

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improvements in the work and, simultaneously, the end of air pollution and acid rain caused by the open-air calcination of pyrites to obtain copper for the expanding industry. There was no compensation for the mass killings.

It was the key episode in a process brewing for several years throughout the mining basin, parallel to the birth of workers' organizations, mostly anarchists. The protests against the fumes and against the harsh working conditions in the mines of Rio Tinto multiplied due to the alliance of trade unions and the anti-smoke League led by local landowners of Zalamea la Real. Research by Pérez Cebada (2014), Dolores Ferrero (1999), Gerard Chastagnaret (2017) and David Avery (1974) on the history of the Rio Tinto company, shows how this alliance of wage workers, small farmers, some large landowners and neighbours was formed. After the massacre there was a debate in the Spanish Parliament, and echoes in the national and international press. And yet, no judicial or political responsibilities were derived, and the crimes went unpunished.

As in the parallel case of Ashio in Japan, such episodes are still relevant today. The Rio Tinto company (although legally quite distinct from the company active in 1888) appears in this book from Chile to Australia, from Bougainville to Madagascar. The protest in 1888 bears on the question of who are the protagonists of environmental justice movements? In Rio Tinto, there was an alliance against air pollution of different socioeconomic sectors alarmed by damage to their health, food gardens, crops and animals. This popular and interclass alliance had grievances and claims expressed in many meetings, and, finally, in the ill-fated rally in the town of Rio Tinto.

The subordination of the region of Huelva to the demands of copper mining and the extractive chemical industries continued. The Franco victory in the Spanish Civil War of 1936–39 destroyed trade unions and later gave free rein to the dominance of the mining multinationals in the copper-belt. Other large-scale polluting industries with imported raw materials came to the industrial chemical hub of Huelva: copper smelting (Freeport McMoran), phosphate fertilizers, titanium ores, also oil refineries and gas pipelines. Questions arise on the systemic pattern of "corporate social irresponsibility" and cost-shifting.

Mina Cobre Las Cruces, Sevilla[19]

In 2016, executives of First Quantum, a Canadian firm, were sentenced to a short term in prison for large-scale damage to the Niebla-Posadas aquifer in Andalusia. The Cobre las Cruces mining project is one of the largest active open pit copper mines in Europe, and it is located between the municipalities of Gerena, Guillena and Salteras, 15 km from Seville. The project area is located at the easternmost end of the Iberian Pyrite Belt characterized by the existence of numerous polymetallic sulphide and pyrite deposits. The reserves at Las Cruces are estimated at 16 million tons, with a copper grade of 6.2 per cent for 15 years.

The project comprises the extraction of the ore in an open-pit mine, followed by the extraction of the copper from the ore in the hydrometallurgical plant. High-purity copper metal is obtained in the form of copper sheets. The Las Cruces project began at the end of 1992, when the Junta de Andalucía granted several research permits to Riomin S.A., a company belonging to the Rio Tinto Zinc group. Currently, the project belongs to Cobre Las Cruces S.A., a subsidiary of First Quantum Minerals.

The Las Cruces deposit is located under an aquifer, which makes it extremely sensitive to water management. In order to exploit this field, the company designed a system known as the

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Drainage and Reinjection System (SDR), which proposed to drain water from the aquifer only in the area where the field is located, and which was approved by Confederación Hidrográfica del Guadalquivir, CHG, in 2003 on the condition that it would not affect the quality or quantity of the water in the aquifer. However, in May 2008, a few months after the implementation of the SDR, the CHG stopped the system due to non-compliance with the authorization, which in turn led to stopping the mining activity by the Junta de Andalucía. Activity resumed in 2009 after the company submitted a new water management plan. The Junta's decision to resume mining was brought to court by the network Ecologistas en Acción and the state prosecutor.

This judicial process reached its end in September 2016. The three defendants, managers of the company, pleaded guilty to crimes against the environment and damage to the public domain. They were sentenced to one year and three months' imprisonment and one year's disqualification from practising their profession. The compensation for civil liability was set at only €43,688 for contamination and €249,521 for illegal extraction of groundwater. The assessment of Ecologistas en Acción stressed its satisfaction with the decisions and claimed that "the crime of contamination and illegal extraction of groundwater is recognized" even if too many years late. Ecologistas en Acción also regretted the "passive attitude of the public administrations, which in addition to not appearing to defend the public domain and the health of the population, continue to protect the mine".

IBERIAN NETWORK OF OPPOSITION TO NEW MINING

As in other peripheral regions of Europe, a new movement has arisen against mining of new or old materials for the "electrical transition". Copper is one of the old ones, and lithium one of the new ones (Dunlap and Riquito 2023). This is a list of current (2022) ad-hoc anti-mining platforms in the Iberian Peninsula, in the typical form of organization of burgeoning environmentalist movements of the people. Whether they win or lose (many of them will stop projects), they are likely to be ephemeral.

Plataforma vecinal mina Touro y O Pino Non
Plataforma Vida e Ría ou minaría de Lousame
Plataformas de la Red Contraminacción de Galicia
Coordinadora No a la Mina de Uranio (Retortillo, Salamanca)
Plataforma no en mi Tierra de Zamora
Plataformas No a la Mina en la Sierra de Yemas
No a la Mina en el Valle del Corneja
Plataforma No a la Mina en la Sierra de Ávila
Plataforma Salvemos la Montaña (Cáceres)
Plataforma de La Raya Sin Minas de Valencia de Alcántara
Plataforma Tamuja de Plasenzuela
Plataforma Sierra de Gata Viva
Plataforma Salvemos las Villuercas (Cáceres)
Plataforma Oro No de Tapia de Casariego (Asturias)
Plataforma Salvemos Esparteros de Morón de la Frontera (Sevilla)
Plataforma de Afectados por Metales Pesados de El Llano del Beal (Cartagena)
Unidos em Defensa de Covas do Barroso (Portugal)

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Lithium in Cáceres[20]

A new lithium belt is opening up in Extremadura and in Portugal, another opportunity for transboundary environmental movement. The population of the city of Cáceres in Extremadura (50 km from the Portuguese border) opposes the opening of a lithium mine only 800 m from the limit of this historical city declared a World Heritage Site by UNESCO. The company Tecnología Extremeña del Litio, a subsidiary of a joint venture promoted by Valoriza Minería (subsidiary of Sacyr S.A.) and Plymouth Minerals Ltd (which changed its name to Infinity Lithium Corporation), wants to carry out an open-pit lithium mine project of 412 ha (could later be extended to 1,175 ha). It would have a pit of 1,100 m in diameter and 500 m in depth, a beneficiation plant with a furnace for the roasting process, an evaporation pond for the washing of minerals and 290 ha for the tailings waste.

The mine would be built in the Montaña and the Sierra de la Mosca, locating the open pit in the Valdeflores Valley, an area of high biodiversity, great ecological value and social importance. This mountain range connects protected natural areas including Special Protection Areas for Birds. Traditionally, it is a place of religious worship (with the Sanctuary of the Virgin of La Montaña) and a residential area; its paths are used for hiking, sports and for an environmental educational activity. It has a traditional economy (horticulture, olive groves, almond trees, livestock, beekeeping, and firewood production). The holm oaks and pastures are deemed to give the city of Cáceres its healthy air.

Lithium has become highly coveted for the production of electric batteries. Behind the mine project in Valdeflores are geopolitical interests to achieve European Union (EU) self-sufficiency in lithium: the EU is the third world consumer of this mineral. For this reason, in 2017 the "European Battery Alliance" (EBA) was created with the aim to "create a strategic value chain for batteries in Europe" that at the European level involves lithium extraction projects such as Caceres, or those that are intended to be developed in Portugal, Sweden or the Czech Republic.

How was the Platform Save the Montaña de Cáceres born? (Figure 23.6). The social mobilization began in the summer of 2017 after the first news of the mine appeared in the press. Then, the first informative meetings were held, the Citizen Platform "Save the Montaña of Cáceres" was created, a first press conference was convened, the collection of signatures began and the first hiking march to Valdeflores was carried out to inform interested people of the project and publicize the values of the place. The first informative material, "9 reasons to say No to the Open Pit Mine in the Montaña de Cáceres" was made. Over the next years, much geolocated information on the risks of this project was disseminated through videos or posters, used for countless talks, workshops, and neighbourhood meetings.

Administrative irregularities allowed legal appeals by the Asociación para la Información y Comunicación Ambiental (ACIMA) and the Asociación para la Defensa de la Naturaleza y los Recursos de Extremadura (ADENEX) on 27 November 2017. They alleged that the permit had failed to comply with the public exposure deadlines. With this appeal, the permit "Extension to Valdeflores" was annulled, and a new public exposure was held. In January 2018, around 10,800 allegations were submitted to the new "Extension to Valdeflores". This strategy of legal appeals and citizen allegations was repeated in 2018 on the Permit "Trasquilón".

Another legal complaint was promoted by the Sierra de la Mosca neighbourhood association on 12 January 2018, before the Nature Protection Service (SEPRONA) for logging trees and opening illegal roads carried out by Tecnología Extremeña del Litio. On 16 February

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Source: Plataforma Salvemos la Montaña

Figure 23.6 *No a la mina en la montaña de Cáceres*

2018, the City Council issued an order to paralyze and seal the mine. The machines were removed by the company and the drilling and earthworks stopped. In May 2019, the General Directorate of the Environment of the Junta de Extremadura fined Tecnología Extremeña del Litio for opening roads and razing vegetation without the mandatory EIA.

Another achievement was the rejection of the project by the municipality of Cáceres, that in April 2018 voted against the modification of the Municipal General Plan (PGM) requested by the company (the PGM in force maintains diverse protections on the Montaña). In addition to the legal appeals, cultural activities and mobilizations were organized as the march held on 21 January 2018, in which around 1.,000 people participated. On 3 February and 14 April, demonstrations were held in the Plaza Mayor of Cáceres to repudiate the project, attended by 3,000 people.

Throughout those years, the Platform Save the Montaña of Cáceres was weaving articulations, participating in the IV collective meeting ContraMinAcción in Galicia together with platforms against other mining projects in the Iberian Peninsula. For its work, the Save the Montaña platform received the "Berta Cáceres" Award from Ecozine in May 2018 and the award from the Association for Defence and Resources of Extremadura (Adenex) in November 2019. The final outcome is still open, as there is pressure to increase lithium production, although there are promises that sodium-based batteries could become commercially viable.

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Save Salau, on the Spanish-French Border: Tungsten/Wolfram[21]

While lithium, copper and uranium are causing conflicts near the Portuguese-Spanish border, at the French-Spanish border, there is one case of conflict on the mining of tungsten (wolfram) in Salau. Wolfram is a famous mineral in the Iberian Peninsula since the Second World War, when Nazi Germany secured access to this mineral.

On both sides of the Catalan border in the Pyrenees there is resistance against tungsten mining by Apollo Minerals from Australia. This is a preventive conflict. As reported in October 2018, a large exploitation project in search of tungsten in the municipality of Alt Àneu, which also covers the other side of the border with France, was driven by the company Neometal Spania. Promoted by the local administrations, the inhabitants of Isil and Alòs d'Isil constituted the Salvem Salau platform, on the mountain pass in which the drilling is intended, with an extension of 27 km^2. According to Sofía Isús, president of the Municipal Entity of Isil, "we do not understand that such aggressive mining practices can be allowed in such an ecologically sensitive area that it is the habitat of numerous protected species, including the (reintroduced) brown bear". This is denounced by the platform, as also that all the extra traffic would pass through the small towns. The platform, which coordinates with the French organization Stop Mine Salau, has asked the management of the Natural Park of Alt Pirineu for a "regulation of uses that ensures which activities cannot be hosted". On the French side, the project was refused in court in 2019, and again in 2020.

The exploration permit granted in 2016 by the French State for the Salau mine covered eight minerals, including tungsten, copper and gold. Tungsten is one of the critical metals listed by the European Union. This extremely resistant and non-substitutable metal is prized by the arms, aeronautics, nuclear and high-tech industries.

It is optimistically reported that this mine could rank third in the world and ensure European autonomy in tungsten. However, stock exchange speculation is suspected of trying to push up the share value of the French and Australian companies involved. There are favourable local views for a strong territorial anchoring with an associated treatment plant, while respecting social and environmental standards. Opponents, for their part, multiply the arguments: the environmental disaster, the threat to wildlife, pollution and dubious financial arrangement with a venture capital company domiciled in a tax haven.

CONCLUSION: STRUGGLING AGAINST WASTE DISPOSAL, BIOMASS GRABBING, HYDROPOWER, OLD AND NEW METAL MINING, INDUSTRY, AND TOURIST INFRASTRUCTURE

Of the approximately 115 conflict cases registered in the EJAtlas from the Iberian Peninsula, about 25 have been featured in this and other chapters. The transboundary conflict on tungsten mining in Salau is one of many such new mining struggles in peripheral Europe, and so is the remarkable lithium protest in Covas do Barroso in Portugal and also in Cáceres where the values in dispute are respect for the local natural environment (Iberian *dehesas* with holm oaks and pastures), the implications of mining near a religious "sanctuary", the historical cultural patrimony, the impact on water availability. All this is against the metabolic hunger for lithium as part of an electrical transition that requires "sacrifice zones" in peripheral Europe.

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Let's destroy the Montaña de Cáceres for the sake of the environment. Quite similar is the anti-uranium conflict in Retortillo in the neighbouring province of Salamanca.

The cases of Rio Tinto (copper mining) in 1888 and Cerdanyola (asbestosis) in the late twentieth century can be interpreted not just as working-class environmentalism because trade unions joined with allies from other sectors of civil society, such as neighbours and citizens against a Spanish company (Uralita), peasants and landowners in Rio Tinto – at the heart of the pyrite belt of south-western Spain and Portugal. In Aznalcóllar, after the failure of Boliden's tailings dam, environmental organizations, scientists and professionals were active. The Boliden company eluded its socio-environmental liabilities (in Spain as also in Chile).

While asbestosis in Cerdanyola is a case of damage to health because of industrial processes and waste, other conflicts have to do with the risks from the burning of domestic or industrial waste in cement factories or in urban incinerators (sometimes called "energy valorization") or the dumping of waste in landfills. Several cement factories (the Lafarge factory in Montcada i Reixac, Cimpor and Secil cement kilns in Souselas (Portugal), and Morata de Tajuña (Madrid)) are involved in controversy. On its side, industrial waste in Zaldibar landfill in the Basque Country led to its collapse and some mortal victims in early 2020, while the outsized incinerator of Son Reus in Mallorca continues its negative career.

In Spain, local ad-hoc movements usually call themselves "Plataformas" or "Coordinadoras". They are sometimes supported by permanent organizations, mainly the confederation Ecologistas en Acción, which often appears in the Spanish conflicts together with local groups. Other new networks appear, such as *Nueva Cultura del Agua*, formed in 2000 in opposition to the water transfer from the Ebro River, whose spokesman Pedro Arrojo got a Goldman Prize. There still are many fights over dams in the Iberian Peninsula. I have included a summary of those in Portugal and two cases from Spain. Space lacks for the conflicts on water transfer from the Tagus to the Segura River, the Xúquer Viu campaign in València (which is also part of the anti-nuclear campaign "Tanquem Cofrents"), and the great campaign from the early 2000s still continuing today against the transfer of Ebro River water from Aragon and Catalonia to SE Spain that would contribute to destroying the Ebro Delta (Figure 23.7) even quicker than is happening because of the retention of sediments in the great dams of Mequinenza and Riba-roja. But there are many more hydro-social conflicts on access to water and memories of famous dam failures, like Ribadelago. The hydropower companies have been and are in command (Swyngedouw 2015).

Hydropower, which is in principle renewable, causes conflicts, and we could have also included some instances of conflictive windmill "parks". Regarding another energy source, we include the closing down of Almaraz in Spain, near the Portuguese border. We also include conflicts on the spread of eucalyptus trees as biomass inputs for the cellulose and paper pulp industry, attracting terrible fires and siphoning off the water. Hydropower, nuclear power, new mining, and biomass plantations all have conflictive transboundary aspects, as also the gas and electricity transport between Spain and France.

Keywords of this chapter are waste management, mining and hydropower, but we also emphasize the infrastructure and land-grabbing conflicts, very common on the Mediterranean coast of Spain. La Punta in València, where the villagers and neighbours defend an agricultural landscape, is an example, as also the grotesque conflict of the Hotel Algarrobico in Almeria.

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Source: ACN

Figure 23.7 *"Lo riu és vida". Against the Ebro River water transfer*

In this book, I am taking "a sample within a sample". This is what I do in this chapter on Portugal and Spain, not exactly a random walk but rather a guided toxic tour based on my own preferences but trying to give a general view to the readers. I should add fisheries conflicts, where Spain is on the ocean-grabbing side. There are many other regions in the world of similar size and population with as many relevant environmental conflicts as in Spain and Portugal. But the point has been made: there is popular resistance everywhere to an industrial system that damages health and environment, requiring biomass, land and water grabbing, fossil fuels and nuclear energy, old and new minerals, and producing much polluting waste. Similar commodities, similar grievances, ad-hoc networks, claims and failures, but also some successes in environmental justice.

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24. The United States: the cradle of environmental justice against environmental racism

BACKGROUND: FOCUSING ON MINORITIES INSIDE THE UNITED STATES INSTEAD OF ON THE WORLD BIPOC MAJORITY

Over one hundred years ago there was a so-called Age of Empire(s) (as Hobsbawm titled the period 1875–1914) with the Austrian empire, the French and British empires, the Russian empire, the Ottoman empire and the attempts at a German empire in Africa until 1918. The United States became undoubtedly the main imperialist country since 1918. The Japanese empire was defeated in China and the Pacific in 1945. It seems that now a new Age of Empires arrives with China, Russia (again) and the United States–NATO empire. And India, a growing empire based on Hindu religion. To the geopolitics of Empire, we can sadly apply Randolph Bourne's dictum in 1918, "War is the health of the State" as we see in Russia's war in 2022 against Ukraine and in the last 30 years in the American and NATO wars in Iraq and Libya – oil was in question but search for naked power and revenge sufficed.

Despite being the top imperialist country, with an abundance of military interventions overseas and also military installations and nuclear tests (some of which are recorded in the EJAtlas), the United States was nevertheless and paradoxically the cradle of the environmental justice movement against environmental racism with the famous meeting in Washington D.C. in 1991 of "people of colour" proclaiming the 17 Principles of Environmental Justice which are totally relevant worldwide 30 years afterwards. This was a movement of social "minorities" with origins in coloniality and slavery and later in the Civil Rights movement led by Martin Luther King and other militants. Crucial concepts such as "environmental racism", "popular epidemiology" and "sacrifice zones" were introduced by the US environmental justice movement. It has been an inspiration for the rest of the world by linking anti-racism with the environmental cause. Authors such as Robert Bullard, Paul Mohai, Laura Pulido, David Pellow and Giovanna Di Chiro have had worldwide influence.

However, this US movement has not fulfilled its universal, cosmopolitan promise of environmental justice and it failed to extend its anti-racist agenda outside the US. It focused on minorities inside the United States instead of the world BIPOC majority. It was to some extent co-opted into the work of the EPA and the application of CERCLA in internal environmental conflicts. Several cases in this chapter mention the US federal Superfund law, whose official name is the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980. It is administered by the US EPA. It does not apply to damages by US companies done abroad. Over the years, in case after case, damages from US companies were brought to US courts under the ATCA (Alien Tort Claims Act) and regularly dismissed (Chevron Texaco, Dow Chemical and Dole – the DBCP cases, Drummond, ExxonMobil, Freeport-McMoran, Southern Peru Copper Co., Union Carbide, Unocal). The US environmental justice movement was silent or impotent to help. Meanwhile, the US

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government also systematically refused liability for climate change, leading the rich countries in this position at the COPs (Chapter 16). The US Environmental Justice movement was unconcerned. Be that as it may, the 17 Principles of Environmental Justice stand with their universal validity.

BIPOC communities inside and outside the United States are protagonists of a political ecology which is not mainly about international relations and the geopolitics between states of access to fossil fuels, water and renewable energies, or to their disputes on the disposal of GHG in the COPs. Their political ecology is more closely connected to industrial ecology, to *Warenkunde* – the science of commodities (Chapter 26). In this chapter we study the access to commodities and to places for waste disposal, and the local resistances arising against states and business companies in sites such as Warren County, Mossville, Africatown, Richmond and Yucca Mountain. I start with cases of waste dumping and threats to human health. Entering the USA from Mexico and California, it is easier to remember Rachel Carson's *Silent Spring* of 1962, which gave strength to the environmental movement in the country and elsewhere. We start then with the agricultural labourers in California and the United Farm Workers (UFW). After that, we continue with two other most famous historical episodes of what we now call "environmental justice". One with Lois Gibbs in Love Canal in upstate New York. Another one, more influential because of its social protagonists, is the non-violent protest in Warren County, North Carolina, against a waste dump in 1982, overlapping with the Civil Rights struggle of Afro American people in the US.

I have lived three years of my long life in the US: one year at Stanford in my early twenties; another year when I was already an ecological economist (1988–89) in Washington D.C. at the World Bank with Herman Daly and Robert Goodland, and in Stanford and the University of California (Davis); and the third year in New Haven at Yale University invited by James C. Scott to write my book *The Environmentalism of the Poor* in 1999–2000. I always learnt a lot. This chapter owes much to Paul Mohai and his students at the University of Michigan.

CÉSAR CHÁVEZ, PESTICIDES AND CHILDHOOD CANCER IN MCFARLAND, CALIFORNIA[1]

In Chapter 21, I mentioned McFarland as a cancer cluster. The story links up a famous Mexican *bracero*, pesticide use in agriculture, working-class environmentalism, environmental racism, and scientific uncertainty in risk assessment. After the first case of childhood cancer in 1978, McFarland was deemed a cancer cluster by Kern County in 1985. In a seven-year span, the town of 6,200 had 13 cases of childhood cancer. The concerns were focused on exposure to pesticides and hazardous wastes, potentially contaminated drinking water. Kern County investigated four particular pesticides that were heavily used in farming practices where many of these migrant workers were employed.

Since the late 1960s, César Chávez of the UFW (United Farm Workers) had been concerned about *braceros*' pesticide exposure. In 1969, César Chávez said that "pesticide poisoning is more important today than even wages". In 1988, 12 million pounds of pesticides were used on grapes in California, some of which were known to cause cancer. In 1988, César Chavez went on a water-only "fast for life" hunger strike and started a campaign to urge growers to stop the use of four pesticides. As part of that effort, the United Farm Workers started a grape boycott to force growers to agree to their demands.

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As R. Gordon (1999) explained, the contract signed at the height of the UFW boycott of California table grapes increased wages but also established regulations regarding the use of pesticides. Later on, in 1995, a group of McFarland residents, a poor Hispanic community, petitioned the EPA Region 9 for assistance in evaluating the community's environment. The US EPA investigation spanned from 1997 to 2002, ruled the area not eligible to be on the Superfund National Priorities List for reparations and said that the town was similar to other towns in California. A direct cause of this childhood cancer cluster remained officially undetermined. Uncertainty prevailed.

LOIS GIBBS AND LOVE CANAL, NIAGARA FALLS[2]

This is an even more famous case of environmental injustice in the US, in which houses and schools were built upon a dump site and incidence of diseases and respiratory illnesses took residents to reclaim justice. Back in the nineteenth century, Modeltown Development Corporation, under William T. Love, planned to construct a hydropower canal that would open up business opportunities. The canal was started in 1884, but before its completion, the United States fell into an economic depression that halted funding sources. The loss of funding and potential business support led to the downfall of Love's company leaving only a partially dug canal left. In the 1920s, the canal was bought by Hooker Chemical Company and used as a site for chemical and municipal disposal for several chemical companies and the City of Niagara Falls until 1953, when it was bought by the local community and completely covered with dirt. In the late 1950s, this land became the new site of over 100 homes and an elementary school. In the late 1970s, the chemical waste began making its way to the surface causing bad odours and oozing waste.

On 2 August 1978, Lois Gibbs, a local mother belonging to the Love Canal Homeowners' Association, began to rally homeowners (1981, 1995). There was severe pollution by dioxin – a word which then started its march through many environmental conflicts around the world. This led to grave health effects, especially a high percentage of birth defects in the Love Canal area and required all residents to be vacated and the risks to be mitigated. However, the health and environmental consequences had already affected many of the residents. There was also a contested participation of Afro American women in this struggle (Blum 2008).

The EPA did clean-up, and the site was removed from the Superfund priorities list and determined to be usable land again. The Love Canal is still subject to maintenance and monitoring activities. New residents still deal with the chemicals that wreaked havoc decades ago. In lawsuits, residents claim they were swayed to purchase homes in the area with low property values and assurances that waste was contained.

WARREN COUNTY, NORTH CAROLINA, 1982: BIRTH OF THE US ENVIRONMENTAL JUSTICE MOVEMENT[3]

Warren County was one of the first cases giving birth to the US Environmental Justice Movement. It was an emblematic struggle, connected to the Civil Rights movement. In 1973, Ward Transformers Company dumped 31,000 gallons of polychlorinated biphenyl (PCB) along more than 220 miles of roadways in the state of North Carolina. PCBs are highly

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Figure 24.1 Civic resistance against the Warren County landfill, NC, 1982

toxic persistent organic pollutants, whose production has been banned by the United States Congress since 1979 and by the Stockholm Convention in 2001. High concentrations of these pollutants are associated with the development of skin conditions, ocular lesions, lower immune responses and cancer. The State of North Carolina responded to the dumping of PCBs with the decision to build a landfill to deposit all the contaminated soil. The location chosen was Shocco, a rural town in Warren County, one of the poorest counties and whose population was 75 per cent Afro American (Figure 24.1).

Afraid of the possibility of toxic materials contaminating their groundwater supplies, in 1979 local residents formed Warren County Citizens Concerned About PCBs to fight the siting and construction of the landfill. They held rallies and protests inspired by the forms of mobilization of the Civil Rights movement. On 24 September 1982, more than 50 people out of 500 protesters were arrested by state highways patrol when the first truckloads of contaminated soils arrived. The protests and arrests continued for the next six weeks. They attracted support from the Civil Rights movement across the nation, and the media began to relate this environmental conflict with issues of institutionalized "environmental racism" (a term invented by Ben Chavis). After weeks of protests, North Carolina Governor James Hunt promised to detoxify the landfill. Three months after capping the landfill in 1982, gas leakages started to occur, and the state proposed to construct a drainage system to remove the contaminated water.

After waiting more than two decades, efforts to detoxify the dump began in June 2001 and lasted until December 2003. The neutralization work at the landfill had a total cost of $18 million, paid by state and federal sources. A private contractor hired by the state dug up and burned 81,500 tons of oil-laced soil to remove the PCBs. However, detoxifying the landfill does not bring the community back to its pre-1982 PCB-free environmental condition.

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Allegedly, soil still containing small PCB levels is buried at least 15 feet below the surface in the dump.

GROUNDWATER CONTAMINATION WITH CHROMIUM-6 IN HINKLEY, CALIFORNIA[4]

I now continue with Hinkley Point in California and Woburn in Massachusetts which are also cases of toxic waste, before describing the conflict in Mossville, Louisiana which is clearly a struggle against "environmental racism".

Residents of the town of Hinkley, California, alleged that the Pacific Gas and Electric Company (PG&E) knowingly dumped wastewater contaminated with chromium-6, a known carcinogen, into the region's groundwater. In 1952, PG&E installed a compressor station near Hinkley in San Bernardino County, part of a gas pipeline system linking Texas to California. The company used a carcinogenic chemical compound named chromium-6 as a corrosion inhibitor in its cooling system. Under ideal circumstances, such a dangerous heavy metal would have been filtered out, but the contaminated water was discharged into unlined pools, thus leaking to the aquifer serving Hinkley's residents' water needs. The leakage occurred from 1952 to 1972. It was not until 1977 that California regulated by law the use of chromium-6.

Chromium-6 is known for causing damage to several organs and cancer. Moreover, the compound also modifies human DNA, which can prolong the effects to future generations. Local residents experienced several symptoms including prostate, cervical, breast and stomach cancers and respiratory problems. In 1987, PG&E officials informed the state of California of high levels of chromium-6 in underground water. The levels were ten times greater than the limits established. At that time, PG&E started buying properties affected by pollution. Yet, company officials told citizens the water was suitable for both drinking and agriculture.

Erin Brockovich, a clerk at 'Masry and Vititoe' Law firm, came across records on PG&E's offers to buy Hinkley's citizens' properties while filing them. The fact that these documents were mixed with residents' medical records raised Brockovich's attention. The clerk decided to investigate the case and ended up convincing some of the people affected by contamination to start legal action against PG&E in 1993. The number of plaintiffs rose to 648. While PG&E lawyers tried to de-link people's health problems from exposure to chromium-6, the plaintiffs showed that the company knew of the contamination at least since 1965. PG&E eventually managed to take the case out of court and reach a settlement through mediation. In 1996, PG&E agreed to pay the plaintiffs a total of US$ 333 million, to end the use of chromium-6 and clean up the environment. After several unsuccessful attempts to clean up the contaminated aquifer, PG&E started buying and destroying people's houses in 2012 to avoid squatting. Two-thirds of the residents in the affected area agreed and moved elsewhere. Later studies by the California Cancer Registry stated that cancer figures in Hinkley were not abnormal in the period 1988–2006. However, the Centre for Public Integrity questioned the validity of the findings.

In July 2014, California established a maximum chromium-6 contaminant level (MCL) of 10 parts per billion (ppb). The case ended up in monetary compensation for the plaintiffs but several people died before 1996, and many victims weren't included in the settlement. PG&E was unable to contain the plume of polluted water, forcing an exodus from the exposed areas. By 2013, PG&E had spent over $750 million on remediation. Hinkley became a ghost town.

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As in other cases of "slow violence" (or "slow murder"), what has been done cannot be now amended. Money cannot resurrect people.

WOBURN, MASSACHUSETTS, ANOTHER CERCLA CASE[5]

This is again a Superfund (CERCLA) case involving Grace and other chemical companies which polluted drinking water. Rapid economic growth in the 1950s caused a chronic shortage of drinking water. Wells G & H were the two municipal groundwater wells developed in 1964 and 1967 to supplement the water supply of the city of Woburn. Despite warnings by an engineering study that the groundwater was too polluted, the town went ahead and drilled the new wells on the east bank of the Aberjona River. These wells would supply about 30 per cent of the city's drinking water. Almost immediately, residents began to complain about the water, suspecting that it was responsible for the occurrence of childhood leukaemia and the increase in birth defects. Ten years after the development, an analysis determined that those wells were contaminated, and the wells were shut down. The extensive contamination of groundwater was the result of decades of industrial water pollution. According to a report by the US EPA, the groundwater was contaminated with industrial solvents, called volatile organic compounds (VOCs), such as trichloroethylene (TCE) and tetrachloroethylene (PCE), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and pesticides. Sediments in the Aberjona River were contaminated with PAHs and heavy metals such as chromium, zinc, mercury and arsenic. In fact, the safety of Woburn's drinking water had long been a contentious issue. Woburn had been home to industry for over 150 years. Tanneries used toxic compounds to cure leather, and other factories sent numerous toxic chemicals down the Aberjona River.

In 1973, a little boy was diagnosed with leukaemia. He and seven other children died, and many became seriously ill before any action was taken, despite residents complaining that the water smelled and tasted bad and that it corroded the pipes. Residents discovered that there were eight cases of leukaemia in east Woburn over a 15-year period. The illness was concentrated among families that had drawn most heavily from the two polluted wells. In 1979, several barrels of chemicals were found dumped near the Aberjona River. When state investigators tested Wells G & H, they found that they were contaminated with TCE and other industrial by-products.

The wells were shut down and in 1982 the Wells G & H Superfund Site was placed on the National Priority List to receive federal money for clean-up. At the same time, a formal complaint against W.R. Grace, Beatrice Foods (formerly Riley Tannery) and UniFirst was filed by several plaintiffs through Jan Schlichtmann, a lawyer. The defendants denied that they had caused the pollution of the wells. During the trial, one of the defendants allegedly perjured himself; the defence attorneys hid critical evidence of a secret clean-up of contaminated soil that would have strengthened Schlichtmann's argument, and the case was assigned to an allegedly biased judge. The jury agreed that there was not a "preponderance of evidence" that Beatrice Foods had polluted the wells and only Grace was found responsible. The judge, however, threw out the verdict against Grace on the grounds that the jury's written decision was contradictory. Schlichtmann settled with Grace for $8,000,000, providing the victims' families with a few thousand dollars each, but no admission of guilt, no apology, and no clean-up. Despite this settlement out of court, the Centre for Disease Control and the US EPA took

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notice. Declared a Superfund Site, the EPA forced Grace and Beatrice as property owners to pay for one expensive clean-up, over US$ 68 million. Woburn was the inspiration for a book and a movie called "A Civil Action", documenting water contamination, subsequent health impacts and the legal battle for restitution.

MOSSVILLE, LOUISIANA: ENVIRONMENTAL RACISM IN CANCER ALLEY AND AN APPEAL TO THE IACHR[6]

Mossville was one early settlement of free Black people in 1790. After the 1940s, Mossville became surrounded by industrial plants. As summarized in a CNN report in 2010: "Gather current and former Mossville residents (in Louisiana's 'cancer alley') in a room and you're likely to hear a litany of health problems and a list of friends and relatives who died young". There is an obvious intersectionality between health issues, human rights, the environmentalism of the poor and anti-racism. Located in Louisiana's Calcasieu Parish, the rural community of Mossville is surrounded by industrial facilities that each year spew millions of pounds of toxic chemicals into the environment. The pollution includes dioxin, polycyclic aromatic hydrocarbons, solvents like xylene and toluene, and heavy metals such as lead and mercury. Mossville was featured in the 2002 documentary film "Blue Vinyl". The area has the largest concentration of vinyl plastic manufacturers in the US, as well as a coal-fired power plant, oil refineries and chemical production facilities.

In 2014, an article in *Mother Jones* explained that in 1790, a freed slave named Jim Moss found a place to settle down on a bend in the Houston River in the *bayous* of southwest Louisiana. Although never formally incorporated, the village of Mossville became one of the first settlements of free Black people in the South. But over the last half-century, Mossville was surrounded by over a dozen industrial plants, making it quite possibly the most polluted corner of the most polluted region in one of the most polluted states in the United States. Here one could indeed find "multidimensional poverty": low money incomes coupled to soil, air and water pollution.

Serious health impacts from the pollution were documented among Mossville residents by the University of Texas at Galveston Medical Branch and the US Agency for Toxic Substances and Disease Registry. In the late 1990s, Mossville area residents began collecting air samples that revealed violations of state standards for pollutants. The EPA confirmed violations, fining some facilities. The effort spread to communities throughout Louisiana's so-called "Cancer Alley" and led to the formation of the Louisiana Bucket Brigade, a grassroots pollution monitoring project. In 2014, a proposal to build the largest chemical plant of its kind in the western hemisphere would all but wipe Mossville off the map. The project, from the South African chemical giant SASOL, would cost as much as $21 billion. In 2015, Christian representatives, using the language of "environmental justice", reported that a new chemical plant would be built in the small African American settlement of Mossville. The company offered to pay Mossville residents to move out of their homes and sell their churches. The company thought it was generous, but some long-time residents and religious leaders felt they were being forced out. "The church is the hub of the community, as far as relationships and as far as love and caring for one another", said the chairman of the deacon board at Mount Zion Baptist Church.

Chemical pollutants in the hamlet's air were 100 times greater than the national standard, according to an EPA investigation from 1998. Another study found that 84 per cent of

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residents had some sort of central nervous system disorder. Its residents at one point mobilized an unusual level of environmental justice in the US because they appealed to an international court, the Inter-American Commission on Human Rights, on the grounds that the continued pollution of the neighbourhood constituted environmental racism. Indeed, in 2010, the IACHR agreed to review this case. It heard a complaint filed by the New Orleans-based Advocates for Environmental Human Rights (AEHR) on behalf of the people of Mossville. An autonomous body of the Organization of American States (OAS), the IACHR along with the Inter-American Court of Human Rights comprise the inter-American system for protecting human rights. The review would consider whether the US government had violated the predominantly African American community's residents' human rights to life, health, equality, freedom from racial discrimination and "privacy as it relates to the inviolability of the home" by allowing numerous industrial facilities to locate there and emit highly toxic chemicals.

"I am grateful that the Commission decided to take our human rights case", said petitioner Dorothy Felix, volunteer vice president of Mossville Environmental Action Now, MEAN. The petition to IACHR from Mossville residents alleged that the US government and local political subdivisions ignored their obligation to protect human rights. In its response, the US government asserted that the IACHR "does not have authority to request that the United States adopt precautionary measures". Then, attorney Nathalie Walker, the New Orleans AEHR's co-director, replied: "Our government is a member of the OAS and has also ratified the International Convention on the Elimination of All Forms of Racial Discrimination and the International Covenant on Civil and Political Rights, which create clear obligations to protect our human right to freedom from racial discrimination". Monique Harden, AEHR's other co-director, noted that Mossville is one of a number of communities of colour across the US that are disproportionately burdened with toxic pollution as a result of government decisions.

In October 2009, Environmental Justice leaders representing more than a dozen polluted communities had met with EPA leaders and asked them to act to better protect the health of the region's low-income communities and communities of colour. That meeting came after environmental justice leaders urged the EPA to address historic problems covering eight states in the Deep South, with its legacy of racism and unequal environmental protection.

HIGHLY POLLUTING PAPER FACTORIES IN AFRICATOWN, ALABAMA[7]

Africatown is another old settlement of mostly Black, low-income people, fighting past and future toxic pollution. Reputed to be the site of the last slave ship to come to the United States in 1860, Africatown was formed as a small community by a group of 32 West Africans after slavery was abolished. Freedmen bought land from their previous owners, shaping a self-governing community drawn from African traditions, what would be a *palenque* in Colombia or a *quilombola* in Brazil. However, it was also a good site for industrial plants and mills because of its location along the water; a paper plant was built on the edge of Africatown in 1928 on land first owned by a former slave trader and slave owner A. Meaher Jr. By the 1970s, industrial factories surrounded Africatown. After decades of the paper plant's operation, the town began to experience abnormally high rates of cancer. As of 2020, two of the five largest industrial polluters in Mobile County are adjacent to Africatown. What was once a town of nearly 12,000 residents has now become a mostly abandoned ghost town of just 2,000. Most

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major industries have left Africatown, including the paper mill, leaving behind polluted air, polluted water and an unemployment crisis. In 2017, a group of about 1,200 residents filed a lawsuit against the company International Paper claiming that its improper waste management over the decades had led to contaminated land and water, resulting in a high prevalence of cancer in Africatown. However, International Paper denied the allegations and the lawsuit is still open, making the future of Africatown uncertain. Africatown's plight has, however, garnered the attention of Senator Cory Booker and former EPA officer, Mustafa Santiago Ali, who now works for the non-profit human and civil rights group Hip Hop Caucus. Residents of Africatown met with these environmental justice leaders to discuss the problem and possible solutions. The threat of major industry in the surrounding area is still a concern, as much of the land surrounding Africatown is zoned for heavy industry use, increasing the threat of pollution as well as the loss of local businesses.

Another major industry that poses a threat to Africatown is chemical water treatment plants. One such company is Kemira Water Solutions, which has proposed an expansion project on a chemical plant located in Chickasaw. The expansion, aimed to be completed in 2020, would include a new chemical production unit which would make Bio-Acrylamide, a toxic chemical used in the production of paper, dye, plastics, and in the treatment of drinking water and wastewater. Exposure to high amounts of acrylamide is known to cause nerve damage and cancer. Members of an environmental group from Africatown, C.H.E.S.S., have confronted state environmental regulators to voice their distrust. CHESS means "clean", "healthy", "educated", "safe" and "sustainable". On their side, Kemira argued that emissions will not be increased, but residents are sceptical. As of 2021, the fight for environmental justice and against environmental racism in Africatown continued Next, we go from Alabama to Michigan (Figure 24.2).

TWO CASES FROM MICHIGAN

Flint's Lead Poisoning and Water Management Crisis[8]

Thousands of Flint's residents (mainly poor and Black) have been exposed to lead and other pollutants in their drinking water. This is another case of "environmental racism", with Black communities disproportionately burdened by environmental contamination and health risks. In April 2014, the Government of Michigan – Richard Snyder as governor from the Republican party – switched the main city's water source from the Detroit Water and Sewerage Department to Flint River. The main reason was that Flint city terminated its water service contract with the city of Detroit, and in order to reduce costs, the city had a project to build a new pipeline to deliver water from Lake Huron to Flint. But as the construction of the pipeline was delayed, the water source switched to the Flint River, a contaminated river that in the past was a repository for industrial waste.

Since 2014, the corrosive water from the Flint River leached lead from the old water pipes, mixing in the water supply high levels of lead. According to an analysis in 2015, Flint River water had ten times more lead compared to the same system using Detroit water. Since 2014, Flint River water consumption created a public health threat. In February 2015, a Flint resident contacted the EPA regarding the high levels of lead in her water. The EPA told water personnel that a programme should be in place in June of the same year. In September, a doctor from Hurley Hospital found high lead levels in children. In order to face the crisis, in 2015 the

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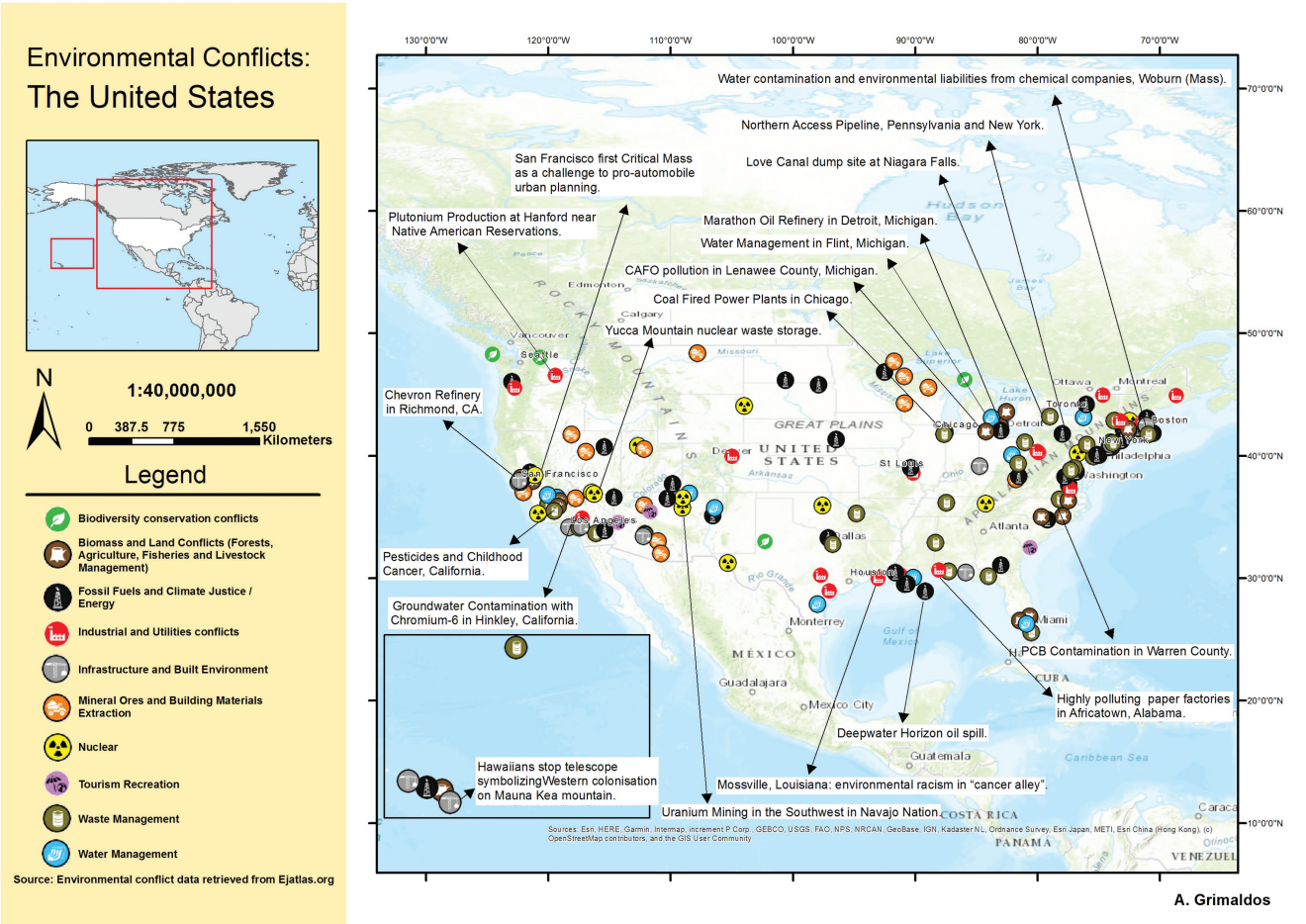

Source: A. Grimaldos

Figure 24.2 *Environmental conflicts in the United States in the EJAtlas and those selected for this chapter*

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Governor created the Flint Water Advisory Task Force, and on 14 December 2015 Flint declared a state of emergency. In January 2016, a crowd of 150 protesters circled through the hallways of the Michigan state capitol calling for action in the drinking water crisis.

Protests and lawsuits against the city were carried out by activists and clergy groups. After the cases were dismissed, in April 2016, 514 residents filed class action suits. The plaintiffs alleged negligence and demanded more than $220 million in damages for the EPA's role in the water crisis. Moreover, Flint activists announced the formation of the Community Development Organization, which assists and shares information with those affected by the Flint River water switch. As a temporary action, water filters, bottled water and at-home water test kits were provided to Flint residents. Four government officials resigned due to their mismanagement of the water crisis, and Governor Snyder issued an apology to citizens while promising money to Flint residents for medical care and infrastructure improvement.

The programme implemented by the city in March 2016 replaced the thousands of lead and galvanized steel service lines that connect Flint water mains to city homes by 2020. But only a little more than 7,500 pipes were upgraded. The slow pace of progress drew the group of residents working with NRDC (Natural Resources Defence Council) back to court to demand that Flint comply with its obligations to identify and replace lead pipes and supply filters to residents after each pipe replacement.

By April 2020, journalist Zahra Ahmad reported that "No charges have yet resulted from a renewed investigation. No high-ranking members of former Gov. Rick Snyder's administration – […] were ever convicted. And the statute of limitations on any misconduct in office charges may have run out Saturday, April 25, 2020 … It's been 5 years, and Flint still doesn't trust the water".

Marathon Oil Refinery in Detroit[9]

Marathon Petroleum Corporation (MPC) has a long history of inflicting environmental injustice on a neighbourhood next to their refinery. Zip code area 48217 along the Rouge and Detroit Rivers in Southwest Detroit is known as the most polluted zip code in Michigan. This part of Detroit has had a long history of environmental racism, starting with its primarily African American residents' ancestors who migrated there after the end of slavery to work in dirty industries promising a good working-class life to those fleeing racial traumas and poverty in the South. 48217 quickly became a "sacrifice zone" or a "pollution hotspot" that rapidly industrialized thanks to "people of colour" taking on the burdens of industrial pollution. The population today consists of 82 per cent African Americans and a rising population of Hispanics. Thirty-eight per cent of locals live below the money poverty line from which, moreover, lack of clean air must be subtracted. Only 41 of the refinery's 524 employees live in Detroit.

The largest polluter in this community is the MPC, but within a four-mile radius there are more than 27 other industrial facilities. Marathon's Detroit tar sands oil processing facility, merely a few blocks from people's homes, has a history of noncompliance and excessive emissions. The refinery failed three EPA inspections since 2016 and received nine environmental violations from the state in 2018. In 2019, the Michigan Department of Environment, Great Lakes and Energy (EGLE) issued at least nine violations to Marathon for noxious odours and exceeding the limits on toxic emissions. Toxicity levels in 48217 are alleged to be more

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than 45 times higher than the state average, designating this a "non-attainment zone" greatly exceeding what the EPA permits under the Clean Air Act.

The air smells very strongly of rotten eggs, burnt plastic and gasoline. Residents cannot sleep well because they choke and cough all night and feel nauseous even at home with their windows closed and with face masks on. Locals suffer disproportionately from high rates of asthma, cancer, brain, heart and respiratory disease, miscarriages, birth defects and infertility; and cognitive impairments all linked to the intense pollution. The University of Michigan School of Public Health estimates that air pollution kills more than 650 Detroiters yearly, more than twice the number of residents killed by gun violence. Thousands more are hospitalized, and children miss days at school. Moreover, the higher the concentration of contaminants in children's blood, the worse their performance was.

In 2006, despite years of local resistance and pollution complaints as well as penalties for persistently violating environmental regulations, the City of Detroit gave company Marathon Petroleum Corporation $175 million in tax breaks to expand the refinery to be able to process high-sulphur tar sands from Alberta, Canada. MPC promised to create many jobs for a city which suffers badly from the nation's highest unemployment rates and bankruptcy. However, the refinery only hired 15 additional Detroiters as a result of the expansion. Only a year later, a cancer epidemic swept 48,217, and almost every home had cancer victims or deaths. Local residents were dying at rates far higher than the state average.

To prepare for a $2.2 billion expansion, in 2012 MPC offered to buy homes in Oakwood Heights for $50–60,000 so that the residents would have enough money to move out to nicer homes in less contaminated areas. Oakwood Heights is a predominantly white neighbourhood in northern 48217. However, the mostly Black neighbourhood of Boynton in southern 48217 did not get any housing buyout offers, leaving its poor residents no choice but to suffer from pollution. Hundreds of complaints were filed against Marathon, but the company refused to extend their buyout programme to the African American neighbourhood. It was around this time that Emma Lockridge, a 66-year-old former radio news programme reporter and grandmother, began taking care of her mother who became gravely ill from Marathon's pollution. Emma herself also had kidney failure and lymphoma. Her house used to be worth almost $100,000 before economic crises and bad publicity over the toxicity in the neighbourhood sank the value to only $10,000. She and many of her neighbours could not afford to move without the buyout programme's help. Enraged by this unfair turn of events, she began mobilizing people into action to push MPC towards finally relocating everyone. Not only did she organize protests and marches, but she also gathered evidence against Marathon by going up close to its facilities to collect data.

In 2016, tired of continuously being ignored, Emma and the people of zip code 48217 then secured funding from the Sierra Club to partner with the University of Michigan for a yearlong study monitoring air quality. The results, unsurprisingly, indicated excessive levels of a wide variety of deadly carcinogens. Their report indicated each chemical, which companies used that chemical, how much of that chemical they were releasing, and the resulting health impacts. Another incident occurred in February 2019, when a fog smelling powerfully of rotten cabbage descended on 48217. Locals began experiencing intense nausea, breathing problems, eye and throat irritation, and vomiting to the point that some of them called 911. What happened was that a gas flare malfunctioned while workers were decommissioning some equipment, causing a propane line to rupture and release hydrogen sulphide and sulphur dioxide. The unit was quickly shut down, and workers knocked the vapours down with water. The

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Toxic Substances & Disease Registry added that the smell was likely from methyl mercaptan. Citizens were outraged that the City of Detroit and the Detroit Police Department did not warn anyone about the incident or about the potential dangers of living in the area, and did not evacuate residents, and many filed complaints with the Michigan Department of Civil Rights.

During the chemical flare investigations, there was also a congressional hearing convened by US Representative Rashida Tlaib attended by approximately 200 people. Environmental justice advocates, residents and academic experts testified about hazards that disproportionately affect communities of colour and low-income areas. The leak at the Marathon refinery was just the latest of many cases. They demanded better infrastructure, green buffers to offset the amount of pollutants reaching homes, cumulative impact analyses, structural legal changes, real accountability and permitting processes giving residents a say in whether to issue permits to polluting companies such as Marathon. Another topic brought up was how a lot of white people were talking for frontline communities, but residents' voices and perspectives themselves were often crowded out. Marathon still does not want to buy out Boynton homes, and the neighbourhood continues to be exposed to gas and oil leaks without much progress in getting MPC to relocate people. Yet the community continues to be actively protesting for a buy-out and working on a federal class-action lawsuit filed by over a thousand locals against MPC.

PIPELINES, OIL SPILLS, CFPP

Northern Access Pipeline, Pennsylvania and New York: Water Is Life[10]

Indigenous groups and local EJOs fight the proposed Northern Access Pipeline (NAPL) by National Fuel Gas Supply Corporation & Empire Pipeline, from Pennsylvania to New York state and Canada. This case has a parallel with the Kinder Morgan Natural Gas Pipeline and the fights against the Keystone XL and the Dakota Access Pipeline (DAPL) that we saw in Chapter 16 on LFFU movements belonging to the kind of grassroots resistance that Naomi Klein called Blockadia when Indigenous peoples complain against oil or gas pipelines.

On 17 March 2015, National Fuel Gas Supply Corporation ("Supply"), a vertically integrated natural gas company whose holdings include a regional natural gas utility, a transmission pipeline company and an oil and gas driller, and Empire Pipeline, Inc. ("Empire") applied for authorization from the Federal Energy Regulatory Commission (FERC) to construct an approximately 96-mile pipeline, called the Northern Access Pipeline (NAPL), from Northern Pennsylvania through Western New York. According to Supply's Council on Environmental Quality (CEQ) report, NAPL would provide gas to markets in the northeastern United States and Canada. NAPL would stretch from Sergeant Township, McKean County, Pennsylvania, under the Allegheny River, through part of the Allegany County town of Genesee and Cattaraugus County towns, and it would cross under Cattaraugus Creek into Erie County, New York. NAPL is proposed to cross 206 bodies of water and impact 389 wetlands and to include a new 22,000 horsepower compressor station and an expansion of an existing compressor station. Empire also seeks to construct a natural gas dehydration plant to export gas from Supply's Western Pennsylvania fracking sites to what the company calls "premium markets" in Canada. All propositions in this project were valued as a US$ 500 million investment.

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Due to the imminent threat posed by the pipeline to the streams and wetlands it is meant to cross, the threat of impaired air quality from compressor and dehydration station emissions and of continued global climate change posed by increased fossil fuel infrastructure, the Seneca Nation of Indians (SNI), local governments and several environmental groups actively opposed NAPL. SNI president elect Todd Gates feared the danger from the natural gas pipeline to his own people, the souls of his ancestors and his human and nonhuman relatives. In a statement to a local television station, Todd Gates reiterated the 'Water is Life' sentiment, popularized by the NoDAPL movement in North Dakota. Furthermore, according to Dr Jason Corwin, the Executive Director of Seneca Media and Communications Centre, the pipeline corridor is set to run throughout the ancestral territory, burial grounds and sustenance-providing water bodies. Nevertheless, FERC has had little if any consultation with SNI as per federal regulations.

NAPL presents multiple threats to the environmental health of the Upper Lake Erie and Niagara River Watersheds. It requires the crossings of protected trout streams. Upwards of 100 acres of wetland and 350 acres of forest can be disrupted and/or permanently impacted; due to the necessity to maintain accessible "Right of Way", ensuing revegetation will take substantial time to replace. The stream trenching during installation can destabilize the stream bed, and such conditions can result in increasing water temperatures, decreasing water quality, turbidity and impacting downstream aquatic life. Construction of NAPL could also have negative impacts on the Cattaraugus Creek Basin Aquifer, the sole source of drinking water for 20,000 citizens.

Owing to these potential threats posed by NAPL, the resistance movement grew from the grassroots, community-based local level to a regional and progressively broader audience. NoNAPL opposition was born out of public hearings held by Supply dating back to 2014. The company was immediately met with a fight from local residents, landowners and the Seneca Nation of Indians. Concerned citizens and environmental organizations joined forces to increase awareness of the issue through letter and postcard campaigns to state and local representatives. The resistance took to the streets of Albany and to National Fuel's headquarters in Buffalo, demanding that their human rights be valued over those of the company and its profits. A number of local landowners resisted NAPL in court. Another medium of mobilization took the form of film, in a moving documentary entitled "Denying Access: NoDAPL to NoNAPL". As of 2021, the future of NAPL was still unknown. The NYSDEC denied Supply its water quality permit, which the company desperately needs if it is to start construction. This and other regulatory delays forced Supply as of December 2018 to file for an extension to meet their 2022 in-service target for NAPL. In 2022, the FERC approved Supply's request for a 35-month extension to build the project by December 2024.

The Deepwater Horizon Oil Spill in the Gulf of Mexico[11]

The British Petroleum Deepwater Horizon Spill in the Gulf of Mexico, in US territorial waters, caused deaths and extensive damage; this was one of the rare cases where the responsible company recognized liability. The oil spill is known as one of the largest oil spills in marine waters. Beyond the compensation paid, international activists called for recognition of the Rights of Nature under universal jurisdiction. In 2010, this disaster was news all over the world because it affected the coast of a rich and powerful country. On the other hand, in many impoverished countries similar pollution cases have occurred for decades without meriting

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so much media attention. Here, British Petroleum was forced to face the liabilities. Other memorable gas/oil platform accidents were Ixtoc in Campeche, Mexico, 1979, and the Piper Alpha explosions in 1988 in Scotland. As oil becomes scarcer, and demand for gas increases rapidly, accidents and spills are likely to increase. We are perhaps on the downward slope of the Hubbert curve (peak oil). The industry will strive to extract oil of poorer quality and in increasingly remote and difficult locations such as the Amazon or the Arctic. Extraction costs will increase, and there might be a tendency to reduce safety expenses.

On 20 April 2010, the offshore drilling rig Deepwater Horizon exploded and caught fire. Eleven workers were killed in the explosion and 17 injured. The rig was owned by Transocean on lease to BP, with Anadarko Petroleum and MOEX Offshore (part of Mitsui Oil Exploration) as minority co-owners. Work on the well had been performed just before the explosion by Halliburton. The 'blowout preventer' was built by Cameron International. On 22 April, the rig sank. Oil leaked from the ruptured wellhead until 15 July, when it was temporarily stopped; approximately 4.9 million barrels of oil had leaked into the Gulf. On 19 September 2010, the US government declared the well "effectively dead". Oil directly affected coastal areas in Louisiana, Mississippi, Alabama, Florida and Texas. People dependent on fishing and tourism were affected. Concerns were also raised in relation to health hazards for clean-up workers and coastal residents. Because the damage was done in US territorial waters, environmental liability was acknowledged in practice. BP agreed to pay almost US$20 billion in settlements resulting from lawsuits. This money was to be funnelled into restoration efforts which have the potential to help restore a large dead zone in the Gulf of Mexico which is also damaged from water from the Mississippi River tainted by industrial agriculture. BP committed US$ 500 million to fund the Gulf of Mexico Research Initiative, allowing scientists to study and understand the impact of the spill.

In an international parallel event in late November 2010, activists filed a lawsuit against BP in Ecuador, citing universal jurisdiction before the country's Constitutional Court and appealing to the country's recognition of Rights of Nature in art. 71 of the Constitution of 2008. Indian environmentalist Vandana Shiva spoke to the claim, saying

> This morning we filed this lawsuit to defend the Rights of Nature […]. It's about universal jurisdiction beyond the boundaries of Ecuador because Nature has rights everywhere, and that is why we are the first signatories of a global coalition and say: we as citizens of the earth have a duty to protect Nature everywhere.

Often applied in Human Rights cases, universal jurisdiction allows a country to prosecute crimes committed by nationals or foreigners anywhere in the world. Diana Murcia, the plaintiff's lawyer, said the case aimed to bring Nature to the table as a rights-bearing entity. For the time being, nothing came out of this.

Chevron Refinery Richmond, California[12]

The Chevron company appears in many conflicts in the EJAtlas. Chapter 27 has a section on the disaster in Ecuador caused by Texaco-Chevron. Here we focus on a smaller conflict, in Richmond, California where the company is domiciled and owns a controversial refinery. The case falls squarely into the history of the environmental justice movement in the US since the 1980s and 1990s. The refinery processes approximately 240,000 barrels of crude oil a day. The company had 304 accidents between 1989 and 1995 – major fires, spills, leaks, explosions,

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toxic gas releases, flaring and air contamination. Since 1902, Chevron has been refining crude oil in order to manufacture petroleum products and other chemicals in Richmond, a poor and mostly African American community in Contra Costa County, CA. Today, the company employs 1,200 people and processes crude oil into gasoline, jet fuel, diesel and lubricants.

Negative health outcomes have been associated with the disproportionate burden of industrial contamination in this area. A health study reported that the prevalence of asthma among children in Richmond (17 per cent) was double the national average (7 per cent). The prevalence of asthma among adults who have lived in Richmond for more than 15 years (34.9 per cent) was significantly higher than those more recent residents (9.2 per cent). Other acute health problems related to air pollution, such as headaches, eye irritation, skin irritation and respiratory allergies, have been identified within these communities.

One local leader was Henry Clark (Figure 24.3), who became executive director of the West County Toxics Coalition. He was among the delegates to the first People of Colour Environmental Leadership Summit held in 1991 in Washington D.C. This coalition was also a founding member of both the National Black Environmental Justice Network and the Southwest Network for Environmental and Economic Justice.

The controversy sparked in 1993, when Chevron made plans to increase its chemical storage and the number of hazardous chemicals in the Richmond area. Local residents tried to lobby public officials to force the company to invest $50 million into community development. The West County Toxics Coalition was able to successfully lobby the planning commission in Richmond. Legal advice from the Golden Gate Law Clinic also helped this community group interpret laws like the CEQA (California Environmental Quality Act) and thus provide powerful evidence that the reformulated fuel plan would have detrimental impacts on children and other vulnerable residents. Chevron ended up paying $5 million.



Source: Sara Bernard, Richmond Confidential

Figure 24.3 *Henry Clark helping carry the "Occupy Chevron" banner to the refinery gates*

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In the 2008 elections, residents of Richmond approved the Richmond Business License Tax (Measure T), an initiative to bring $10 million in additional annual revenue for the city from Chevron to expand community programmes. However, in February 2009 Chevron filed a lawsuit in Contra Costa County Superior Court that was ruled in its favour, proclaiming Measure T unconstitutional.

Since the plant started operating, hundreds of accidents have occurred. There was a large explosion and fire on 6 August 2012 causing over 15,000 residents to seek treatment at area hospitals. After this accident and mass protests, the city of Richmond filed a lawsuit against Chevron over the fire. In response, Chevron pleaded no contest to six criminal charges and agreed to implement extra oversight of its operation, paying $2 million in fines and restitution.

CFPP in Chicago: An Alliance of Local Environmental Justice and "Big Green" Organizations[13]

In August 2012, the Fisk and Crawford Power Plants closed their doors after the "marriage" of community organizations and larger "big green" organizations in their campaign against coal. This was after more than a decade of conflict with local residents, grassroots community groups and national environmental organizations. The two power plants, located in the predominantly Hispanic neighbourhoods of Pilsen and Little Village, had some of the worst environmental compliance records in the country. The emissions cost neighbouring communities more than $120 million a year in hidden health damages, according to an analysis by the National Research Council. In 2011, two Chicago aldermen responded to growing community resistance to the coal plants by reintroducing an ordinance to regulate particulate matter and carbon dioxide emissions. Shortly afterwards, Midwest Generation announced that the Fisk and Crawford Plants would be permanently closed.

The grassroots groups had realized that if they wanted the plants closed, they needed to work with these larger Big Green organizations. About 12 groups came together and formed the Chicago Clean Power Coalition. Despite mounting evidence of coal burning power plants contributing to climate change and health issues in the community, the City Council wouldn't put pressure on the company who owned the Fisk and Crawford Plants (Midwest Generation). Activists made their frustration with the City Council known by painting "Quit Coal" in large vertical letters on the 450-foot smokestacks. Activists also made sure that the coal plants were on the agenda for a mayoral forum held that year 2011. It became public that one of the aldermen was allegedly receiving funds from Midwest Generation. The Coalition was able to get one-third of the city's aldermen in support of their campaign to close down the plants.

On 28 February 2012, the news broke that the plants would be closed. However, since the closure of the Fisk and Crawford power plants, there have been proposed site redevelopments that have the potential to perpetuate disproportionate environmental and health burdens. This site is located adjacent to an existing public park, and in 2017 the city put forth a proposal to expand this park to include 1.5 acres of the Fisk site. The city committed $40,000 in Open Space Impact Fees to "study the potential for creating the park". Planning was set to be completed by the end of 2017, but thus far no other public announcements have been made. The Fisk site is owned by NRG Energy, who took ownership of both the Fisk and Crawford sites after Midwest Generation closed the coal-fired plants and operates the remaining natural gas-fired plants.

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In early 2018, the Crawford plant was scheduled to be demolished, and the property was used as an industrial warehouse/distribution centre for online retailers. The Hilco Redevelopment Partners purchased the site for one hundred million dollars. Hilco began promoting and discussing these developments without involvement from the Little Village Environmental Justice Organization (LVEJO). While Little Village residents hoped for some form of redevelopment for the Crawford site, they have concerns with the proposed distribution centre and the effect that increased traffic and diesel truck idling will have on health and air quality. The LVEJO has been particularly vocal in their concerns surrounding environmental quality, public health, and a lack of citizen representation in the process so far.

THREE NUCLEAR ENERGY CASES

Uranium Mining in Navajo Territory[14]

As of 2005, the Navajo nation banned uranium mining on their land. However, due to the large supply of uranium under the Navajo Reservation, companies have been trying to reopen mines. Liabilities remain. The lands of the Navajo Nation include 27,000 square miles spread over Utah, Arizona and New Mexico. The geology of these lands makes them rich in uranium, a radioactive ore in demand. From 1944 to 1986, nearly four million tons of uranium ore were extracted from Navajo lands under leases with the Navajo Nation. Many Navajo people worked the mines, often living and raising families in close proximity to the mines and mills.

Today, the mines are closed, but a legacy of uranium contamination remains, including over 500 abandoned uranium mines as well as homes and drinking water sources with elevated levels of radiation. Potential health effects include lung cancer as well as bone cancer and impaired kidney function. The Navajo people, due to a language barrier, were largely isolated from the flow of knowledge about radiation and its hazards. Mobilization began in reaction to several mill spills and continuing health effects from mine tailings, but those affected were not listened to and did not have adequate resources to create a large opposition. As journalist Judy Pasternak recounts, a few outstanding individuals – among them Navajo schoolteacher Lorissa Jackson, former Interior Secretary Stewart Udall, his son Tom (now Sen. Udall, D-N.M.) and US Rep. Henry Waxman – helped raise awareness and made a stand against one of the grossest cases of betrayal and wilful oversight in the history of the country. Another voice in the fight against this injustice was Harry Tome, a tribal council member and later employee of the minerals department of the tribe. In 1973, the *Albuquerque Tribune* ran a cover story that led to the first legislation in the US Congress aimed at compensation for uranium miners. The bill never passed, but in 1978 Harry Tome began working with Udall, who filed two lawsuits in 1979.

After a 30-year fight, with multiple dismissed class-action lawsuits, Congress responded by developing a programme allowing partial restitution to individuals who developed serious illnesses after exposure to radiation released during the atmospheric nuclear tests or employment in the uranium industry: the Radiation Exposure Compensation Act (RECA) was passed in October 1990. Navajo members continued to push for compensation that would allow them to pay medical bills and provide comfort following the loss of family members. The US

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Justice Department announced on 2 March 2015 that it had awarded more than $2 billion in compassionate compensation to eligible claimants under RECA.

EPA's clean-up work continued under a second 5-year plan developed in 2014. In 2015, Federal and Navajo agencies formed the Community Outreach Network as part of the Five-Year Plan. The Community Outreach Network includes representatives from EPA, the Bureau of Indian Affairs, the Nuclear Regulatory Commission, the Department of Energy, the Indian Health Service, the Agency for Toxic Substances and Disease Registry, the Navajo Nation Environmental Protection Agency, the Navajo Nation Abandoned Mine Lands/Uranium Mill Tailings Remedial Action Program and the Navajo Nation Department of Health. The Community Outreach Network plans and coordinates outreach events to enhance community understanding of the work agencies are doing to address uranium contamination on Navajo Nation. Companies such as Hydro Resources, Inc (HRI), have been trying to re-open mines.

On 15 December 2015, the State of New Mexico Environment Department terminated HRI's groundwater discharge permit 558 because it did not comply with groundwater permitting regulations of the Water Quality Control Commission (WQCC). HRI was encouraged to apply for a new permit in accordance with the new lowered water quality standards. A lot was at stake in this ongoing case, namely the quality of millions of gallons of drinking water that would most likely be contaminated as a result of HRI's proposed in-situ mine. Navajo members continue the fight to protect their land, their water, their health and their future.

Plutonium in Hanford, Washington State[15]

A related case is that of Hanford near Native American Reservations. In response to security uncertainties and to increase the defence capabilities of the United States, the US government chose Hanford, Washington, as the home to the first full-scale plutonium production facility as part of the Manhattan Project. Due to the size of the facility more than 1,500 people were told to evacuate their homes, and infrastructure – including 554 new buildings – replaced them. The production of plutonium and eventual modification into a waste storage facility continued until the late 1980s. In 1988, the facility was put on the National Priorities List for the Superfund Clean Up. What was most concerning was the proximity of the contamination to the Columbia River, the water source for millions of people.

Another aspect of this conflict is that there were a number of Native American tribes living on this land that had rights granted through treaties to use the resources in the now polluted area. Their rights were removed, and this took away part of their ability to follow traditional ways of living. The intensity of the mobilization increased in the late 1980s as organizations began to push for clean-up due to the heightened threat of groundwater contamination leading to contamination of the river. There has been steady mobilization by organizations and the government to clean up the large area completely. The site has been in remediation since 1989 and continues to be cleaned up. Annually, a very high sum is spent on remediation. There are many decades ahead of decontamination, at enormous cost.

The US Department of Energy estimated that radioactive and chemical contamination included 2,300 tons of spent nuclear fuel (stored in two ageing basins just 400 yards from the Columbia River), 12 tons of plutonium, 25 million cubic feet of buried or stored solid waste, 1,400 waste sites, 500 contaminated facilities, 200 square miles of contaminated groundwater and 53 million gallons of high-level nuclear waste in 177 ageing underground storage tanks.

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Yucca Mountain Nuclear Waste Storage, Nevada[16]

This can be deemed to be an environmental justice success because the organized opposition, successful litigation and environmental analysis was able to prevent the storage of nuclear waste in Yucca Mountain for many years. Due to the lack of health precautions and regard for Native American culture, the implications of Yucca Mountain could have been disastrous.

In 1982, the US government passed the Nuclear Waste Policy Act which requires deep geological repositories for nuclear waste. In 1983, Yucca Mountain was named as a potential site for a nuclear waste repository. In 1996, Yucca Mountain was found to be lacking the natural geological and hydrological qualities that are needed to be the crucial first barrier of the waste. In 2001, several environmental organizations as well as the state of Nevada filed lawsuits against the US EPA. Nevada also filed lawsuits against the US government, the Department of Energy and the US Nuclear Regulatory Commission (NRC), challenging the Yucca Mountain project. In August 2013, a federal appeals court ruled to resume the licensing process for the project.

Throughout this conflict, one main actor has been the Western Shoshone tribe. Yucca Mountain contains traditional and cultural sites and there has been debate with the US Department of Energy over their rights and access ability to these communities. So, here we have a case in the USA with Indigenous populations as protagonists. Clearly, Indigenous peoples are located as internal "refugees" both at the frontiers of commodity extraction and of waste disposal.

Highly intense resistance has produced constant litigation, new environmental assessments and appeals. The United States government removed funding to the Yucca Mountain project but under the Nuclear Waste Repository Act the US is required to find a more permanent holding place for nuclear waste. Therefore, although funding has been removed there is still the potential to refund the repository. Former President Barack Obama convened the so-called Blue Ribbon Commission on America's Nuclear Future that was tasked with "establishing a nuclear waste administration and creating a consent-based process for siting nuclear waste facilities". The Blue Ribbon Commission had really no clue on how to achieve this. Debate continues. On 20 May 2020, it was reported that Donald Trump and his administration had no plans to use Yucca Mountain as a nuclear waste repository.

SAN FRANCISCO'S CRITICAL MASS FOR CYCLIST RIGHTS: WE ARE NOT BLOCKING THE TRAFFIC, WE ARE THE TRAFFIC[17]

Car and oil industries helped to shape the city of San Francisco around private vehicles. Within this context, in the early 1990s a world-famous form of cycling protests was born: the "Critical Mass". This conflict is on the use of urban space and on the means of urban transport. By 1930 in San Francisco, car-based transportation benefitted from giant public expenditures, though they were used by an affluent minority of the population. The investment on car infrastructure was far greater than the investment in public transportation. Also, the electric street cars were left aside and the streets were taken over by private vehicles.

One graduate student, Miller McClintock, became a prominent traffic researcher. In his 1925 thesis "Street Traffic Control" he wrote that "the automobile is a waste of space compared to the streetcar", and described the automobile as "the greatest public destroyer of

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human life". But two years later his perspective changed after being hired by Studebaker's Vice President to direct the new "Albert Russel Erskine Bureau for Street Traffic Research". After, he wrote an article called "Curing the Ills of San Francisco Traffic" where he wrote: "it is recognized that an ultimate requirement for the solution of street and highway congestion is to be found in the creation of a more ample street area". He became a recognized authority on traffic planning, now with a pro-automobile vision.

By that time, Ford was already a growing business. A fair in New York City in 1934 "The World of Tomorrow", built by General Motors, exhibited a vision of "San Francisco in 1999", to redesign San Francisco as a Corbuserian city, with elevated roadways and highways. In the spring of 1937, Shell oil company combined McClintock`s traffic expertise with the stage designer Norman Bed Geddes to build a scale model of "the automobile city of tomorrow", to promote Shell Oil Company's new "motor-digestible gasoline".

In 1955, the newspaper *San Francisco Chronicle* published a map of proposed routes of the freeways which helped to promote the opposition known as the "Highway revolts", where 30,000 citizens mobilized to stop freeway building in San Francisco. These protests took place between 1950 and 1970. By 1991, established activist cycling groups protested against the oil industry; this year, around 100,000 citizens participated in anti-Gulf War demonstrations, often on bicycles. Within this context, where the car and oil industries helped to shape the city around private vehicles, and with growing protests from activist groups and a noticeable bicycle messenger community, one of today's best world-wide known cycling protests appeared: the "Critical Mass". This anarchic type of protest and celebration today takes place in more than 300 cities around the world, usually every last Friday of the month.

By 1992, a group of around 60 cyclists in San Francisco, which included bicycle messengers and activists, started to ride once a month, increasing their visibility and reclaiming the public space by making a "social use of the streets". It was initially called "the commute clot", an "experiment in urban anarchy". Many interesting questions started to come up with these ridings: "Why is there so little open space in our cities where people can relax and interact, free from the incessant buying and selling? Why are people compelled to organize their lives around having a car? What would an alternative future look like?" Over time, the concept and movement started to take shape and the name evolved to Critical Mass. With a double purpose: on one side "to celebrate bicycles" and on the other to "dominate the streets for a change". It also has the purpose to allow people to experience what it is like "to be the majority" or "to be safe".

One of the tools of the decentralized network of Critical Mass is "Xerography". The word "Xerography" comes from "Xerocracia", a Greek word meaning the "government of the foreigners". With "Xerography" anyone is free to make copies of their ideas and pass them around. The mission of the ride is not set by a few people, people are there to promote "human powered transportation as a viable alternative, others seek the respect of motorists and city planners, and some take part simply because they like riding bikes". Critical Mass has received many titles; an "organized coincidence", "a revolutionary act", "just a bike ride". The several names reflect the fact that the Critical Mass is to be interpreted, shaped, and redefined by the participants in each context; it has a decentralized structure.

Traffic tactics evolved in order to maintain the mass together throughout the city. Nowadays, the route and starting point is agreed on social networks, and the departure point is the same every Friday. One of the most important characteristics is that the mass should not split. That is the main idea, to be a mass. "We are not blocking the traffic; we are the traffic". Therefore,

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in the intersections "corks" stop the motorized traffic until the last of the bicycle riders pass. San Francisco has become a place of honour in what has become a world movement.

HAWAII: MORE SIGNS IN MAUNA KEA OF INDIGENOUS POWER[18]

Of the four or five cases of environmental conflict collected so far in Hawaii in the EJAtlas, I select one that was first uploaded in 2020. In Hawaii, there was a demographic collapse after 1778, when British Capt. James Cook arrived, as had happened nearly three centuries before in the Americas when Spaniards and Portuguese first arrived. Nowadays, there are sometimes clashes of opinion between the remaining Indigenous population and the US population. In 2019, Hawaiians stopped the building of a telescope that, to them, symbolized Western colonization on Mauna Kea Mountain. To Native Hawaiians, it also interfered with cultural practices related to the mountain. The project was stopped after five months of protests.

Mauna Kea, the tallest peak in Hawaii, provides a unique place in the Northern Hemisphere for observing the heavens. It is here, at nearly 14,000 feet, that a consortium led by Caltech and the TMT International Observatory including the University of California wanted to place a 30-m-tall telescope that would serve for celestial observations and research and give astronomers the ability to "peer through space-time to the beginning of the universe 13 billion years ago", according to a UC Santa Cruz astrophysicist and Thirty Meter Telescope board member.

Native Hawaiians agree that Mauna Kea connects humanity to the universe – as an umbilical cord between Earth and space. The peak at Mauna Kea is the "highest point where land touches the sky – where the two deities, Sky Father and Earth Mother, meet", said an elder in the fight against the telescope. Thus, to Native Hawaiians, putting a giant telescope on their sacred mountain is a form of "pollution". Thirteen much smaller telescopes, many built without Native Hawaiian approval, already stand on Mauna Kea. Opponents argue that they are not anti-science but that they don't want a telescope on their sacred mountain. "We have a belief system that is based in nature and our environment, not on churches and buildings", a Native Hawaiian stated. In 2018, a coalition of activists led by Kealoha Pisciotta filed a legal challenge in the Third Circuit Court of Hawaii against the telescope's construction. The TMT International Observatory, the activists said, had failed to post a security bond that is required under a 1977 plan that governs the management of the mountain. The constructors, however, promised that the full cost of the project would cover the cost of restoring the site to its natural state once the telescope had finished its "mission". The Supreme Court of Hawaii ruled that the telescope did not violate environmental laws, nor Native Hawaiian rights to engage in traditional and customary practices.

Direct action was called for. On 15 July 2019, five days after Hawaii Governor David Ige announced that the construction on Mauna Kea was about to happen, Native Hawaiians, activists and neighbours mobilized. They occupied the Mauna Kea access road, blocking equipment trucks from ascending to the summit and drawing massive support via social media. At the base of Mauna Kea 2,000 people were protesting. On 17 July 2019, state police arrested 38 Native Hawaiian elders (*kupuna*) for blocking the road. They had decided to put themselves on the front line, to protect the younger leaders from arrest. They were quickly released and returned to protest on the highway. The governor issued an emergency proclamation and warned that he would send the National Guard. At the heart of the resistance to the telescope

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is said to be the concept of *kapu aloha*, a Native Hawaiian moral philosophy grounded in compassion, respect, self-discipline and non-violence.

The struggle for Mauna Kea continues. "Every piece of machinery you try to bring up on this mountain, we're gonna fight you", a protester stated. After five months of widespread and active protests, the project temporarily stopped on 20 December 2019. The Hawaii Governor also announced that police enforcement would be removed from the site; the project "would not be proceeding with construction at this time". By 2022, the issue is still open.

CONCLUSION: ENVIRONMENTAL RACISM IS A TYPE OF "STRUCTURAL VIOLENCE"

Environmental justice, as born in the USA in the 1980s, was a BIPOC (Black, Indigenous, and People of Color) movement born from the awareness that the environmental crisis was a racial issue. There was dumping of toxic and nuclear waste upon racialized communities. The same also applies on a global scale. In the 1980s, the Afro American liberation movement gave the world from the USA the watchword "environmental justice" to fight "environmental racism". It deserves gratitude.

The US environmental justice movement, focusing on minorities, has done enough inside the country but very little outside. On occasion, as in Mossville, Louisiana, it managed to appeal to the Inter-American Commission on Human Rights. However, damages from the US companies in the rest of the world have been neglected, and this is to be lamented because the US is an imperialist power with an economic and military presence everywhere.

Around the world, Indigenous movements have fought for over five hundred years. Ecofeminism realizes how ecological degradation and extinction are deeply imbricated with patriarchy. Peasant movements claim their right to food sovereignty as a way to 'cool down the earth'. Socio-ecological movements are thus of worldwide significance. In this chapter we focus only on the US, selecting a sample within the 180 socio-ecological conflicts registered by 2022 in the EJAtlas for the US. Many had disastrous outcomes. The two last ones are more hopeful: the internationally successful San Francisco critical mass movement for cyclist rights and the recent conflict in Hawaii showing signs of the world Indigenous revival. This revival is the main theme of the next chapter, which begins with a mining conflict in Santa Rita Mountains, in Arizona in the "copper belt" shared with Sonora, Mexico. Keywords of this chapter have been environmental justice, environmental racism and the CERCLA legislation. Another keyword could be "corporatocracy", defined as "a society or a system that is controlled by 'business corporations'", what the Russian people spontaneously called in Greek after 1990 the "oligarchy". But, of course, this is combined with the violence of the state.

The US territory covers from Massachusetts to Louisiana and Alabama, and then to California and Hawaii. It also includes Alaska, Puerto Rico and some Pacific islands, which appear in other chapters. Any social movement lives on its successes although it might also learn from its failures, as the Warren County case teaches because the plan for a PCB depository was not stopped. The cases in this "sample within a sample" are slightly on the "optimistic" side: about six could be seen as successes (projects cancelled, important liabilities acknowledged or a change in urban traffic norms imposed), about five would be "not sure", and eight would be failures in environmental justice.

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We have revised lead pollution in the supply water at Flint and Marathon Oil in Detroit, bad cases of "environmental racism". In Chapter 21, we saw a major CAFO conflict in Lenawee County also in Michigan. We have also seen complaints against pipelines and Blockadia movements; the Deep Horizon disaster, the Chevron refinery in Richmond, California; a CFPP in Chicago. Then the injustice of uranium mining in Navajo territory, nuclear waste dumping in Hanford in Washington state, and the conflict on Yucca Mountain in Nevada. Indigenous populations appear as protagonists in some of these cases and of course Afro American people. The industries and commodities involved in the conflicts are dangerous chemicals, agricultural pesticides, the oil and gas industry and its refineries and pipelines, the coal burning industry, metal and uranium mining, nuclear waste, land grabbing threats to beautiful and sacred landscapes, water use and claims for urban space for pedestrians and cyclists. The values in dispute range from monetary compensation for damages to the preservation of landscape or water sources which are deemed sacred and priceless. We know that the different valuation languages displayed in the conflicts are not commensurate.

We identify some general themes. For instance, the McFarland conflict in California showed the role of César Chavez, founder of the UFW, overlapping protests on pesticide use that killed birds and damaged human health with immigrant working-class activism. In the US perhaps there is an environmentalism of the "subaltern classes" of different colours, but this terminology would weaken the force that the US Environmental Justice movement has obtained by fighting against "environmental racism". Racism is indeed present in the social constitution of the US, and "environmental racism" against Black, Hispanic and Indigenous populations appears in our sample. But also "poor white" protagonists of struggles as in Hinkley, California, Love Canal NY and Woburn Mass. Together with the presence of leading women activists in many cases (Tran 2021).

When the Environmental Justice movements started in the US in the 1980s a frequent complaint was a lack of support from the Big Green organizations; they were green but exclusively white in their leadership and membership. However, there are some confluences between grassroots local movements and national environmental organizations such as Earth Justice or the Sierra Club which are normally distant from the environmentalism of the BIPOC. Meanwhile, EPA and its rules, the courts of justice and the CERCLA's Superfund inevitably appear in many cases. I am reminded of India and the legislation on Forests Rights and the National Green Tribunal (Roy 2018) which are sometimes effective. Among the protagonists, there are agricultural labourers but not peasants. This is different from many other countries in the world. There are however Indigenous people who complain about potential or actual environmental damages.

Most environmental conflicts everywhere have public cultural expressions, from humble cardboard placards and cloth banners to collectively shouted slogans and songs to street theatre, amateur documentaries, many academic or newspaper articles and heavy books, and even US Hollywood movies. In the US, the 1979 Three Mile Island nuclear accident had been anticipated in the fanciful movie *The China Syndrome*. The cinema industry is also powerful in India but there are not yet movies (I think) on the Chipko movement, the Narmada Bachao Andolan or the opposition to the Kudankulam NPP.

Finally, there is less open violence against environmentalists in these cases and in the US as a whole than in some countries of Latin America or the Philippines, which rank high in the Global Witness statistics of killed environmentalists. The homicide rate is high in the US, but not against environmentalists. But we have seen other types of violence like persistent

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contamination provoking cancer. These are cases of "slow murder" (a term from Sunita Narain of the CSE, Delhi) or "slow violence" (Nixon 2013). In fact, "environmental racism" can itself be seen as another type of violence, "structural violence" (Navas et al. 2018). And, of course, US firms abroad have been very violent, as also the US Army with nuclear bomb testing in inhabited Pacific islands, "depleted uranium" bombs in Iraq, and the use of Agent Orange in the Vietnam War (that led to the introduction of the neologism "ecocide").

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25. Indigenous revival and resistance around the world

ARE INDIGENOUS PEOPLES ATTACKED BECAUSE THEY LIVE AT THE COMMODITY EXTRACTION FRONTIERS?

In Latin and North America, Australia, India, Central and Southeast Asia, Africa and the peripheries of Europe, we witness similar patterns of Indigenous peoples defending their rights at the extraction frontiers. They are motivated by their own values of sacredness, identity and livelihood against coloniality and racism. There are about 1,500 cases of Indigenous-environmental resistance documented in the EJAtlas. Indigenous people live in "marginal" areas, almost as refugees from colonization, and these areas become new commodity extraction frontiers threatening their habitats. They are deemed to be powerless to resist. However, they are sometimes able to appeal to their long histories of resistance and survival, and even to the international protection won collectively in the last 40 years of an "Indigenous revival". I shall start this chapter with a case in Arizona (copper mining) and another case in Florida as a prolongation of the previous chapter on the United States. Then I shall continue with other cases in the Americas (Peru, Brazil and Venezuela). Then, we will see other cases of Indigenous defence against extractivism in Africa (Cameroon and Ethiopia), India and Southeast Asia. In other chapters (particularly in Chapter 7 on the Arctic) we have already asked whether such Indigenous peoples are attacked because they are weaker (political hypothesis) or because they live at the commodity extraction frontiers (geographical hypothesis).

"Commodity frontiers" is a concept that comes from "world systems theory" with Wallerstein and Moore (2000). It does not come from anthropology because anthropologists from colonialist backgrounds were often more interested in the permanent cultures, classificatory structures and kinship systems of Indigenous peoples than in the ravages to which they were subject. In university departments of anthropology, Indigenous peoples were inert objects of study rather than heroes of environmental resistance movements.

This chapter therefore emphasizes links between environmental activism and the exercise of self-determination pushed by the Indigenous revival. This revival brings back old names of tribes obliterated by colonization and racism. Many of the peoples deemed to be "without history" (Wolf 1982) are recovering their history as victims of coloniality. The main enemy of Indigenous communities has been capitalism but there is also a pattern of majority populations (and religions) attacking local minority Indigenous and/or ethnically discriminated populations in post-colonial countries. Thus, in India, one of Adivasis' worst enemies is Hindutva politics, combined with internal capitalist growth searching for raw materials such as coal and metals.

There is a global Indigenous cultural and political revival manifested in socio-ecological conflicts. As with the feminist, human rights, anti-colonial and anti-racist movements, we are making two points here: these movements are growing on their own, and they grow

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together with the environmental movement. Other important social movements also overlap to some extent with environmentalism, i.e. the working-class and agrarian movements (Chapters 20 and 21). There is also a popular health and environment movement (Navas et al. 2022) very active in urban contexts.

In the Americas, 2021 marked the fiftieth anniversary of the Barbados declaration, where 15 anthropologists against the grain foresaw the strength that the Indigenous movement would acquire. They called for self-determination of Indigenous peoples. One of the fifteen, Stefano Varese, wrote a pioneering book in the 1960s, *The Salt of the Mountain* (*La Sal de los Cerros*), on Asháninka history and resistance in the Peruvian jungle. Guillermo Bonfil Batalla was also in the Barbados meeting, and he became the author of the harrowing and influential book *México profundo.* Then came the ILO 169 Convention of 1989 (which many countries still refuse to ratify) and the UN Declaration on the Rights of Indigenous Peoples in 2007.

The EJAtlas is not only an archive of ecological distribution conflicts, it is also a tool to support the world movements for environmental justice. A few Marxists (e.g. Jim O'Connor, with his theory of the "second contradiction of capitalism" (O'Connor (1988), cf. Chapter 30) and also obviously Immanuel Wallerstein and Eric Wolf would have sympathized with the EJAtlas, but some Marxists are perhaps still bothered by the appearance *as main protagonists* in environmental struggles of people who are not members of the industrial working class (Figure 25.1).

IN THE AMERICAS

Copper Mining in Arizona: Santa Rita Mountains[1]

Tribes halted the Canadian Hudbay Minerals company's plans for copper mining on ancestral lands, Santa Rita Mountains. The company proposed to dig a mile-wide open-pit copper mine, burying dozens of sacred sites under many tons of toxic waste. This is a US counterpart to conflicts in Sonora (Northern Mexico) in the same copper-belt. Arizona's best asset, it has been argued, is not the metals but the natural grandeur that draws visitors. The compact Santa Rita Mountain range alone, between Tucson and the Mexican border, offers one of the country's richest patches of biodiversity: wetlands, grasslands, desert and thorny scrub, rising through thick forests to high cliffs. However, copper has been central to Arizona's economy, as the star at the centre of its flag signifies. The state still accounts for a large amount of the USA's production and the industry is growing.

The $1.9-billion Rosemont mine was proposed to sprawl across federal, state and private land. Hudbay Minerals' plans included clearing dozens of known archaeological sites. The company planned to target Gaylor Ranch, a historic Hokokam village, proposing to completely excavate the site and remove human remains, funerary objects, sacred items and objects of cultural patrimony. The Santa Rita Mountains cradle 10,000 years of Indigenous history. The Tohono O'odham Nation, Pascua Yaqui Tribe and Hopi Tribe, among other tribes, have lived in the mountains for generations. The Santa Ritas are home to the jaguar and southwestern willow flycatcher. Moreover, critical to this desert ecosystem are freshwater streams, which were the lifeblood of the Tohono O'odham ancestors and are considered holy by them – making Hudbay's plans to pollute them especially devastating – this is the notorious company that in Guatemala is trying to mine nickel in Lake Izabal.

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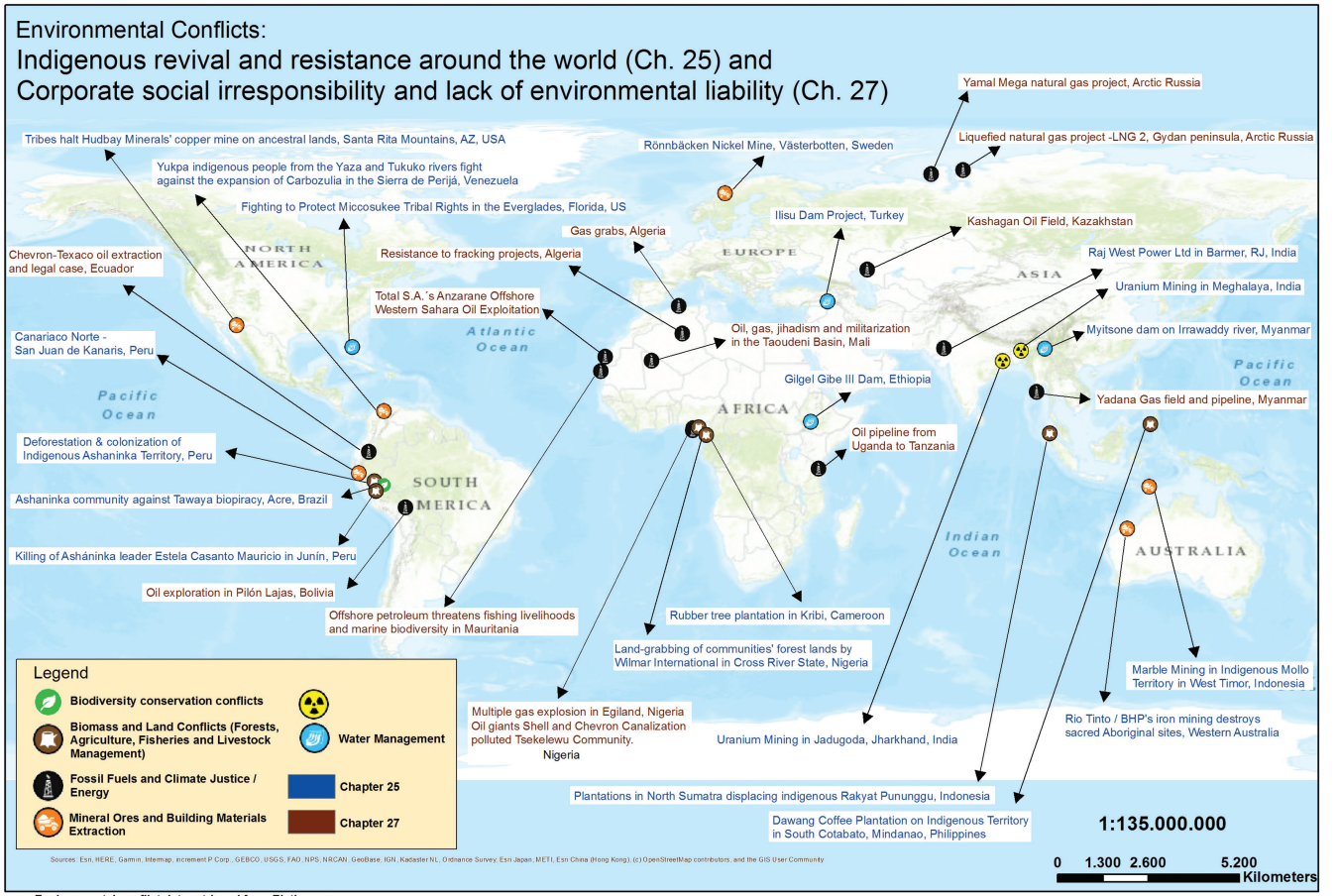

Source: Environmental conflict data retrieved from Ejatlas.org

Source: A. Grimaldos

Figure 25.1 *Environmental conflicts: Indigenous revival and resistance around the world and corporate social irresponsibility*

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Hudbay decided it could get away with creating a colossal mine on public lands in the Santa Rita Mountains by using an antiquated Mining Law from 1872 granting mining companies a right to use public lands on mining claims if the land is discovered to contain a valuable mineral deposit. Hudbay filed patent claims overlying the proposed mine pit, which contained valuable minerals but also unpatented claims on adjacent lands with no mining value, where they intended to discard the waste and tailings. The Forest Service acquiesced to this land grab. However, in 2017, the Tohono O'odham tribe turned to Earthjustice for help. While the case moved slowly in the courts, the company was moving quickly to start excavation. As Hudbay challenged the Tribes by bringing machinery to the mine site, seeking a preliminary injunction became urgent although they often are not granted because parties must prove that they face immediate irreparable harm. Instead, the judge went a step further and definitively ruled on the merits of the Tribes' case itself. The Court held that the Forest Service made a "crucial error" by assuming Hudbay had a right to use public lands without enough evidence of a valuable mineral deposit. With this argument, the judge prevented any mining activities from going forward, and called out the Forest Service "for abdicating its duty to protect our public lands".

Conservation and tribal groups praised the ruling, saying it recognized that the Forest Service failed to protect public lands that are home to endangered jaguars and cougars, black bears and deer. The mountain range is also home to Madera Canyon, one of the premier US bird-watching spots. The judge's ruling could set a precedent among similar mining claims that abuse the Mining Law (Figure 25.2). This case in Arizona comes together, in a global perspective, with other environmental conflicts involving Indigenous groups in the West of the United States (and Canada) on oil and gas pipelines, on water and land grabbing, on disputes on metal and uranium mining and nuclear waste – affecting the Navajo, the Shoshone and the Apache Stronghold in Arizona (Chapter 22).

Fighting to Protect Miccosukee Tribal Rights in the Everglades[2]

Since the 1800s, this small Miccosukee Tribe has lived in the Florida Everglades – first seeking refuge from colonizing forces but in the process forming a deep connection with the land and water of the area. However, Miccosukee lands now face pollution from agriculture, urban development and industrialism. The Miccosukee people continue to fight forces that seek to threaten their cultural practices, through protest but also judicial activism.

There are two main areas of concern, the land in the Miccosukee Tribe's Federal Indian Reservation (lands held in trust by the federal government), and lands provided to the Tribe under a perpetual lease from the State of Florida, also known as Water Conservation Area 3A (WCA-3A). When the Miccosukee Tribe was recognized by the federal government decades ago, they were given a total of 90,000 acres of land. The WCA-3A lands were leased to the Tribe in perpetuity in 1982 with the goal to preserve the local ecosystem to protect the Tribe's cultural rights, as if it were an Indian Reservation.

Much of Miccosukee Tribal land is located in the Everglades – a large network of ecosystems where the natural flow of water has now been disrupted. It is now a network of compartmentalized reservoirs and canals – the result of large-scale engineering projects. The Miccosukee Tribe relies on the integrity of the Everglades ecosystem to support their religion, culture and economic prosperity. In the early 2000s, the South Florida Water Management District began back-pumping polluted water into the greater Everglades ecosystem. This was

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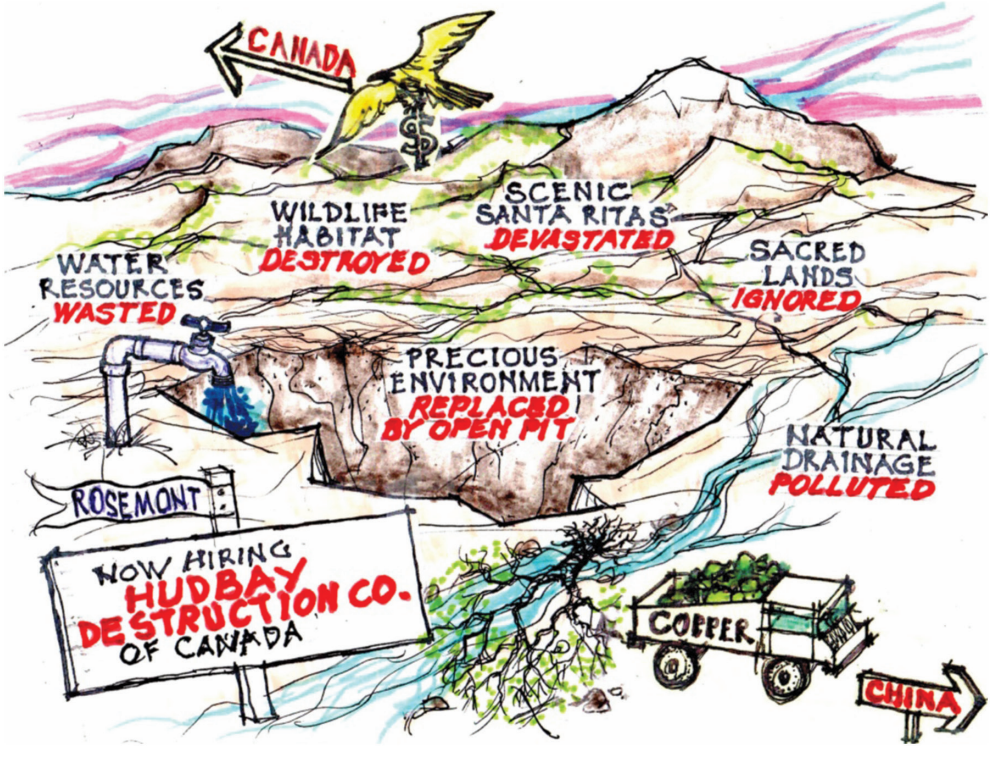

Source: EJAtlas

Figure 25.2 Cartoon by Bob Swaim

a prime example of environmental injustice and environmental racism – dumping polluted water for the benefit of others at the expense of a historically marginalized community. It began to cause eutrophication and overgrowth of cattails, forcing out native grasses and vegetation and jeopardizing hunting and fishing rights granted to the Tribe, as well as hurting their cultural identity.

The Clean Water Act federally recognized tribes have "treatment as states" status. This allows the Miccosukee Tribe to set its own water quality standards, which must be adhered to by both members and non-members of the tribe. Additionally, it requires that a National Pollution Discharge Elimination System (NPDES) permit is required before any pollutants from a point source can be discharged into navigable waters. The Miccosukee Tribe sued the South Florida Water Management District, stating that an NPDES permit should be required. In 2004, the Supreme Court ruled in their favour, stating that the water management district needed to acquire an NPDES permit.

In 2020, they faced another challenge to their tribal rights to a clean Everglades ecosystem. The tribe had an agreement with the federal government and never gave consent to state control of wetlands. However, the control of wetlands development was changed from the federal government to the state of Florida by the Environmental Protection Agency. This was part of a larger effort by the Trump administration to weaken environmental protections.

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In response, they released a statement: "The tribe is deeply appalled about the loss of culturally sensitive sites and the potential destruction of the Miccosukee way of life. This way of life is integrally entwined within the Florida Everglades". Betty Osceola, a Miccosukee activist, clarified that the "tribes have codified rights to these lands". They have led several prayer walks, as well as an 80-mile march in the Everglades to raise awareness.

There is another recent threat to the Miccosukees' tribal rights to a healthy ecosystem, since Burnett Oil Co. applied for a permit to drill in Big Cypress National Preserve in 2022. If it were to occur, it would not only threaten endangered wildlife, but an ancestral burial ground.

The Kañari in Lambayeque, Peru

Cañariaco is a copper deposit located in the province of Ferreñafe, on the northern coast of Peru. Between 1995 and 2000, it was explored by Placer Dome and Billiton Exploration & Mining. In 2001, Candente Copper Corp. acquired 100 per cent of the project. In September 2012, nearly 2,000 members of the San Juan de Kañaris Campesino Community attended a consultation previously agreed upon by the community, the Ministry of Energy and Mines, the Ministry of Agriculture, the Vice-Ministry of Interculturality and Candente Copper. According to the president of the Electoral Committee, Emilio Manayay, a total of 1,896 people participated, of which 1,719 voted against the project and 106 in favour. This consultation was attended by Regional Governor Luis Millones and other government officials, and by Jose Delgado; sociologist, Juan Vilela of the National Confederation of Peruvian Communities Affected by Mining (CONACAMI); Felix Delgado of Red MUQUI; Erwin Salazar of the Unitary Command of Struggle of Lambayeque and other leaders.

This mountainous region of Lambayeque is not often visited by journalists. The mining company Candente Copper rejected the referendum and announced that it would continue with the project. In response, the president of the community, Cristóbal Barrios, demanded respect for the will of the people and to suspend operations. Nevertheless, the company claimed to have obtained the operating permit, based on the consent given in an assembly organized by the company in July 2012 with 200 summoned villagers. The Ministry of Energy and Mines recognized the legal result of this assembly, ignoring almost 2000 villagers.

In December 2012, the community suspended the protests until the conclusions of the dialogue with the authorities were presented. The company offered to give shares to community members. In January 2013, Cristóbal Barrios announced that the decision of almost 4,000 community members was to resume protests. The police attacked community members blocking roads and several people were injured. Ten years later, the conflict is still ongoing.

Local Referendums on Mining Operations in Latin America: Two Main Varieties[3]

In Latin America, local referendums have been used in mining conflicts or against other extractive industries. The precursors were Tambogrande, in northern Peru, and Esquel, in Argentine Patagonia, in 2002 and 2003 (Walter and Urkidi 2017). Although the legal validity of such referendums was not recognized, they were effective in stopping gold projects. Those examples were propagated by videos and supported by networks such as the Observatory of Mining Conflicts in Latin America (OCMAL) and by the website "No a la Mina". These local cases became NIABY cases. Manifestations of popular and Indigenous environmentalism,

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local expressions of the global environmental justice movement where links between distant villages and countries were established. Slogans, videos and pamphlets circulated.

Sometimes such local referendums have been organized by Indigenous communities under the protection of Convention 169 (ILO). In Kañari, the Indigenous status of the community was disputed by the mining company and the state authority, and reaffirmed by community representatives who appeared speaking Quechua on television in Lambayeque. They would have liked to appeal to Convention 169 of ILO, but their own identity as Indigenous was not recognized by the State. Here, as so often, environmental injustice and racism involved mainly distributional issues and also previous issues of recognition and procedure.

Often, in the face of the inhibition of the authorities towards the protests and their acceptance of bribes offered by the mining companies, a feeling of proud local democracy arises, sometimes reinforced by feelings of Indigenous identity. Direct action, marches and roadblocks are used, but also local consultations. Thus, in June 2012, there was a referendum in Loncopué (Neuquén, Argentina); the initiative against open-pit mining won with 84 per cent. By 2020, there were over 50 well-documented cases in Latin America, with two main varieties. One is consultations that appeal to ILO Convention 169, which says that Indigenous peoples can withhold their consent to mining, plantations or oil and gas extraction in their territories, like in Sipakapa (Guatemala). Without achieving immediate victories, they at least increase the social legitimacy of the opposition and delay implementation deadlines. In other cases, it is simply citizens who organize referendums following the precedents of Tambogrande and Esquel, and in 2017 in the famous case of La Colosa in Tolima, Colombia. A third way is for the State to request a local referendum.

Asháninka Leaders Assassinated between Peru and Brazil[4]

The events described in this section are still ongoing in Acre, near the border in the Amazon between Peru and Brazil. On 12 March 2021, Asháninka leader Estela Casanto was killed. The Indigenous Asháninka of the Peruvian Amazon have long struggled against drug trafficking as well as mining, logging and land grabbing on their territory, in Shankivironi in the Perené River valley. Although most of the country's Indigenous population struggles with the recognition of their land rights, these communities in the central jungle have legally recognized titles. However, these titles are over 40 years old and have no defined borders.

There have been many intrusions upon their territories. Many of their defenders receive death threats, and the State does not respond to calls for help. The killing of Estela Casanto is one of the latest of nine murders of environmental defenders in Peru in 2020–21. (The case was mentioned in the Conclusion to Chapter 4.) This increased in frequency during COVID-19 lockdowns; several murders of Indigenous activists occurred, mostly in the Junín, Pasco, Huánuco and Ucayali regions. Benjamín Ríos was assassinated in April 2020 in the Asháninka community of Kipachari. In May 2020, Cacataibo leader Arbildo Meléndez from Unipacuyacu; Asháninka leader Gonzalo Pío from Nuevo Amanecer Hawai, whose father, Mauro Pío, was also assassinated in 2013; and Cacataibo leader Santiago Vega from Sinchi Roca were killed, as also, Lorenzo Wampagkit, a park ranger at the Chayu Nain Communal Reserve, in June 2020. Roberto Pacheco, who ran a forest concession threatened by alleged illegal gold miners in the Madre de Dios region, was assassinated in September 2020. In February 2021, Herasmo García from Sinchi Roca and Yenes Ríos from Puerto Nuevo were also murdered, which caused the people of Puerto Nuevo to flee their territory fearing more killings.

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On 12 March 2021, Casanto's body was found in a cave at the bottom of a ravine near her home. Official autopsies alleged that she died by choking while chewing on coca leaves. This, however, contradicts evidence of her being beaten and abducted from her bed, then dragged before being thrown down the ravine. Her body had multiple injuries as well as bloody haemorrhaging. The murderers were declared to be neighbouring settlers who had been threatening and harassing Casanto for over five years. These "colonos" occupy Indigenous territory without permission. Casanto never reported the threats out of fear. Police arrested the suspect, who was detained for less than a day. Active civil society organizations have been Central de Comunidades Nativas de la Selva Central (CECONSEC) and ONAMIAP (Organización Nacional de Mujeres Indígenas Andinas y Amazónicas del Perú).

Asháninka of Rio Amonia (Acre, Brazil, and Ucayali, Peru)[5]

The Brazil-Peru border has increasingly become the scene of socio-ecological conflicts because of the advancing of road construction, oil and gas extraction and other mega-projects, and also ongoing deforestation and invasion of loggers into Indigenous lands. Indigenous groups in the region, such as the Asháninka communities of the Kampa Rio Amônia Indigenous Territory, are affected and mobilized against threats to their livelihoods. These territories of Asháninka, one of the largest South American Indigenous groups, are located in the borderland of the Alto Juruá area, divided between Brazil and Peru. Their isolation in interior parts of the forest has historical roots as their territories faced terrible abuse from the expanding rubber economy in the late nineteenth and early twentieth century but also, through the attacks from the militarized group *Sendero Luminoso* in the 1980s. Moreover, hydroelectric dams were constructed and new concessions to logging, mining and oil companies were handed out by the Peruvian government. All this made Asháninka communities and isolated Indigenous groups increasingly migrate to Brazilian territories.

This densely forested area rich in mahogany and cedar faces illegal logging and drug trafficking problems. The community of Rio Amônia, located in the municipality of Marechal Thaumaturgo in Brazil, became increasingly confronted with extensive deforestation during the 1980s. The companies responsible for this belong to the influential Cameli family (Orleir Cameli was governor of Acre in the 1990s and Gladson Cameli a senator for a right-wing party). The Asháninka reported that Cameli's loggers logged the forest with machinery and tractors. The company claimed to be the landowner, and the logging only stopped when the National Indian Foundation (FUNAI) identified the area as public land. In total, more than a quarter of the Kampa do Rio Amônia Indigenous territory was affected, leading not only to deforestation but also to an impoverishment of the region's biodiversity, pollution of rivers, arrival of squatters and an increase in hunting for rare animal furs. While the timber business flourished, the Asháninka communities suffered from forced labour for loggers, diseases, introduction of alcoholism and cultural loss. They started to organize and fight for land demarcation on the Brazilian side, which they received in 1992, and finally initiated a lawsuit against the Cameli family for three documented logging invasions in the years 1981, 1985 and 1987. Although the Cameli family was defeated in all instances and condemned to a fine of 35 million Reais, the process took a dramatic turn in 2018 when the Supreme Court invalidated all previous decisions. In August 2018, an Asháninka representative made a statement at the UN in Geneva, announcing that the community would continue the fight and asking the UN to make the Brazilian government respect its international obligations.

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Also, over recent years, such logging invasions have remained commonplace on the Peruvian side. In 2007, the Asháninka of the Rio Amônia reported death threats from the Peruvian logging company Venao Forestal, allegedly owned by Keiko Fujimori, which had even become FSC certified by the SmartWood programme of the Rainforest Alliance in 2007. Venao is reported to have crossed into Brazil to illegally log valuable trees. As a consequence, the Asháninka called authorities for immediate action. Following an inspection in 2011, the Asháninka estimated that 15 per cent of their territory has been affected by invasions from sometimes armed Peruvian loggers. On the neighbouring Serra do Divisor National Park besides logging, there is also ongoing drug trafficking. FUNAI publicly warned against genocide in 2011 and 2012.

The Asháninka also engage in community projects and with local civil society. For example, the Asháninka of the Rio Amônia started to initiate activities to recover the forest stock and to engage as a civil society voice for Indigenous autonomy. They formed the Apiwtxa Association, a focal point for Indigenous resistance in the whole Alto Juruá region, building alliances with other groups and organizations and launching community projects, a traditional school and a cooperative. Thus, the mobilization against logging has also led to social transformations within the community and new infrastructures and institutions. Apiwtxa, which is the local Indigenous name for "union", has become the main village of the traditionally dispersed Asháninka group in the Kampa do Rio Amônia Indigenous territory and home to about 800 inhabitants.

A leader of Apiwtxa reported that various communication sites with Internet connection were established to participate in a transnational working group. This forms a wider network and movement of local Indigenous groups, NGOs and civil society organizations to discuss and coordinate actions to defend Indigenous lands and protect isolated communities. The association was awarded several prizes for its actions in defence of the environment.

On 1 September 2014, Edwin Chota and three Asháninka leaders were shot dead. Three of the corpses were found weeks later in a swamp, one remained disappeared; a police group was sent to the area but left soon after without intervention as media attention turned away from the case. The Peruvian Indigenous organization FENAMAD was among the supporters and denounced the authorities of Ucayali for being indifferent about the crime.

The Saweto community had denounced loggers since 2011. Just some months before the murders, the Asháninka community had indicated 67 timber trafficking spots to the public authorities and called them to intervene. Some of the leaders repeatedly received death threats. When inspectors finally arrived in 2014, the four men – Edwin Chota, Leoncio Quintisima Melendez, Jorge Ríos Pérez, Francisco Pinedo Ramírez – accompanied them to geolocate some of the spots; before the mission was finished, the inspectors decided to depart, confronted with harassments and death threats from strangers. The Indigenous leaders continued the mission, but never arrived in Apiwxta. In particular, Edwin Chota had been known as an activist against logging. He previously officially denounced the owner of Eco Forestal Ucayali SAC. He sent a letter with geodata, maps and photos as evidence to the State prosecution and, despite the risk, spoke in the media about the case, which ultimately gained the attention of the world press.

Sabino Marca el Camino: Coal, Land Grabbing and the Yukpa Resistance in Venezuela[6]

This is a conflict with national political implications: Sabino's death traced a possible road out of the political impasse since President Chavez died in 2013. Hence the saying, "Sabino marks

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a new road". Yukpa Indians of the Yaza and Tukuko rivers struggled against the expansion of Carbozulia in the Sierra de Perijá not far from the struggles of the Wayúu in La Guajira in Colombia also against the coal industry. This was the most emblematic socio-environmental conflict in Venezuela in the last decades.

Environmental conflicts in Venezuela can be divided into two classes (Teran 2018): those north of the Orinoco River related to oil extraction and refining, and those south related to illegal metal mining and Indigenous peoples. The coal-mining conflict in the Sierra de Perijà is in a different category, in the north-western Zulia state, on the border between Venezuela and Colombia. This state has various resources and is also a connection point to ports and cross-border transit areas, within the framework of the COSIPLAN-IIRSA projects. Several peoples inhabit the region, among which the Yukpa, Barí, Wayúu and Japreria.

Venezuela is the second largest coal exporter in Latin America. In the late 1980s, extraction began in the Mara municipality and new concessions were approved in the 1990s. These processes, together with livestock production by large ranchers, increased the dispossession of land of the Indigenous peoples. Since 2005, attempts were made to expand the extraction of coal. Despite the constitutional rank obtained by the demarcation of Indigenous lands and the promulgation of the Law on Indigenous Peoples in 2005, as well as the statements of President Hugo Chávez in favour of Indigenous rights, the reality was actual land grabbing and coal extractivism, to which the Yukpa, under the leadership of Sabino Romero, put up a strong resistance. Together with popular organizations, environmental groups and social movements, they denounced the stagnation of their demarcation process, as well as severe damage to the water, air and ecosystems in the Sierra de Perijá. The 2006–12 official plans were geared to an extraction goal of 24 million tons of coal per year (Figure 25.3).

There were reports in alternative media; denunciations by official institutions; several marches, and mobilizations; and the occupation of haciendas in the highlands, with the foundation of new communities which represented a recuperation of Indigenous lands previously taken away. The latter triggered an escalation of violence in the area, causing clashes with the National Guard and hired armed groups. Sabino Romero was imprisoned between 2009 and 2011, then killed in 2013, and some Yukpa wounded and dead.

In 2016, the government sought financing through associations to relaunch the coal extraction quotas of Carbozulia and other projects such as a coal-fired power plant (CFPP), the railroad and the American port. The danger of mining exploitation in the middle zone of the Sierra de Perijá continues. The Yukpa Indigenous people try to keep their presence in one of the few territories they have preserved.

IN SOUTHEAST ASIA

Dawang Coffee Plantation in South Cotabato, Philippines[7]

The Philippines has long ranked near the top of the list of environmental victims in the Global Witness annual reports. The victims in this case were Indigenous (Lumad) people displaced by land grabbing and killed by Army violence. Eight members of TAMASCO were killed in a military operation in 2017. T'boli, Manobo and Ubo Indigenous peoples living in the village of Datal Bonlagon have been struggling for three decades against DM Consunji Incorporated (DMCI) Silvicultural Industries and Inc.'s (SII) Dawang Coffee Plantation, which supplies

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Figure 25.3 *Sabino Romero. Documentary film, 2018*

coffee to Nestlé. The plantation area covers approximately 12,000 ha across Indigenous villages and was granted a 25-year Integrated Forest Management Agreement (IFMA) permit.

In 1991, armed thugs began to harass and threaten villagers, whose homes were burned, destroying the remains of their ancestors. Most of the nearby forest, which the community depended on for fruit and medicine, was cleared. The birds, wild boars and monkeys disappeared. Since then, the young are no longer taught how to use bows and arrows. The villagers were prevented from tilling their farms and those who attempted to do so were harassed by company guards armed with guns. Soon after, heavy machinery arrived and cleared the entire area of bananas, fruit trees, native coffee and other locally grown plants to make way for the coffee plantation. Fearing for their lives, T'boli families fled to the Blugsanay village. It was raining that night, and two children and an old man died. Seven years later, the T'bolis started to come back to rebuild it despite continuing threats. Moreover, the situation became even more complicated with a coal mining exploration project beginning in 2006.

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When the IFMA permit expired in 2016, villagers mobilized to form the T'Boli-Manobo S'daf Claimants Organization (TAMASCO) to reclaim the land through litigation and protest actions. With the help of various church and legal rights groups, they discovered that the Department of Environment and Natural Resources (DENR) approved another secret IFMA permit in 2015. In response, leader Datu Victor Danyan and supporters hacked down a 150-ha area of coffee trees and replanted the land with corn. They ordered the guard to leave and received death threats, including from villagers employed at the plantation. To address rising tensions, the Catholic Church organized a peaceful dialogue between TAMASCO and the DENR on 4 December 2017, but the villagers never arrived. A day before, the military organized a surprise attack, killing Danyan and seven other members in what they claimed was a military operation against communist rebels.

Women like Marivic Danyan, the first female village chief, then occupied the frontlines of the movement. Widow Tarcela Ceraldo stated that they would continue the fight for ancestral land. A coalition of NGOs conducted an investigation into the crimes, including a national public inquiry. A resolution was filed in the Philippine Congress to inquire into the massacre of the eight TAMASCO members. A forensic expert was also killed for investigating the assassination in January 2018. Residents evacuated the village. Friends of the Earth and the Legal Rights and Natural Resources Centre (LRC-KsK) filed a special civic action to cancel the plantation's permit, and the Ministry of Environment agreed to form a task force looking into the controversy. In November 2019, TAMASCO and LRC-KsK filed another lawsuit at the Quezon City Regional Trial Court against Environment Secretary Roy Cimatu for neglect of duty, which he denied. LRC-KsK also supported TAMASCO in hearings with the Philippines National Commission on Indigenous Peoples. The cases remain unresolved, and the community continues to be raided (see also Chapter 3).

Marble Mining in Mollo Territory, West Timor, Indonesia[8]

Mutis Mountain, a protected conservation reserve, is not only full of water sources and biodiversity, home to the Indigenous Mollo people but also a commodity extraction frontier rich in marble, manganese, gold, oil and gas. The Mollo consider Mutis Mountain's forests to be sacred and rely on them for their livelihoods. They gather food and medicine from the forest, grow crops in the fertile land and use forest materials to make art. They also consider themselves deeply connected to the territory and all of them are named after parts of the forest.

According to the Indonesian Law No. 4/2009 on Minerals and Coal, the mining companies have to consult and submit endorsement from the local Indigenous people. Yet in the 1980s, local government officials from the Ministry of Forestry arbitrarily seized land and began giving illegal permits. The first of these mining projects by PT Teja Sekawan began in 2004. Community leaders initially tried to negotiate with the company but were tricked into believing that miners were only there to chisel artwork out of the rocks. Mining representatives also promised to give homes, electricity, schools and health clinics to the local populations. However, frequent landslides became an issue that displaced Mollo settlements. This is because Mutis Mountain has many underground wells, and during marble extraction rocks covering the surface are removed and erosion sweeps away the earth, making entire villages suddenly disappear and destroying habitats for many species.

Aleta Baun, also known as Mama Aleta, thus started a network. She gathered over 150 local women for an occupation protest at the mining sites lasting for about three years, where

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they got in the way of the miners and did traditional weaving, preventing equipment from moving. Some community members damaged company vehicles, but Mama Aleta and others convinced everyone to stand up for themselves peacefully. Nevertheless, they were often harassed and beaten, and police refused to intervene. In 2006, Mama Aleta barely survived an assassination attempt when a group of men ambushed her in the forest, slashing her legs with machetes while she was walking home holding her baby. She was thus forced to send her husband and children into hiding. Despite these threats, the movement continued growing as more women joined and men stayed at home to take over domestic work and childcare. Even though the police and the military were backing up the mine, the community outnumbered them. Finally, in 2010, the mines were shut down and the Mollo community established a strong network protecting their land from commercial exploitation. Aleta Baun was eventually awarded a Goldman Prize in 2013.

Rakyat Pununggu People vs. Oil Palm Plantation, North Sumatra, Indonesia[9]

The Rakyat Pununggu are Indigenous people living in various settlements across Deli Serdang, Langkat, and other nearby districts; they legally reclaimed their land rights. The land is swampy with fertile soils. However, this also attracted the attention of PT Perkenunan Nusantara II (PTPNII), a state-owned palm oil and sugar plantation company that encroached upon their land, turning it into a palm plantation without their consent.

In May 2011, PTPNII ordered a special heavily armed "counterterrorist" police force to forcefully displace the Rakyat Pununggu living in Secanggang village. The company put up a sign claiming control over the territory; however, hundreds of locals protested, causing PTPNII to threaten to come back with 1,000 army men. However, the company instead moved onto the Indigenous Sei Nernih village in June 2011. Twenty members of the special forces beat community members in attempts to remove them from the land, five trucks loaded with armed forces came to burn down their houses, destroy plants and injure residents. Three hundred troops were sent to burn Klambir, another village.

Throughout the land seizures, not only was the surrounding vegetation and farmland razed to the ground, but plantation palm trees also disrupted the soil's ability to absorb water while chemicals polluted the ground. This especially affected the Indigenous women, almost all of whom previously subsisted on farming vegetables and rice, but now must work in the palm plantations. Such work pays only 50,000 rupiah, or $3.50 daily, which is not enough to support their families. Lack of access to land means that they become poorer even though they now have monetary incomes. Poverty is multidimensional.

In May 2013, PTPNII sent another heavily armed troop to a Rakyat Pununggu settlement without any prior notice of eviction, burning down their homes, places of worship and crops. The locals were badly beaten before they were chased away. In December, PTPNII again expanded their operations further with military and police, bulldozing gardens, fields and homes. Locals performed a blockade, with many women climbing onto the bulldozers. PTPNII aimed to seize 22 more Indigenous lands using three concessions, and the violence continued with many more incidents.

In September 2020, hundreds of Indigenous locals across Kampung Durian Selemak, together with the Indigenous Peoples Alliance of the Archipelago (AMAN), protested against PTPNII's violent displacement methods. According to AMAN chairperson Ansyurdin, locals took peaceful action as PTPNII attacked those participating, even children, the elderly and

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women. Some residents went missing after the incident. Although the Rakyat Pununggu own the land with customary titles, PTPNII used an allegedly falsified legal basis, with a corruption ring supposedly involving unions, government officials and more.

PTPNII claims that they offered residents compensation that they rejected and denies the people's communal land ownership. Despite the North Sumatra Commission for Missing Persons and Victims of Violence documenting 30 instances of violent conflict and disappearances against PTPNII, they also deny any unjustifiable violence. The Civil Society Alliance Against Torture and the Civil Society Advocacy Network declared the violence a crime against the humanity of farmers and Indigenous peoples, urging investigations according to military legal procedures. AMAN continues efforts to ratify an Indigenous Peoples Bill. In October 2020, the People's Watching Community also had a mass mobilization at the North Sumatran Governor's Office to revoke PTPNII's land use rights.

This is one of many examples where Indigenous and human rights intersect with women's activism and agrarian struggles. The AMAN works locally, nationally and internationally to represent and advocate for Indigenous peoples. With about 17 million members from more than 2,300 Indigenous communities throughout Indonesia, AMAN supports Indigenous people having sovereignty over land and natural wealth, socio-cultural life and customary institutions that maintain the sustainability of their lives. In 2015, AMAN was awarded the prestigious Elinor Ostrom Award.

Coal Mining in Hasdeo Arand Forest, Chhattisgarh, India[10]

In 2009, the Chhattisgarh state environment ministry categorized Hasdeo Arand forest as a "no-go" area for mining for its rich, unfragmented forest cover. Soon after, in 2011, coal blocks even in no-go areas were opened up because the no-go policy never got off the ground. In 2019, the Ministry for Environment gave environmental clearance for open cast coal mining in Parsa that will be operated by Rajasthan Collieries Limited, a unit of Adani Enterprises Limited which has 74 per cent ownership of Rajasthan Collieries. In the Hasdeo-Arand two coal mines are operational apart from the Parsa mine, with a capacity of 5 million metric tonnes per annum. All three mines in the Hasdeo forests have been awarded to Adani Enterprises Limited as the Mine Developer and Operator. In 2019, Chitrangada Choudhury reported that the 90 million Adivasis are among India's poorest. Among them, the Gonds and other Adivasis who live outside and within parts of the Hasdeo Arand forest will become a lost people. They will be removed from their land, lose their fields, lose their culture and, perhaps, join the great, desolate migration to the slums of Indian cities.

For a decade, Adivasi communities have battled to preserve the Hasdeo Arand, even though successive governments have illegally bypassed local village councils to award coal-mining contracts to India's powerful Adani conglomerate.

The Hasdeo Arand Bachao Sangharsh Samitis are a village-level organization set up to protect the forest (Chapter 16). On 2 October 2021, marking the birth of Gandhi, hundreds of tribal villagers began a *padayatra,* a long protest march, against government plans for a major coal mining expansion. "This land is our land!" chanted men and women in Hindi as they navigated forest tracts, village paths and highways on a 300-km trek to the state capital. The local Adivasi communities are agitating to save their *Jal Jangal Zameen*, water, forest and land, a slogan with a long history in rebellions in central India. But they are also waging a much larger battle that goes beyond self-interest. They are trying to protect this entire

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forested landscape, the elephants and wildlife emphasizing the interconnectedness of all these issues. The representatives of all 30 villages of Hasdeo Arand were part of this *padayatra* (foot march) in 2021, demanding justice from the State and Central government. Complaints against the extractive industries use their own vocabularies and images often taken from civil society repertoires of action for multiple causes. *Padayatra* is a common form of action across the subcontinent. Figure 25.4 shows the well-behaved march occupying less than half the road led by Adivasi women. The banner reads: *Footmarch to save Hasdeo.* The portraits include Birsa Munda, Gandhi and Ambedkar.

The general context is the offensive against Adivasi peoples at the frontiers of extraction. The economic context here (Roy and Schaffartzik 2021) is the "transition to coal" in India. While China extracts nearly four billion tons per year, India has barely reached one billion (including some imports), with a similar population.

Uranium Mining in Jadugoda, Jharkhand, India[11]

Conflicts along the nuclear chain, from uranium mining to NPP, to nuclear waste disposal and even to military nuclear testing have often involved Indigenous peoples. Beyond those mentioned in Chapter 10, here I give space to two conflicts on uranium mining in India involving Indigenous peoples. In Jharkhand, a mining state east of Chhattisgarh, the scale of uranium mining in Jadugoda is as large as the damages to health. Mining activity in the region started way back in 1967 and the place is now one of the major sources of uranium in India. A large number of villagers suffer from cancer, skin diseases, physical deformities, blindness, brain



Source: The Week, Sravani Sarkar

Figure 25.4 *Chhattisgarh: Amid protests, coal block in Hasdeo gets stage-II forest clearance*

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damage, disruption of the menstrual cycle or loss of fertility. The Santhal, Munda and Ho tribes, evicted from their lands, work as miners and are exposed to a heavy dose of radiation. The government owned corporation responsible for the mining refutes the allegations.

The conflict became well known thanks to the documentary "Buddha Weeps in Jadugoda" on the deadly impacts on people living near the mine, mill and tailings dam. It depicts the misuse of power by the authorities, the utter lack of concern for internationally accepted norms and safety precautions in the handling of uranium and their contempt for the disastrous impact. The mines, set up decades ago, employ around 5,000 people. Intense civil society activity has made the situation public and to some extent remedied some consequences. Organizations active include at various times the Indian Doctors for Peace and Development (IDPD), Jharkhandi Organisation Against Radiation (JOAR), Jharkhand Mukti Morcha, Communist Party of India Marxists Leninist, Indian Federation of Trade Union, Human Right Law Network and All Jharkhand Student Union.

Uranium Mining in Meghalaya, India[12]

The second case is a proposal to mine uranium in Meghalaya state in the North East region of India. Meghalaya is the third most uranium rich state in the country after Jharkhand and Andhra Pradesh. The state accounts for 16 per cent of India's uranium reserves, with rich deposits in West Khasi hills region. The Killing-Pendant Sohiong Mawthabah (KPM) uranium mining project is located there. Uranium deposits were found in 1972, confirmed in 1996 after drilling and it is estimated that they would last for 25 years.

The Khasi are local Indigenous peoples. Formerly, this project was also known as the Domiasiat uranium mining project. Uranium Corporation of India Ltd (UCIL) proposes to mine it using an open-pit mining method up to a depth of 45 metres. The processing plant would be constructed at Mawthabah. The plan to mine uranium in Meghalaya to address the needs of the nuclear industry in India has run into opposition and protests in the state. For instance, the Khasi Students Union opposing the project fears that uranium mining will affect the environment, open floodgates of outside influence in the state and precipitate health hazards in and around the mines.

RUBBER PLANTATION IN KRIBI, CAMEROON[13]

It is common for African states not to recognize the category of *Indigenous*, on the grounds that the bulk of the population is African by origin, even if there are ethnic minorities. Africa is different in this legal respect from the Americas or Australia. There is no doubt, however, that in Africa some populations self-identify as Indigenous, as the Ogoni and the Ijaw famously do in the Niger Delta.

This conflict complements the palm oil conflicts analyzed in Chapter 14 in Nigeria and other West African countries. The rubber tree plantation of Hévéa created by the State in 1975 is a case of colonial land grabbing and displacement of Indigenous peoples. From that moment and especially after privatization, different populations, including Bagyeli and Bulu people, claimed compensation for the expropriation of their lands and condemned the destruction of the rainforest and the water pollution. In the first years, there were conflicts with the Bulu communities especially. Hévécam is one of the main producers of natural rubber in

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Cameroon – along with the Cameroon Development Corporation (CDC), a public company. The Hévécam company was acquired by a Singapore firm, and later by a Chinese company. The local peoples mainly demand compensation for damages, infrastructures, recruitment of residents for high rank positions and the possibility to have their own plantations and to establish clear limits for the concession (plantations cover about 42,000 ha).

In September 2015, the residents of Hévécam accused the company of "monopolizing cultivable lands, going beyond the limits of its concessions and depriving the people of their means of subsistence". In response, the company denounced "illegal occupation of land" alleging that the population was planting palm oil and cocoa in its concession. Also, in 2014, the Bagyeli people, one of the most affected communities, raised their voice: they are hunters, relying on a forest that no longer exists. Animals disappeared (Gerber 2007). Moreover, the workers of the plantation complained about low wages, hard work, health issues and the impossibility of trade union organization.

The rubber plantation borders the National Park of Campo-Ma'an, a 246,000-ha reserve created in 1999 with about 80 different species of mammals, 307 different species of birds and 122 species of reptiles. According to WWF, the area is in danger because of big infrastructure projects, extractives and agro-industries, including the Kribi deep sea and industrial port complex, the Memve'ele Hydropower Dam, the Mount Mamelles iron ore exploration project, the Hévécam and Socapalm rubber and oil palm plantations and the construction of a railway terminal for raw materials export (Socapalm appears again in Chapter 27).

TWO DAMS

Irrawaddy Dam in Myanmar[14]

Myanmar is a country with many Indigenous peoples. Military rule in Myanmar lasted from 1962 to 2011 and resumed in 2021. After the 2011 democratic change President Thein Sein declared that the Myitsone dam project would be suspended because "it is against the will of the people". It is a large dam and hydroelectric power development project by a joint venture between the China Power Investment Corporation (CPI), the Burmese Government's Ministry of Electric Power and the Asia World Company. The dam was to produce electricity primarily for export to Yunnan, China. At 152 m high and with a potential capacity of 6,000 MW of electricity, the Myitsone was to be the largest of seven dams at the headwaters of the Irrawaddy River. Its planned location is near the birthplace of the Irrawaddy River, a sacred place. The river waters are essential for fishing, irrigating rice cultivation throughout the country and supplying silt in the delta. The reservoir would submerge important historical and cultural sites and destroy much wildlife. It would be located in Kachin territory, an ethnic group which has often been in armed rebellion against the state.

The Burma Rivers Network (BRN) had been encouraged by the President's words in 2011, but urged the people to demand an official declaration and pull-out of all personnel and equipment from the dam site. Stopping a very large dam scheduled for completion in 2019 in the upper reaches of the Irrawaddy River seemed to be a success story. Spokesperson Ah Nan declared: "I think pressure from China will be too strong" but "It will be difficult to send material to the dam site. And this kind of development is only fuelling the conflict". What the plans are with the new military Junta in Myanmar by 2021 is not clear yet. "Seeing like states" (Scott 1998), both China and Myanmar might dam the river.

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In Ethiopia, Gilgel Gibe III Dam: Transborder Effects[15]

Aboriginal communities in the Omo valley are facing the threat of starvation in the name of sustainable development and clean energy. The Omo River in southern Ethiopia is the largest Ethiopian river outside the Nile Basin. The river is the principal stream of an endorheic drainage basin, the Turkana Basin. In December 2016, Ethiopia inaugurated Gibe III dam. According to the project promoters, the dam was going to boost the Ethiopian economy and bring prosperity to the country.

But one should question the word 'prosperity'. Some 50 members of the Suri tribe in the Omo were massacred by Ethiopian government soldiers who were forcing them to move from their land. This is just an indicative episode of a long period of controversial practices around the construction works in the UNESCO World Heritage site Omo valley. In fact, the consequences of the impacts of the dam have attracted the international attention of NGOs fighting for human rights and environmental justice.

The Gilgel Gibe III dam is the third largest hydroelectric plant in Africa with a power output of about 1870 Megawatt (MW), after the existing Gibe I (184 MW) and Gibe II (420 MW), as well as the planned Gibe IV (1472 MW) and Gibe V (560 MW) dams. Together with the Grand Ethiopian Renaissance dam (6,000 MW, the largest in Africa), the structures form part of an energy strategy included in the "Growth and Transformation Plan", a five-year development plan to "eradicate poverty and dependence on food aid in a shorter period of time" (Figure 25.5). But the plan cannot avoid dealing with the 700,000 inhabitants of the valley and Lake Turkana, which are characterized by a multiplicity of ecosystems, cultures and languages. Lake Turkana is a lake in the Rift Valley in northern Kenya threatened by the Gilgel Gibe III dam in Ethiopia since the Omo River supplies most of its water (Figure 25.5).

These communities belong to at least 16 distinct ethnic groups whose survival depends on traditional farming, forestry, breeding, herding and fishing. Salini-Impregilo was proud to declare that the dam offers benefits for local communities, enabling the development of fisheries, preventing the occurrence of floods and preserving traditional recess agriculture. But Survival International had a different take, enough to report to OECD for human rights violations and file a petition against the Ethiopian Government through the African Charter of Human and Peoples Rights (ACHPR) in April 2012.

At the stage of project design, a positive EIA was produced by Italian consultancies. The Africa Resources Working Group (ARWG) promptly responded with a counter-assessment which deeply criticized the official one. They individuate (i) a radical decline of fish productivity in Lake Turkana; (ii) risk of increased seismic activity and landslide potential; (iii) major transboundary ecological degradation of the Omo delta shared between Ethiopia, Kenya and Sudan; (iv) elimination of a consistent part of riverine forest and woodland due to 50 to 60 per cent reduction of river flow volume; (v) recession of cultivation for Indigenous communities; (vi) land expropriation; (vii) obfuscation, distortion and "fabrication" of public consultation and of flood simulation data.

Salini-Impregilo has a long-documented history of what we call Corporate Social Irresponsibility (Chapter 27). The governmental company Ethiopian Electric Power Corporation contracted them for Gibe III through directed negotiation, at the time when the Italian Minister of Foreign Affairs was considering financing the project. After both the European Investment Bank and World Bank decided not to, the Industrial and Commercial Bank of China (ICBC) stepped forward and approved a loan in 2010. At the same time, the Chinese company Tebian Electric Apparatus Stock Co was contracted for the transmission

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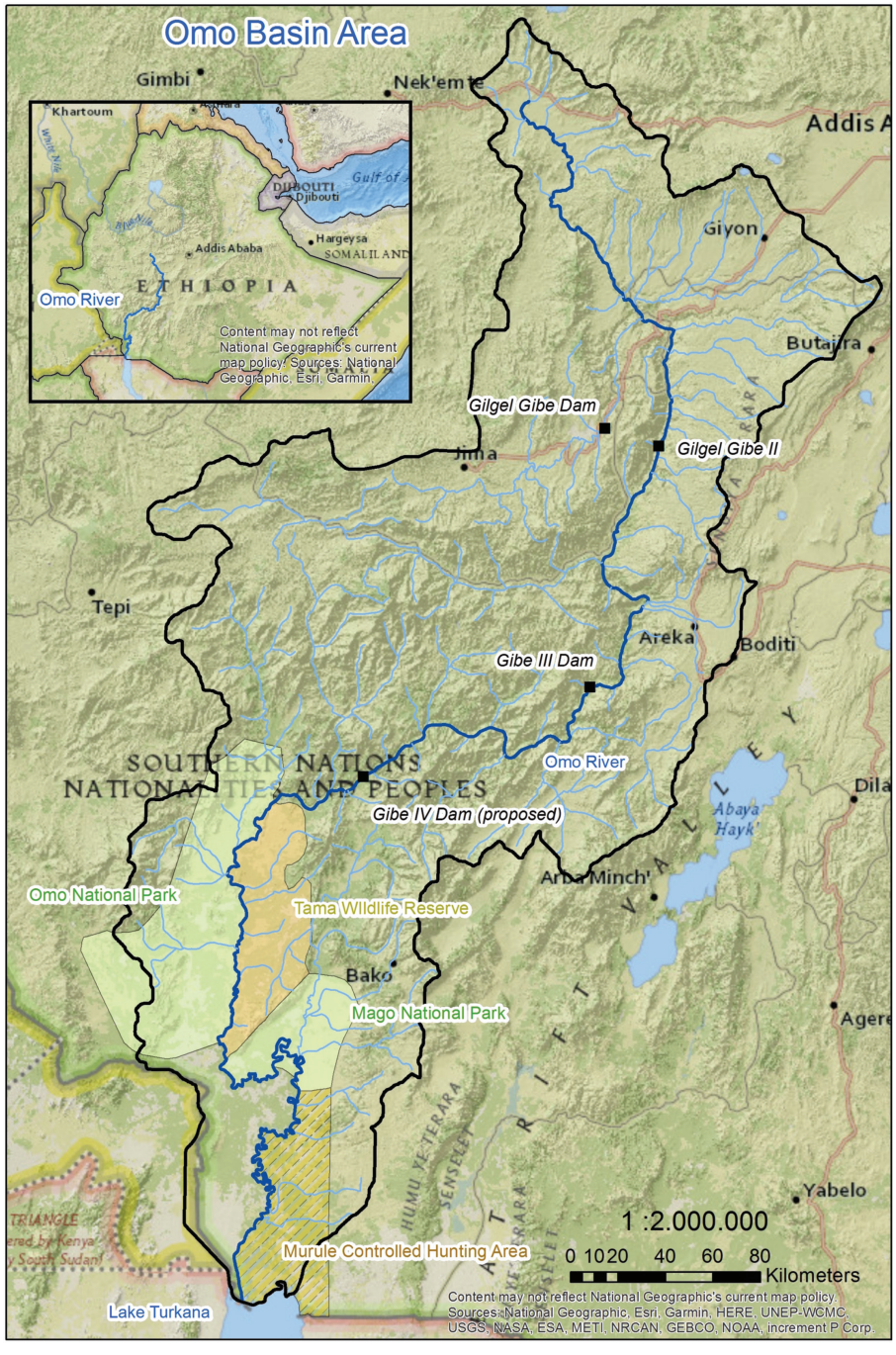

Source: A. Grimaldos

Figure 25.5 The Omo River basin

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line to Addis Ababa. Finally, in 2012, the World Bank financed US$ 684 million for the high-voltage direct current transmission line between Ethiopia and Kenya.

Four years after the completion of Gilgel Gibe III dam, various predicted negative outcomes became reality. It altered the magnitude and seasonality of the Omo River flood pulse tremendously. It further increased the vulnerability by diminishing the food security of the regional populations. The fish population has already been adversely affected. The dam is a threat towards Lake Turkana. On the other hand, Gibe III dam's river regulation enabled the Ethiopian Government's plan to develop large-scale sugarcane and cotton plantations going hand in hand with the agrarian-industrial transformation.

CONCLUSION: A GEOGRAPHICAL HYPOTHESIS VS. A POLITICAL HYPOTHESIS

An Indigenous cultural and political revival is in evidence, which manifests in environmental movements which are growing on their own and also alongside feminist, anti-colonial and anti-racist movements of social and political awakening. Incommensurable values arise and make money compensation inappropriate at extraction commodity frontiers inhabited by Indigenous peoples. It is common in the literature on environment and society to approach Indigenous peoples in terms of their worldviews. I am favourable to collecting such Cosmovisions and experiences in a "pluriverse" of alternatives to industrial, destructive development (Kothari et al. 2019). Nevertheless, in this chapter I have not focused on the Indigenous worldviews, on what they say, think and believe in, but rather on what they do. The resistances display different values and a whole repertoire of claims and actions. Indigenous peoples struggle, in the conflicts in this chapter, against copper and coal mining, marble extraction, logging, uranium mining, oil palm, cotton and rubber plantations, hydropower and other old or modern commodities.

So-called economic development often deprives Indigenous peoples of access to their lands, water and clean air, and therefore curtails their freedom. Indigenous resistance around the world is a remarkable phenomenon on several accounts. Indigenous communities are assumed to be only 5 per cent of the world population, but they appear among the protagonists of resistance in almost 40 per cent of cases in the EJAtlas, where about 800 names of Indigenous groups are recorded (Scheidel et al. 2023). Perhaps around the world there are 4,000 named Indigenous groups. Adivasis from India are perhaps the most numerous. Anthropology and other related disciplines have shown a longstanding interest in Indigenous peoples' lifeways and cultures. There are colonialist traditions to such disciplines but recently they have been attentive to resurgent Indigenous-led governance. They have pointed out "ontologies" that do not separate between nature and culture. It was anthropologists who founded Survival International, which works on Indigenous communities suffering from the arrival of extractive industries. Ethno-ecologists emphasize bio-cultural values (Toledo and Barrera-Bassols 2008).

Indigenous resistance mostly takes place at the commodity extraction frontiers, and also at the waste disposal frontiers. Growth and changes in the social metabolism and Indigenous resistance are two sides of the same coin, accompanying capitalist economic expansion. Indigenous peoples are exercising "degrowth in practice". However, Marxists have not looked at Indigenous and peasants' resistance as harbingers of a global world movement for

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environmental and social justice. For instance, Harvey's "accumulation by dispossession" looks at the world from above, contemplating "the logic of capitalism" (Harvey 1995, 2002). He really does not place Indigenous peoples, peasants, fisherfolk, pastoralists, women, local EJOs, religious groups and scientists at the vanguard of a successful resistance to industrial capitalism. Marx, at the end of his life, was interested in the revolutionary potential of peasant communes (as shown in his letters to Vera Zasulich that he did not send), and also of colonized peoples (Shanin 1983). But Indigenous people were placed at the margins. "Environment" and "Indigenous" are rather unexpected words in the old Marxist dictionaries. Later Marxists liked the concept of "militant particularisms" that Raymond Williams had used (Harvey 1995) for his analyses of working-class movements before they coalesce into trade unions or socialist political parties. However, applying a notion such as "militant particularism" to environmental movements of the poor and the Indigenous must be avoided. It is a sort of "Nimbyism" ("Not in My Backyard-ism") denying the reality of many interconnected instances and movements of environmental resistance. Thus, the AMAN in Indonesia is a country-wide movement, with international links. The claims under Convention 169 of ILO are very common in Latin America. The self-identification as "Indigenous" is in itself a denial of "particularism" because there is a growing Indigenous movement around the world. In an era of planetary environmental issues, how to interpret the revival of Indigenous identity? Is this not a reactionary "back-to-the-land" movement? No, "identity" is not a new opium of the people, even when it comes together with feelings of sacredness. It is a refusal of the colonialist robbery of their livelihoods (Mbembe 2020).

The resistance by Indigenous peoples has its own characteristics. Beyond the few cases in this book, many more are collected in the EJAtlas. What most of these conflict cases have in common is the presence of commodity extraction. The price of these commodities is desecration of Indigenous territories including their burial grounds, chapels, mosques and historical patrimony, land and water grabbing, displacement, violence, and sometimes death. The availability of resources is very specific to the geology or orography of places. There are also social factors (legal concessions, "social licence to operate", bribery and co-optation of local stakeholders, naked violence) that play a role. The social factors are even more relevant when the commodities may be obtained from large territories (as in the tragic case of the Dawang coffee plantation in the Philippines, or for coal in Central India). In all cases there are both physical and social factors at play.

Indigenous peoples must be given a place of honour in a book such as this one. First, because of the very many recorded instances that have already allowed original work on statistical political ecology (Scheidel et al. 2020, 2023). Second, because of the links between such environmental activism and the Indigenous revival as the pressure against the remaining Indigenous communities increases. In this chapter, I pose and give provisional answers to two hypotheses. The first is geographical: Are Indigenous peoples attacked and sacrificed to commodity extraction (or to waste disposal) because they live at distant frontiers while other nearby territories have already been sacrificed? Is this the main reason why they appear so often in the EJAtlas, in greater proportion than their presence in the population censuses would warrant? Is the march towards new places for extraction and for waste disposal occupied by the remaining Indigenous peoples explained by the geography of the growth and changes in the social metabolism? For instance, where to find the lithium for the "electrical transition"? Where to locate the windmills and solar panels? There are physical conditions required which are not spread around at random. Physical availability tends to be far away

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from the metropolis. Then, the geology and geography of the commodities plus coloniality and racism lead to genocides.

This is the geographical hypothesis. Then I also pose a political question: Are the Indigenous populations attacked disproportionately because they are politically and socially weaker than other populations? I tend to answer "yes" to the geographical question and "no" to the political question. Indigenous populations appear often in instances of resistance because they live at as yet untouched resource frontiers, and also because they are not weak but increasingly strong. They have learnt to defend themselves by legitimately displaying their Indigenous identity, and thus sometimes are able to argue in terms of Convention 169 of ILO and in other countries, such as India, are able to bring in other legislation (such as the Forest Rights Act) into the disputes.

Recognition is however often lacking, and legislation is certainly not their only arm. Their own cultures, religions, self-governance and the "arts of not being governed" learnt over many centuries can be displayed politically against robbery by outsiders. Despite the resistance, in most cases environmental justice is not achieved. However, each case of success reaffirms the Indigenous revival closely linked to an environmentalism of the dispossessed and the subaltern. Thus, the international Convention on Biodiversity and the IPBES reports should recognize not only the rights of Indigenous peoples and local communities and their agency in biodiversity policy but their militant resistance at the frontiers of commodity extraction and waste disposal.

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26. Preciosities vs bulk commodities in ecologically unequal trade

INTRODUCTION: BULK COMMODITIES DOMINATE THE SOCIO-METABOLISM BUT THE "PRECIOSITIES" DESERVE A CHAPTER

This thematic chapter contributes to understand the political ecology and political economy of the world-system of historical capitalism. We focus not only on economic and political domination but on the materiality of the social metabolism and industrial ecology. Some large areas around the world are extractive frontiers from where enormous amounts of bulk commodities are taken to the "core" regions of the world economy by new means of transport (including pipelines and tankers). They are essential to the rich economies' metabolism. There is an *international division of nature* that appears very clearly at the new frontiers of commodity extraction and waste disposal. These same peripheral extractive frontiers also supply high-price, low-volume necessary industrial inputs (palladium, coltan, niobium) and other superfluous preciosities whose extraction is locally also damaging.

The environmentalism of the poor and the Indigenous is a reaction against ecologically unequal trade, and the Northern refusal to face up to ecological liabilities. Ecologically Unequal Exchange (EUE) between nations or regions is an underlying source of most ecological distribution conflicts (Hornborg 1998; Muradian and Martinez-Alier 2001a, 2001b). Most of such conflicts are caused by *bulk commodities*, by their extraction, transport, manufacturing and waste. But the preciosities are also troublesome, they have small volume and weight, and great economic (chrematistic) value. They might be mere luxuries (feathers, jade, emeralds) or become industrial inputs. Or they might have both qualities, like diamonds and gold. If kept carefully, the preciosities might last. Furs are typical preciosities. As the tango lyrics say, *tu tapado de armiño, más durable que tu amor*, but organic matter rots. Jewels can last for a very long time. Artistic paintings and sculptures also last for a long time. They have no direct role in the social metabolism. Some historic monuments are still standing while other monuments, irrigation channels and harbours have disappeared. The buildings, roads, railways and ships that are being built will need maintenance, and will also disappear. The endosomatic and exosomatic energy spent on building and maintaining them is dissipated forever.

What is Ecologically Unequal Exchange?

In economic geography, there are debates on "resource peripheries" and also debates on resistance movements. Thus, Hayter (2003) defined "resource peripheries" as marginalized places facing a specific set of processes: industrialism, environmentalism, aboriginalism and imperialism (Irrazábal and Arias-Loyola 2021). "Resource peripheries" is a concept of economic geography close to "commodity extraction frontiers" in economic and environmental history

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(Moore 2000) that comes from Wallerstein's "world systems theory", and more remotely from the *Raubwirtschaft* of the geography of 1900.

Wallerstein's theory divided countries into the core (European colonialist countries, later the United States and Japan, now some regions of China), the semi-peripheral countries, and the colonized peripheries that supplied cheap labour and materials to the central metropolitan regions, the core. Racism, coloniality, military power and international trade support these political structures. Russia had its own core and its internal periphery and did not become a world core. The notion of internal colonialism (in Russia, Brazil or India) is also relevant.

Ecologically unequal exchange (EUE) theory was developed to understand the structure of the world economy. Peripheral countries or regions fulfil the crucial role of raw material providers. EUE theory can be traced back to the Latin American 'structuralist school' (Prebisch 1962) and later to 'world systems theory'. Prices are the means to extract materials and exergy (available energy) (Hornborg 1998), reinforced by unequal political power relations based on global, historical developments of capitalism and colonialism. Global trade thus enables environmental harms to be displaced. In *Underdeveloping the Amazon*, Steve Bunker (1985) explained how the Amazon region of Brazil extracted bulk commodities (such as hydropower, bauxite and iron ore), and there was no local social and political structure able to stop this unilateral current. Bunker emphasized that "extraction" was different from "production" (Yasin 2017). I myself brought together EUE theory and political ecology, researching the conflicts that arise from the irreversible socio-environmental damages in the areas sacrificed to such unequal trade. New painstaking and brilliant research on "the opens veins of South America" shows that the region has been persistently for the period 1900–2016 a low-economic-value, primary-product net exporter while importing manufactured goods at a higher price (Infante-Amate et al. 2020, 2022).

Simron Singh published one of the first studies of the metabolism of the economy of India (2012). In a recent article (2021) he revisits this work and recalls that global material extraction has tripled since the 1970s. These accounts leave water aside. Less than 10 per cent of the 100 GT of materials entering the world economy per year are recycled, while 60 per cent ends up as waste and emissions that are the leading cause of global warming and pollution. The rest accumulates as stocks in the built environment (Figure 15.1). There is an enormous entropic hole of 12 tons per person/year, almost 35 kg per day. This is a world average with great differences between rich and poor. This means large volumes of fossil fuels, sand and gravel, biomass, and metals in bulk; these commodities dominate the human metabolic landscape and international trade. The increase in the material volume of inputs into the economy is due to the increase in the bulk commodities facilitated by the means of transport, mainly maritime trade but also internal or international trade by pipelines, railway and trucks although a substantial part of the material inputs is extracted inside countries; it does not travel long distances. This is particularly true of the sand and gravel for the cement and building industries.

Compared to "bulk commodities", preciosities are material goods with a high economic value per unit of weight. In the origins of the colonial expansion of Europe the tiny sailing vessels could not carry heavy weights. Think of Vasco da Gama filling his one-hundred-ton ships on the coast of today's Kerala with pepper, not with coconuts and bananas. Compare to today's container ships, bulk carriers or oil tankers. For instance, the 220,000-ton Ever Given that got stuck in 2021 in the Suez Canal carried many thousands of 20-foot containers. The tonnage transported by bulk carriers, oil tankers and pipelines is enormous as we realize when there are accidents. For instance, on 19 July 1979 two Greek oil tankers, the 288,000-ton

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Atlantic Empress and the 207,000-ton Aegean Captain, collided not far from Tobago in the Caribbean Sea. Twenty-seven crewmen lost their lives. They were carrying a total of 3.5 million barrels of crude oil, about half of which was burned or spilled into the ocean.[1]

Preciosities might have large environmental impacts on human livelihoods and ecosystems in their places of origin. They produce much waste. The amalgam of silver required mercury (*azogue*) with terrible health consequences in Potosi (Bolivia) or in Zacatecas (Mexico). However, the means of transport at the time made bulky trade impossible. There was some trade in timber. Vessels made of teak and carrying goods came from India to Great Britain to be dismantled. Interestingly, some preciosities changed status and became staples. Sugar for instance was a luxury good. However, later, as a result of the large-scale slave trade for American plantations and factory-crushed and boiled sugar cane, it became a source of cheap calories.

Some primary-exporting peripheral countries managed to follow the route of the so-called "staple theory of economic growth". The staple theory was put forward by Harold Innis (1894–1952), a Canadian author. Many other countries have persisted in their role as extractivist peripheries, perhaps hoping to follow the "staple theory of growth" but falling into a "resource curse", submerged into periodic economic crises because of low export prices that lead to still more primary exports and further socio-ecological destruction and conflicts.

Conflictive Preciosities

Bulk commodities such as coal, iron, oil or copper are essential products that are relatively inexpensive per kilogram and that usually have serious environmental impacts during the extraction process. In 2021, thermal coal's price had gone up to US$ 200 per ton, 20 cents per kg. Gold might cost US$ 1,000 per ounce (33 gr.), US$ 30,000 per kg. In principle, preciosities are luxury goods, not essential for the metabolism of the economy but this statement must be qualified. Some high value goods are used in small but essential quantities for industrial processes. Indeed, the rare earths and rare metals needed for the electrical transition are preciosities in the sense of high monetary value per unit of weight. They are necessary inputs for new industries more than luxury, superfluous goods. The "geodiversity" of the world, all the elements in the Periodic Table, are being commodified and coming into the commercial economy.

Preciosities are not used as energy carriers or in large quantities as material inputs into the economy. If strongly heated in the presence of oxygen, diamonds will burn to form carbon dioxide. However, nobody cooks his meals by burning diamonds. It is obvious that the "bulk commodities" cannot be substituted so easily. Substitution of fossil fuels by current sun energy requires large space and material requirements. This is what Vaclav Smil's concept of "power density" clarifies. Power density is low for renewable energy flows and high for fossil fuels and thermal electricity generation. The "boring" trade in bulk commodities, coal, oil and gas, as also biomass, has trumped in the news in 2022 together with the excited search for lithium after the Russian invasion of Ukraine.

I give below some instances of conflicts on diamonds, jade, "precious" woods, gold, palladium and other preciosities. The ounces of gold and the carats of diamonds look negligible as metabolic items but they cause social and environmental havoc at the points of extraction.

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THREE CONFLICT CASES ON DIAMONDS

Diavik Diamond Mine by Rio Tinto and Kimberlite Waste Issue in Canada[2]

Rio Tinto is a leading international mining group headquartered in the UK and Australia. The Diavik Diamond Mine is a diamond mine in the Northwest Territories, Canada, about 300 km northeast of Yellowknife, itself known for gold mining and terrible arsenic pollution. According to Rio Tinto, the Diavik mine produces "stunning white gems", which is indeed a raw material for the jewellery industry. It also produces a lot of waste. But diamonds are not a bulk input for industry, they are measured not in tons but in carats. A carat is equal to 200 milligrams.

The mine is placed on First Nations' territories, and the proposal is to dump mine waste kimberlite and other tailings into their waters and land. The Environmental Board approved the project in January 2020. The Diavik Diamond Mine lies on Lac de Gras, about 200 km south of the Arctic Circle. Diavik comprises four diamond-bearing pipes that are mined using a combination of open-pit and underground mining. The mine is owned by Diavik Diamond Mines (2012) Inc., a subsidiary of Rio Tinto (60 per cent ownership), and Dominion Diamond Diavik Ltd. The mine was approved in 1999 and opened in 2003. In 2018, a fourth diamond pipe was opened. The most precious diamonds that the companies exploit from the mine are collectively known as "The Diavik Stars of the Arctic". However, the most valued and the rarest diamond on the market is the Large Yellow Diamond; the mine produces only five of these diamonds each year but earns the highest profit from them.

The company filed for an amendment to its water license with the Wek'eezhii Land and Water Board that would allow it to fill three mined-out pits with processed kimberlite, diamond-bearing rock which includes waste rock and tailings known as slimes. At the moment, processed kimberlite is piled into a containment facility. Arguing for such a project, Diavik says it is due to a storage area shortage. First Nations communities were unhappy about the decision and were calling for a full-panel environmental assessment of the mine. Leaders such as Chief Felix Lockhart of the Lutsel K'e Dene said the environment minister acted irresponsibly. The Mackenzie Valley Environmental Impact Review Board conducted an environmental assessment, saying more information was needed on how adding mine waste to the pits could affect fish, wildlife and traditional use by Tlicho and Akaitcho Dene.

First Nations representatives, the federal and territorial governments and Diavik would jointly determine the scope of the environmental assessment because the First Nation's' concern was that the processed kimberlite could contaminate water in Lac de Gras.

> "Their proposal is that they will deposit all of the processed kimberlite into the underground and they will fill it up with water – they say it will never mix, or flip. […] Then for five years after active closure, they're going to monitor that water and if they determine that water is safe, they''ll breach the dike and it''ll become a greater part of Lac de Gras".

First Nations replied: "A lot of what they're proposing relies on permafrost being there".

An alternative proposal by the company was to store the processed kimberlite by raising the dam walls of the existing processed kimberlite containment facility and building additional on-land containment sites. The Mackenzie Valley Environmental Review Board opened the public hearing, in which Crown-Indigenous Relations and Northern Affairs Canada provided

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$300,000 to individuals and groups to help them participate in the environmental assessment. The report was completed in eight months, and on 6 January 2020 the project was approved by the Board. The Review Board believes the Project will not lead to impacts on caribou. For the First Nations, with a longer time horizon, this was seen as a bad outcome.

Rio Tinto's Diamonds in Madhya Pradesh – a Bizarre Story[3]

Rio Tinto Exploration India Private Ltd is the operator for Rio Tinto's mineral exploration activities in India. The Bunder Diamond Mine project, located in Chhatarpur district of Madhya Pradesh, was proposed as a mechanized open cast mine up to 360 m deep. Reserves are estimated to last for 11 years. The proposed lease area of 954 ha is a block south of Sagouriya village and about 7 km north of Bakswaha village. A minor dam was also planned to supply water to the project, as well as other infrastructure to support the mining process.

In October 2017, it was announced that Indian resources conglomerates Adani and Vedanta were considering bidding for a US$ 9 billion diamond project in the country that was abandoned by global miner Rio Tinto. What had happened? The Bunder Diamond Mine had been sold to Essel Mining, a company owned by the Aditya Birla Group. The mine was set to produce two to three million carats a year.

The Chhatarpur district of Madhya Pradesh in Central India is home to the Panna Tiger Reserve, an important ecosystem for various critically endangered or highly sensitive species. The reserve itself is part of Buxwaha forest, which is ecologically important because of its teak forest cover and watershed sourcing the Shyamri River. However, this was threatened by Rio Tinto's Bunder Diamond Mine. Because it is a protected area, only forestry activities are permitted, making it very questionable whether the Union Ministry of Environment and Forests really did grant Rio Tinto the lease and rights while violating the Forest Conservation Act. Environmentalists heavily criticized the mine for its potentially degrading practices. For example, the mine could lead to habitat loss for endangered tigers; drilling would lower the water table, dry the forests and pollute the Shyamri River; over 99 per cent of mined ore would be wasted and dumped along with precious topsoil; and blasting, drilling, loading and transportation would release a lot of fumes and dust contributing to air pollution.

Local communities living near the mine were fearful of the project yet they felt powerless to prevent it from starting. In October 2009, the state´s chief minister Shivraj Singh Chauhan inaugurated the Rio Tinto project and many stakeholders were set to become rich. This is a story that many people in India remember when diamond mining is mentioned. Activist Shehla Masood was killed when exposing Rio Tinto's mining proposal. On 16 August 2011, she was sitting in her car outside her house in Bhopal on her way to a protest. A hired hitman shot her in the neck. She was a well-known tiger conservationist and president of the Progressive Muslim Women´s Association and also allied with Anna Hazare's India Against Corruption movement, women´s rights campaigns, police reform campaigns and the Right to Information (RTI) movement. As part of a minority community, she had been seeking support from fellow activists she could trust during her activist career fraught with many threats. These threats first began when false rumours circulated that she was a spy for Pakistani intelligence. In July 2011, she was working on a legal case with a parliament committee against Rio Tinto's illegal operations. She had also already filed over 200 court appeals against various corruption scandals revolving around what she called "the tiger mafia" and was starting "RTI Anonymous" as a platform to help whistle-blowers expose corruption.

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Human rights, environmental and other organizations such as Front Line Defenders and Toxics Watch Alliance came forward with allegations that Masood was silenced for her continued investigation. The manager of Rio Tinto India, however, said that "The company never met Shehla Masood nor had any interaction with her", and that "If the chief minister went over and inaugurated it, [the Rio Tinto mine] has to be legal… we have a very strict, transparent ethics policy that is uncompromising no matter where we operate". According to the CBI's investigation, her murder was nothing more than a "love triangle that went horribly wrong". In the end, the government sold the mine to Aditya Birla Group's Essel Mining Company, with rights for a 50-year government lease.

Diamonds in Sierra Leone. Koidu Diamond Mining Conflict[4]

Diamonds in this region started to be mined under British colonial rule, and later have financed civil wars. They were called "blood diamonds". Relocation from mining sites, displacement, killings, land degradation, a decrease in biodiversity, reduction in water quality and air and noise pollution are some of the results of diamond mining by Koidu Holdings Limited (KHL) in Sierra Leone. KHL, operating since 2003, was granted rights to mine kimberlite diamonds worth about $1.5 billion for 25 years after the end of Sierra Leone's war (KHL became part of the Octa Diamond Group). In December 2007, people were shot dead by security in clashes with residents from nearby communities at the mine. Following this incident, the government suspended KHL's operations, and set up the Jenkins-Johnston Commission of Inquiry to investigate. The Commission produced a critical report on KHL's operations and made recommendations which were included in a White Paper which found that the root causes of trouble were relocation and resettlement, forced evacuation before blasting, lack of community benefits and lack of community participation. Crop compensation had also been a point of contention.

The initial EIA going back to 2003 was criticized because it happened just after the war at a time when people were displaced. It said 4,537 people would be affected by KHL's blasting They would have to be relocated to new housing which the company should construct. KHL eventually built housing using mud bricks and proceeded with operations, but this led to near violence until agreement was reached in 2005 to build new houses. In December 2012, violence again flared at the mine and two people were shot dead when local workers went on strike over poor working conditions. The conflicts continue.

GOLD MINING

Gold is a precious commodity although also a raw material for industry, and a deposit of chrematistic value that goes as ingots to the vaults of banks – from the earth to the earth causing a lot of damage in between. In the EJAtlas there are many conflicts on gold mining, nearly 300 by July 2021. Conflicts with both gold and copper as commodities are about one hundred. There are 67 conflicts in which one commodity is gold and one mobilizing group are "artisanal miners". But I must insist that most gold is mined not by artisanal miners but by corporations. Corporate open cast mining dominates although there are also conflicts on a small scale, often on alluvial artisanal mining. In Eduardo Gudynas' words (2014), "gold mining has become a scourge plaguing many Latin American countries. A few transnational

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giants are operating in certain places but hundreds, thousands, of people throng together in other areas, sifting through the rivers of the rainforests or in the bowels of the mountains in search of a few ounces of gold". Gudynas complained: "It's hard to argue that community wellbeing or the planet's industrial development depends on continued mining for gold, […] when the gold is then mostly used for jewellery and the financial world".

The small miners of alluvial gold use mercury. They work for middlemen, who then become exporters. The mining corporates do open cast gold mining with a yield of a few grams of gold per ton of earth removed and lixiviated with enormous amounts of water with cyanide. Here are two more conflicts from gold mining.

Newmont in Conga, Cajamarca, Peru: *el agua vale más que el oro*[5]

Massive social opposition managed to suspend the giant mining project in 2012. However, it is still on the Peruvian state's agenda. This happens a short distance from the city of Cajamarca, where there is a memory of *el cuarto del rescate*, the room that Atahualpa, kidnapped by Pizarro, had his followers filled in with gold jewellery. He was executed nonetheless. The drawing by Guaman Poma (seventeenth century) is inexact in the details but a faithful symbol (Figure 26.1).

The Conga project belongs to Minera Yanacocha., belonging to Newmont Mining Corporation (United States), Minas Buenaventura (Peru) and the International Finance Corporation (World Bank). The Sumitomo Corporation acquired the shares of the IFC. The area of the project extends throughout 80 lagoons at over 3000 m of altitude in the province of Celendin. Under threat are 100 ha of wetlands (*bofedales*), the project boasts reserves of 11.8 million ounces of gold and 3.2 billion pounds of copper. In February 2010, the company Yanacocha presented the EIA, and in October the Ministry of Energy and Mines approved it. The enormous controversy generated by the Conga project arose after years of conflict caused by the Yanacocha mining company. It is the result of a democratic demand from the communities to be consulted, for the right to veto, and to participate in the benefits of mining investment. In 2011, the Ministry of the Environment made observations contrary to the EIA approval; in February of this year, the US expert Robert Moran (who travelled to the region) wrote that the EIA report was a dishonest document not providing the necessary technical information.

In November 2011, a strike was held in a large area of Cajamarca in rejection of the Conga project. Peru's National Police intervened, injuring 19 people and leaving Elmer Campos permanently paralyzed. A state of emergency was declared throughout the Department, with a number of leaders arrested. In March 2012, a peaceful Water March was held. It carried a giant green flag and it grew as it passed through many communities and cities to Lima. After complaints and demonstrations against the EIA, plus the resignation of the Deputy Minister of the Environment, José De Echave and the intervention of Robert Moran, the central government decided to hire other international experts to review the EIA. They were quickly discredited. Soon after, a survey was carried out by the company GFK to determine the level of approval of the mining project. As reported by *El Comercio*, this survey showed that 54 per cent of the national urban population was in favour while 36 per cent opposed it. At the regional level, 78 per cent of respondents in the province of Cajamarca opposed the mine. In July 2012, the central government again decreed a state of emergency restricting the inviolability of the home and freedom of assembly and travel in three provinces of the

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Source: Guaman Poma de Ayala, First New Chronicle and Good Government

Figure 26.1 Death of Atahualpa, 1533

Department of Cajamarca to deal with protests that left five civilians dead and 20 injured by police gunfire.

The resistance was organized with the Celendin Inter Institutional Platform (Milton Sánchez), the Bambamarca Defence Front (Eddy Benavides) and the Environmental Defence Front of Cajamarca. These three formed the CUL Unitary Committee of Struggle. Faced with these facts, there was an agreement in July 2012 that Monsignor Cabrejos and Father Gaston Garatea of the Catholic Church mediate to reach an agreement. The *Conga No Va* movement remained strong. In the face of resistance, the Newmont company announced the suspension of mining activities. In April 2013, the *ronderos* (peasant civic resistance groups) of Bambamarca and Celendin recovered the *rondero* camp set on fire by the police months before. A telephone tower was blown up. The Guardians of the Lagoons were constituted and

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Source: Goldman Environmental Prize

Figure 26.2 *Máxima Acuña stood up for her right to live off her land sought by Newmont and Buenaventura Mining to develop the Conga mine*

regularly monitor the area. International support was decisive, as well as alternative press, videos, documentaries, music, poetry. The Chaupe-Acuña family was accused of usurpation by the mining company. A trial ended in 2015 and exempted Máxima Acuña. However, the mining company did not stop attacking her (murdered dog, contaminated trout, shots in the air, fence built around her lands). In 2016, she was awarded a Goldman Prize (Figure 26.2).

Open-pit Gold Mine in Conglomerate Mesa, California[6]

Less dramatically, the ad-hoc group Friends of the Inyo together with a coalition of tribal representatives, conservation groups, individuals and recreationalists organized against the K2's mining project in Conglomerate Mesa. In 2021 it was still in the exploratory phase. It is located next to Death Valley National Park in California, the traditional homeland of the Timbisha Shoshone and Paiute Tribal Nations. For both Indigenous and non-Indigenous people, Conglomerate Mesa is an important environmental and cultural territory. However, Vancouver based Canadian mining company K2 Gold has been developing an open-pit cyanide heap leach gold mine project there. The project has completed Phase 1 of its exploration. Local residents and environmental groups found out about the project on a monitoring trip in April 2020.

Local people and environmentalists are especially concerned about the project because cyanide heap leach mining is known to produce high rates of toxicity in lands and waters.

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Local people argue that the "cyanide heap leach project will have devastating consequences for tribal homelands, biodiversity and recreation in the area". Furthermore, the company explored an area three times larger than their permit allowed. For instance, the company adopted the 7-drill site helicopter exploration project but submitted an expanded proposal requesting road construction into the Mesa and 30 additional drill sites.

The people of Inyo County have made it clear: "An open-pit cyanide heap leach gold mine and any associated exploratory drilling is not welcome at Conglomerate Mesa". The coalition argues that Conglomerate Mesa "deserves trees, not drill holes a thousand feet deep" and "quiet nights with a full blanket of stars, not noise and light pollution"; "There is no place for a cyanide heap-leach mine on our public lands". According to Friends of the Inyo, the lands K2 aims to mine are called Payahuunadu or Panawe by the Nuumu and Newe peoples, respectively. This land acknowledgement is a recognition of the original inhabitants of the Eastern Sierra, and it shows respect for Native peoples often suppressed in colonial history of the US.

PALLADIUM AND PLATINUM MINING, TAYMYR, ARCTIC RUSSIA[7]

This is yet another mega-project planned in the Arctic, which is a commodity extraction frontier as we saw in Chapter 7 (Hanaček et al. 2021). The project was agreed in 2018 between Russian Platinum and Norilsk Nickel; a new project was expected to be launched in 2024 which involves the development of several platinum-group metal deposits on Taymyr Peninsula. The deposits bear almost 5,000 tons of platinum group metals with a production potential of 120 tons per year. Russia will produce more palladium than all other countries combined. In 2021, palladium became more valuable than gold, in the money scale, and it reached a record high of US$ 3,440 per ounce in March 2022 after Russia's invasion of Ukraine.

Palladium is a white shining metal and one of the six platinum-group metals along with ruthenium, rhodium, osmium, iridium and platinum. It is used for catalytic converters in electric cars, where it filters pollutants. It is also used in electronics, dentistry and jewellery. The metal is mined primarily in Russia and South Africa, and mostly extracted as a secondary product from operations that are focused on other metals. In order to produce 120 tons a year of palladium, the mine(s) will be opened by the company Russian Platinum, on the Chernogorsk Oye field in the Taymyr Peninsula, near the nickel fields of Nornickel. The production period will be of 55 years, and a plant will process 7 million tons of ore per year. The resources are planned to be extracted through an open pit and a nearby processing plant and a new smelter will be built. Indigenous activists, however, expressed concerns regarding the project in general and about the Nornickel company in particular, as the company is historically related to pollution and disempowerment of Indigenous communities. Ten thousand Indigenous people live on the Taymyr Peninsula. Nornickel also has a production site in Russia's Kola Peninsula where Saami people live. In both regions, pollution by the company is seen as a direct threat to the local way of life. Nornickel extracts and produces metals which are "essential" to the booming electric car industry.

As reported in *The Barents Observer* in June 2021, activists travelled to Switzerland to urge Swiss banks to push the companies responsible to protect the environment and properly consult Indigenous communities. A similar protest form was used in the case related to Tesla battery metals from Nornickel. Banks reassured the Indigenous environmentalists. Also, scientists from Russia's Academy of Sciences embarked on a study of the environment

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of the Arctic in an expedition to the Taymyr Peninsula at the invitation of Nornickel itself. Finally, Nornickel announced that there had been cooperation agreements with three organizations representing the Indigenous peoples of the Taymyr Peninsula and that they had developed a joint and comprehensive, five-year support programme. However, Indigenous activists of the Batani Foundation stated that "This is just an example of Nornickel buying influence". "In Taymyr, Nornickel is the Tsar and the God at the same time". Batani Foundation is an international fund created to support Indigenous peoples in the Russian north helping their protests against mineral extraction and industrial pollution. The Russian government declared Batani Foundation a foreign agent in 2015 and in 2017 the organization was liquidated by a court after a demand from the Ministry of Justice. There are many legal and illegal ways of trying to stop the world movement for socio-environmental justice, not only in Russia.

COLTAN

Coltan is another mineral of high economic value per kg but also a necessary input for industry. Coltan is primarily a combination of columbium and tantalum, two minerals that went from being a geological curiosity to a crucial item in electronic equipment.

In DR of Congo

There is persistent illegal coltan mining in DR Congo, using child labour and causing increasing biodiversity loss and environmental risks. There are many other conflicts in the country generated by the competition to exploit its rich forest and mineral resources. The mining of coltan, an essential mineral for mobile phones and electronics, has not benefitted local communities. Coltan smuggling likely provides income for the military influence in the Congo and the proceeds of mining have financed civil war. The environmental impacts are negative and citizens' rights are at risk. Eastern Mountain Gorilla populations are also now endangered as some miners are deemed to kill the gorillas for bushmeat. The Initiative in 2004 by RAID and Friends of the Earth US to render chemical North-American multinationals accountable didn't succeed. The priest Vincent Machozi was shot dead on 20 March 2016. He was denouncing the mass killing of the Nande community, the main ethnic group in Beni-Lubero territory. This community continues decrying the ongoing arbitrary killings and land dispossessions they endure. However, the multiple issues around coltan mining remain hard to challenge due to the politically precarious situation of the country and the persistent refusal to face the problem by the international community.

In Colombia, in the Puinawai National Park[8]

The department of Guanía lies at the eastern end of Colombian territory bordering Venezuela to the east and Brazil to the south. There are other conflicts over coltan in Venezuela south of Orinoco (Teran 2018). This is a territory mainly inhabited by Indigenous communities. In 2009 the discovery of a gigantic coltan deposit near the border with Colombia was announced. Merchants, speculators and armed groups arrived in the area around a new business. The boom of coltan in Venezuela awoke the interest in Colombia. Ingeominas (Colombian Institute

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of Geology and Mining) gave the permits to extract the coltan in 35,000 ha between Vichada and Guainía.

What the processing plants do is crush coltan and extract tantalum and niobium, with which capacitors and chips are made for cell phones, computers, iPods, mp3, GPS, console games, satellites, remote control weapons, high-speed magnetic trains. The importance of this mineral explains why the government of China had its eyes on the deposits found in this region in Colombia, which is an important National Natural Park known as 'Puinawai' with the presence of Indigenous communities.

As the mining of this material was not regulated in the country, the merchants took refuge in false records to buy and sell the product. By *barequeo* in rivers and slopes they collect the ore, which is then taken to Bogotá, where a ton can cost between US$ 40,000 and 60,000. It was said that merchants pay a tax to the self-defence groups and guerrillas in some of those areas. Between 10 and 25 tons of coltan could be exported monthly.

Barequeo is understood in Colombia as the washing of sands by manual means in order to separate and collect metals. Coltan is collected in the open, without penetrating the subsoil and it does not require intense mining work. Part of the current exploitation is being done in Indigenous territories where the State is officially not present. This mineral has been controlled by illegal armed groups and drug lords. A black market is growing in the area. In Venezuela, it is alleged that the Army is also involved (Teran 2018). Miners are violating national and international rules set by the United Nations and by the US government. The Dodd-Frank Act of 2010 prohibits US companies from buying illegally obtained natural resources or in areas controlled by criminals or terrorists.

The mining area is seen from the air as a patch where the topsoil of the jungle has been removed near a sacred mountain, Puinawai Hill. Since the smugglers invaded the territory of the Indigenous community, the community has denounced illegal mining but also takes part in the mining. One of the problems that prevent control in these areas is that there are titles legally granted that are being used as havens. In January 2011, Rodríguez Forero (who holds a legal title granted by Ingeominas) began filling out tax forms for the purpose of exporting tungsten to Strassen, Luxembourg, owned by Traxys Europe SA. His title corresponds to the area closest to the Guaviare River and the Puinawai National Natural Park, where mining activity is prohibited. But just by passing the river it can be sheltered with a title of Vichada, where no parks or Indigenous territories restrict mining.

In mid-June 2012, the national government of Colombia announced that 72,000 ha of territory in the department of Guainía were declared a strategic mining reserve and there would no longer be indiscriminate exploitation, apparently leaving this important mineral in the hands of the State. But it should be borne in mind that the external demand is strong.

JADE

In Myanmar: Great Human and Environmental Cost[9]

Jade is a gemstone whose price may reach US$ 3,000 per ounce. It is used in jewellery, an industry causing environmental impacts under dire working conditions. The industry seems to fuel the ethnic conflict in Myanmar which is one of the main producers of jade in the world. It is estimated that around 70 per cent of the world's jadeite comes from Myanmar. One of the

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main production sites is located in Hpakant, in Kachin state, an area where an ethnic conflict between the Kachin Independence Army (KIA) and the Myanmar army has been running for decades.

The business has been buoyant, fuelled by Chinese demand, a country where jade has mystical meanings. In 2016, the United States lifted a ban on the jade imports that were in place since 2008 after the military junta that ruled the country stepped down, but it reimposed it one year later due to the abuses against Muslim rohingyas in another area of the country. According to a report released by Global Witness in 2015, the industry is controlled by the "[old junta] military elite, US-sanctioned drug lords and crony companies" while "very few revenues reach the people of Kachin State […] or the population of Myanmar". Thus, Global Witness pointed at the families of former dictator Than Shwe and generals Maung Maung Thein and Ohn Myint as some of the key actors in the industry.

The value of the industry was about US$ 31 billion in 2014. The jade industry has been linked to a number of social and environmental conflicts. Some of these impacts were summarized in a letter sent to then-President Thein Sein in October 2014 by almost 5,000 residents of Hpakant detailing the abuses of mining companies, such as harm related to the use of dynamite. People also have lost their properties, and some of them their lives, due to the landslides provoked by the mining activities. One of these landslides killed 17 people in May 2018 in Wak Khar village.

In November 2015, many miners perished when a 60-m-high mountain of earth and waste collapsed, burying the huts where the workers slept. In another accident in July 2020, many people were killed by a landslide triggered by heavy rain in Hpakant. According to media reports, the miners were trying to find jade stones among the rubble discarded from lorries when the mudslide happened. The Myanmar Fire Service Department announced that 162 bodies had been recovered from the landslide in Hpakant, the centre of the world's biggest and most lucrative jade mining industry. Hpakant is an area in Kachin state, 950 km north of Yangon. Apparently, a 305-m-high cliff wall collapsed onto a tailings pond at a suspended mining site. Meanwhile, the Myanmar Gems Enterprise issued a directive to jade mining companies to suspend operations for three months during the monsoon season.

Miners are mostly daily labourers, many of them migrants. The trade is also driving ethnic tensions with the Kachin Independence Organization, and its army branch, the KIA. "Jade is the main source of income for the KIA/KIO. This makes the battle for control of jade revenues a strategic priority for both sides in the conflict", says Global Witness. Nevertheless, the KIO lost control of the Hpakant district in the 1990s. After 17 years of ceasefire, fighting broke out in June 2011 between the Kachin Independence Army and the Myanmar Army, displacing an estimated 90,000 people and killing hundreds.

Global Witness also mentions Wei Hsueh Kang, a drug kingpin and long-time financier of the United Wa State Army/United Wa State Party (UWSA/UWSP). In 2016, the government announced that renewal of gem mining licences would be suspended until a new law on gemstones was passed. In 2019, the parliament approved a new gemstone law while in 2021 a military junta took power in Myanmar again. This will have an effect on the jade industry.

Jade in Guatemala[10]

Jade has been appreciated in Mesoamerica since before the European conquest. Local communities denounce illegal jade mining companies, some of them protected by the National

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Police. Since 1950, sporadic deposits of jade were identified in Sierra de las Minas in the Department of Zacapa, and from that date on artisanal mining groups began to extract the stone. In 1998, the first complaint of illegal extraction on a larger scale was made. According to the Turcios Lima Foundation, the illegal extraction was directed by Marcos Wang, a Taiwanese who through his organization El Crucero S.A. exported the gemstone to Taiwan and China without permission from the Ministry of Energy and Mines of Guatemala.

In December 2012, the first illegal container of jade was seized but the person responsible was released on bail. The problem continued and has been denounced by local populations, artisanal miners and other companies that extract jade on a smaller scale and are licensed by the MEM. In February 2015, peasants from the El Arco community obstructed the passage from early morning with the aim of preventing the entry of jade contraband trucks. A week earlier, two young people from the El Arco community were murdered; the perpetrators were hitmen of the illegal extraction company. The neighbours, in addition to being annoyed by the extraction of the precious stone that is heritage and of great wealth for Mayan history and culture, also denounced that for extraction at this scale the forest is cut down and earthworks are carried out which damage nature. And because of its location, it affects the buffer zone of the Sierra de Las Minas protected area and the Teculután River basin.

On 22 April 2015, an organized community group stopped removing a 5-m-high jade stone. The truck in which it was transported was abandoned in the area. Investigations linked Roxana Baldetti (former vice president of the nation) as one of the alleged owners of illegal jade mining companies. A deputy (Regina Guzmán) along with her husband were allegedly also involved with a company called Jade Kingdom. Thanks to the lobbying of both parties in Congress, jade was a mineral to which the percentage of royalties in the 2015 Budget Law was not increased. The neighbours affirm that the illegal extraction companies are guarded by the National Civil Police (PNC) and that there has been an increase in violence that has left behind dead people.

PRECIOUS WOODS: THE MOABI TREE IN CAMEROON[11]

This topic would deserve a whole book. Mahogany springs to mind, in Brazil. Rosewood from Madagascar was mentioned in Chapter 13. I shall use as an example the trade in precious woods from Cameroon. Since the 1950s, unsustainable logging in Cameroon threatened rainforest biodiversity and the Indigenous communities' survival. Timber exploitation in Cameroon began with German colonization. It grew rapidly after the Second World War. In 2002, annual production was around 2 million m^3 over a surface area of some 300,000 ha. It was destined for the luxury goods market due to its high quality. It is, if one may say so, an abundant *preciosity* bound for extinction or at least for scarcity. The weakness of State controls or rather its complicity in the timber trade meant that exporting was problem-free. If from the start of the 1900s deforestation was totally unchecked, later the exploitation of forests targeted only the most expensive. Six varieties account for nearly 80 per cent of timber exploitation: The Ayous (*Triplochiton scleroxylon*), Sapele or Sapelli (*Entandrophragma cylindricum*), Azob (*Lophira alata*), Limba or yellow pine (*Terminalia superba*), Tali (*Erythrophleum ivorense*) and Iroko (*Chlorophora* spp.).

A particularly exploited species of timber for its economic value is the Moabi (*Baillonella toxisperma*), a tree important to women forest dwellers due to its versatility in providing

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medicines, oil and other vital goods. It is also a sacred tree. Moabi fruits are eaten, the bark is used for medicinal purposes and cooking oil is extracted from the seeds for sale and domestic use. Timber from the moabi tree is particularly valued on the European furniture market. Harvesting it for this purpose has caused the extinction of the species in parts of Cameroon. Moabi seeds contain oil that is so highly valued that it is rarely traded or found in markets. The women who are its primary users prefer to keep it for their own consumption. Regrettably, the short-term profit gained by logging holds sway over its long-term, oil-producing value (Figure 26.3).

From the days of colonization until now, almost all the timber felled in Cameroon has been exported to Europe. The main importing nations between 2000 and 2005 were France, Belgium and the Netherlands. Between 1990 and 2005, Cameroon lost 13.4 per cent of its forest cover, around 3,300,000 ha. A report from the European Union released in 2015 denounced the many irregularities of the timber industry in Cameroon. For instance, two French timber multinationals, Rougier and Pallisco respectively own 625,253 ha and 388,949 ha whereas according to Cameroon law forest properties cannot exceed 200,000 ha. Both companies, as well as many others, have ironically been granted FSC certification.



Source: Public domain

Figure 26.3 A moabi tree

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Even the removal of just a small number of tree species causes severe disruptions to the affected ecosystems. Another side effect of forest exploitation has been the development of a large-scale trade in bushmeat. The local communities of Indigenous Bantus and Pygmies depend on the forests' ecology, not only for their food but also for the collection of raw materials, the production of natural medicines and the key role that the forest plays in maintaining traditional practices and cultures. The loss of their territorial sovereignty affected and diminished access to these resources, causing an increase not just of monetary poverty but in terms of the satisfaction of livelihood needs, and also territorial and socio-cultural sovereignty allowing better chances for life. Poverty is multidimensional. "Development" consisting of wood export does not lead to a good living and freedom.

In February 2000, Pallisco began illegally logging moabi trees in the Kélempeing community forest without consent. A group of women villagers, locally known as the "courageous women" and headed by Koko Sol, immediately reacted to the sound of chainsaws by blocking the machines from the trees, threatening to burn the equipment and chasing away the workers. Four villagers later came to the company's sawmill to claim damages for the trees. The villagers never received any compensation and there were no legal successes against Pallisco. Another incident occurred in 2002, when Italian logging company Fipcam similarly illegally encroached upon Bapilé village's forest land, opening a road on the village's sacred cemetery. Five women tried to stop the logging upon hearing the sawing noises. The entire community then joined the women for a month-long occupation and blockade of the forest. The police threatened the villagers and dispersed them, and no compensation was given for the 300 lost moabi trees.

CONCLUSION: "MERE PRECIOSITIES", SAID WALLERSTEIN

Let us go back to the older generation of authors in World Systems Analysis such as Immanuel Wallerstein, Samir Amin, Andre Gunder Frank, Giovanni Arrighi, born between 1929 and 1937 in whose steps we are walking. All had established roots in Africa or Latin America. They studied international economic exploitation and economic cycles but *did not yet count currents of trade in terms of energy and material flows.* They were more expert on social, political, economic and financial aspects than in industrial ecology and the study of social metabolism. *They wanted to understand the accumulation of capital and the concentration of political power and forgot to some extent the dissipation of energy and materials.* One attempt to bring together some of these theorists with a slightly younger generation of students of social metabolism (including Bunker, Hornborg, John R. McNeill, members of the "Vienna school" of Marina Fischer-Kowalski, Helmut Haberl, Helga Weisz, and others including myself) led in 2004 to an extraordinary conference at Lund University organized by Alf Hornborg, and later to a book "rethinking environmental and economic history" (Hornborg et al. 2007).

The EJAtlas broadens EUE theory as developed by Bunker (1985) and Hornborg (1998), by considering the resistance and political agency of local populations and entire nations. Many thematic chapters could be written looking at conflicts on specific commodities. Take copper for instance, a bulk commodity whose global extraction from mines amounted to an estimated 20 million metric tons in 2019. The history of copper from the late nineteenth century to today is marked by conflicts on pollution and also social strife. A new one might be in Afghanistan, with Chinese investment in the Mes Aynak deposit, 40 km southeast of Kabul.

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Or take rubber, for instance, which became a critical raw material for industrial economies. At several points in this book Chico Mendes' defence of rubber trees in Acre, Brazil, in the 1980s appears. He represented villagers in the Amazon making a living by harvesting the latex from the isolated trees of *Hevea brasiliensis*. Around 1900, the demand for rubber had led to plantations in Indonesia, Malaysia and also West Africa. Rubber as a bulk commodity also led to large-scale forced labour and manslaughter in the upper Amazon and in the Congo basin. There are many accounts of the tragedies – such as a moving film by Nuria Frigola and Rember Yahuarcani, *El canto de las mariposas*, on the suffering of the Witoto people between Colombia and Peru when Casa Arana (the Peruvian Amazon Company) ruled over the area

In the EJAtlas, we see evidence for the distinction in world systems theory between trade in preciosities versus trade in bulk commodities as it was proposed by Wallerstein (1974, 1989). His argument was that one could distinguish trade in bulk goods and trade in preciosities because the former but not the latter was necessarily based on unequal exchange. If we look at flows of energy and materials from the global South to the global North, this certainly applies. The global North cannot live without the cheap imports of energy and materials.

At the beginning of European colonization, imported goods were silver, pepper or bird feathers. But soon the slaves from West Africa working at low cost in American plantations and mines became a substantial source of human energy. Cheap exports of cotton from the US and elsewhere to the UK were essential for the industrial revolution (Beckert 2014). Palm oil also was useful, and guano from Peru. Interestingly, some preciosities changed status and became staples. Others are essential inputs to production processes. And others remain as genuine "useless" luxury goods that nevertheless may destroy local environments and populations. The local ecological impacts of precious exports of rosewood, shrimp, ivory, tiger body parts or rhino horns are grievous compared to the direct irrelevance of such trade for the importing countries' social metabolism.

Stephen Bunker (Bunker 1985) did pioneer research showing how core nations imported at cheap prices physical wealth from politically powerless regions leaving social and ecological degradation in their wake. In this exploitative process the raw materials and the embodied energy are relocated from periphery to core, empowering the latter and weakening the former (Davidson 2018). Assume two countries or two regions one of which is a net exporter of materials (in tons), energy (in Joules), water incorporated into the materials, and also hours of work and hectares of land. The second country is a net importer of all this. This is more or less the relation between Northern Africa and the European Union. Or South America and the rich importing world (Infante-Amate et al. 2020, 2022; Alonso-Fernández and Regueiro 2022). Research that takes as a unit tons of materials (including the "energy carriers") shows the existence of ecologically unequal trade. For instance, Pérez-Rincón for Colombia (2006).

Thus, we analyzed the PTB of five South American economies since 1990 (Samaniego et al. 2017). Notice that the measurement of physical flows in tons, and the concepts of PTB and PTD (physical trade balance and deficit) come after 2000 from the Vienna school of Marina Fischer-Kowalski, Helmut Haberl, Fridolin Krausmann and others. In South America exports were consistently much larger than imports. Export prices of primary goods increased but by 2013, export prices had declined and the exports could no longer pay for imports. Countries started to show commercial trade deficits (in money terms). The optimism generated by the improving terms of trade in South America at the beginning of the twenty-first century was premature. First, there were PTDs even in the boom years; second, the deterioration in the

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terms of trade after 2012 was accompanied by a counterproductive deficit in the monetary trade balance. This can lead to greater external debts or to outflows of currency reserves, and it can also create pressure to increase physical exports. These deficits also tend to be compensated by increasing the deficit in the PTB, which can lead to enhanced environmental pressures and therefore to local protests.

Looking at it from a Northern point of view, to finance the net imports the importing countries must impose or achieve price relations by which a physical unit of imported materials is cheaper than one physical unit of exports. This is easy to get through forceful political colonial relations and the imperialism of free trade. The asymmetric global transfers of embodied labour are not the only relevant metric. The *international division of nature is not less important than the international division of labour* (Yasin 2017). Recent quantitative research shows that transfers of embodied labour are an important component of ecologically unequal exchange, along with large asymmetric transfers of other embodied resources such as energy, materials and land (Dorninger et al. 2021; Hickel et al. 2022). Regardless of the concrete materiality of what is exchanged, ecologically unequal trade requires asymmetric biophysical transfers that occur as a result of how commodities are priced on the market. The asymmetrical transfer can also happen by force (Dehm 2022).

The Science of Commodities

What we now call industrial ecology is closely related to ecological economics and it is not to be found in the occasional ecological glimpses in Adam Smith, David Ricardo, John Stuart Mill, Marx, Walras, Marshall, Pigou, Keynes or more recentlly Samuelson, Arrow or Sen. An early exception was Jevons' book on coal of 1865. Economists had little to say about the ecology of humans. We should look at Geddes or Soddy one hundred years ago or to R. U. Ayres, Nicholas Georgescu-Roegen, Herman Daly, K.W. Kapp fifty years ago as precursors of today's ecological economics (Martinez-Alier, Schlüpmann, 1987; Franco, Missemer, 2022). The new fields of study called ecological economics, industrial ecology and political ecology share the socio-metabolic view of the economy. This was practised in Italy by Giorgio Nebbia (1926–2019), a professor of *Merceologia*. What in Italian was called Merceologia in German was called *Warenkunde*, the science of commodities, similar to today's Industrial Ecology. Wikipedia explains: "'Warenkunde' ist ein Fach, das ursprünglich Grundlagenwissen des Handels beschreibt. Es geht zurück auf den Göttinger Professor Johann Beckmann (1739–1811), der den Begriff 'Waarenkunde' prägte und darunter die neuen und bisher unbekannten Waren (z. B. aus anderen Erdteilen) erklärte und bekannt machen wollte, die später als Kolonialwaren bezeichnet wurden". So, *Warenkunde* is a science dealing with international trade and the new commodities in that trade, known as "colonial commodities".

This started with the silver from Potosi and Zacatecas and the pepper brought to Europe by Vasco da Gama from Malabar, the timber from Scandinavia, the cotton and sugar of colonial America, the guano and cinchona of Peru and the nitrate from Chile. Also, the oil, gas, coal, iron ore, bauxite, copper, soybeans, palm oil, cellulose, platinum and palladium, as well as the new metals for solar electricity, nickel, the cement produced with sand and gravel, the ilmenite, rutile, zircon, the petrochemicals and plastics. They come from the peripheries to the metropolis, extracted by human work (slaved, forced or "free"). The rise of capitalism in the global North depended and depends on colonial and imperial appropriation of commodities. Today's *Kolonialwaren* are not merely silver, gold, coffee, tea, pepper, diamonds, jade,

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emeralds, cocaine, bird feathers or furs, they are also very substantial bulk commodities such as coal, oil and gas, iron ore and copper exported from the extraction frontiers (Moore 2000) in an ecologically unequal trade.

These commodities are not produced merely by other commodities and human labour, they are really produced by current or by "bottled" photosynthesis and the carbon cycle, or by other biogeochemical cycles and processes. They enter international trade but also the trade facilitated by internal colonialism. The quantity of materials extracted and the volume of transport have never been so large as today. The waste is "exported" to the atmosphere and the oceans, or to landfills and incinerators in peripheral regions or countries. As regards CO_2, there has been a great theft of the atmosphere and also a theft of the oceans and terrestrial sinks.

The existence of preciosities allows an objection to be raised to the main thesis of this book which is that environmental conflicts are mainly caused by the changing configurations of the social metabolism. What is then the place for conflicts that are marginal to the social metabolism? One conflictive trade in Andean countries is still to search for old preciosities in pre-Hispanic tombs looking for jewellery, pottery and textiles from before the European conquest. This archaeology is also practised in Egypt and elsewhere. It is largely irrelevant to the metabolism of both exporting and importing countries although local damages are indeed caused by mining for gold, diamonds and other gems, jade, or harvesting precious woods. This can be compared to conflicts on deforestation because of intensive extraction of cascarilla (*Cinchona officinalis*) in historical periods before 1950 which might be included among the early bulk commodities.

It could be argued that an imaginary "dematerialized" world industrial system using only current solar energy would decrease its use of fossil fuels and materials and nevertheless still produce capricious demands for environmentally costly precious goods. Conflicts would not be on bulk commodities, but on preciosities, some as cruel as ivory and rhino horns, sharks' fins, or feathers plucked from beautiful birds. Imagine that people would spend the time lying in bed, eating and drinking little, going for walks on foot, recycling their night soil in small domestic food gardens, eating raw vegetables and nuts, and watching the screen of their phones or computers all day. Would they be dematerialized human beings not requiring bulk commodities and despising preciosities? Not quite. And not only because of their housing, heating (or cooling) needs, but also because of the materiality of the communications industry – the reliance of the media technologies on minerals such as lithium, coltan and others, the dumping of electronic waste and the use of great amounts of electricity (Parikka 2015).

***

In the nineteenth and early twentieth centuries, the countries of today's European Union depended on their own coal and biomass (wood) as energy sources. Now they have become large net importers of oil and gas, and resort to large-scale agrofuels imports from Brazil and Argentina. Taking all materials together, in the year 2000 the European Union imported about three times more than it exported This means heavy environmental impacts in the extractive regions, along with local resistance from communities whose livelihoods are threatened. South Africa exports coal, and Nigeria is also a large net exporter of energy as also northern Africa in the form of oil and gas. Bulk commodities are exported from Africa to Europe

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(including phosphorous) while the migration of human beings is forbidden causing thousands of deaths in the Mediterranean.

From the point of view of economic valuation (as distinct from ecological valuation) it is quite true that preciosities were and are good business. Thomas Hakansson (2004, in Hornborg et al. 2007) looked at the savannas of East Africa to explore the impact of the ivory trade on local ecology since the nineteenth century. Ivory is a "prestige good" with high value-to-volume ratio and negligible metabolic significance for importing societies. Yet, its extraction has had grave ecological consequences for the exporting regions. Another example is feathers sometimes imported from tropical countries. "The plume trade escalated from the 1870s through the early 1900s until the most popular species were hunted to the verge of extinction".[12]

Wallerstein (1974) dismissed luxury goods ("mere preciosities", he wrote) as a source of historical economic changes and as an important factor in the arrival and development of capitalism. There were exchanges of "windfall profits" in the silver and silk trade between Europe and China. There were many other exchanges of precious goods in antiquity, in medieval times and in the modern times of incipient capitalism (Figure 26.4). But capitalism meant physically and also in economic value terms something different. "In the long run, staples account for more of men's economic thrust than luxuries" (Wallerstein 1974, p. 42). If we add



Source: Public domain

Figure 26.4 *The Llotja of València (the Commodity Exchange building, as tourist leaflets call it). Built between 1482 and 1533, also known as the Silk Exchange*

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to agricultural staples the fossil fuels, the large-scale metal mining and the sand and gravel mining, there is little doubt that Wallerstein was right.

His argument is even stronger in terms of social metabolism, the "tons and joules" of industrial capitalism. Braudel included some accounts of energy in his last books, but the World System Theorists were not yet practitioners of ecological economics and industrial ecology.

However, the distinction between "preciosities" and bulk commodities was contested by anthropologists (Schneider 1977) objecting to the view that exchanges of "preciosities" are not essential to the constitution of world systems. They argued that pure 'prestige goods', far from being superfluous, are on the contrary socially crucial as dowry for instance, or for the accumulation of purchasing power in gold ingots or jewels to be mobilized when convenient in capitalist systems. Exchanges of preciosities (gold and silver, precious gems and woods, jade, silk) were essential to economic world systems because preciosities play crucial roles in social life. Patron–client relations inside and across societies relied on "the power of the gift of preciosities". Even if they did not comprise the mass of the population, they were able to mobilize surplus labour. For instance, slaves were bought with gold or other preciosities. To such anthropologists the World System Theorists would reply that the mass trade of slaves from Africa to America in the triangular trade of the later eighteenth and nineteenth centuries was based on violent force and on the bulk commodities traded such as cotton and sugar.

Some metaphysical Marxists seem to believe that the extractivist process around the world arises from lack of investment opportunities in the central economies because of a decreasing rate of profit. This is why they apply the word "extractivism" not only to extraction of energy and materials but also to privatization of public services, urban speculation and financial operations anywhere as a source of money making. I do not agree with this use of "extractivism". I stay with the physicalist Latin American school of Eduardo Gudynas, Maristella Svampa, Alberto Acosta and Horacio Machado. Previous Latin American authors such as Raul Prebisch and Celso Furtado have already complained about the unbalanced terms of trade. The Chilean economist Jacobo Shatan (1998) counted in detail the tons of exports needed to pay for the external debt. Or vice versa, how the external debt became an instrument of unequal trade. This Latin American school defended politically and intellectually the doctrine of "ecologically unequal trade" for many decades.

NOTES

1. The agony of the Atlantic Empress, a large sinking oil tanker in flames. Trinidad Tobago, EJAtlas.
2. Diavik Diamond mine by Rio Tinto and kimberlite waste issue, Northwest Territories, Canada (Ksenija Hanaček & Joan Martinez-Alier), EJAtlas.
3. Rio Tinto's Bunder diamond mine and murder scandal in Madhya Pradesh, India (Dalena Tran), EJAtlas.
4. Koidu diamond mining conflict, Sierra Leone (Patrick Burnett), EJAtlas.
   Transparency International (2019). Blood diamonds and land corruption in Sierra Leone, 2 August.
   Idris, A. (2019). Sierra Leone diamond mine: Legal action over land grab, *Al Jazeera*, 5 November.
   Black, E. (2022). Sierra Leone lawsuit against diamond mine runs up against corporate opacity, *Mongabay*, 17 February.
5. Conga mining project, Peru (P. Chávez and J. Martinez-Alier), EJAtlas.
   Jaria i Manzano, J. (2012). The Yanacocha Mine Case, *EJOLT* Factsheet 43, 9 p.

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6. Open-pit gold mine in Conglomerate Mesa, California, USA (Ksenija Hanaček), EJAtlas.
   Friends of the Inyo, Conglomerate Mesa.
7. Hume, N. (2019), There's no end in sight for soaring palladium prices, *Financial Times*, 2 October.
   Palladium/Platinum mining, Taymyr, Arctic Russia (Ksenija Hanaček and Joan Martinez-Alier), EJAtlas.
   Tesla battery metals from Nornickel, Talnakh, Arctic Russia (Ksenija Hanaček and Joan Martinez-Alier), EJAtlas.
8. Coltan in the Kivu Region, DR of Congo (Lucie Greyl), EJAtlas.
   Coltan Parque Nacional Puinawai, Colombia (Mario A Pérez-Rincón), EJAtlas.
9. Land and human rights abuses in the jade industry, Myanmar (Laura Villadiego, Carro de Combate), EJAtlas.
10. Extracción Ilegal de Jade en Zacapa, Guatemala (Grettel Navas), EJAtlas.
11. Exploitation of Forests, Cameroon, (Lucy Greyl and Dalena Tran), EJAtlas.
    WWF, More than 90 years to reach adulthood.
    Veuthey, S., and Gerber, J.F. (2011). Valuation contests over the commoditisation of the moabit tree in South-Easter Cameroon, *Environmental Values* 20(2): 239–254.
12. *Racing Nellie Bly* (2019). Feathered Victorian hats decimated several species, 29 January.

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27. Corporate social irresponsibility and systematic lack of environmental liability

INTRODUCTION: POLITICAL ECOLOGY AND BUSINESS ECOLOGICAL ECONOMICS

In this book, we elicit the names and practices of powerful corporations (private and public) (Figure 27.1) that in alliance with states enter into conflict with local communities in their extractivist fever for getting hold of particular commodities (Figure 27.2) and obtaining places for waste disposal. Thus, the search for new amounts of materials and energy at the extraction frontiers gives rise to conflicts on the extraction, transport and burning of coal, oil and gas and other materials and also on the excessive production of carbon dioxide. Such conflicts often display incommensurable plural values. Some political scientists would point to other causes of conflicts such as defective governance, and lack of participatory institutions of decision making where companies, the state administration, and the local stakeholders could come together and diplomatically reach mutually beneficial agreements. Economists would perhaps say that mechanisms of monetary compensation for the negative externalities are lacking, and therefore the local populations are reluctant to accept the investment projects. My own perspective on the causes of the conflicts is more ecological and physical, based on the large "circularity gap" of the industrial economy and on the existence of ecologically unequal trade.

Ecological economics treats the economy as a subsystem of Earth's larger ecosystems, and thereby contradicts the concept of CSR (Corporate Social Responsibility) which draws on the notion of the *triple bottom line*. The "bottom line" refers to the profit-or-loss account in a firm's accounts. By extending the accounts to social and environmental issues, the socio-environmental damages are placed at the same level as the economic gains. This contested notion of *triple bottom line* considers human-made capital and "natural capital" as commensurate and exchangeable in view of achieving at the same time economic and socio-environmental sustainability (Busch et al. 2016; Elkington 1997). But as a rule, this equivalent compensation does not happen. CSR has had enormous rhetorical success in business management but we empirically accept instead K.W. Kapp's definition of capitalism (Kapp 1950) as a cost-shifting system, where costs are not always economic costs. CSR has for the most part remained voluntary (Tamvada 2020), de-emphasizing liability. Companies use CSR as a philanthropic instrument that allows "responsible" business to go beyond norm compliance, avoiding administrative sanctions or court cases (Marens 2013). CSR excludes monitoring tools for the operation of businesses such as shareholder activism, stricter regulation, sanctions, boycotts, disinvestment and other forms of protests like those provided by Extinction Rebellion or grassroots LFFU movements (Newell 2005; Martinez-Alier 2001, 2021; Ginanjar and Mubarrok 2020).

Banerjee (2017) published critical analyses of Corporate Social Responsibility as a strategy enabling multinational corporations to exercise power in the global political economy.

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Ranking	Parent Company Name	N° of cases
1	Royal Dutch Shell	96
2	Chevron	62
3	Eni	54
4	Rio Tinto	51
5	Nigerian National Petroleum Corp.	49
6	TotalEnergies/Total	46
7	Vale	42
8	Enel	39
9	Glencore	36
10	ExxonMobil Corp.	35
11	PT Perusahaan Listrik Negara (Persero)	33
12	Russian State Atomic Energy Corp. (Rosatom)	30
13	Monsanto Corp.	29
14	Newmont Mining Corp.	28
15	Salini Impregilo	28
16	BHP Billiton	27
17	EDF	27
18	Anglo Gold Ashanti	26
19	Repsol	26
20	Anglo American	25
21	GDF Suez	23
22	Sinohydro Corporation Limited	23
23	Ecopetrol	21
24	Mitsui & Co., Ltd.	20
25	Petróleo Brasileiro (Petrobras)	20
26	Iberdrola	18
27	Dow Chemical Company	17
28	Odebrecht	16
29	Barrick Gold Corp	15
30	China National Petroleum Corp.	15
31	Sacyr	15
32	Sinopec	15
33	Wilmar International	15
34	Alstom	14
35	Areva	14
36	China Three Gorges Corp.	14
37	Electricity Generating Authority of Thailand	14
38	Naturgy	14
39	AES Gener	13
40	Enbridge	13
41	National Thermal Power Corp.	13
42	Perenco	13
43	RWE	13
44	Vinci Group	13
45	Alcoa	12
46	British Petroleum	12
47	Cargill	12
48	Gazprom	12
49	Grupo Mexico	12
50	Korea Electric Power Corporation (Kepco)	12
51	Petroleos de Venezuela (PDVSA)	12
52	Statoil	12
53	Tata Group	12
54	Veolia	12
55	Comisión Federal de Electricidad	11
56	ConocoPhillips Co.	11
57	Eldorado Gold	11
58	Gas Natural Fenosa (Naturgy)	11
59	Grupo Luksic	11
60	Ingenieros Civiles Asociados	11
61	Pacific Gas and Electric Company	11
62	PEMEX	11
63	Siemens	11
64	Teck Resources Limited	11
65	Adani Group	10
66	Aditya Birla	10
67	Camargo Corrêa S.A	10
68	China Harbour Engineering Company (CHEC)	10
69	Dole	10
70	FCC	10
71	Gold Fields	10
72	NUON	10
73	Bharat Heavy Electricals Ltd	9
74	CODELCO	9
75	Occidental Petroleum (Oxy)	9
76	Oil and Natural Gas Corporation Limited	9
77	Pan American Silver Corp.	9
78	TransCanada Corp.	9
79	Vedanta	9
80	Acciona	8
81	Andritz Group	8
82	Buenaventura	8
83	CEMEX	8
84	Coca-Cola Company	8
85	Daewoo International	8
86	Duke Energy	8
87	Itochu	8
88	Jaypee Group	8
89	Lafarge	8
90	Petroecuador	8
91	PETRONAS	8
92	Solvay	8
93	Sumitomo Corp.	8
94	Vattenfall	8
95	YPFB	8
96	Power Construction Corp. of China	7
97	ABENGOA S.A.	7
98	AECOM	7
99	Arcelor Mittal	7
100	British Petroleum	7

Figure 27.1 *One hundred most frequent companies in the EJAtlas conflicts (3,800 entries)*

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Commodity	Number of cases	Percentage	Commodity	Number of cases	Percentage
Land	1177	32,7	Sugar	64	1,8
Water	769	21,3	Manufacture	58	1,6
Electricity	653	18,1	Cellulose	57	1,6
Crude oil	333	9,2	Rare metals	53	1,5
Coal	313	8,7	Eucalyptus	52	1,4
Gold	313	8,7	Aluminum/B	46	1,3
Domestic municipal waste	235	6,5	Meat	44	1,2
Tourism services	233	6,5	Pesticides	44	1,2
Industrial waste	223	6,2	Steel	42	1,2
Natural Gas	208	5,8	Corn/Maize	39	1,1
Copper	204	5,7	Soybeans	38	1,1
Chemical products	185	5,1	Rice	36	1,0
Timber	159	4,4	Shrimps	35	1,0
Silver	146	4,1	E-waste	34	0,9
Biological resources	142	3,9	Ethanol	28	0,8
Uranium	135	3,7	Lithium	26	0,7
Fish	126	3,5	Asbestos	24	0,7
Sand, gravel	110	3,1	Pine	21	0,6
Ecosystem Services	102	2,8	Titanium ore	21	0,6
Palm oil	101	2,8	Diamonds	20	0,6
Iron ore	98	2,7	Rubber	20	0,6
Lead	78	2,2	Asphalt	18	0,5
Zinc	71	2,0	Cotton	15	0,4
Carbon offsets	70	1,9	Charcoal	14	0,4
Live Animals	70	1,9	Wheat	14	0,4
Fruits and Vegetables	69	1,9	Jatropha	11	0,3
Recycled Metals	68	1,9	Cut flowers	8	0,2
Cement	65	1,8	Coffee	3	0,1
Total of cases	3603	100		3603	100

Figure 27.2 *Frequency of commodities in the EJAtlas; several might appear in the same conflict. Many other commodities (e.g. nickel, fertilizers, cobalt, graphite, niobium, rutile, zircon, palladium) are included in other categories (e.g. eucalyptus under cellulose) or grouped into a category of Others. A word search in the EJAtlas finds them easily*

Social movements associated with concepts and ideas of ecological economics such as the Ecological Debt, Ecologically Unequal Trade, Environmental and Climate Justice, Post-Growth and "Degrowth in Practice" know the human rights violations and environmental damage caused by business corporations. We focus on the role of private or public corporations in the *international division of labour and nature*.

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Top Business Corporations and Main Commodities in the EJAtlas

As a critique of CSR, and at a much lower publicity level, the concept of 'Corporate Social Irresponsibility' (CSIR) has been intermittently discussed for over 45 years (e.g. Armstrong 1977; Chatterji and Listokin 2007; Lange and Washburn 2012) and new contributions are only just emerging (e.g. Clark, Riera, and Iborra 2021). What is the role, then, of environmental justice conflicts in revealing CSIR? Can we compare the behaviour of transnational extractivist firms acting in different continents? Are notions of thermodynamics taught in business schools? Is Georgescu-Roegen's flow-fund model used for a critique of mining (Silva-Macher and Farrell 2014)? Is the EJAtlas relevant for the rating agencies pretending to guide institutional or individual shareholders into socially and environmentally sound investments or for disinvestment campaigns?

Figures 27.1 and 27.2 give the most frequent corporations and commodities appearing in the EJAtlas opening up new vistas in business studies. In the list of corporations, the subsidiaries are listed under the name of the parent company. Companies change names from time to time. The field of CSIR is so vast that this chapter focuses only on two companies: Total and Chevron.

We could also look, for instance, at Wilmar engaged in the acquisition of land for palm oil plantations and therefore generating widespread resistance from communities in SE Asia, West Africa and Latin America. Yet, while such protests have received scholarly and activist attention, the companies' strategies are still rarely studied. Building on detailed documentation on many conflicts between palm oil companies and rural communities in Indonesia beyond those in the EJAtlas, Berenschot et al. (2022) show that companies are contentious actors engaging in strategic efforts to realize their claims, mobilizing a repertoire of actions involving the co-optation of local leaders, connections with local authorities, the suppression of community protests, the criminalization of and violence against protest leaders. Interestingly, companies adopting the RSPO's (Roundtable on Sustainable Palm Oil) code of conduct are not less likely to employ all these tactics.

This chapter is then a sequel to articles published in 2021 by the EJAtlas team on two other companies included in Figure 27.1, the Vale mining company and Salini-Impregilo (WeBuild). Both articles (summarized below) build on the concept of CSIR. This chapter outlines monographic studies of Chevron and TotalEnergies (Total, for short). Such research could also focus for instance on Rio Tinto, Glencore, Sinohydro, Anglo American, AngloGold Ashanti and Shell, and so many other extractivist companies on topics such as cost-shifting, lack of environmental liability, corporate accountability, corporate impunity, environmental crimes, corporate violence, SLAPPs and SLO, and also shareholder activism and environmental justice movements. These evidence-based case-studies could be taught in business schools.

Vale and Salini-Impregilo

In Chapter 14, we saw how the constellation between bauxite mining, aluminium smelting and hydropower was remarkably linked in Ghana to Nkrumah's search for "development"; it was a central piece of an industrial nationalism paradoxically driven by foreign corporations. The historical intervention of the multinational Italian company Salini- Impregilo in the Akosombo dam motivated EJAtlas authors into a new line of work. Antonio Bontempi et al.

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traced and evaluated the long history of Impregilo-Salini showing that controversies around large-scale development projects may be analyzed through the lenses of business ethics and CSIR. They empirically confront the CSR narratives and strategies of WeBuild (formerly known as Salini-Impregilo). Based on the methods of the EJAtlas, Bontempi et al. collected evidence from NGOs, EJOs, journalists, scholars and community leaders on socio-environmental injustices and controversies surrounding 23 hydropower schemes built by this corporation throughout the last century. As a counter-reporting exercise, they coded critiques of the company's behaviour looking at their mismatch with narratives coming from the company. The CSR narratives coming from this corporation leave aside many realities. CSR reports are not reliable. In this regard, political ecology is better equipped to understand the actual practices of the WeBuild company than mainstream business studies. (Bontempi et al. 2021)

The Vale mining company will be familiar to anyone who knows Brazil or knows the iron ore trade. Our article (Saes et al. 2021) explains that after the Vale's tailings dam failure in Brumadinho (Minas Gerais) in early 2019 (Chapter 19), a group of researchers and activists from around the world produced a thematic map in the EJAtlas platform including 30 cases of environmental conflicts in which Vale had a prominent role. The company's actual performance contrasts with its record in Sustainability Indices. We explored the contradiction between CSR standards, discourses and practices produced by the company and its scores in risk analysis, compared to the socio-environmental conflicts in its reality (tailings dam failures, displacement of local populations, deaths of environmental defenders). Vale considered its actions both responsible and exemplary, aiming this information to its actual and future shareholders and to regulatory authorities. In fact, the company was already practising CSIR before 2019 (Saes et al. 2021).

SLAPPs by Vincent Bolloré and Others[1]

There are cases where companies also engage in so-called SLAPPs. A "slapp suit" is (in US parlance) a tool in the management toolkit, a lawsuit intended to intimidate and silence critics of a firm by burdening them with the cost of a legal defence until they abandon their criticism or opposition. Such "strategic lawsuits against public participation" burden lawyers, journalists, NGOs and activists with the costs of legal defence. They produce a "chilling effect" on environmental defenders. Chapter 23 includes the case "Celtejo's SLAPP against Arlindo Marques – Celulose do Tejo, SA", in which the Altri Group (a Portuguese tree-plantation company) sued an environmentalist for €250,000 for his allegation that pollution levels in the Tejo River were unacceptable. One or two other cases have appeared in previous chapters. Another famous one is related to the SOCAPALM plantations in Cameroon, established in 1968 by the state on confiscated land customarily belonging to Bagyeli and Bantu populations. In 2000, the plantations were privatized and now they belong to the Luxembourg holding company Socfin linked to the Bolloré group, a French conglomerate led by Vincent Bolloré, one of the key players of "Françafrique", a word used to denote France's sphere of influence over its former colonies in Africa involving corrupt and clandestine practices.

The expansion and intensification of the plantations has continued since its privatization at the cost of the adjacent ecosystems on which local populations depend. The agrochemicals used in the monocultures and the residues of its Kienké processing plant have polluted nearby rivers. The local populations' traditional way of life has become difficult. SOCAPALM brings its workforce from other parts of Cameroon; allegedly hundreds of subcontracted workers

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worked six days a week without social security coverage or adequate protection, for about €1.6 per day. Also, SOCAPALM vigilantes were hired to prevent local villagers from entering the plantations. This situation led to a serious clash with villagers in 2003. In retaliation, the army came to support the guards and randomly grabbed villagers and detained them for weeks.

The peasant-supporting NGO GRAIN was worried about the impact of rubber and oil palm plantations in Cameroon. In January 2018, GRAIN announced:

> We will not be silenced by Bolloré's SLAPP lawsuits! This Thursday 25 January a lawsuit was opened against three newspapers (Mediapart, L'Observateur and Le Point) and two NGOs (Sherpa and ReAct), who are accused of defamation by the Luxembourgian holding Socfin and its Cameroonian subsidiary Socapalm […]. These companies have strong links to the Bolloré group, and Vincent Bolloré himself serves on their board of directors. […] Since 2009, no less than 20 defamation lawsuits have been launched by Bolloré or Socfin in France and elsewhere against articles, audio-visual reports, reports by NGOs and even a book […]. More than 40 journalists, lawyers, photographers, NGO leaders and media directors have been targeted by Bolloré and its partners.

The wave of lawsuits started in 2009 when, following the broadcast on France Inter of a programme presenting a critical perspective on the SOCAPALM, the Bolloré group launched a lawsuit against Radio France and journalist Benoît Collombat who reported on several sectors of activity of the Bolloré group in Cameroon. The SOCAPALM component was finally not considered defamatory by the Tribunal de Grande Instance de Paris.

Another instance in the EJAtlas is the case "DuPont Contamination in Parkersburg, West Virginia and Ohio, USA" which inspired the film *Dark Waters*, or the case "Toxic Waste Incinerator in East Liverpool, Ohio, USA" describing how the firm Waste Technologies Industries in 1997 slapped a $34-million court case against Terri Swearingen (who later got a Goldman Prize) and 32 other local citizens.

In March 2019 in KwaZulu Natal, at the heart of the coal extracting country in South Africa, the activist Tshabalala led farmers in a protest against the company Ikwezi for mining near graves and fencing them off so that community members could not visit them. The company also ran over livestock with their machinery. The protesters demanded that the mine should be shut down until court conditions were fulfilled. Police were present but the protest remained peaceful. In retaliation to the protest, on 3 April 2019, Tshabalala along with 22 other villagers was subjected to a SLAPP accusing them of intimidation and assault of an Ikwezi mine manager. However, on 22 July all charges against Tshabalala and the other protesters were withdrawn, marking a victory for environmental activists and the community.

In April 2012, Formosa Plastics filed a US$ 1.3 million civil suit for a tort claim and a criminal suit for defamation against Ben-Jei Tsuang, a scientist at National Chung Hsing University, Taiwan, for presenting evidence of increased cancer risk in the vicinity of the Formosa Plastic Group hydrocarbon-processing facility in Mailiao. More than 1,000 academics complained. In September 2013, judges at Taipei District Court ruled against Formosa Plastics and announced that they would dismiss the criminal suit. After the decision, Tsuang held a press conference at NCHU and said the outcome was a milestone for academic freedom in Taiwan. "However, the litigation has already caused some chilling effects: my students dare not mention the polluting corporations by name even when they have already been fined by the government for violating pollution-control regulations".[2]

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As this book was finished, we got this petition of 14 April 2023 through ICCA channels (Indigenous and Community Conserved Areas):

> SAVE Rivers, an Indigenous organisation from Sarawak Malaysia, is being sued by a logging company Samling for 5 million Ringgit (around EUR 1 million) and needs your solidarity. The SLAPP against SAVE Rivers is going for trial in May 2023 at the Miri High Court in Sarawak. The company claims that SAVE Rivers' statements around the lack of consultation of local communities in the certification process for sustainability (Malaysian Timber Certification Scheme MTCS endorsed by PEFC International) were defamatory. SAVE Rivers well documented their statements and voiced out community concerns.

The Ambivalence of SLO

Similarly, there is information in the EJAtlas on another instrument in the extractive industries' toolkit, the "social licence to operate" (SLO) (Prno and Slocombe 2012; Gehman et al. 2017), meaning communities' acceptance of ongoing projects. This belongs to the "soft" methods in the companies' armoury. SLO is used by companies as a permit to allow mining to proceed but sometimes lack of social licence has been used by opponents as an argument to prevent mining. However, harmonious "company towns" end up producing bleak contaminated landscapes when the mineral runs out while short-term "acceptance" is quite often obtained by violence and fear.

DISCOVER TOTAL, A FRENCH COMPANY[3]

The following section focuses on one firm with conspicuous history. Total is increasingly active in natural gas, particularly LNG. On 20 May 2021, several EJOs demonstrated in Paris in front of the Ministry of Economy and Finance against a project by Total to extract and build a plant for LNG in the Arctic financed with €700 million of public money. The protest took the form of large ice sculptures that slowly melted down. This was noticed by the media though nobody interpreted yet that the melting ice symbolized not only climate change but the evaporation of the friendship between Presidents Macron, Putin and Total's CEO Patrick Pouyanné with the Ukraine war in 2022.[4] Total deserves to be a case study for research and teaching on business management (Llavero-Pasquina, 2023) because of its role in Cabo Delgado (Mozambique), in Uganda and Tanzania, in North Africa, in Myanmar in the Yadana pipeline, in Bolivia and Kazakhstan and in the Yamal and Gydan peninsulas in the Russian Arctic. In the following sections we consider Total's involvement in environmental conflicts beyond those which have already appeared in previous chapters on the Bemolanga tar sands conflict in Madagascar and the domestic palm oil conflict in Marseille (Chapter 21), and also in Cabo Delgado as explained in 2022 by Joseph Hanlon (quoted in Chapter 13; see also Chapter 16):

> The civil war in northern Mozambique is a classic case of resource curse. The discovery in Cabo Delgado province of rubies and then one of the largest natural gas reserves in Africa fails to bring prosperity to most people. The resources were grabbed by the elites of the ruling party Frelimo in alliance with transnational corporations. In 2017, marginalised groups launched a local civil war which has now killed more than 3000 people and delayed the development of the gas. The

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> Mozambique government has brought in 2000 Rwandan troops to defeat its own peasants and allow Total Energies to resume its $30 bn gas development.[5]

Total followed Exxon's lead in spreading doubt about the link between fossil fuels and climate change (Bonneuil, Choquet, and Franta 2021). It often operates together as a partner of other firms, including Chevron, and it gets closely involved with governments which are far from democratic. It also draws on contacts with the French government and establishment. Is Total concerned about its reputation in the CSR and Sustainability indices which are supposed to guide investors? The company claims on its webpage (2021) that

> At Total Energies, we aim to set an example in this area [social and environmental commitments]. Our CSR performance is assessed by two of the leading rating agencies in this area […]: FTSE4Good (London) and the Dow Jones Sustainability World Index (New York). Discover the principles, commitments and initiatives that make us a major creating sustainable value, both in financial terms and at the environmental and social level.

In several of the cases below, gas extraction is given in boe/d, meaning barrels of oil equivalent per day. One million boe/d is roughly equal to 50 million tons per year.

Total in the Russian Arctic: LNG in the Yamal and Gydan Peninsulas

Total's investments in the Arctic are troubling. They imply close involvement in Russian geopolitics. The Arctic cases below complement those in the section "Yamal peninsula, Gydan, Taymir: natural gas and coal from the Russian Arctic" in Chapter 7. On 24 May 2018, in Paris and in the presence of the President of the Russian Federation, Vladimir Putin, and the President of the French Republic, Emmanuel Macron, Total signed an agreement with Novatek outlining the terms upon which Total shall acquire a direct interest in Arctic LNG 2, a giant liquefied natural gas project on the Gydan Peninsula in the north of Siberia.

Total has a direct 10 per cent interest alongside Novatek (60 per cent), CNOOC (10 per cent), CNPC (10 per cent) and a Mitsui-Jogmec consortium, Japan Arctic LNG (10 per cent). Total also owns an 11.6 per cent indirect participation in the project through its 19.4 per cent stake in Novatek, thus an aggregated economic interest of 21.6 per cent. Novatek and Total also agreed that Total will have the opportunity to acquire a 10 to 15 per cent direct interest in Novatek's future LNG projects in Yamal and Gydan. "This project fits into our strategic partnership with Novatek and also with our sustained commitment to contribute to developing the vast gas resources in Russia's far north which will primarily be destined for the strongly growing Asian market", said Patrick Pouyanné. With a production capacity of approximately 19.8 million tons per year (Mt/year), or 535,000 boe/d, Arctic LNG 2 will unlock over 7 billion boe of hydrocarbons' resources in the onshore Utrennie gas and condensate field. The project will involve the installation of three gravity-based structures in the Gulf of Ob on which the three liquefaction trains of 6.6 Mt/year capacity each will be installed.

However, Gydan peninsula is home to Indigenous Nenets communities. Opposite to the Yamal peninsula (Figure 27.3), Arctic LNG 2 project means an estimated investment of $25.5 billion and was expected to export its first LNG cargo by 2023. "Arctic LNG 2 […] will deliver competitive LNG to the markets in four years' time. Arctic LNG 2 adds to our growing portfolio of competitive LNG developments based on giant low-cost resources", said Patrick

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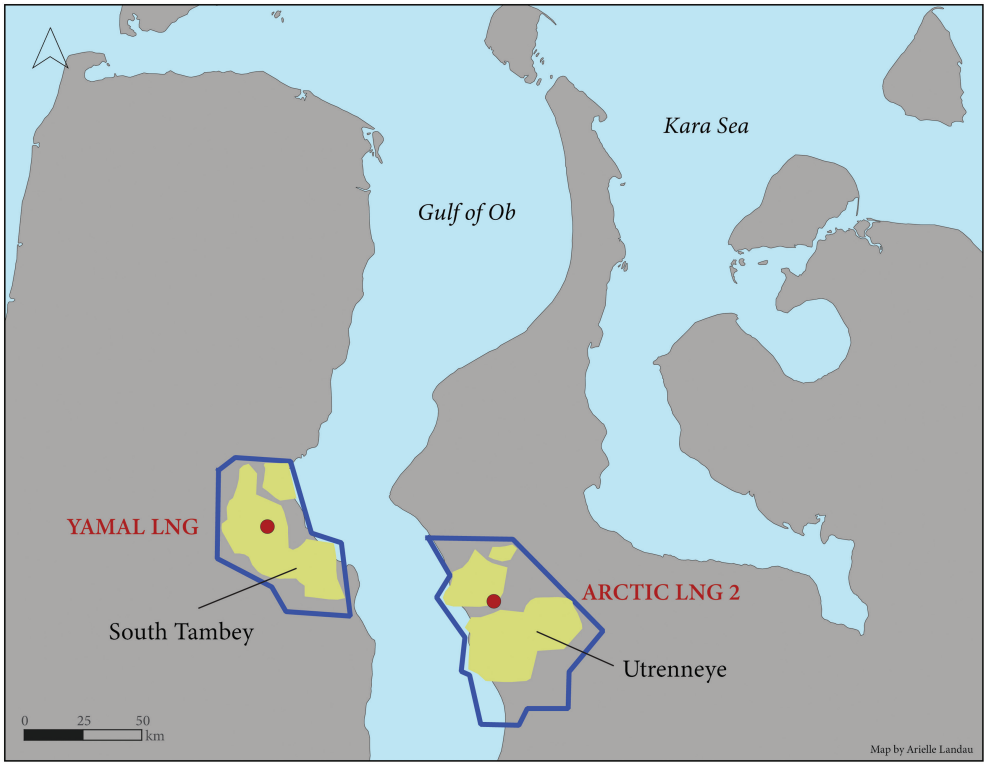

Source: Arielle Landau

Figure 27.3 Yamal and Gydan peninsulas with Total's investment with other companies

Pouyanné. Close proximity to Yamal LNG will allow Arctic LNG 2 to leverage synergies with existing infrastructure and logistics facilities. The Yamal LNG is owned by JSC Yamal LNG. Novatek owns a 50.1 per cent stake in this company while Total S.A. and CNPC own 20 per cent each. The LNG carriers will be able to use the Northern Sea Route, the trans-shipment terminal in Kamchatka for cargoes destined for Asia and the trans-shipment terminal close to Murmansk for cargoes destined for Europe. Total's triumphal announcements asserted that it is the world's second-largest private global LNG player, with an overall portfolio of around 40 Mtpa by 2020 and a worldwide market share of 10 per cent. One year before, in 2019, Total claimed that it had sold 34 Mt of LNG through its stakes in liquefaction plants located on the four continents.

Total's and Chevron's Friendship with Myanmar's Military Juntas[6]

In 2021, after the military took over again in Myanmar bringing to an end a period of democratically elected government, there was a petition from the opposition to Total and Chevron to stop extraction in the Yadana fields, and thereby stop payment to the Junta. This was the response from Total's CEO:

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> Patrick Pouyanné said at a shareholder meeting in France that the only way to fully stop all revenues flowing to the junta would be to stop production at the Yadana gas fields, which are operated by the French company and supply power plants in Thailand and Myanmar domestic market. Gas produced by the Yadana Project is used to supply electricity for approximately half the population of Yangon, Myanmar's largest city, and also for people in Thailand. Effectively turning off the power […] – in the middle of a state of emergency and a pandemic – risks creating even more hardship.

The opposition asked to stop payments to the Junta, not to stop the gas.

Memories arise of the conflict on the Yadana field and pipeline in the 1990s. The Yadana gas field in the Andaman Sea is located about 60 km offshore and is operated by Total S.A., with Chevron Corporation as its junior partner along with PTTEP, a Thai state-owned oil and gas company, and Myanmar Oil and Gas Enterprise (MOGE), a state-owned enterprise of Myanmar. Since the project began in the early 1990s, it was marred by widespread human rights abuses committed by pipeline security forces on behalf of the companies, including forced labour, land confiscation, forced relocation, rape, torture and murder. The project consortium asked the government to provide security for the project site, while a dozen local villages were relocated along the corridor of the pipeline area. With the presence of more government troops, the local population was also forced to work without compensation. Many villagers fled to Thailand and took refuge in camps along the border, whereas many more were internally displaced within Myanmar. By 1994, international human rights and environmental groups started to investigate the abuses and damage caused by the project. Both Total and Chevron managed to escape universal jurisdiction for crimes against human rights in several courts in France, Belgium and the United States. Both had a role in financing the military regime in Myanmar, profiting from human rights abuses on the Yadana natural gas project. This became public through the ground-breaking human rights lawsuit Doe vs. Unocal (Union Oil Company of California). In October 1996, 15 members of the Karen minority group, alleging that they or their family members had been subjected to relocation, forced labour, torture, murder and rape, filed a class action suit against Unocal in a US federal court. The suit argued that Unocal should be held responsible for the injuries inflicted on hundreds of Karen by the military because the military's activities were conducted on behalf of the pipeline project. The suit in Federal court was based on the Federal 1789 Alien Tort Statute (ATCA) which authorized civil suits in the US courts for violations of internationally recognized human rights. In 2005, Unocal merged its upstream petroleum business with Chevron Corporation and became a wholly owned subsidiary.

In April 2002, four Myanmar refugees filed a lawsuit against TotalFinaElf (now Total), Thierry Desmarest (former chairman of Total) and Hervé Madeo (the former director of Total's Myanmar operations) in Brussels Magistrates' Tribunal pursuant to a 1993 Belgian law of universal jurisdiction. The plaintiffs alleged that Total and its managers had been complicit in crimes against humanity committed by the Myanmar military junta in the course of the construction and operation of the Yadana gas pipeline. The plaintiffs alleged that Total provided moral and financial support to the Myanmar military government with full knowledge that it resulted in human rights abuses. Environmental activists were also concerned with the potential impact of the pipeline construction in Taninserim region, which has one of the largest blocks of intact rainforests in Southeast Asia. On the other hand, the offshore portion of the pipeline in the Andaman Sea also put the environment at risk. No independent EIA of the project was conducted. However, the Belgian authorities declared the case closed

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in March 2008, dropping the case against Total. In 2010, EarthRights International released a new report that described how the oil companies Total (France), Chevron (US) and PTTEP (Thailand) made their project the largest source of revenue for the country's repressive dictatorship. Are Total and Chevron in 2021 doing it again?

Total in Uganda: EACOP[7]

In East Africa, Total has at stake two of the biggest capital projects in the continent: the LNG (liquefied natural gas) development in Mozambique, and a 1,445-km pipeline from Lake Albert in Uganda to Tanga in Tanzania, for oil exports. There is opposition to the Tilenga and EACOP projects because of human rights and environmental concerns. Tanzania and Uganda had signed a $3.5-billion deal to build the pipeline – sparking a wave of outcry from environmental groups. There are basically two Ugandan projects: to exploit oil around Lake Albert in Uganda (1.7 billion barrels), and to ship it through a pipeline to the coast in Tanzania (Figure 27.4). This could fuel an LFFU movement (Chapter 16).

The world frontier of oil extraction as well as that of natural gas continues to advance. Oil or gas cannot burn twice. Therefore, new supplies are required despite local and global concerns. In Uganda, Total, China's CNOOC and British firm Tullow Oil teamed up to plan the world's longest heated pipeline, expected to carry nearly 200,000 barrels of oil per day, 10 million tons per year. In September 2020, Tanzanian President John Magufuli signed the deal with his Ugandan counterpart Yoweri Museveni. China's CNOOC and French TotalEnergies, alongside the Uganda National Oil Company and the Tanzania Petroleum Development Cooperation, push ahead with the pipeline project.

Human rights group FIDH and NGO Oxfam published on 10 September 2020 two reports expressing concern over the project. "Estimates suggest that at least 12,000 families will lose part or all of their land". Sacha Feierabend, a consultant at FIDH, told FRANCE 24 that: "Companies go door-to-door and buy land, promising to resettle the inhabitants in new villages". However, such "compensation" looked unlikely to satisfy the local inhabitants. "For example, in some Ugandan villages where families have already been resettled, clans have been mixed and are now living on top of each other. Meanwhile certain crucial components of the common good, such as wells and pasture land shared with neighbours, cannot be moved". Another concern is that air and water quality could be threatened. "Oil exploration activities carried out a few years ago in Uganda have already made access to safe drinking water more complicated", Feierabend noted. "A leak could have disastrous consequences on the lakes and rivers in the local area", she continued. The threat is all the more serious as the project envisages 419 oil wells being drilled near Lake Albert, "an exceptional ecosystem which allows thousands of fishermen to live off its resources".

The French branch of Friends of the Earth, together with Ugandan associations AFIEGO, Cred, Nape and Navoda filed a complaint in 2020 against the French company. In particular, they accused Total of breaking the law by expropriating land before compensating its inhabitants. Ugandan opponents are criminalized by the government. AFIEGO has been the target of intimidation from the Ugandan authorities. As reported in October 2021, it is estimated that during just the construction phase of EACOP, Uganda and Tanzania will see an increase of over 60 per cent in foreign direct investment.

On 16 March 2022,

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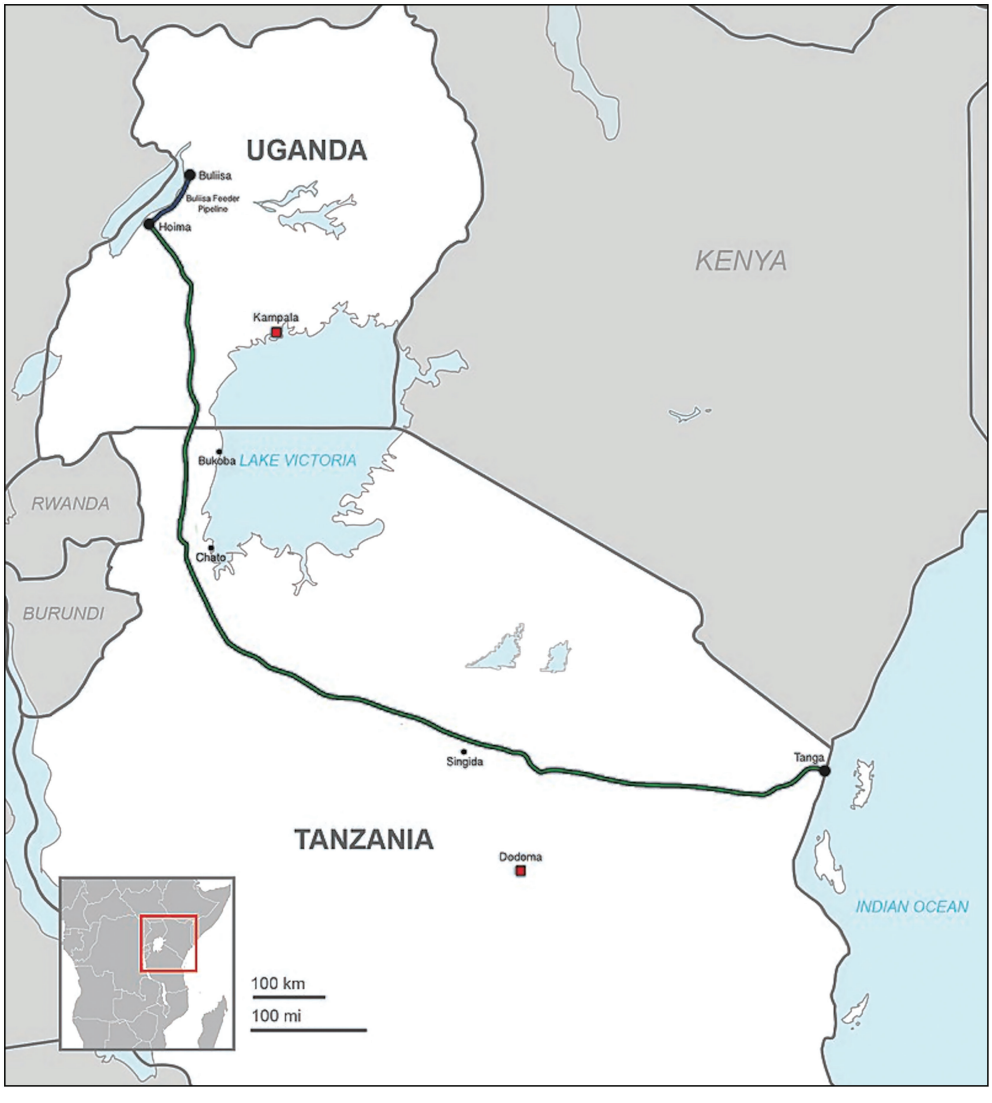

Source: Wikimedia Commons

Figure 27.4 The Uganda-Tanzania oil pipeline project

> Ugandan environmental activists hit out at a mega oil project by TotalEnergies in East Africa. Four leading youth activists were received by the French National Assembly to pressure the government to take a stance on the project. Vanessa Nakate (2021)… was among them. She had come to France to ask the government to make clear what its position is on the East African Crude Oil Pipeline (EACOP).

Western Sahara Geopolitics and Total[8]

We now travel across Africa where Total is involved in another conflict: the Anzarane Offshore Western Sahara Oil Exploitation, where geopolitical injustice is compounded with

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environmental justice. Petroleum resources are exploited in Western Sahara by multinational companies under the approval of the Moroccan government. In 2001, Morocco´s Office National des Hydrocarbures et des Mines (ONHYM) granted two licences to exploit petroleum in Western Sahara to TotalFinaElf (France) and Kosmos Energy (USA).

On 7 February 2014, Total renewed its Moroccan contract to explore for oil off the shores of Western Sahara. However, "shareholder activism" led the Norwegian pension fund KLP to withdraw from the company, citing anxiety around "breaches of fundamental ethical norms". Sustained protest by Sahrawi activists also pushed Norwegian contractor Aker Solutions to pull out from another US-led offshore drilling project. On 22 December 2015, Total announced its withdrawal from Western Sahara until the UN delivered an outcome on the still pending decolonization case. While this can be declared a success, there is still potential for the project to restart again. Alternatively, Kosmos Energy (US) remains active in the region and other oil companies have been granted licences for oil exploration and are still enjoying them: Kerr-McGee (USA), Longreach Oil and Gas Ventures (UK), Cairn Energy (UK), San León Marruecos (Ireland) and ONHYM (Morocco).

The background to Total's involvement in the Anzarane oil exploration project is as follows. As stated in Total's Code of Conduct, "human rights standards are one of our three priority business principles". When the company signed a reconnaissance contract with the Moroccan government in October 2001, the legal department of the UN Security Council investigated whether the contract stood in line with international law governing the rights of peoples in disputed territories. In January 2004, UN legal counsel concluded that further exploration or exploitation that is not in accordance with the wishes of the people of Western Sahara would be in violation of international law. Total´s operations ended in November 2004. Yet, the relationship was reaffirmed in December 2011, when Total S.A. signed a new reconnaissance agreement with the Moroccan government for the biggest oil block located in the southern waters of Western Sahara. In 2012, the licence was renewed by Total S.A. for a block called Anzarane Offshore. The Sahrawi Arab Democratic Republic (SADR) issued a statement in June 2014 that specified the lack of involvement of the Sahrawi people in the decisions being made about their resources.

In December 2015, Total S.A. announced that it would not prolong its reconnaissance contract, as the initial results were not convincing. This decision came on the heels of the denial by the Court of Justice for the EU of an EU-Morocco trade agreement due to its inclusion of Western Sahara. Morocco has been accused of failing to respect the UN Charter in regard to its dealings with Western Sahara, which it illegally annexed since 1975. Similar episodes occur also with agreements on fishing rights with Morocco, declared internationally illegal because of lack of consent from the Sahrawi.

According to the UN Legal Opinion, any exploration or exploitation of Western Sahara's mineral resources is considered to be illegal if the Sahrawi people have not previously provided signed consent. Yet, in Total's and Kosmos' cases, this consent was never obtained. Massive protests, outcries and countless written responses have dominated the conflict, and these organized movements have also garnered support from international EJOs and bodies such as the African Union. On 6 December 2012, officials of the SADR sent letters to both Total and the United Nations demanding the immediate cessation of all exploratory oil activities. In this same month, French EJOs demanded that Total leave Western Sahara. On 7 February 2013, 26 non-governmental organizations made of SADR civil society groups and refugee groups in France published a declaration demanding that Total leave Western Sahara. The African Union issued a Legal Opinion on 14 October 2015 that ongoing exploration and exploitation of Western Sahara´s natural resources are a stark violation of international law.

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Total in Algeria: the Ain Salah's Uprising[9]

The French company Total is deeply immersed in the hydrocarbon politics of Algeria dating back to 1952. In Algeria the company has been involved in some of the strong conflicts on gas fracking with its partner Sonatrach (Chapter 20). The best known was the uprising in the oasis town of Ain Salah, with violent confrontations between police and up to 40,000 protestors. Fracking commenced in the area in 2013, and a mass movement against the practice rapidly unfolded. On New Year's Eve 2015, four days after fracking operations were announced near the city, Ain Salah stopped functioning in a conventional way. Commerce and administration combined business as usual with an occupation of the main square, along with several rallies. In December 2013, the National Oil Corporation had announced its intentions to bolster the economy by allowing overseas corporations to commence fracking operations.

On 24 February 2015, Ain Salah's main square was renamed Place Somoud, or Resistance Square, to celebrate the 44th Anniversary of the nationalization of hydrocarbons by former-President Boumediene. The protesters had two main concerns: preventing pollution to the aquifer that sustains them and keeping out Total and Halliburton. Ain Salah's location as a desert oasis relies on a sensitive aquifer system that stretches from Southern Algeria to Tunisia and Libya and overlaps with at least four intensive shale gas fields. And the struggle goes beyond Ain Salah: 24 February saw mass demonstrations from the town of Ouargla to Algiers.

Ain Salah protestors reacted to the oppressive measures by rallying at the Gendarme station, and police responded with large quantities of tear gas and rubber bullets. The police violence persisted into Resistance Square, where the rally site was destroyed and tents burned; over the next few days hundreds of people were arrested, with numerous injuries. Finally, as police attempted to seal off and lay siege to the city, protesters began throwing stones. Police retreated; a police barracks, a residence of the mayor, together with several police vehicles, were set ablaze. The army was called in. This is the second time serious unrest has been caused in Ain Salah over gas companies – the first having occurred in 2002.

Total also in Nigeria[10]

In the sad oil and gas region of the Niger Delta, Total has been involved in conflicts together with its partner Chevron. The Italian Agip is also in trouble while the main culprit has been Shell.

Thus, in the River State the Egi people are part of Ogba kingdom in Ogba, Egbema and Ndoni Local Government Area. The clan is made up of about 17 communities and Total Exploration and Production Nigeria Ltd., formerly known as Elf, is the main oil company operating in the area. One event recorded in the EJAtlas was a gas explosion on 20 March 2012, in the Egiland cluster of wells. A few days later, there were multiple explosions, devastating community farmlands of about 45 ha. Hunger faced the communities as the explosions continued for days, unabated. The village hosts Total's flow station and gas plant with over 80 oil wells that grabbed community lands, denying their rights to adequate land for their survival. The oil is collected by pipelines in the flow station and the extraction gas is flared. The continuing 'eruptions' contaminated underground water and nearby surface water in streams. The four communities most badly affected included Egita, Obiyebe, Ogbogu and Obite in Egiland. The communities demanded clean-up and remediation of their land, proper investigation to ascertain the cause and the impacts of the gas explosion on their health and

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environmental space, and adequate compensation. Indeed, this has been the usual human and environmental landscape of the Niger Delta for many decades, and Total has its share of responsibility.

Total in the Kashagan Oil Field, Kazakhstan[11]

Kazakhstan is a net energy exporter with large oil, gas, coal and uranium reserves (Chapter 20). It is the world's ninth-largest crude oil exporter. Chevron and Total are very active in oil and gas exploration and extraction operating the North Caspian licence, which encompasses the Kashagan field – one of the world's biggest oil finds. Business in Kazakhstan has been famously corrupt. Foreign oil and gas companies have not had an easy life. Total would like to have a bigger share of the very large oil potential extraction in the country, perhaps drawing on its cosy relations with Russia, which is in military alliance with Kazakhstan's authorities. The start of the Kashagan project has been delayed due to several environment, legal and investment-associated complications. Despite such complications, the NCOC (North Caspian Operating Company, a consortium including Eni, Exxon Mobil, Shell, Total, CNPC, Inpex and AGIP) are not giving up attempts to extract the vast deposits. The case history of Kashagan involves various conflicts and public hearings, as well as court cases. One of the major issues is the impact of the oil field on the health of the local populations and on the fragile environment of the area.

Part of the oil field is located within a protected North Caspian Sea nature reserve with its unique biodiversity, including endangered Beluga sturgeon and the Caspian seal. In September 2013 a major hydrogen sulphide leak occurred at the refinery as a result of a burst pipe, and the operating company flared millions of cubic metres of sour gas. The Kazakhstani ecological authorities fined NCOC a sum of US$ 737 million for large-scale damage to the environment.

Several EJOs published information on the unliveable conditions, poor and deteriorating health, low level of income and absence of infrastructure for the population of nearby towns and villages. Nevertheless, the project was moving ahead with support from Nursultan Nazarbajev, president of the country between 1990 and 2019. In 2021, Kazakhstan's Prime Minister Askar Mamin launched the construction of a gas processing plant at Kashagan. According to the country's government, it will produce 1 billion m^3 of gas per year. The facility is also expected to help increase crude oil production as it will refine raw materials from highly toxic and aggressive hydrogen sulphide present in associated natural gas. In addition, up to 2,500 temporary jobs will be created during the construction period, and 600 permanent jobs during the operation period. Kazakh GPC Investment company will reportedly build the plant, which is set to come online in late 2023. The deal will cost the Kazakh company $860 million.

Meanwhile, Tengiz produced more crude oil than any other field of Kazakhstan, while Kashagan ranked second, producing 6.2 million tons in January–May 2021. The country, of 18 million people, exported 28 million tons of crude oil in the same period.

Total in Pilón Lajas, Bolivia[12]

Finally, Total is also in Amazonia. In Bolivia, Petrobrás, Repsol, Total and Petroandina were active in the biosphere reserve and Indigenous peoples' communal territory in Pilón Lajas, north of La Paz. Evo Morales was not to become president until 2006, so before his time

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concessions in the Rio Hondo Oil Block were awarded in 2001 tender. This block occupies territories of the Madidi National Park, the Pilón Lajas Biosphere Reserve and Indigenous Territory, and reaches the TIPNIS. This one-million-hectare concession was awarded to Petrobras Bolivia (50 per cent) and Total Exploration Production Bolivia (50 per cent). This Indigenous territory is characterized by its dual status of TCO (community land of origin) and protected area. In 2002, Petrobras started the process to begin with the seismic project. In 2004, after the "gas war" in Bolivia, the company managed to obtain the permit.

The infrastructure includes: 2,520 wells 15 m deep, 16 kg of explosives per well, 21 heliports with an area of 900 m^2 each, 280 discharge zones, 21 flying camps and a base camp of 4 ha near the community of El Palmar from where water would be provided. One hundred and fifty people would work on the project, of whom a few would be local. This Seismic Exploratory Project was never consulted with the population of the affected area. So, the Regional Council Tsimane Moseten refused to receive the consultants of the company and the fieldwork was not carried out either. In 2007, Repsol became involved in the failed project. On 15 June 2013, all the communities and authorities of the TCO Pilón Lajas, as well as local and regional organizations, mayor and authorities of the Council and the Municipality addressed a note to the president of Petrobras in which they indicated their position of not allowing oil activities in their territory. The network FOBOMADE (Foro Boliviano sobre Medio Ambiente y Desarrollo) formally requested the Ministry of Sustainable Development to revoke the environmental licence granted to Petrobras for the Río Hondo project. This stopped Petrobras' attempt to gain access to the territory.

Oil fever increased. In 2015, Evo Morales and Alvaro Garcia Linera's government, despite their feeble attempt some years earlier to give leadership from the South to the global movement against climate change, opened up protected and Indigenous territories in the Amazon to oil exploration and exploitation. Here, the Total company appeared again as one of the companies involved. The government argued that oil exploration would help to "reduce extreme poverty in the communities living in protected areas". But poverty is multidimensional, and in some aspects it increases when water, air and soil become unavailable and polluted, whatever wages or money compensation some of the local people might get. In any case, the national parks Iñao, Aguaragüe, Pilón Lajas and Madidi had between 75 and 90 per cent of their territories committed to oil exploration contracts. These exploration projects were authorized by Decree DS 2366, approved in May 2015.

On 30 January 2015, Bolivian president Evo Morales had given the green light to oil exploration in Lliquimuni, north of La Paz, on a mountain range thick with vegetation on the edge of the country's Amazon region. According to the state oil company, Yacimientos Petrolíferos Fiscales Bolivianos (YPFB), exploration for oil or gas in the Lliquimuni Block was to take place by the companies Andina, Total, Chaco, Repsol, Maxus, Petrobras and Don Wong that obtained over 25 concessions in protected areas throughout Bolivia, according to data from SERNAP (Servicio Nacional de Áreas Protegidas). SERNAP feared that the extractive industries, along with the expansion of the agricultural frontier and of human settlement areas, would cause social and environmental problems due to the construction of roads and the contamination of waterways. According to a 2015 report from the Center for Documentation and Information Bolivia (CEDIB), the surface of protected areas in the country is approximately 18,271,700 hectares. About 17 per cent was threatened by oil activity.

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DISCOVER THE CHEVRON CORPORATION: THE TEXACO-CHEVRON CASE IN ECUADOR

An EJAtlas Featured Map[13] was published on Chevron in a collaborative project between the ICTA – UAB, A SUD – Ecologia e Cooperazione, CDCA – Centro di Documentazione sui Conflitti Ambientali, Italy, and the Unión de Afectados por Texaco – UDAPT, Ecuador. It was used for "shareholder activism". Chevron seeks to avoid liability for environmental damages. Moreover, Chevron is one of the companies contaminating the planet most with its carbon dioxide emissions. The aim of the Featured Map was therefore to show major conflicts concerning the company as well as peoples' resistance and struggles in many countries. Chevron is active in conflicts in the refinery in Richmond, California (Chapter 24), it is responsible for oil spills in the campo de Frade, Brazil, while in November 2014 children of a school close to Karachaganak in Kazakhstan suffered from chronic intoxication. The threat to food sovereignty affects in particular the ancestral cultures of Indigenous peoples. Alleged tax evasion undermines the financial resources of the states intended to finance public services. Also, its refusal to disclose contract conditions with the states does not allow populations to evaluate the impact of its activities in their country. The criminalization of victims and protestors is part of the company's strategy as shown clearly in Ecuador.

For instance, Chevron's partnership with the people and the Government of Indonesia can be traced back to 1924, when the Standard Oil Company of California (Socal), now Chevron, dispatched a geological expedition to the island of Sumatra. Its oil production began in 1952 and it remained active in Indonesia throughout the brutal decades of the Suharto dictatorship (1965–1998). Chevron's oil production continues to take place in the Riau province. As a result, citizen resistance to Chevron has been a constant of life in Riau, often taking the form of massive protests. Chevron has employed forceful measures to quieten down protests, including utilizing Indonesia's notorious security services, bringing charges of human rights abuse, violence and intimidation. WALHI – Friends of the Earth Indonesia – denounced many such facts in a 2011 report. They describe collusion between the company and special forces: on 27 January 2000 Chevron allegedly paid the BRIMOB (the special operations, paramilitary unit of the Indonesian National Police) to overcome a series of actions and protests over land disputes and employment. As a result, 15 people were wounded and five were hospitalized.

The people's struggles against Chevron around the world mobilize different strategies beyond shareholder activism: legal cases in national courts, participation in global campaigns and the creation of platforms by affected people to exchange expertise, roadblocks and popular epidemiology reports, among others. I know in particular about Texaco-Chevron's liability in the northern region of Ecuador which I have visited many times since 1994 when I noticed the social agitation in the streets of Quito and met members of Acción Ecológica fully engaged in this campaign. I know the lawyers of the court cases against Chevron in Ecuador and in New York. The permanent refusal of Chevron to assume liability led the communities to initiate and support judicial proceedings in the Amazon of north-eastern Ecuador. No jurisdiction has been able to execute the historical sentence of US$ 9.5 billion issued by successive courts from Nueva Loja (Lago Agrio) to the Supreme Court of Ecuador. The following pages summarize and update what happened at the judicial level.[14]

I include also comparative comments on Shell in Nigeria, BP in the Gulf of Mexico, loss of health from DBCP in banana plantations, the CERCLA legislation in the United States and,

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concluding the chapter, my views on the systematic practice of cost-shifting and the lack of environmental liability as part of the current ecological and business system.

Proceedings in Ecuador

Following the narrative of the NGO Business and Human Rights (London), the original suit was filed against Texaco in 1993 in a New York court under the ATCA. The plaintiffs were Indigenous peoples and some settlers. But then the case went back to Ecuador. The plaintiffs thought they had a better chance of redress in the USA than in Ecuador but they put up with the New York court's decision. In 2003, a lawsuit was brought against Texaco (acquired by Chevron in 2001) in Ecuador alleging severe environmental contamination of the land where Texaco conducted its oil operation activities, leading to increased rates of cancer as well as other serious health problems for the residents of the region.

Judicial inspections of the allegedly contaminated sites commenced in August 2004. In early 2008, an independent expert recommended to the court that Chevron should pay $7–16 billion in compensation for the pollution. This expert increased his estimate of damages to $27 billion. In 2008, Chevron reportedly lobbied the US government to end trade preferences with Ecuador over this lawsuit. Following allegations of judicial misconduct, the original trial judge recused himself from the case. Then, following a successful petition in US court to receive unused footage from the documentary "Crude", Chevron filed a petition with the court in Ecuador in August 2010 seeking to dismiss the lawsuit based on the company's assertion that parts of this footage show alleged fraud on the part of the plaintiffs.

In September 2010, the plaintiffs submitted a new assessment of damages stating that the cost would be between $90 and $113 billion. That same month, the judge concluded the evidentiary phase of the lawsuit. On 14 February 2011, the Ecuadorian judge issued a ruling against Chevron; the company was ordered to pay $8.6 billion in damages and clean-up costs, with the damages increasing to $18 billion if Chevron did not issue a public apology. Chevron indicated that it believed the ruling to be "illegitimate" and filed an appeal. On 3 January 2012, a panel of three judges from the Provincial Court of Justice of Sucumbios upheld the February 2011 ruling against Chevron. On 20 January 2012, Chevron appealed the decision with Ecuador's National Court of Justice. In March 2012, Chevron asked the Provincial Court of Justice for the fourth time to block the Ecuadorian Government from enforcing the $18-billion judgment against it. On 28 March 2012, the court ruled that Chevron was not entitled to use an order from an international arbitration tribunal.

In an effort to enforce the judgment, the Ecuadorian plaintiffs filed a lawsuit in Canada in May 2012 and one in Brazil in June 2012 targeting Chevron's assets in those countries. On 6 August 2012, the Ecuadorian court ruled that Chevron had until the end of the day to pay the $19 billion judgment. In October 2012, the Ecuadorian court issued an order permitting the plaintiffs to seize about $200 million of Chevron's assets located in the country, in an effort to collect on the judgment against the company. On 12 November 2013, Ecuador Supreme Court upheld the August 2012 ruling against Texaco/Chevron for environmental damage but halved damages to $9.51 billion. Chevron still challenged this. On 10 July 2018, the Constitutional Court upheld the $9.5 billion judgment against the company.

Chevron refused to pay, and in fact started lawsuits against the lawyers, as a super-SLAPP, particularly the US lawyer Steven Donzinger who in 2021 was serving a six months sentence in prison in the USA for contempt of court. The injustice is so obvious that the prosecution

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of Donzinger might finally backfire against Chevron. Much depends on public opinion in the US. Meanwhile, the Ecuadorian main lawyer Pablo Fajardo and Luis Yanza, a settler in the contaminated area, got Goldman Prizes in San Francisco in 2008. Indigenous Cofanes and Secoyas were among the main plaintiffs.

In the weeks leading up to the ruling issued by Judge Nicolás Zambrano of the Provincial Court of Sucumbío in Nueva Loja on 14 February 2011, Chevron-Texaco desperately undertook a series of legal actions in the United States to criminalize the plaintiffs and their lawyers in Ecuador and in the United States. Following the ruling, the oil company declared that the obligation to pay billions of dollars to the Frente de Defensa de la Amazonía responded to the collusion between plaintiff lawyers and "corrupt judges". I wrote back in 2011:

> Anyone who knows Spanish can read the original of Judge Zambrano's well-argued ruling. […] The ruling explicitly denies that there was forgery of signatures of plaintiffs as alleged by Chevron Texaco, but it does take up an important argument made by Chevron-Texaco removing from the case the entire contents of the report of the expert Richard Cabrera (a Court-appointed geologist under a previous judge). Cabrera's objectivity was called into question by Chevron Texaco […]. The judgment agreed with this allegation, and thus disregards the evidence of Cabrera and his proposed damages valuation of $27 billion.

Cabrera conducted or commissioned a series of damage assessment studies and relied for his data on illness and death on the book *Las palabras de la selva*, by Carlos Beristain, social psychologist and doctor of medicine. For those who want to know what happened in the Amazon during Texaco's time, Beristain's book is a good source. But the judge left it aside together with the first major report on the case, *Amazon Crud*e by Judith Kimerling, published in 1991 by the Natural Resources Defence Council, translated and published in Quito by Abya-Yala in under the title *Crudo Amazónico.*

Unsuitable Technology

The damage that Texaco did and that the sentence analyzes in detail came from the technology it used to dispose of the extraction water that comes out of the wells together with the oil and gas. The main issue was underground and stream contamination and damage to people's health. The sentence also echoes the many deaths of domestic animals. It almost leaves aside the damage to wild biodiversity although it quotes some Indigenous people who complained during judicial inspections of contaminated wells and water disposal pools which led to disappearance of hunting and fishing. The court established an amount of money to recover the flora and fauna. It did not set any fine for irrecoverable damage to biodiversity nor did it echo the disappearance of entire Indigenous groups at the time of Texaco. It awarded a small amount for restoration of damaged ethnic cultures. It asserted that the standards of ILO Convention 169 could not be applied retroactively to the 1970s and 1980s. The overall tone of the ruling was unkind to Indigenous people and more favourable to the relatives of settlers with damaged health.

The court decision discussed whether there was simply negligence or whether there was intent. Clearly, Texaco wanted to reduce monetary costs at the cost of increasing environmental and health risks. It did not take due precautions. It did not line the "pools", use steel tanks or reinject the extraction water. "It is appropriate for this Court to conclude that extraction water is an industrial waste inevitably produced when extracting oil and that in view of its

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hazardous nature it must be treated with extreme diligence, which was not the case in the operation carried out by Texpet". This name, Texpet, was used by Texaco in Ecuador.

What technologies should Texaco have used? How to avoid pouring extraction water into unlined pools that overflowed when it rained? Judge Zambrano rummaged through the 200,000 pages of the court case papers and found the original English of a 1962 text, *Primer of Oil and Gas Production*, an introduction to the subject published by the American Petroleum Institute, one of whose co-authors was precisely T.C. Brink of Texaco Inc. It warns of the danger of the technology that Texaco was to use shortly thereafter in Ecuador.

At the time Texaco operated there was no legislation in Ecuador regarding hydrocarbon limits or heavy metal concentrations in water. The sentence reviews the results of hundreds of samples provided by both parties and also collected at the Court's own initiative. It cites conclusions of experts from both sides. It uses more the Chevron-Texaco's conclusions than those of the plaintiffs, regarding the extent of contamination in the nearly 1,000 pools that remained, and it doesn't rely on specific legislation but on the general Health Code in force at the time in Ecuador, to prove that Texaco acted without due diligence in a risky activity.

The sentence is careful not to apply new Ecuadorian legal norms or international covenants retroactively, but it could have mentioned, for the sake of embellishment, something that Chevron-Texaco was well aware of: the 1980 US CERCLA law known as Superfund, which I summarize later.

Damage to Health

The discussion of environmental chemistry in the judgment occupies several pages. The actual effects on human health are, together with the extraction water, the star topic. Here, evidence from scientific studies appears briefly. It accepts data from the study by Miguel San Sebastian, a physician specializing in environmental epidemiology and author of the *Yana Curi* (black gold) report published in 2000, which studied the influence on health of pollution from oil extraction in some areas of the Ecuadorian Amazon. San Sebastian published articles in international journals, and Dr Jaime Breilh (a well-known Ecuadorian epidemiologist) also appears in the sentence. Finally, the sentence recognizes, on the one hand, the difficulty, if not impossibility, of obtaining official data and, on the other hand, the judge's inability to get both parties to agree on the cases of illness and death caused by the contamination. Chevron-Texaco's experts do not accept even one death in excess. Therefore, the judge resorts to evidence presented in the judicial ocular inspections of wells and pools. On these occasions local inhabitants complained bitterly (in Spanish or Indigenous languages) about the deaths that occurred, about their own state of health and of the lack of state attention.

That local evidence may seem anecdotal, and it was challenged by Chevron-Texaco's lawyers. On page 144 of the judgment, the following episode of a judicial inspection is recorded. Chevron's legal representative questioned a peasant who had used the word "toxic". "How do you know they are toxic, what analysis, what studies have you done to define that they are toxic?". Judge Zambrano writes: "in recognition of the lawyer's shrewd argument to disqualify a peasant, it is reiterated that in this matter this Court will appreciate such declarations (of the local population) according to sound criticism and in conjunction with all the scientific evidence that has been submitted by the parties". The judgment does not thus establish a number of dead or sick in excess of the usual. It concludes that there is sufficient evidence to establish from a legal standpoint that the health of the local population was seriously impaired.

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Petroecuador's Responsibility

Chevron-Texaco rightly argued over the years that it seemed odd that Petroecuador was not taken to court, since after 1992 that state-owned company continued to use the technologies introduced by Texaco. The judge agreed with the argument but dissociated the lawsuit against Chevron-Texaco from the one that could eventually be brought against Petroecuador. Undoubtedly, as the ruling explicitly recognizes, the contamination of the areas operated by Texaco, which merged with Chevron in 2001, became after 1992 also the responsibility of Petroecuador. This damage caused by Petroecuador was left aside in this court case because nobody sued them. Chevron wanted to use it as a cover, but the judge did not allow it.

CERCLA in the United States

Beyond Judge Zambrano's ruling of 14 February 2011, it is worth repeating that during its time in Ecuador, the Texaco company (whose assets and liabilities passed on to Chevron) was directly aware of the debates in the United States on environmental liabilities. These debates took place in the 1960s–70s culminating in the enactment of the Comprehensive Environmental Response, Compensation and Liability Act – CERCLA, also known as Superfund. Judge Zambrano's ruling does not mention CERCLA, which was enacted by the US Congress on 11 December 1980, in the middle of the Texaco period in Ecuador. It establishes that companies must face the damages caused and must clean up existing contamination. This Superfund is a trust fund that compensates and restores damages in cases where the companies have disappeared. Otherwise, if they exist (such as Chevron-Texaco), they must respond for the damages.

I do not argue here that CERCLA applies in this case in Ecuador. CERCLA is not like the ATCA, Alien Tort Claims Act, of 1789, a law that sometimes allows bringing to court in the United States individuals or companies for damages caused outside the United States, as was initially attempted with Texaco since 1993. No, CERCLA applies only within the United States. But Texaco knew since 1980, because CERCLA already existed in the United States, that environmental liabilities could give rise to compensation and restoration payments, retrospectively.

In Ecuador, general legislation on liability for damages already existed in 1964, although it did not yet specifically address compensation and restoration of environmental damage. Texaco should not have acted in Ecuador as if it were a lawless colonial country. Moreover, Texaco should have applied not the same technical standards as in its own country, but even better and more careful ones since it was extracting oil in a territory surrounded by unknown biodiversity and inhabited by Indigenous peoples susceptible to introduced diseases.

Judge Zambrano's sentence was a remarkable document that did not close the case as it was appealed. But it survived three appeals in Ecuador, up to the Constitutional Court. The environmental remediation that the Texaco company reportedly had carried out in the 1990s for US$ 40 million was a pantomime that counted on the complicity of official authorities of the time. This was indeed recognized in Judge Zambrano's ruling.

The sentence against Chevron-Texaco should have had worldwide effects. It could not be a prison sentence against the company's executives since this was a civil case. But it could have set a standard for economic compensation. Companies and their CEOs and shareholders are

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not insensitive to moral exhortations but perhaps understand better economic losses or prison sentences. However, 20 years later Chevron has not yet paid.

Shell in Nigeria

This short section complements what has already been said in Chapter 14 on the Gulf of Guinea. This is a more extreme conflict than that of Chevron-Texaco in Ecuador. The Niger Delta in Nigeria exports five times more oil than Ecuador. Shell is the main culprit but Chevron and other companies have also been involved. Since 1958, when Shell began exploiting the subsoil of the Niger Delta, the contamination of soil, vegetation and water has not ceased. Many communities protested and filed lawsuits for compensation. In 1995, under the government of dictator Sani Abacha, nine members of the Movement for the Survival of the Ogoni People, among them the writer Ken Saro-Wiwa, were executed. The mass peaceful protest by the Ogoni people against Shell was repressed by the Nigerian army, resulting in the execution of more than 1,000 people. Shell left Ogoni territory but not the Delta. The Ijaw and other peoples protested in the aftermath. Pipelines and tanks are often rusted but not replaced. There are semi-abandoned pumping stations. The flaring of extracted gas has not been banned until recently.

In 2010, an exceptional judgment concerning damages to the small community of Ejama-Ebubu in the Niger Delta condemned Shell to "leave as it was" an area that it had polluted. The lawsuit was filed in 2001, when Nigeria emerged from military dictatorship. After ten years of waiting, Judge Ibrahim Buba ordered Shell to pay US$ 105 million to a single small community for a damaged area of 255 ha (2.5 km^2). The Human Rights Writers Association of Nigeria (HURIWA) commended the judge and noted that "while in the United States, the government has taken an immediate decision to claim 20 billion from BP to compensate those affected by its Gulf of Mexico spill, in the case of the Delta the multinationals have been operating with impunity and with no response from the government". Nigeria is Africa's largest oil exporter and number 11 in the world. The Niger Delta is probably the world's oil pollution champion.

DBCP

The DBCP case is another example of a failed retrospective environmental liability claim. The ATCA legislation has usually been deployed without success. It affects Nicaragua, Costa Rica, The Philippines, the US in Hawaii and certainly Ecuador, mainly in El Oro. In this case (as also in the Texaco case) the extraordinary delay in obtaining justice is noteworthy, since the responsible companies (Dow Chemical, Shell, Dole and others) have managed to adjourn the court decisions or have not yet paid compensation when they have been sentenced, accruing interest they should have to pay as well (Navas 2022) (see also Chapter 21).

In 2007, a trial was reported on July 19th in Los Angeles against Dow Chemical and Amvac Chemical, manufacturers of Nemagon, and the Dole banana company. Nemagon or Fumazone, trade names for the nematicide DBCP, caused sterility and other health damage to the 5,000 Central American plaintiffs after having used it during the 1960s and 1970s to combat pests and diseases affecting banana plantations. According to the lawsuit, Dow and Amvac knew that Nemagon was a toxic substance since the early 1950s. Other information on the same dates reported that in Costa Rica alone there are some 30,000 workers harmed

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by the nematicide. "Some say this is one of the worst labour tragedies in the world", summed up the BBC. It is not a matter of repairing the damage in a physical sense; the damage caused has to be compensated, including the emotional aspects. Thus, in Nicaragua in December 2002 under Law 364, the Nicaraguan judiciary handed down the first judgment. The multinationals Dow Chemical, Shell Oil Company and Dole Food Company were ordered to pay $490 million to some 600 of the 5,000 workers who filed suit. The companies refused to pay.

In the United States, DBCP had been banned since the 1970s, but in several Latin American countries and in the Philippines, it continued to be applied in the 1980s and 1990s. As Raquel Hernández explained in the magazine *Envío* of Nicaragua (n. 57, March 1995, *El Nemagón en el banquillo: acusan los bananeros*), at first it was thought that the compensation requested would have to be lower than those of the Americans, taking into account the difference in living standards. But, after some discussion, another criterion gained ground, for it is precisely the conviction that the lives and health of citizens of poor countries are worth less than those of Americans that make situations like the one generated by Nemagon possible. In general, victims of DBCP outside the United States have not been compensated.

Asbestos is another well-known international cause of liabilities that were eventually recognized through lawsuits. Sometimes, after decades of delay, most victims have already died. Money does not really compensate for ill health, and much less can money resurrect the dead. What has been done cannot be now amended. However, perhaps a lesson is taught to companies by these exceptional cases (see Chapters 19, 20 and 23).

The Environmental Liability Accumulated by Chevron-Texaco in Ecuador

In the balance sheet of any company there are assets (what the company has) and liabilities (what the company owes). Liabilities usually include short and long-term debts, either to suppliers or banks, or to social security or the State as tax debts, as well as the company's own capital contributed by the shareholders. If a company has debts with the victims of environmental damages it should also include them in the liabilities, but this is not usually done because it is thought that these damages are "externalities" i.e. they fall outside the accounting.

The Chevron-Texaco court decision of February 2011 gave temporary support in Ecuador to those who wanted to leave the oil in the soil in the Yasuni ITT fields. Other main arguments on the Yasuni ITT proposal of 2007–13 were to avoid contact with isolated peoples, to avoid carbon dioxide emissions and to preserve biodiversity. The first two were absent in the Chevron-Texaco court ruling and the third was only touched upon in passing. The judgment established a liability that accumulated from 1964 until the company ceased its activity in Ecuador around 1990. However, Chevron decided not to comply with the court decision. The liability has subsequently increased as the water and soils were not properly cleaned up and the victims have not been compensated in due time. How much does Chevron-Texaco owe?

Chevron-Texaco should have compensated for the damages caused by contamination between 1964 and 1991. On the contrary, the company has employed delaying tactics.

Unjustified Enrichment

Texaco did not pay at the time the costs it should have paid to ensure that its operations did not cause damage, using practices that would never have been accepted in its country of origin. These unpaid costs meant higher profits for Texaco that allowed it to distribute dividends

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to shareholders and to make other investments, which in turn contributed to the company's economic growth. Texaco saved costs, and also refused to pay indemnities for irreversible damages and remediation. The Chevron-Texaco company's entire liability implies paying compensation for damages caused by the loss of ecosystems, loss of income from agriculture, livestock, hunting and fishing, loss of water supply sources, exposure to disease and cancer deaths due to exposure to toxic substances, loss of soil, the psychological component including sexual abuse of the company's employees, and the delay of the solution, as well as the cost of the affectation and displacement and even disappearance of Indigenous peoples.

Texaco had extracted about 1.5 billion barrels of oil altogether over the period 1962–92; Judge Zambrano's estimate of damages of US$ 9.51 billion amounted to a reasonable US$ 6 per barrel, this is my own calculation. The price of oil in 1980, half way through Texaco's period in Ecuador, was around US$ 30 per barrel.

To summarize plausible values:

A) Unpaid compensation for the irreversible damage caused to people and the environment by spills, deforestation, extraction water dumped in open-air pools, gas flaring, irrigation of oil on roads, all described in the evidence provided by the plaintiffs. With the levels of toxic, carcinogenic substances in the environment, proven in ocular inspections and in analyses, undoubtedly there must have been an excess of illnesses and deaths over those expected. Carlos Beristain's study, *Las palabras de la selva*, shows how the memory of cancer incidence varied with distance from oil wells and stations, appealing to what is called "popular epidemiology".

How much is a human life worth? Viscusi (1993) estimates morbidity and mortality costs (since not all victims of disease die, and those who do die spend years ill). For mortality in the United States, it presents figures between $3 and $9 million per deceased person. These are values used for improvements in automobile safety or other environmental regulations. This study seems relevant and justifies the use of an (economic) value per human life of US$ 6 million. If, on the other hand, we were to apply "prices" from Ecuador, we would acquiesce to what some have called the "Lawrence Summers principle", the poor are cheap. The victims were tens of thousands.

Damage to the environment can also be estimated. There is evidence provided by the plaintiffs. A well-known article by Fearnside from 1997 estimated the value of natural products and services for the Amazon rainforest at something like $20,000 per year, year after year, per 100 ha, for products (from harvesting) and for environmental services (the water cycle, bioprospecting, carbon sequestration). The destruction of the forest was caused by oil, and Texaco has a share of responsibility for the deforestation of an area of about 4,000 km^2. From this, an assessment of the destruction of the ecosystem can be made.

To the monetary valuation of these irreversible damages, which were not compensated at the time, an adjustment factor ought to be applied taking into account the accrued interest from the 1970s to 2011 and the loss of purchasing power of the dollar.

B) The deaths or illnesses, the displacement and disappearance of Indigenous peoples, as well as the disappearance of biodiversity are irreversible. What was lost is not even known, since the taxonomy of fauna and flora (and micro-organisms) of the concession was not done before Texaco entered. **But there is a part of the damage that can be remedied.** The plaintiffs presented evidence and suggestions on how the damage could be remedied, by repairing contaminated pools and soils, remediating groundwater quality, installing water systems to avoid using contaminated water and taking care of the health of the inhabitants

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of the area in the future. The current value of these investments that Chevron-Texaco must finance would be of the order of $7.75 billion.

C) Texaco made excessive profits, later accumulated in the form of profitable investments, by not operating with good practices in the concession for more than 20 years. If Texaco had extracted the oil and built and operated the pipeline with good practices it would have implied an extra cost. Texaco's waste disposal methods, that would never have been allowed in the US, were not pure negligence. They were intentional practices to make more money. If we consider the amount of only one dollar per barrel of "savings", that means that Texaco made an excessive profit of about $1.5 billion between 1970 and 1990. Taking into account the loss of purchasing power of the dollar and accrued interest, so that the actual value was not less than $10 billion.

Texaco was also responsible for the extinction of native peoples such as the Tetetes and Sansahuaris and this was not recognized in the 2011 sentence. Ironically, the names of the two disappeared peoples are the names of two oil fields in the area where they used to live. To this must be added all the social and cultural damage caused to the Siona, Secoya, Cofán, Kichwa and Waorani, in addition to the damage to the settlers.

In conclusion, the trial was a failed attempt to obtain socio-environmental justice. It was successful in the courts of Ecuador but failed to make Chevron pay. This shows the political power of a transnational company such as Chevron, and so far the lack of moral sense of its shareholders. The environmental justice movement of the USA is too concerned with its own local problems, and indeed too powerless to help bring to justice American corporations for their behaviour abroad.

CONCLUSION: TEACHING ECOLOGICAL ECONOMICS AND POLITICAL ECOLOGY IN BUSINESS SCHOOLS (ÖKO – BWL)

The Chevron-Texaco company delayed the day of reckoning as long as possible, from 1993 to 2022 and beyond, bringing people's lawyers to court and to jail, allegedly bringing paid witnesses to the court in New York, enriching the company's assets in the meantime by investing the money it should have paid in compensation. I lament that criminal charges were not brought up against Texaco-Chevron directors in the 1990s. It is advisable to use both the civil and criminal routes.

Some practitioners already use the EJAtlas for information relevant to investors such as pension funds keen on applying Corporate Social Responsibility (CSR) and ESG criteria to particular firms or business sectors. As Rajiv Maher wrote in the *Business and Human Rights Journal* (2020), the EJAtlas documents and catalogues social conflicts around environmental issues aiming to make these instances of mobilization more visible, highlighting claims and testimonies, making the case for corporate and state accountability for the injustices inflicted through their activities. According to him, the EJAtlas is relevant to the construction and criticism of indices and benchmarks meant to inform and guide shareholders and other stakeholders, such as the Responsible Mining Index (RMI) and the Business Human Rights Benchmark (CHRB). The visibility given by the EJAtlas may be of use not only for activists but also in professional advisory financial activities and in fields like eco-labelling, product certification, SRI, CSR and ESG. Corporations are supposed to practise disclosure of environmental, social and governance (ESG) results. The EJAtlas may help strengthen the opposition between two

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objectives: "shareholder value" and "responsible management" (Laasch et al. 2020; Laasch 2021). Are corporations actually worried about their place in CSR and Sustainability indices? How do they manage their relations with the rating agencies? Do the main companies practise Socially Responsible Investment (SRI), incorporating ethical criteria into business decisions?

Environmental liabilities increase at the commodity extraction and waste disposal frontiers and through the growth of new commodities. We notice that firms and often states (particularly the military branch) do not take socio-environmental damages much into account either economically, physically or socially. This is the rule. Claims for economic compensation for damages and in other valuation languages are also put forward. Private or state companies tend to get away with cost-shifting, not facing liabilities. In other cases, it is not private or public firms but states themselves that should be accountable as in the Chornobyl nuclear disaster of 1986 or the damage to territories subject to nuclear testing or endangered by sea level rise. We favour the use of economic valuation of environmental damages in a forensic context after damage has been done but we refuse the ex-ante economic valuation as in cost–benefit analysis to decide (using only an economic language) whether an investment project should be carried out or not, excluding the pertinence of other valuation languages (Rodríguez-Labajos and Martínez-Alier 2013).

Within and also beyond academic research, the EJAtlas wants to be relevant by 'naming and shaming' the actors behind injustices, looking at the alliances among private and public corporations and their cooperation with state authorities. This can be done through Network Analysis of corporations (privately or state-owned) involved in conflicts. (Aydin et al. 2017). This chapter can be understood as a trailer for a textbook for Business Management students emphasizing CSIR, the unacknowledged environmental liabilities and the practice of corporate violence caused by profit-seeking and inflicted on human beings and ecosystems (Chertovskaya and Paulsson 2020; Navas et al. 2018; Tran et al. 2020). There is a growing body of research on the "social engineering" practised by corporations, including different sorts of violence but also "soft" methods of achieving consensus with local populations. In contrast to studies focusing on overt conflict and explicit repression, this social engineering perspective (including CSR) looks at the less visible and long-term ways in which corporate actors and their allies obstruct, condition and attempt to shape (re)actions 'from below'. Companies practise counter-insurgency tactics in some documented cases (Verweijen and Dunlap 2021; Brock and Dunlap 2018).

The key words of this chapter (such as CSIR and Corporate Violence) are different from those found in textbooks of ecological business economics, a discipline with a strong tradition in Germany. Since the early 1980, Reinhard Pfriem (long-time professor in Oldenburg) published articles and books on *Ökologische Unternehmensführung*. In German this would be part of the field called *ökologische Betriebswirtschaftslehre*. In a textbook of 1995 by Klaus Tischler, the name of the discipline is helpfully abbreviated as Öko – BWL**,** ecological business economics. It comprises *Bilanzierung* (drawing up balances) in economic and physical units (energy and materials), eco-marketing and topics such as investments improving profitability, resource efficiency and protection of the environment, win-win strategies in the economic and environmental front, use of "life-cycle analysis" for improving production and marketing processes. All this is seen at the firm level, and not at the commodity level as in industrial ecology (or in the old *Warenkunde*).

A robust research and teaching project would bring together business economics with ecological economics and political ecology through case studies of companies, asking questions

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on the assessment of risks, examples of disinvestment, displacement of costs to poor world regions, attempts at obtaining social and environmental justice by direct action or through the courts, compliance with administrative regulations or lack of it, shareholder activism, lawsuits under the ATCA, examples of CSIR, violence against activists, SLO and some SLAPPs as management tools.

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28. Environmental activism, uncertain risks and post-normal science

BACKGROUND: PROFESSIONAL SCIENTISTS ENGAGE WITH LAY CITIZENS AND EJOS IN SOCIO-ECOLOGICAL CONFLICTS

Continuing from Chapter 27, we see that Total, Chevron-Texaco, Shell and others have been able to escape from decisive court cases. With the Shell company, we could contribute research to both business ecological economics and to the campaign "Shell must fall". Artistic imagination, knowledge and political impetus are combined in such campaigns. The powers of industry and government obfuscate reality as in climate change denial or nuclear energy risks, and by deliberate lies from the pesticide, asbestos or tobacco companies There is journalistic and scientific work making the facts visible in a confrontation with what is called the "manufacturing of uncertainty" (Oreskes and Conway 2010; Michaels 2008). This "fabrication of uncertainty" must be separated from "genuine uncertainty". The "precautionary principle" could be applied, but usually it is not. Sometimes for new technologies, the risks are genuinely uncertain.

An ability to identify the uncertain risks caused by new technologies and investments is useful to environmental movements. Their assessment requires co-production of knowledge between ecotoxicological consultants and the affected population. A positive outcome is sought from these participatory practices, but it is not at all guaranteed.

Activists Mobilizing Scientists in Rössing (Rio Tinto) in Namibia, and in Niger (Areva)[1]

One remarkable article from the ICTA UAB group working on social metabolism and environmental conflicts was Marta Conde's "Activists mobilizing Science" in the journal *Ecological Economics* (2014). This was based on her fieldwork in Namibia on the health effects of radiation from uranium mining by the Rio Tinto company, and on interviews in Niger also on radiation left behind by Areva, the French nuclear energy company. Her conclusions relied on work by the activist-scientist Bruno Chayeron of CRIIRAD France (Figure 28.1), and they have been mentioned in Chapter 10. Marta Conde shed light on processes where unequal power relations led to unequal access to information. Both Namibia and Niger (and their Indigenous peoples) were historically subject to coloniality and racism. Together with scientists, the local activists co-produced new and alternative knowledge that gave the local organizations visibility and legitimacy, information on how to protect themselves from the impacts of radioactivity and allowed them to some extent to challenge the misleading information produced by the state or by companies. She called this process Activism Mobilising Science, a major contribution to Post-Normal Science and to Science and Technology Studies (STS).

In the following pages, I figuratively walk in the steps of activist scientists or professional consultants such as the hydrogeologist Robert Moran – he was loved in Argentina, Peru,

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Figure 28.1 *The uranium Rössing mine near Arandis, Namibia*

Colombia and other countries and continents – and the ecologist Robert Goodland who did voluntary work in Kashipur (Odisha, India), the Oyu Tolgoi mine in Mongolia and elsewhere after he retired from the World Bank. Also, Bruno Chayeron travels the world as a nuclear energy "citizen scientist" *desfazendo entuertos*, providing technical information to local EJOs to straighten the wrongs in their territories. Andrés Carrasco (1946–2014) and other scientists in Argentina researched with local groups the effects of the glyphosate used massively in soybean production for export (Conde and Walter 2022).

Risk, Uncertainty, Activist Knowledge, Post-Normal Science in the EJAtlas

In the EJAtlas we make visible events that were somewhat hidden although already known, bringing to the forefront alternative understandings of the real world, making them potential objects of politics (Gibson-Graham 2008). In this chapter, we focus on scientific knowledge required to argue about human health and environmental impacts and on scientists' participation in socio-ecological conflicts alongside Indigenous peoples, international and local EJOs, peasants, citizens, trade unionists, fisherfolk, pastoralists and religious groups.

The Indigenous miners who were forced to work in Potosí mining silver ores and amalgamating them with mercury (*azogue*) learnt that the process was toxic. They often died as *azogados*. A drawing by Guaman Poma de Ayala with the title *indio azogado* shows an Indian bribing an officer to avoid the *mita* (forced labour) in Huancavelica's *azogue* mines.

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The EJAtlas deals with similar socio-economic injustices of the last decades. Lay citizens and local EJOs immersed in ecological distribution conflicts engage with professional scientists to understand the impacts that an extractive or polluting project will cause or is causing to their environment and to themselves. Scientific controversies arise, often as "late lessons from early warnings".

One of the variables in the section on impacts in the EJAtlas data sheets is the existence of genuine scientific uncertainty regarding the risks of the project in question. It could be low-level radiation in the use of nuclear energy, the use of cyanide in gold mining, DBCP or *chlordécone* in banana plantations, Endosulfan in a cashew plantation, the presence of pneumoconiosis (black lung) or other industrial illnesses, the suspicion of excessive lead blood levels in children next to an industry. Another variable in the EJAtlas, in the section on "protagonists" of the conflict, allows for the presence of "scientists and professionals". This variable is ambiguous because "professionals" also means lawyers and journalists, for instance, not only scientists. We could then select cases in the EJAtlas where the EIA (environmental impact assessment) is disputed as a document purporting to turn the conflict into a technical, post-political issue. If we cross these three variables (scientific uncertainty, presence of scientists and contested EIA) we get a substantial sub-sample of cases to be analyzed with the hypothesis that "extended peer communities" are active (as described in "post-normal science" (PNS) by Funtowicz and Ravetz 1993; Figure 28.2). For this chapter I have chosen about 20 conflicts under the lens of PNS, focusing on the arguments displayed by different groups.

The relevance of PNS in the study of socio-ecological conflicts has often been noted before. The famous case of radiation from Sellafield-Windscale in the UK is in the EJAtlas.[2] Another case is Love Canal[3] explicitly analyzed under the lens of PNS by Fjelland (2016) who showed the struggle between, on the one hand, the scientific arguments and the clout displayed by the official New York Dpt. of Health and, on the other hand, the local EJO led by Lois Gibbs. In this chapter, I look more at conflicts in the global South.

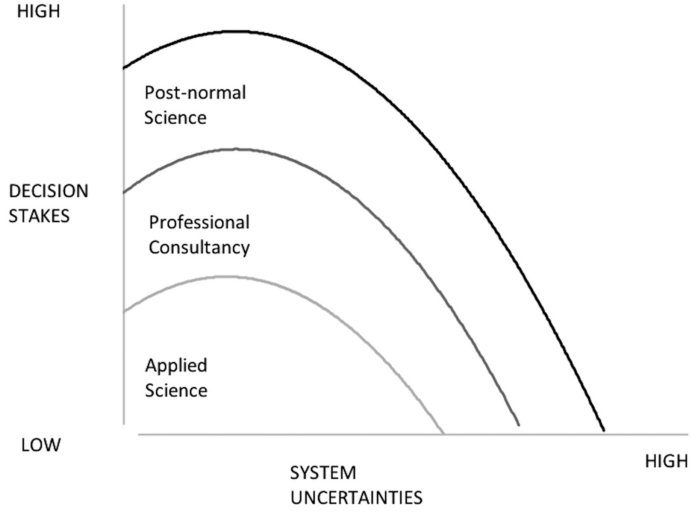

Figure 28.2 Post-Normal Science in the diagram by Funtowicz and Ravetz

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PNS was born in the 1980s (Strand 2017) in discussions from philosophy of science on risk analysis and cost–benefit analysis of new technologies with enormous stakes. Before the Three Mile Island accident of 1979, experts attempted to calculate probabilities of accidents in nuclear energy to assuage industry, political leaders and the public. "The Rasmussen Report" was issued. This did not stop debates that included, in practice, non-certified lay experts from civil society expressing opinions and helping to prevent the building of NPP (Chapter 10). There is room for normal applied science, also for professional consultancy (by engineers, medical doctors) and for post-normal science. It depends on the nature of the conflict in question. The assessment of the likelihood of grave nuclear accidents belongs to "post-normal science". Other names are applied to the processes of "extended peer review". For instance, the role of children's parents in the lead poisoning episode at the Zijin Huaqiang battery factory in Fujian in this chapter could be called "popular epidemiology" in the US EJ movement.

The participation of non-official experts arises from the nature of the case as in the damage to the health of local inhabitants done by Texaco (later Chevron) in the deep Amazon of Ecuador, where in the 1970s and 1980s there were no doctors. PNS proposes a scientific practice that is reflexive, inclusive and transparent in regard to scientific uncertainty, while moving towards a democratization of expertise because of the nature of the problems considered. However, the feasibility of conducting PNS processes has been questioned because of obstacles to recognition and participation. The unequal distribution of power limits freedom of opinion, limiting the possibility of sustaining open and deliberative dialogues between agents with opposite visions (Orozco-Meléndez et al. 2022). This chapter contributes to the analysis of such challenges to PNS in many countries in the global South (or in other countries with weak democracies).

IN AMERICA

Glyphosate in Argentina: *paren de fumigar*[4]

This is a debate between economic logic and human and environmental health briefly described already in Chapter 17. In 2009, Dr Andrés Carrasco concluded that glyphosate was highly toxic and that its exposure had serious effects on embryos. His research was questioned by Monsanto. The US Embassy in Buenos Aires – according to WikiLeaks – lobbied in the company's favour after Carrasco's research was made public. As described elsewhere in this book (Chapters 17 and 21), bottom-up collectives were set up by mothers whose children's health was severely affected. At stake is the whole structure of the Argentinean biomass economy, based for many decades on transgenic soybean exports.

There is an organization called the Doctors Network of Fumigated Towns (*Médicos de Pueblos Fumigados*). While Monsanto, the US biotech giant, used to be the exclusive producer of glyphosate, it was later taken over by Bayer. Glyphosate is currently used not only in soy cultivation but also for growing cotton, maize, citric, yerba mate, wheat and other crops. Traces of the herbicide are routinely found in tests of foodstuffs, water, topsoil and human urine above limits set by regulators – according to Dr Medardo Ávila Vázquez, the coordinator of the Doctors Network of Fumigated Towns (*Médicos de Pueblos Fumigados*). The expansion of soy crops in the country led to aerial spraying of glyphosate reaching the edge of many urban settlements.

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"Glyphosate can lead to a wide array of health problems […]. It alters the intestinal flora and can lead to hepatic problems and neurologic alterations, increasing the risk of malformations and diseases such as Parkinson's and Alzheimer's", according to statements by Damián Verzeñassi, a doctor and researcher at Rosario National University. Since 2010, Verzeñassi and his team have studied the health of more than 115,000 people in 31 towns from different provinces of Argentina. These health problems reported by Ávila Vázquez and Verzeñassi are backed up by findings from the International Agency for Research on Cancer (IARC) which classifies glyphosate as probably carcinogenic to humans. For years, glyphosate was considered to be among the safest pesticides by international agencies such as the United States EPA. Should glyphosate be banned in Argentina? Can human health be considered together with other scientific issues of soybean cultivation, such as the loss of nutrients, the export of water or the impacts on soil fertility?

Uranium Mining in Indigenous Territory in Nebraska[5]

This is one of several cases uploaded in the EJ Atlas on uranium mining in North America. It is a case of PNS with the intervention of a local hydrogeologist. It is also an example of the environmentalism of Indigenous peoples engaging in a valuation contest where sacredness and historical values are displayed. Crow Butte mine was an in-situ leach uranium mine located in Dawes County, Nebraska, and is located in Lakota Treaty Territory. It was operated by Cameco Corporation (a Canadian company, Canada being the world's second largest producer of uranium). It was the first uranium mine found in Nebraska, it didn't start production until 1991. The mine was located 6 km southeast of Crawford, a town of about 900 people. Opposition to the mine began in 2007 when local groups filed a petition against its expansion, and in 2008 opposition increased from the Oglala Sioux Native American Tribe and environmental groups due to a request for the renewal of the mine's licence for another ten years.

Because of the opposition raised, the Nuclear Regulatory Commission granted a public hearing to the concerned groups to voice their concerns about the threats to their water supply, and also to the spills and leaks into the nearby White River, which runs from the mine to Pine Ridge Reservation. In the mining process, local water is used to inject a leach solution into drill holes in the ore, extracting uranium from the solution and processing it into solid yellowcake on site for shipping to fuel production facilities for nuclear power plants.

The worries in the community solidified when a local geologist at Chadron State College (Hannan LaGarry PhD) answered the call from activists to scientists claiming that threats to the water supply were imminent, concerning the lack of mapping and monitoring of the faults in the bedrock, which could be transmitting wastewater from the mine through the confining layers of rock and into the White River. Other concerns expressed by the Oglala Sioux Tribe were related to the massive volume of water used during the operation of the mine, which was extracted from aquifers which the tribe described as "precious" and "ancient" and very slow to recharge. Debra White Plume of Owe Aku said that "Crow Butte is known to the Lakota as a sacred place for vision quest and medicine, and where Crazy Horse [Lakota Leader] spent many of his last days in prayer and solitude before his murder at the nearby Ft. Robinson prisoner of war compound. We can't go there anymore".

In 2014, the Nuclear Regulatory Commission granted the mine its new licence for another ten years. Yet, in June 2018 Cameco Corp announced that depleting uranium concentrations

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in the Chadron aquifer and unfavourable market conditions meant that they stopped mining operations.

LNG in Ensenada, Baja California[6]

A few miles south of Tijuana on the Mexican-US border, in Ensenada, the local population opposed Sempra Energy's expansion of its regasification plant to add capacity to liquefaction with a movement called *Ensenada Resiste*. While in the US a project like this was considered risky, the Costa Azul Consortium, a subsidiary of the Mexican company IEnova, in turn, a subsidiary of the American company Sempra Energy, built a regasification plant which started to operate in 2008. In this conflict, Total and Chevron appear again. This plant receives vessels of liquefied natural gas (LNG) transforming it from liquid to gaseous state, to then be exported to the United States through a network of gas pipelines also owned by Sempra Energy. This was one of the first foreign companies to distribute natural gas in Mexico with the EcoGas network of Mexicali; it also has several electricity generation projects in Baja California to supply the United States and the local market. The company currently has a new project. Instead of importing LNG and transforming it to a gaseous state, it will now be able to receive natural gas from the United States, convert it to liquid status (cooling it to -162°C) and export it on ships to Pacific countries. Sempra would turn Baja California into a platform for the export and import of natural gas between the United States and the Pacific, and perhaps Europe.

Therefore, when it is cheap to buy gas in Texas, gas will be transported to Ensenada and use its liquefaction plant to export it; when it is more profitable to acquire gas elsewhere, it will be transported through Baja California to the United States. The company also plans to build a storage terminal for refined petroleum products called Baja Refinados. Sempra Energy, through its subsidiary IEnova, signed preliminary agreements with affiliates of Total, Mitsui and Tokyo Gas for the 20-year sale of all liquefied natural gas (LNG) that it intends to transform into the plant during phase 1. Total also acquired a 16.6 per cent stake in the plant project. Sempra also has a contract with Chevron so that its subsidiary Chevron Combustibles de México can use approximately 50 per cent of the storage capacity of a new marine hydrocarbon receipt, storage and delivery terminal that Sempra plans to build next to its gas plant.

What are the risks and who is evaluating them? These projects represent potential emissions of methane and other toxic gasses, as well as effects on marine ecosystems by wastewater thrown into the sea at very low temperatures. This could have effects on fishing, tourism, recreational activities and grey whales. The proximity of projects enhances the risks to each other in the presence of geological faults and fractures.

With the plant expansion project, a broad mobilization started with the name *Ensenada Resiste*. Since 2003, opposition has been aroused against the regasification plant by the inhabitants of the Bajamar housing complex, located less than 4 km from the plant. They obtained an *amparo* lawsuit that granted the definitive suspension of the plant. There is also an agrarian litigation for the fact that this plant was built on several lots belonging to the Costa Azul Agricultural Colony. Academic staff of the Centre for Scientific Research and Education (CICESE) and the University of Southern California (USC) rejected the expansion of the natural gas plant, denouncing the environmental effects it would cause and the fact that the project is contradictory to an energy transition process. The population demonstrated against the citizen consultation process carried out fraudulently in October 2020, which was favourable

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to the company's project. The consultation had been manipulated because Sempra coerced the mayor of Ensenada by offering to allocate 430 million pesos for the construction of 24 public works. Popular participation was deviated by this political manoeuvre.

Prince Rupert at Risk: LNG in British Columbia, Canada[7]

Aurora LNG Terminal was to be in British Columbia, Canada, one more terminal for LNG, a fashionable fuel. In the summer of 2017, the terminal was in the EIA stage, but it was cancelled in September. The primary project backer was Nexen Energy, a subsidiary of CNOOC, China's top LNG importer. Other backers included Japanese companies INPEX, an LNG supplier to Japan, Korea and Taiwan; and JGC, formerly known as Japanese Gasoline Corporation and now an engineering company that builds LNG facilities. The cost would be Canadian $ 20 billion. The gas would reach the coast through controversial pipelines.

What was the local debate? The Aurora LNG export facility would threaten the fishing community of Prince Rupert, displacing local residents and enabling the expansion of further fracking. CNOOC-Nexen wanted to build a four train LNG liquefaction, storage and export terminal within ½ km of the Canadian community Dodge Cove and within 3 km of the city of Prince Rupert. This project might mean drastic health impacts to the local communities as well as impacting the Skeena River Estuary, where the berthing terminals, dredging and tanker traffic would be. Besides people's homes, and migratory birds using the Pacific Flyway, would be impacted by the location of this project (Figure 28.3).

Aurora LNG would ship 24 million tonnes a year. The project would feature up to four trains for liquefaction of natural gas, storage facilities, power plants, up to three LNG loading berths, a marine offloading facility, a floating pioneer facility, a 5,000-man work camp, a pipeline and related infrastructure to bring gas to the facility. The LNG tanker berthing would be only 500 m from the centre of the main marine navigational channel, putting all vessel traffic entering and exiting Prince Rupert Harbour within the hazardous zones. This project would require dredging sediment in the Skeena River Estuary which might release toxic dioxins and furans into surrounding waters with adverse impacts on wildlife and human health. Digby Island is home to many species of special concern, including nesting colonies of Great Blue Herons, essential habitat for the Western Toad, a nationally important Pacific Flyway for migrating birds and a transit area for Humpback Whales.

Aurora LNG would burn approximately 7 million m^3 of gas per day to process 97 million m^3 of gas into LNG. This would dump thousands of tonnes of harmful emissions on the air of Dodge Cove, Prince Rupert, and surrounding communities. Cumulative impacts for the already approved PNW LNG and the proposed Aurora LNG were one major concern. Independent environmental reviews of the proposed Petronas LNG export facility on neighbouring Lelu Island identified that the alteration of the water flows from the massive facility would destroy the Flora Banks Eelgrass habitat, essential to the life cycle of the salmon of the Skeena River, the third largest salmon run in the world. The Aurora project was likewise proposed on top of essential eelgrass habitat and the potential alteration of water flows had not been adequately studied.

Typically for a peaceful successful protest case like this, the participating groups are listed as: Indigenous groups or traditional communities, international and local EJOs, local government/political parties, neighbours/citizens/communities, recreational users, *local scientists/professionals* and fisher people. The tame repertoire of actions taken were community-based

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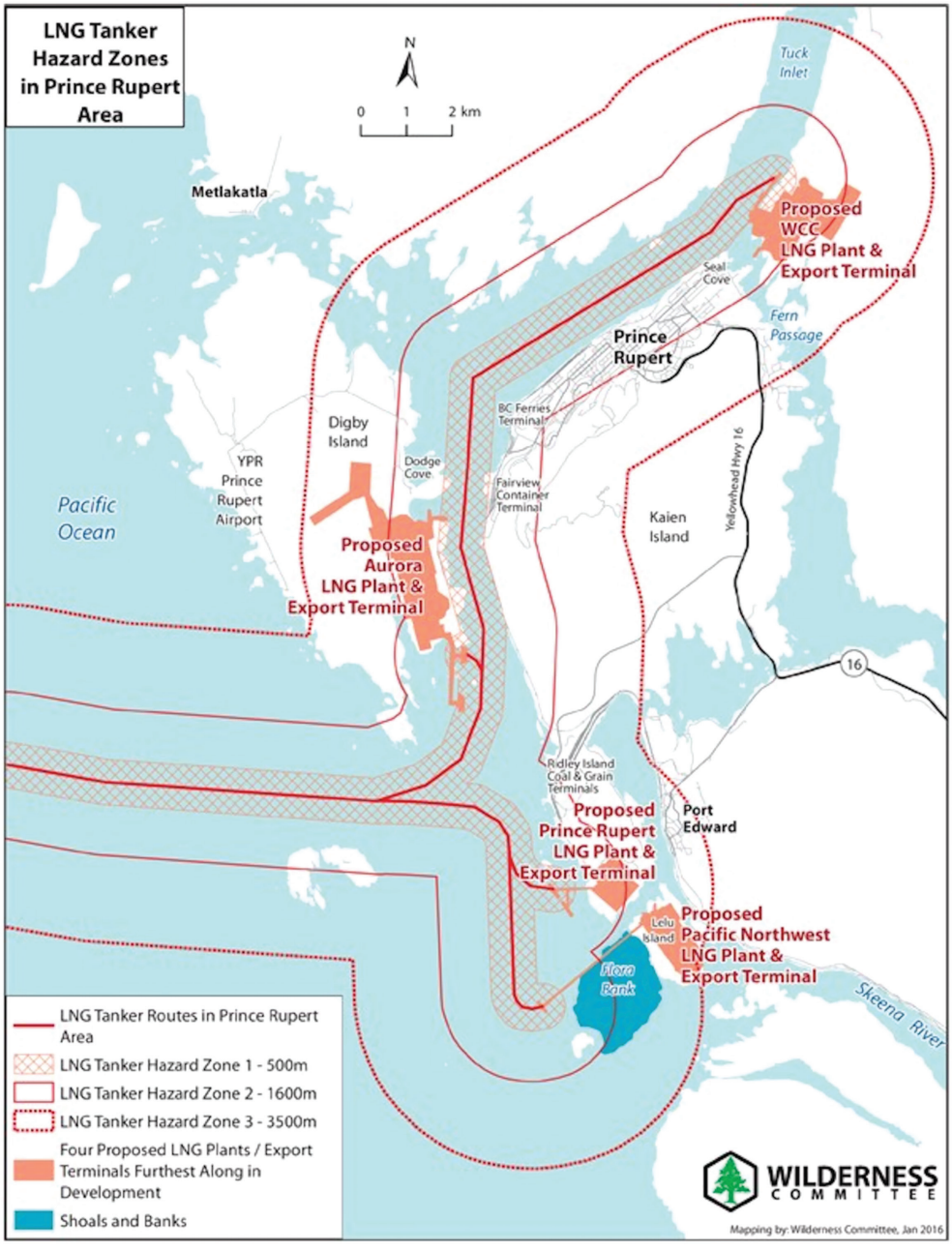

Source: Wilderness Committee

Figure 28.3 *Prince Rupert, BC, Canada as a sacrifice zone for LNG Plants and Export Terminals*

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participatory research, creation of knowledge, development of a network, alternative media, objections to the EIA, official complaint letters and petitions.

Norsk Hydro's Alunorte Refinery in Barcarena, Belem, Parà[8]

Hydro Alunorte is the world's largest alumina refinery and it is located in Bacarena, close to Belém, Brazil. In 1984, a project with Japanese capital called Albras-Alunorte was established, now belonging to the Brazilian corporation Vale. This was part of the global process of relocating polluting and energy-intensive industries to the South, specifically Japan's decision to outsource the production of aluminium. The Brazilian military regime embraced the opportunity. The Tucuruí mega-dam was inaugurated in 1984 and resulted in social and environmental disasters (Chapter 19). Since then, Tucuruí dam has been providing energy to the aluminium industry at subsidized rates. The process of turning Barcarena into an industrial centre continued unabated after the dictatorship, with hydro-ways and pipelines transporting kaolin and bauxite. This part of Northern Brazil inspired Steve Bunker's theory on ecologically unequal trade (Chapter 26), and the decades-long regionalist lament by Lúcio Flávio Pinto, the journalist and editor of *Jornal Pessoal*.

Hydro Alunorte refinery started its operations in 1995 transforming bauxite into alumina. The owners are Norsk Hydro whose main shareholders have been the Norwegian state (34.3 per cent), the Norwegian Government Pension Fund (6.81 per cent) and other transnational financial corporations. The factory Albras (Alumínio Brasileiro S.A.) transforms Alunorte's alumina into aluminium and is owned by Norsk Hydro (51 per cent) and the Japanese consortium NAAC (Nippon Amazon Aluminum Co. Ltd) (49 per cent). Industries in the region also include the steel plant Usipar and kaolin processing Imerys Rio Capim Caulim S.A. and PPSA.

Since the 2000s public entities such as the Instituto Evandro Chagas (IEV) from the Ministry of Health and other scientific experts detected water pollution in the community of Barcarena threatening environmental and human health, especially of children diagnosed with skin and visual problems. Workers of the company have also been affected. IEV confirmed that water pollution was caused by leakage and toxic waste of Hydro Alunorte. One main leak took place in 2009, with lead and mercury. The company was fined (R$ 17,000,000) but it never paid up, denying evidence of a lasting environmental impact. Dwellers and local organizations with the support of *Movimento dos Atingidos por Barragens* (MAB) denounced this situation to Brazilian authorities. Paulo Sérgio Almeida Nascimento was shot dead in March 2018; he was the leader of the Associação dos Caboclos, Indígenas e Quilombolas da Amazônia (CAINQUIAMA), an environmental justice organization which had denounced the company. Paulo had asked for governmental protection but it was denied. The company is said to follow the Norwegian Code of Practice for Corporate Governance.

On 17–18 February 2018 heavy rainfall had led to flooding in the Barcarena region and resulted in flooding at Alunorte. The containment basins of the bauxite residue deposit were exceeded until February 27th. A scientific-political debate followed. Local residents and Brazilian authorities accused the company in Barcarena of causing a toxic leak in February that polluted the water supply. A study by the Evandro Chagas Institute determined that Alunorte had contaminated the nearby waters with heavy metals. Alunorte questioned the validity of the institute's scientific work and sued state prosecutors. In May 2018, a Brazilian federal judge upheld a state court decision forcing Norsk Hydro to slash output by half at the refinery after the company admitted to making unlicensed emissions of untreated water

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Hazardous Waste Incineration in Sarzedo, Minas Gerais, Brazil[9]

Establishing incineration as the solution to the waste problem has been a proposal across Brazil and the world, meeting opposition from civil society and in particular the waste-pickers movement. An international network exists (GAIA). Minas Gerais has been on the front lines of this struggle and in 2014 became Brazil's first state to prohibit the incineration of urban solid waste. However, a new legislative project brought forward by the private economic sector favoured incineration projects. One of these controversial projects is the burning of hazardous industrial waste by the company Ecovital in the municipality of Sarzedo, close to Brumadinho in Minas Gerais. The main protagonists of this conflict have been working-class *catadores*, neighbours and citizens, and scientists who provided information.

In 2013 public-private partnerships in the waste sector of the Belo Horizonte metropolitan region and the possibility of incineration technologies were discussed in the Legislative Assembly of Minas Gerais. Brazil's *Movimento Nacional de Catadores de Materiales Reciclables* (National Movement of the Pickers of Recyclable Material, MNCR), the Instituto Nenuca de Desenvolvimento Sustentável (INSEA) and other organizations launched protests and street demonstrations against the adoption of incineration technologies by private operators, claiming that this would contradict Brazil's solid waste policy (regulated by Law 12.305). The MNCR initiated a campaign for a legislative project (PL 4.051/2013) that would prohibit the incineration of solid waste and instead promote selective waste collection. The movement demanded that local deputies stop another legislative project that would promote the utilization of plasma pyrolysis technologies, which allegedly would pose risks to public health. Moreover, incineration also jeopardizes the recycling work done by Brazil's *catadores* because the economic viability of incinerators depends on solid waste with high calorific value and this competes directly with selective waste collection. After much mobilization, the ban on solid waste incineration in Minas Gerais was adopted at the end of 2014 (through Lei 21.557/2014). The importance of the selective waste collection of thousands of *catadores* in the state, who are organized into more than 150 associations and cooperatives, was recognized.

A particular conflict in this context has been the incineration of chemical toxic waste by the company Ecovital Central de Gerenciamento Ambiental in the industrial district of the municipality Sarzedo, Minas Gerais. After obtaining a licence from the Belo Horizonte metropolitan region in 2014, the company started burning 3,000 tons of hazardous industrial waste in what it calls the "largest and most modern hazardous waste incineration plant in Brazil". The incinerated waste stems from chemical production by the famous French multinational company Rhodia, which operated from the 1960s to the 1990s in Cubatão. It consists of a range of highly toxic substances such as hexachlorobenzene and pentachlorophenol (PCP), used as insecticides and fungicides until it was forbidden in Brazil in 2006. Still today, several areas south of São Paulo are contaminated by Rhodia's substances. Despite this, in Sarzedo there were no public hearings before Ecovital began its activities.

In the surrounding area there are the Imaculada Conceição and Riacho da Mata neighbourhoods, a permanent protection area and community recreational facilities. Residents are allegedly affected by diseases as well as dust and bad smells that come from the plant's smoke, which has already made people move away. The presence of PCP has been particularly worrying. Mobilization by residents was led by the ad-hoc local movement SOS Sarzedo and was supported by the MNCR, INSEA, the Observatório da Reciclagem Inclusiva

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e Solidária (ORIS), the Comissão Pastoral da Terra (CPT), the Global Alliance for Incinerator Alternatives (GAIA) and ACPO, founded by former employees of Rhodia in the 1990s. They noted that toxic waste incineration is an outdated technology when it comes to environmental safety. The movement criticized the choice of an urbanized area like Sarzedo and the fact that the states of São Paulo, Paraná and Bahia had already rejected Evovital's incineration plans. The transport of hazardous waste over 600 km was also called into question.

Following an increase in public and political pressure and interventions by the Public Ministry of Minas Gerais and the municipality of Sarzedo, the movement had its first victory when in 2016 the company had its incineration licence for PCP and hexachlorobenzene temporarily suspended. A civil lawsuit was launched, and a new public hearing was announced. Up to that point, 500 tons of toxic waste had been incinerated. Ecovital also considered the incineration of urban solid waste. However, a decree was issued in 2018 prohibiting the storage, disposal and processing of waste from outside the state if hazardous substance concentrations exceeded a specified value. After that, residents continued to complain about air pollution.

Ecovital's first environmental licence expired in 2018. It requested a ten-year extension. The company had already been issued a preliminary extension allowing it to continue its activities. In July 2019, the extension of the incineration licence was debated in a public hearing in Sarzedo marked by community protests. More than 200 residents attended the hearing and, together with civil society organizations, demanded the complete closure of the plant. In an open letter, the SOS Sarzedo platform, the NGO Cedefes and CPT denounced the negative environmental and health impacts associated with the incineration project as well as attempts by the company to manipulate public opinion.

IN SOUTH AFRICA

Sasol Pollutes Sasolburg, Mpumalanga, the Vaal River and Other Areas in South Africa[10]

Significant air and water pollution in the Vaal River, Mpumalanga and elsewhere in the country have been caused by Sasol (South African Coal, Oil and Gas Corporation Ltd.), a top-polluting company. The Vaal River is the third-largest river in South Africa and is the main source of water for the Witwatersrand area. It has been plagued by multiple forms of pollution for decades, devastating nearby communities and wildlife. It is said that pH levels in the river water can be as acidic as lemon juice, and some residents of surrounding settlements say that birds fall dead from the sky when they fly over the area. Locals suffer from respiratory and cardiac illnesses because of the government's non-enforcement of emission standards for Eskom and Sasol. A lot of the water pollution also comes from acid mine waste tailings.

Sewage also flows freely from poorly managed drains. Scientists trace elevated sulphur dioxide emissions as well as heavy metals in the soil and acidic water to 22 collieries and 13 coal-fired power stations (including the newest, Eskom-owned Kusile). The South African Human Rights Commission (SAHRC) charged that Sasol does not comply with regulations on discharging waste. However, the City of Ekurhuleni and the Emfuleni Local Municipality have defended Sasol, which has allegedly failed to maintain its infrastructure but accuses community members of sabotage through theft and vandalism. Facts are deemed to be uncertain,

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and the balance of costs and benefits is in doubt. Sasol has a history of high emissions of toxic pollutants in Sasolburg, Free State and Secunda, Mpumalanga, and it is the second-largest emitter of GHG in South Africa after Eskom.

The company-dominated city of Sasolburg is south of Johannesburg. It was built by Sasol Ltd. to house employees at the coal plant producing commercial quantities of oil. This Sasol coal-to-oil refinery releases the highest amount of volatile organic compounds in South Africa. People suffer from asthma, respiratory illnesses, heart attacks, and other illnesses triggered by Sasol's pollution, which reportedly causes about 20,000 deaths per year. Activists have been a driving force behind efforts to curb pollution and fight Sasol's impunity. "Extended peer review" is not easy when power is asymmetric.

Sappi Ngodwana Pulp Mill, South Africa[11]

The Sappi company cheerfully states that "it is a global renewable resource company that uses every part of the tree to make every day more sustainable. Our high-quality packaging, speciality and graphic papers, pulp and biomaterials are innovative solutions". The reality is that for over 50 years the Sappi Ngodwana pulp mill, also located in Mpumalanga, has polluted the Elands River valley and surrounding areas. The air pollution is evident from the foul taste and burning eyes. Mpumalanga is a province subject to extractivism of coal and commodities such as pines, eucalyptus and cellulose. Mpumalanga means "east", or literally "the place where the sun rises" in the Swazi, Xhosa, Ndebele and Zulu languages.

Chemicals such as chloride leach into the Elands River system, and there is a potential serious conflict between the mill and downstream users of the river system, who need clean water for drinking, washing and irrigation. Vast monoculture pine and eucalyptus plantations supply the mill with raw logs. These plantations impact heavily on water resources and biodiversity, cause severe soil erosion, spread invasive alien plants and have historically displaced local people from their land. The mill increased its production of pulp for kraft, in the process of further increasing its capacity and simultaneously converting to cellulose production.

Should eucalyptus (an invasive species) be welcome? Are biologists active in this debate? Mill effluent is presently sprayed onto irrigated pasture which becomes saturated and then leaches through the soil. Resistance to the project is old, it started in the 1960s when local farmers questioned the impacts of the mill. The conflict escalated due to the death of fish in the Elands River, which triggered greater awareness. During 2003, Sappi announced expansion plans which resulted in protest action with *toyi toyi dancing* and the handing over of a memorandum opposing the expansion (toyi-toyi is a dance of protest, a form of participation in the scientific and policy debate). Environmental groups criticized the EIA process.

IN ASIA

Oyu Tolgoi in Mongolia[12]

This is one of the world's largest new copper-gold mines and is located in the South Gobi region of Mongolia, 80 km north of the Mongolia-China border. It is a combined open-pit and underground mining project approximately 235 km east of the Ömnögovi Province capital Dalanzadgad. The site was discovered in 2001 and is being developed as a joint

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venture between Turquoise Hill Resources (a subsidiary of Rio Tinto) and the Government of Mongolia. The mine began construction in 2010 and shipped its first batch of copper in 2013. The Oyu Tolgoi mining project is the largest financial undertaking in Mongolia's history and is expected to produce 450,000 tonnes of copper annually. It is one of these mines that by itself drives the political history of a whole colonized country, like Grassberg in West Papua, Goro nickel mine in New Caledonia, Kumtor gold mine in Kyrgyzstan, Paguna copper mine in Bougainville.

Oyu Tolgoi means "Turquoise Hill" in Mongolian. Concerns have been raised by local Mongolian herders around various health and ecological impacts directly related to the mining activities. A World Bank Report clearly outlined that the daily water needs of the nomadic populations were largely overtaken by the water usage of the industries in place. Water scarcity, decreased pasture capacity, dust and noise pollution have a strong impact on the health and welfare of Mongolian herder communities. Approval of the expansion of the mine came after disputes between Rio Tinto and the government which led to the suspension of the construction in 2013. Moreover, there were plans for a 450-MW coal-fired power station to provide power for the Oyu Tolgoi copper mine using local coal resources. In 2016, it was announced that Rio Tinto and its Canadian affiliate Turquoise Hill signed off on a $5.3 billion expansion of their massive Oyu Tolgoi mine ending a three-year stalemate and political tension over revenue sharing and the foreign role in Mongolia's mining sector.

External experts did what they could. As Robert Goodland (himself a Canadian and former World Bank officer) wrote in 2012,

> The main communities impacted by the mine are traditional nomadic herders […]. The main impacts on these indigenous peoples are likely to be significant and already include dust and pollution harming the grazing, exacerbation of respiratory disease […], less water availability for their herds, construction and operation of roads and rails hampering transhumance.

Bank Watch reported: "With huge amounts of unexploited natural resources, the Mongolian economy is estimated to grow massively. But will it also benefit the people in Mongolia? Our work shows how mining operations lead to pollution and displacement for local herders and exacerbate water scarcity issues".

Lead Poisoning of Children in Huaqiang Battery Factory, Fujian, China[13]

This case is similar to that in Chapter 6: "Lead poisoning in a battery recycling enterprise in Pizhou, northern Jiangsu". Here, the protagonists are children and parents. We have a brief account of events in 2008–9 when villagers repeatedly protested against a battery plant which polluted the air, water and soil of the local environment and sickened children with excessive blood lead in Shanghang, a county in Fujian province. Shanghang County is also the base of the transnational Zijin Mining Group. Shanghang Huaqiang Battery Co. Ltd. is one of the largest professional manufacturers of Electrode-Plate and Valve Regulated Sealed Lead-Acid batteries in China. In July 2005, the company moved from its original location in Quanzhou City to Jiaoyang Industrial Park in Shanghang County.

Landless peasants were promised that at least one person in a household would be employed in the factories, but it turned out that factories like Huaqiang Battery preferred to recruit migrant workers instead of local villagers to avoid potential local collective actions. At the

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same time, local villagers started to smell the unpleasant odour coming from the Huaqiang battery plant. Gradually, some other strange things happened (e.g., pigs and geese in some households became sterilized, flowers in the village did not blossom), which could not be explained by traditional knowledge. An open letter issued by villagers of Chongtou stated:

> a large amount of lead dust and lead mud were dumped on the side of the plant without any treatment. When it rains, it directly flows down, causing serious water and soil pollution. Lead dust is everywhere around the plant, and it is scattered everywhere when the wind rises. The physical and mental health of thousands of peasants and over 3,000 students in the nearby schools have been affected by the disaster-related pollution that threatens the intellect and fertility of future generations.

In March 2008, a woman from Chongtou village who woke up in the early morning to do laundry found that a white and smelly sewage with foam was discharged from Huaqiang Battery Plant to the stream that villagers were still accessing for water. Several hundreds of villagers from the same village gathered in front of the Huaqiang Battery Plant and asked the factory to stop the sewage discharge and give a statement. However, the factory ignored the protest and the person in charge of the factory disappeared. The angry villagers put some stones to block the road to the factory to stop the in and out vehicles, and then they sat down and refused to disperse. Later, the villagers clashed with the workers in the factory as well as officials from the Industrial Park, the police intervened and mediated the clash. After the pollution accident in March 2008, Huaqiang Battery Co., Ltd. carried out the work according to the "rectification" opinions of the Shanghang County Environmental Protection Bureau and the guidance of the Municipal Environmental Protection Bureau. Huaqiang Battery was fined CNY 75,000 and quickly built a sedimentation tank; villagers saw the cement pool of about $20m^2$ and less than one metre deep, and they did not believe it would reduce the lead pollution.

In August 2008, the Shanghang Huaqiang Battery Co. Ltd held a public hearing for the second phase of its project. The venue was changed without notification, so that only the party secretary, the village director and the leaders of the production unit in the village rushed to attend the hearing. At the end of the hearing, more villagers went to the venue and asked the county to provide the EIA report for the second phase of the Huaqiang Battery. The county could only provide an EIA issued by Shanghang Environmental Protection Bureau, which did not comply with the regulations from the Ministry of Environmental Protection. Moreover, villagers also claimed that the direct discharges of sulphuric acid, heavy metals and highly toxic substances into the streams without any treatment seriously polluted water resources and the groundwater; it violated the provisions of Article 30 of the Water Pollution Prevention and Control Law. In addition, the emissions of lead dust from Huaqiang Battery were not treated by the dust-free equipment.

The lead poisoning was uncovered because a local villager took his son to the provincial hospital for a test in June 2009 – excessive lead was found in his blood. More children were tested in August, showing similar results. When the new semester started in September, local people took their children to be tested, also confirming excessive lead in their blood. More villagers started to take their children outside the province to get tested, not trusting the local results. Local police began preventing residents from going to other provinces for medical tests.

As the pollution came from the Huaqiang Battery Factory, the Government of Shanghang County ordered to stop its production immediately from 10 September 2009. However,

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Huaqiang did not comply, which led to great dissatisfaction among the villagers. Lead poisoning fears kept hundreds of pupils away from primary and middle schools. One kindergarten, just 800 m from the factory, also reported a large number of absences. On 17 September 2009, hundreds of parents and some other Shanghang residents protested in front of the Jiaolong Township government offices and blocked a local highway for hours; a market strike echoed the protest. Officials from Longyan City and Shanghang County governments visited the township to talk with villagers and announced some decisions on the same day: people with excessive blood lead would be treated with support from the government; children who lived 600 m around Huaqiang Battery would be examined for blood lead; production of the Huaqiang Battery Plant would be suspended; representatives would be elected to supervise the implementation of the above measures. People gradually dispersed after the announcement and the factory was finally shut down.

In a mediation meeting on 18 September 2009, local residents shouted to the local officials, "You have introduced these dirty factories, are you responsible for our children? You have to pay for our green hills and clear waters! You have to return us to a healthy environment!" On September 20th, people from relevant government departments went from door to door to mobilize students to go back to school. After the three-day market strike, the shops in Jiaoyang Township reopened. However, many students still had not returned to school. According to the local government, doctors tested almost 300 children under the age of 14 and found that 121 of them showed signs of lead poisoning.

On 27 September 2009, the Fujian Provincial Environmental Protection Bureau determined that "Shanghang Huaqiang Battery Co., Ltd. in Fujian Province should be deemed responsible for more than 100 children with excessive blood lead". Still in August 2017, local villagers found a large amount of industrial toxic waste piled up in the abandoned Huaqiang Battery Plant.

Australian Lynas Corp's Rare Earth Refinery in Kuantan, Malaysia[14]

This investment prompted Malaysia's biggest environmental campaign. A large rare earth refinery was producing toxic waste close to 30,000 residents, a peatland, a bio-rich estuary and floodplains in a marine ecosystem. On 8 March 2011, a *New York Times* article revealed the construction of a world-scale rare earth (RE) refinery project in an industrial estate in Gebeng, near Kuantan, Malaysia. The refinery belonged to Australia's Lynas Corporation, which owns and operates a mine and concentration plant in Mt Weld (Western Australia, WA) shipping the ore concentrate a very long distance from Fremantle Port to the Kuantan plant for extraction and processing into RE oxides.

In 1992, the WA government granted Lynas' predecessor Ashton Rare Earth Limited conditional approval for a processing plant in Meenaar industrial estate. The EPA of WA approval stipulated numerous social and environmental conditions. Choosing, instead, a Malaysian site, Lynas could avoid the stringent Meenaar conditions set by the WA government. The refinery is about 2 km from a residential population of 30,000 and 700,000 people live within a 25-km radius (including Kuantan city with over 400,000). Malaysia's last RE refinery, Asian Rare Earth (ARE), left a toxic legacy involving aclean-up effort costing $100 million. Partly owned and operated by Japan's Mitsubishi Chemical in the industrial town Bukit Merah, nearby villagers and workers experienced miscarriages, birth defects and unusually high incidence of childhood leukaemia due to poor management of toxic and radioactive wastes, lack

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of health and safety measures and government inaction despite independent scientific evidence of dangers. ARE closed down in 1992 after ten years of operation and strong popular actions and protests.

A peat mangrove – theoretically protected by law – sits adjacent to the Lynas refinery. The Lynas refinery went ahead without public knowledge, consultation or impact assessment on the peatland, its biologically rich estuary and floodplains, and the marine and coastal ecosystems of the South China Sea. Pitched as a 'green' supplier of materials for low-emission technologies vital to tackling climate change, it is ironic that Lynas located its refinery in this rich tropical peatland, which stores huge amounts of carbon which are emitted whenever burnt in the drought season.

Malaysia's biggest ever environmental campaign evolved as local, Australian and international environmentalists became alarmed by the secrecy surrounding the refinery, the fast-tracked approval, a 12-year tax break granted to Lynas and the vulnerable social and ecological environment with prior experience of tragedies in Bukit Merah. On 15 May 2011, about 100 people organized by DAP (Democratic Action Party) Kuantan gathered at the refinery to demonstrate before police moved in to arrest four individuals: DAP Pahang publicity secretary Chow Yu Hui, organizing secretary Lee Chin Chen, Khor Hui Ying and Thing Siew Shuen. They carried banners with radioactive symbols. Malaysia's political regime has been described as an "electoral authoritarian regime".

On 22 June 2014, thousands of protestors organized by NGO Himpunan Hijau ("green assembly") gathered outside the Kuantan facility when guards began violently disrupting the crowd. Sixteen protestors including Australian-based activist Natalie Lowrey were arrested and detained in a Kuantan prison while two others were hospitalized after guards beat them. Her arrest incited worldwide protests and a petition signed by 15,000 people calling for her release (Figure 28.4).

In December 2018, a newly elected government demanded that Lynas ship back its refinery waste to Australia by September 2019 or else they would not have their licence renewed. This caused the company's stock price to fall by more than half. In August 2019, Prime Minister Mahathir Mohamad extended Lynas' operating license by three years on condition that Lynas stop importing radioactive materials by July 2023. In response, protests continued. On 28 April 2021, thanks to the joint efforts of organizations and political parties including Sahabat Alam Malaysia (Friends of the Earth), Lynas failed an EIA for a proposal to build a permanent toxic and radioactive waste dump that would be sited in a rainforest forest reserve that feeds two rivers that supply 90 per cent of the population of Kuantan with drinking water.

Coal Mining in Dehing Patkai, Assam, India

The next two cases, with extractivist state companies in India engaged once again in internal colonialism and the destruction of forests, certainly belong to this sample of PNS cases. The first one is on coal. Near the Assam border with Myanmar, Dehing Patkai, known as 'Amazon of the East', is home to many endangered species and is believed to be the last remaining contiguous patch of lowland rainforest area in Assam, extending up to the Deomali elephant reserve in Arunachal Pradesh. Dehing Patkai is also home to Assam's state bird, the white-winged duck; the state tree, the hollong, and the state flower, the fox tail orchid. These rainforests straddling the Dehing River and the Patkai range of the Eastern Himalayas, which comprise the Indo-Burma global biodiversity hotspot, are a valuable ecosystem. According to

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Source: Damian Baker, Friends of the Earth

Figure 28.4 Natalie Lowrey at the scene of her arrest in Malaysia

the Forest Department of Assam, 46 species of mammals, 71 species of reptiles, 290 species of wild birds, 276 species of butterflies, 70 species of fish, 70 species of dragonflies, 101 species of orchids and thousands of different insects are found in the sanctuary. Located on the southern bank of Brahmaputra, Dehing Patkai is also home to a large number of Asiatic elephants.

The Government of Assam declared 111 km^2 area of the rainforest as 'Dehing Patkai Wildlife Sanctuary' on 13 June 2004. Located within the greater Dehing Patkai Elephant Reserve (total area of 937 km^2), this Dehing Patkai Wildlife Sanctuary spreads across the oil- and coal-rich districts of Upper Assam namely Tinsukia, Dibrugarh and Sivasagar.

Coal mining in the region dates back to the British era. In 1973, North Eastern Coalfields (NEC), a Coal India subsidiary, was provided a 30-year lease. The lease expired in 2003, but Coal India didn't attain a clearance from the forest department. That same year, the state government notified the Dehing Patkai Elephant Reserve and the wildlife sanctuary was carved out in June 2004. But Coal India continued to mine in the area. The NEC approached the Assam government seeking a fresh lease only in 2012, but it was rejected. The CIL applied again for the clearance of 98 ha in 2019, out of which it was carrying out mining activities in 73 ha. As the nationwide lockdown was imposed for the COVID-19 pandemic, a conditional clearance for a coal mining project was permitted in the Saleki Proposed Reserve Forest in April 2020. The National Board of Wild Life (NBWL) under the Union Ministry of Environment, Forest and Climate Change approved the project provided it fulfilled 28 conditions.

The decision sparked massive protests in the state. From prominent student unions in Assam to internationally acclaimed actors and artists of Assamese origin, many raised their concerns on the approval of coal mining activities in the Dehing Patkai rainforest. The 'Forest Man of

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India' Padma Shri Jadav Payeng in his appeal to the Union government said, "Coal mining in the Dehing Patkai rainforest will severely impact our climate, environment of Assam and other parts of the North Eastern region. I appeal to the government to change this decision".

Assamese musician-composer Joi Barua said,

> If our ecosystem, trees, the habitat and the wildlife are at risk – what are we left with? Where is literature and poetry going to spring from? Where will fables originate? Where will folk music take its inspiration from? As people, what do we fall back on to? Just barren land from where all of nature's bounty has been plundered due to man's greed?

Dr Deborshee Gogoi, an academic and a cartoonist said, "Earlier when a child cried, we showed them a bird or a dragonfly. Now, we hand them the mobile phone. We can be rich only if our biodiversity is rich". Rapper and songwriter Rahul Rajkhowa, vented his anger in his 'Rap for Dehing Patkai'.

Following the ongoing protest (Figure 28.5),[15] the NEC announced the temporary suspension of all its mining operations in the Dehing Patkai Wildlife Sanctuary. Further, during the first week of July 2020, the Assam government decided to upgrade the sanctuary into a national park to ensure better conservation. Finally, a judicial probe was ordered by the Assam government to investigate illegal coal mining activities in the Dehing Patkai rainforest region. Decisions are urgent, and incommensurable values are in dispute. Scientists, university students and artists took part in the protests. Very rich biodiversity is endangered, the cultural pride of Assam is being defended, and nevertheless a growing supply of coal is needed for India's economy and also gives legal and illegal money incomes to local people.

Uranium Mining within the Amrabad Tiger Reserve, Telangana, India[16]

The Amrabad Tiger Reserve (ATR) is one of the big Tiger Reserves (TR) in India spreading over the Nallamala hills for 2,800 km^2. This forest is very rich in biodiversity, with lofty hills, numerous rivers and thick forest areas. It became a TR in 1983. This forest is also home to the Chenchus, a most vulnerable scheduled tribe in India. The conflict emerging in this area is related both to the conservationist rules which have become more restrictive in India after 1972 (Wildlife Protection Act), and to the exploration of uranium. The Chenchus community have been living in this forest for millennia; they are continuously threatened by eviction in the name of conservation. Now, the government grants uranium mining concessions in the same area. There are risks to humans, to tigers.

The process of displacement of the Chenchus from the Reserve Forest started early in the twentieth century by the British. It became a normalized process in 1980 after the declaration of the Nallamala forest as a Tiger Reserve, which led to the displacement of many Chenchus. Today it is estimated that about 200 villages are situated in and around the reserve, out of which 120 are within the sanctuary limits. However, the Chenchus have always fought back and have never accepted the Tiger Reserve in their territory. According to the Integrated Tribal Development Agency data in 2015, there are 10,671 families comprising 41,780 people belonging to the Chenchu Adivasi community across Nallamala forest in Telangana and Andhra Pradesh.

Besides the tiger project and "fortress conservation" (Chapter 11), since 2003 the Chenchus have also been fighting against the proposed uranium mining within and around the TR, when

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Source: Abu B. Siddik designs

Figure 28.5 Stop Coal Mining and Save Dehing Patkai

the Uranium Corporation of India Ltd (UCIL) applied for a mining lease. Since then, the Chenchus, together with NGOs and environmentalist groups, have campaigned against the exploration of uranium in Nalgonda district. While in 2003 the Union Forest and environment ministry approved the denotification of 1,000 ha of the Tiger Reserve to allow the uranium exploration, in 2004 the State Pollution Control Board rejected the project in the Malappuram area as too close to the Tiger Reserve. This was considered a first victory for environmentalists and the locals, but the company continued to explore new areas to drill for uranium.

Trying to cope with uncertain risks and local opposition, the new proposed site for uranium was Seripally, in Devarakonda Mandal. Environmentalists, people's representatives, political leaders and local tribes also opposed this. At an environment public hearing held by the Pollution Control Board on 3 March 2005, the majority said a firm “no” to the UCIL proposal. In a public hearing in 2006 in Hyderabad, K. Saraswathi, the joint secretary of

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city-based Forum for Sustainable Development, said: "There was a strong police presence at the public hearing (at Kadapa) and several activists were beaten up". "One of our activists in Kadapa even received death threats from the police", said Ravi Rebbapragada, chairman of Mines, Minerals and People, another NGO. However, all this did not stop the Ministry of Environment and Forests (MoEF) giving the site clearance and permission for the setting up of mines.

In 2011, in the name of tiger protection, a number of 40,000 Chenchus were planned to be relocated from the Nallamala Forest. The MoEF in 2009 had packaged this as voluntary resettlement. The others are fighting against the relocation. In the meantime, the state board of wildlife approved uranium exploration inside the Amrabad Tiger Reserve. The resistance against the project united the local communities, the conservationists and the state authorities against the Central Government. Indeed, the proposed uranium mining would both severely impact biodiversity and will result in the displacement of over 70,000 people. In opposition to this, the left parties organized protests across the State in support of the demand to stop the mining project. A signature campaign was also organized by the Hyderabad Tiger Conservation Society (HyTCS).

On 9 September 2019, a huge 'Nallamala Bandh' (general strike) was observed by people's organizations and political parties against the central government. Shops, banks and educational institutions remained closed, and people rallied and raised slogans against uranium exploration. Hundreds sat-in in *dharna* at the Ambedkar Chowrastha in Hyderabad, blocking the traffic. People were not going to allow the Delhi government to carry out the plan to explore uranium in the forests. Then, on 16 September, the Telangana State Legislative Assembly unanimously passed a resolution requesting the Central Government not to permit or allow mining operations of uranium in the Nallamala forest area. In theory, India plans to increase its uranium production tenfold over the next 15 years. Other conflicts on uranium mining in India have been described in Chapter 25.

IN EUROPE

Maradykovsky Chemical Weapons Storage and Disposal Facility[17]

This is one case in the Russian Federation where military control and civil society activism come against each other. Kirov Oblast lies in the central part of European Russia in the Volga and Vyatka River basins. There were protests in 2019 and 2020 at the Maradykovsky Facility outside of Mirniy village in Kirov Oblast. Between 1953 and 2005 it stored a total of 6,928 tonnes of chemical weapons, which made up 17.4 per cent of Russia's total arsenal. What to do with them? As Russia tries to recover its imperialist role, the question becomes more relevant.

In 1993, Russia signed an international treaty to destroy all of its chemical weapons. In order to do so, eight specialized chemical weapon disposal facilities were built, one of which was on the territory of Maradykovsky's Chemical Weapons Storage Facility. The disposal programme began in 2005/2006 and ended in 2015; within that period, 7,000 tonnes of chemical weapons were destroyed. This produced chemical waste which has been stored in landfills, with the majority of the waste being classified as moderate or low hazardous waste, although there are around 200 tonnes of extremely hazardous waste.

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In 2017, after all eight facilities had finished disposing of the leftover chemical weapons, Russian officials began preliminary discussions about how best to continue. These initial discussions triggered protests in Mirniy because residents were hoping that the facility would be shut down indefinitely. Moreover, in March 2017 it became clear that the Radioactive Waste Management Enterprise (RosRoa) was taking part in government officials' discussions. Later it was revealed that RosRoa was planning on converting Maradykovsky into a deactivation, disposal and storage facility for Class I (extremely) and II (highly) hazardous waste.

The news spread on social media and groups such as 'anti-radiation Vyatka' formed, which then mobilized to write letters to President Putin, the local government and the Supreme Ataman of the Union of Cossacks, demanding that construction of the storage facility be stopped. Additionally, on 5 March 2017, a petition was organized by 'anti-radiation Vyatka' and flyers were distributed across the area warning residents of the potential plans. In response, RosRao stated that any plans would be discussed with residents and that no radioactive waste would be stored at the facility.

In April 2017, a public consultation was held to reassure residents that the village's safety was officials' main priority and they discussed the possibility of allowing Maradykovky to store an additional 1,000 tonnes of waste. In total, 150 local residents showed up and vocalized their concerns that officials were not taking sufficient safety precautions. Ultimately, in October 2017 the local government prohibited the entry of chemical waste from other regions and instead proposed to convert Maradykovky into a pharmaceutical production company or recycling centre. However, in April 2019 a federal decree announced a new, unified framework for handling and monitoring Class I and II hazardous waste. A large national project would start in 2020 and convert all previous chemical weapons facilities into industrial engineering complexes. Rosatom, the State Nuclear Energy Corporation, is at the forefront of developing the legal regulation and procedures of dealing with Class I and II hazardous waste and RosRoa will work with it to oversee the building and management of the project. This announcement sparked an ongoing series of protests in Kirov Oblast, the first of which started on 17 June 2019.

People are worried about the health impacts since the facility is being constructed in a highly populated area. Also, they worry about the environmental impacts, because it is located next to the river Vyatka and will be constructed on marshy soil. In addition, the facility is located in a zone where earthquakes are allegedly prone to occur. The Regional Ministry of Environment stated that a referendum was impossible. Notably, on 30 June 2019, 600 people gathered in Kirov city and were joined by activists from the Shiyes camp and Fridays For Future – the petition gained close to 600 signatures. In Shiyes in Arkhangelsk region authorities are building a landfill to deposit waste from Moscow permanently. Local citizens, excluded from decision making, fear health risks and environmental degradation.[18]

The petition from Kirov city demanded five things: for the project to be cancelled and moved to a non-populated area; for the local government to ban the entry of dangerous waste into the region from other areas of the country; to convert the facility into something that would actually economically benefit the area; permission for an independent ecological investigation to take place and for a local referendum to decide whether or not the facility should be converted into an industrial engineering complex.

The protests continued, such as the one in August 2019 organized by the Communist Party attracting 50 people. Furthermore, in January 2020 there were protests in which 300 people took part. At this protest, it was prohibited to display any political slogans or symbols. Another

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protest was announced for November 2020 in light of the publication of the official ecological report; however, people were banned from gathering. The official investigation concluded that the project was safe. In response, an independent investigation took place, conducted by counter-experts of the Union for Chemical Safety. The scientific group struggled to gain access to the project's documentation and was finally granted access via a court decision. The experts had difficulty making sense of the plans.

In Slovenia – Closing Down a Lafarge Factory[19]

There are several cases in the EJAtlas of complaints against cement factories because of the health risks of burning waste in cement kilns (as a measure that is supposed to save GHG emissions from fossil fuels). As an outcome of one of these conflicts, a Goldman Prize was given in 2017 to a local activist in Slovenia: the farmer Uroš Macerl. This was a small conflict in a small country, with a happy ending for the time being. The energy-guzzling cement industry plays a central role in the growth of social metabolism and economic growth. At the manufacturing end, there were complaints because of uncontrolled exhausts caused by the incineration of waste in a cement factory belonging to the transnational Lafarge Cement in Trbovlje. The company argued that they operated within the normal range of permitted emissions, but locals thought otherwise. The scientific facts were in dispute, and the issue was seen as urgent. They formed an EJO called Eko Krog.

For decades, air pollution from local manufacturing operations had been settling over the narrow valleys in central Slovenia's historically industrial towns. Dangerous emissions affected forests, wildlife and people. Cancer rates in the region outpaced the rest of the country. Among these companies was Lafarge Cement, which in 2003 took over a 130-year-old cement plant in Trbovlje. Lafarge received strong support from the local government. The company promised jobs and denied that its emissions would harm residents. Its assertions were met with scepticism by citizens. Among them were the members of Eko Krog, the local environmental group organized by volunteers. Uroš Macerl was the president of Eko Krog and an organic farmer whose family farm sits on the outskirts of the Lafarge plant. He grew up on the farm belonging to his grandfather. Many farmers suffered losses as industrial pollution wiped out the three most vital elements of their livelihood: clean air, soil and water. When he was 23 years old, Macerl took over his family's farm but gave up the fields and orchards because air pollution made growing crops impossible.

Unwilling to accept the injustice to his community, Macerl began organizing farmers, residents and local groups to collect air quality data that showed increased dangerous pollutants. He presented the data to the media, as well as local and national authorities. But his arguments fell on deaf ears as job creation was prioritized at the expense of air quality. After enduring years of pollution from the cement plant, Macerl came to a breakthrough in 2009 when Lafarge applied for an environmental permit to co-incinerate hazardous industrial waste with petcoke. The company claimed that only areas within 500 m of the main chimney stack would be affected by the emissions. Part of Macerl's property fell within the pollution zone outlined in Lafarge's plans, granting him legal standing to challenge the permit application.

The Slovenian government rubber-stamped the permit, and Lafarge began incinerating over 100 tons of waste on a daily basis. Macerl filed and won a lawsuit that cancelled the permit, but Lafarge continued to burn petcoke and waste. Noting the Slovenian authorities' failure to enforce the court ruling, Eko Krog and Macerl informed the European Union. Meanwhile,

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Macerl rallied community opposition while simultaneously managing his farm. As president of Eko Krog, he kept the community updated on the legal proceedings. The European Commission sided with Macerl and requested that Slovenia be brought before the European Court of Justice for its failure to enforce EU pollution standards. The national authorities finally ordered Lafarge to halt production. The National Agency for Environment repealed the environmental permit for the incineration of waste in cement factories.

Fracking in Lancashire, UK[20]

Some of several successful struggles against fracking in Europe took place in the UK – in Sussex and also in the North of England. Here we consider the 2014–19 struggle against Cuadrilla Resources, a UK energy company that announced that it was applying for permission to carry out horizontal high pressure hydraulic fracturing (fracking) of four wells at each of two sites in Lancashire. One site is at Little Plumptons, also referred to as the Preston New Road Site, a few miles from Blackpool. These applications were part of a larger plan to drill up to 100 wellpads in the licence area (PEDL 165) covering 1180 km^2. Each horizontal well could travel over 2 km underground. This means practically every square metre of the area would be fracked under. Drilling companies believed trillions of cubic feet of shale gas may be recoverable from beneath parts of the UK and more than 200 onshore exploration licences were awarded to energy companies. In 2011, all fracking was suspended in the UK after it caused earthquakes near Blackpool, but the ban was lifted later.

In August 2014, an ad-hoc group calling themselves *the Nanas* staged a three-week anti-fracking occupation on one of the fields in the planning area, with the support of Reclaim the Power. Cuadrilla, which had rented the field from a farmer, argued that the occupation caused disruption and distress to the farmer's family and his business, and applied for an injunction to prevent further protests in the area. The company was granted the injunction to prevent activists from entering land in October 2014. A member of the Nanas, Tina Louise Rothery, was the only named defendant in the case and Cuadrilla's legal costs were awarded against her. She refused to pay the £55,000 legal fees and in December 2016 a judge discharged the order against her and she was spared jail.

Preston New Road Action Group (PNRAG) obtained a reversal of Lancashire County Council's recommendation to grant Cuadrilla's application on 29 June 2015. Cuadrilla's fracking applications to create 90 seismic activity monitoring stations were refused by the Development Control Committee (DCC). Over 50,000 people signed a petition calling for a rejection of the fracking applications. The share price of iGas dropped sharply after the council's announcement. The Council's refusal of the licences came after PNRAG employed experts to give evidence at the hearings to explain technical aspects of fracking instructing a barrister to advise the DCC members of their legal position, which contradicted the Council's own legal advice. Friends of the Earth provided their own similar assessment. The DCC refused the applications on noise, traffic and landscape grounds. Here we have a classic PNS case again: facts in dispute, different values at stake and uncertainty about the risks.

Cuadrilla Resources was not a powerful multinational and the Nanas were indeed a grassroots EJO supported by Friends of the Earth and expertly trained lawyers. Cuadrilla appealed the Council's decision. A public inquiry ensued and the appeal was upheld by the Government on 6 October 2016. The decision to allow fracking in Lancashire was only the second licence to permit fracking (as opposed to exploratory work) in the UK, and the first

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to involve horizontal drilling. PNRAG's lawyers Leigh Day claimed the Government's decision appeared to be in breach of Lancashire County Council's development plan, as well as in breach of the correct planning law tests. PNRAG submitted legal proceedings at the High Court against the Government's decision. Meanwhile, Cuadrilla began surface construction work at the site in January 2017. Cuadrilla stopped drilling after multiple earth tremors. Fracking resumed on 15 August 2019, but activity was suspended 11 days later, after the UK's largest fracking-induced seismic event. In September, after the Nanas celebrated 1,000 days of activism at Preston New Road, Cuadrilla announced that it was giving up. (*The Observer*, 13 October 2019).

In summary, in 2014 the Nanas had captured a field under planning application by Cuadrilla hopping over the fence, setting up tents and claiming squatters' rights, staying for three weeks.

> By the time they left, the Nanas had earned the support of 14,000 local residents and appointments at Manchester's High Court, and their action, along with that of other campaigners, led to Lancashire County Council rejecting Cuadrilla's fracking application, a decision later overturned by the then secretary of state, Sajid Javid.

The Nanas mounted an ironic and emotional war of attrition against Cuadrilla. At the entrance to the Preston New Road site, they sang, danced, knitted, prayed, read poems and monologues, and obstructed fracking activity wherever possible. Every Wednesday, dressed in white, they staged a call for calm at a site where tensions between protesters and police sometimes erupted into violence (*The Observer*, 13 October 2019). I find it moving to read that, jumping scales, the "Anti-Fracking Lancashire Nanas" were to appear in 2021 at the Cop26 rally in Glasgow alongside Greta Thunberg (M. Holmes, *Lancashire Post*, 28 October 2021).

CONCLUSION: EXTENDED PEER COMMUNITIES: THEIR SUCCESSES AND THEIR DECEASED

Scientists were active in the ecological distribution conflicts summarized in this chapter as they are in many other cases in the EJAtlas and the outside world. Though they are rarely the main protagonists. Environmental risks do not spread evenly across social classes and geographies, and we find example after example where the affected urban or rural communities, or occupational groups (such as waste-pickers) ask for help from scientists ("Activists mobilizing Scientists") searching for their knowledge on the impacts that old or new investments might have. A variety of arguments are displayed in the EIA procedures, in court cases or when asking for reparations for damages. Often issues are transnational, and awareness of ecologically unequal exchanges or *Raubwirtschaft* helps to construct coalitions across the world to protest the environmental injustices. Colonial relations usually dominate deliberative processes of consultation on soybean or LNG trade, coal mining and burning, copper and gold production for export, and there is also internal colonialism within countries stopping scientific deliberation. We have pointed in this chapter to some positive North–South connections (Norway state company with Brazilian activists; Australian support to Malaysian activists).

As Temper et al. (2015, 2018, 2020), Scheidel et al. (2020, 2023), Navas et al. (2022) have explained, the EJAtlas provides empirical, statistical material for a research agenda that contributes to understanding how inequalities (economic, social and epistemic) are shaped

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through changes in socio-metabolic growth and transformations in the economy. Unequal power relations are contested through the co-production of scientific knowledge on soil pollution, air pollution, dead fish in rivers, endangered species, radioactivity, seismic risks …The commodities that appear in this chapter are similar to those in other chapters: pesticides, herbicides, soybeans, paper pulp, aluminium, hydropower, rare earths, copper, gold, lead, cement, petcoke, uranium, coal, oil, gas (and LNG) and chemical weapons. The EJAtlas integrates activist and scientific knowledge into the research on environmental justice movements. It includes many examples of contested nuclear risks or risks from asbestos or endosulfan, kidney disease in sugarcane and rice plantations, alleged contamination with lead, sulphur dioxide, arsenic, mercury and dioxin, as well as protests related to heavy metals or particulates from CFPP, and to the risks of waste incineration. Many different sciences are involved. Scientists help environmentalists, sometimes with success. Sometimes medical doctors in the pay of companies hide the facts, and sometimes they dispel uncertainties.

The increased and changing metabolism requires new materials and sources of energy, and at the same time, this creates new uncertain risks to the environment and to human health. Such risks are not social-class or caste or gender neutral. While state policies are failing in general to stop excessive GHG emissions, loss of biodiversity and local toxic pollution, the grassroots complaints are sometimes more effective. International alliances are born such as GAIA (against incineration) backed by scientific knowledge.

What are then the relations between world movements for environmental justice and Post-Normal Science? In Silvio Funtowicz's own crystal-clear summary,[21]

> A good example of a problem requiring post-normal science is the actions that need to be taken to mitigate the effects of sea level rise consequent on global climate change. All the causal elements are uncertain in the extreme, at stake is much of the built environment, and the settlement patterns of people, what to save and what to sacrifice is in dispute, and the window for decision-making is shrinking. […] In such contexts of policy-making, normal science (in the Kuhnian sense) is still necessary, but no longer sufficient. We can locate post-normal science in relation to the more traditional problem-solving strategies in the figure (Figure 28.2). This has two axes:
>
> - 'Systems uncertainties', which conveys the principle that the problem is concerned not with the discovery of a particular fact, but with the comprehension or management of an inherently complex reality.
> - 'Decision stakes' which concern all the various costs, benefits and value commitments that are involved in the issue through the various stakeholders.
>
> When systems uncertainties or decision stakes are small, we are in the realm of 'normal' science, where expertise is fully effective. When either system uncertainties or decision stakes rise then skill, judgement and sometimes even courage are required. This is the realm of professional consultancy. And when either or both system uncertainties or decision stakes are high, this is the realm of post-normal science. In post-normal science, the solutions are evaluated by the criteria of the broader affected communities… Nevertheless, post-normal science is a valid form of inquiry and not merely politics or public participation.

PNS is a crucial contribution in its own terms to the philosophy and sociology of science. It must not be intellectually and politically assimilated to one more postcolonial call for "listening to the subaltern" (Coronil 1994). PNS does not preach democratic participation in conflicts for its own sake, and environmental justice as the supreme goal. PNS is a "type of science", useful for "policy making" when facts are uncertain, decisions stakes are large and

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values are disputed. In Funtowicz's words: "The epistemological analysis of post-normal science, rooted in the practical tasks of quality assurance, shows that such an extension of peer communities […] is necessary for the effectiveness of science in meeting the new challenges of global environmental problems".

I then conclude this chapter with the following two points:

a. How does PNS contribute to global political ecology?
b. What contributions, if any, does this book make to PNS?

In this book I focus on the grassroots actions of an environmentalism of the people denouncing damage to human and environmental health, trying to stop resource extraction and pollution. Such movements sometimes achieve "degrowth in practice", they are indeed practical "policy-makers". While governments and companies try to reduce complexity by claiming that risks are known and will be safely managed, and that economic benefits compensate for the socio-environmental damages, communities point to other uncertain aspects and time dimensions that should be taken into account. Usually, the damage done cannot be later amended; and it certainly cannot be measured only in monetary terms. The legitimation of the opinions, interests and values of the affected communities is therefore one main help from PNS to political ecology. This legitimation of ways of knowing and different valuation languages through the extension of "peer communities" is in itself a great contribution to the recognition and participation of the dispossessed and downtrodden in environmental conflicts. This is independent, so to speak, of the role of PNS in the epistemology of complex realities.

In its turn, how does this book on global political ecology contribute to PNS? As we compare the Slovenian, Canadian, Lancashire UK or United States cases in this chapter to the Telangana and Assam (India), Fujian (China), Mongolian, South African, Brazilian, Argentinian, Malaysian, Russian cases, we demand more attention from PNS practitioners towards local contexts where the social actors are often rendered voiceless, killed, displaced, jailed, frightened and otherwise reduced to silence. Sometimes dialogues would be possible but the authorities do not allow them.

In the South as in the North, activist knowledge is easily despised. Under authoritarian regimes, moreover, activists are not easily allowed to come onto the stage. Though relatively powerless, they try to make themselves heard by appealing to national or international scientists or other supporters across gulfs of cultural distance. The possibilities of PNS, deliberative democracy and "extended peer review" are curtailed by the structural or open violence in areas long subject to coloniality and racism. As Banerjee plainly writes, "postcolonial critiques of corporate social responsibility (CSR) policies and stakeholder engagement practices show that colonial relations dominate deliberative processes of consultation between Indigenous communities and multinational corporations in the extractive industries" (Banerjee 2021). The brutality of extractivism does not fit with the niceties of public participation informed by sound scientific knowledge.

Sometimes, getting killed allows subaltern voices to reach wider audiences – as with Chico Mendes, Ken Saro-Wiwa, Gloria Capitan, Berta Caceres, Fikile Ntshangase and so many other environmental defenders. This is the real world, far away from diplomatic courteous collective debates recognizing the legitimacy of different problem framings, in terms of both facts and values. It is rather a world of naked power, violence and incommensurability of values.

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NOTES

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   Areva Uranium mining in Imouraren, Niger (Zahra Moloo), EJAtlas.
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11. Sappi Ngodwana, South Africa (Philip Owen), EJAtlas.
12. Oyu Tolgoi very large copper and gold mine, Rio Tinto, Mongolia (Joan Martinez-Alier), EJAtlas.
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15. Coal mining in Dehing Patkai, Assam, India (Anwesha Borthakur and Brototi Roy), EJAtlas.
16. Uranium mining proposed within the Amrabad Tiger Reserve, Telangana, India (Eleonora Farnari), EJAtlas.
17. Maradykovsky chemical weapon facility, Russia, EJAtlas.
18. Shiyes Landfill in Arkhangelsk region, Russia (Carola Rackete), EJAtlas.
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29. Population and resources: feminism and neo-Malthusianism

with Eduard Masjuan[1]

INTRODUCTION: THE GRASSROOTS MOVEMENTS FOR WOMEN'S FREEDOM IN RELATION TO RAPIDLY DECLINING POPULATION GROWTH

In ecological macroeconomics, we hold that the industrial economy is not circular but entropic (Georgescu-Roegen 1971). The planet Earth is open to sun energy and this produces photosynthesis, drives the water cycle, and also other biochemical cycles – what Jacob Moleschott in the mid-nineteenth century called *Der Kreiskauf des Lebens*. Life is "anti-entropic", "negentropic" as Felix Auerbach, Vernadsky, Schrödinger and others explained in the early twentieth century. But an economy based on fossil fuels from the distant past whose energy dissipates when burnt, and on other materials which are recycled only in part if at all, is an economy that cannot grow much more. Also, today's economy attacks the incredible biodiversity evolved in the "circle of life", and occupies to excess the overflowing "sinks" for industrial waste (in particular carbon dioxide). It constructs and cements infrastructures whose maintenance will need further amounts of energy and materials. It cannot go on like this. Hence the blossoming of the theories of ecological economics of the "steady state" (Herman Daly 1973), "prosperity without growth" (Tim Jackson 2009) and "Degrowth" (Kallis and Hickel 2020, building on Illich, Latouche and previous authors). The Degrowth hypothesis (as Kallis calls it) is that we could live well under a political economic system that has per capita a smaller energy and materials throughput than in the rich countries at present. I myself belong to this Degrowth school – but I criticize it on two points. First, as the EJAtlas shows, there is very wide geography of environmental movements of the poor and the Indigenous, "degrowth in practice" that the Degrowth school tends to leave aside for the moment because of Eurocentrism and a certain obsession with public policies rather than world grassroots movements. Second, ecological macroeconomics tends to leave demography aside or (as Herman Daly did, but not Georgescu-Roegen) tends to draw anti-migration conclusions from population growth. My own approach is different, it is "feminist neo-Malthusianism", a doctrine born around 1900. The Degrowth dictionary (D'Alisa, Kallis and Demaria 2014) already included a section that I wrote in favour of "feminist neo-Malthusianism".

One of the main tenets of the feminism movement is that "the personal is political". Our most personal relations, our sex life and reproductive life, are part of social and political systems. Most of us humans (of any gender) have been born in patriarchal systems which are slowly changing and eroding under the influence of the feminist movement. Feminism is very possibly the most important social movement of our time (Delap 2020). I would say that the environmentalism of the poor and the Indigenous is the second one in importance. Anti-colonialism and anti-racism are also growing. There are other movements: human rights,

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the peace movement, agrarianism, the working-class movement. They are not fashions, they respond to long-lasting trends with socio-structural roots, and they interact and overlap with each other. So, in this chapter we continue the analysis of ecofeminism begun in Chapter 4 but with a new twist by introducing the issue of Population and Resources.

The UN estimated in 2022 that the human population will peak in 2086 at just over 10.4 billion people. But the UN has consistently overestimated population growth. Indeed, one favourable trend towards environmental sustainability is that the human population is likely to reach its peak between 2060 and 2070 below 10 billion. It was 1.5 billion in 1900. In the twentieth century it increased by 400 per cent; in the twenty-first century it will increase by about 50 per cent until it stops growing quite soon. While in some large countries of Africa, population still grows, in most other continents the population is not growing anymore. The issue of population growth has sometimes been left aside by claims that what matters for environmental pressures is the level of consumption. This is partly true. Thus, the "ecological footprint" (adding up the surface used for providing food and wood, and the virtual surface needed to absorb carbon dioxide produced mainly by combustion of fossil fuels), may vary from 0.2 ha to 10 ha per capita, depending on the income. However, when the poor population becomes less poor, then the total footprint increases, so that population growth is very relevant.

The "ecological footprint" (that Rees and Wackernagel popularized after 1990) is the inverse of the "carrying capacity", a concept from ecology defined as the maximum number of individuals of a species in a given territory (frogs in a lake for instance) that can live sustainably. When applied to humans (as biologists such as Garrett Hardin liked to do), two questions immediately arise: what is the exosomatic level of their consumption, with enormous differences *within* the human species, and how do the "given territories" come to be "given"? The history of humankind is made of occupation of new territories, change and establishment of frontiers through military means, pandemics and collapse of some populations (as in the Americas after 1492), mass migrations (including those of slave or indentured labourers), and prohibition of migrations and deaths of would-be migrants as at present between Africa and Europe, and Mexico and the United States. Environmental pressures from excessive consumption, and the racist military and police curtailment of the free right to move around are major issues of our times (Mbembe 2020). Against Hardin's doctrine of the "lifeboat ethics" (1974), where the rich avoid poor people coming into and overcrowding our own boat because we will all sink, we believe that "planet Earth is our lifeboat", and that free mobility is a human right (article 13, Universal Declaration of Human Rights).

The UN Population Report of 2019 points out that in many countries, population is already decreasing. I agree with this. Fertility rates are coming down more quickly than the UN demographers foresaw a few years ago. South India and even India as a whole is a good example. Unfortunately, some patriotic governments are still introducing policies in favour of population growth, sometimes with racist arguments – they prevent immigration and at the same time they give incentives to local population growth. Some people lament the decline in population growth because the number of old people increases (making the payment of pensions more difficult) and because some rural and even urban areas will be abandoned, with negative impacts on payment of rents and perhaps even with bad effects on the care for the environment. Fertility rates have come down from 3.2 per woman in 1990 to 2.5 in 2019, and on average are coming down quickly to 2.1, the replacement rate. Nigeria, Pakistan, the RD Congo, Ethiopia, Tanzania, Indonesia, Egypt and the United States are the set of big countries where population will still increase. In 55 countries, the population will decrease by one per

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cent by 2050, and in 2060 the reduction will be over 10 per cent. Migrations might change such figures. But altogether it seems that "only" two billion people will be added to the current 7.7 billion before population growth stops, and this is to be welcomed indeed. Some economists will call for more people because this is good for the economy after many decades of saying that economic growth was good for the people!

A slow process, 120 years since the neo-Malthusian feminists (Emma Goldman, Marie Huot, Madeleine Pelletier, Paul Robin) advocated *la grève des ventres* at heavy political cost to themselves (Ronsin 1980), and since E. V. Ramaswamy Periyar in South India in the 1920s defended women's freedom (Cova 2011, 2020). I have sometimes been blamed for supporting "bottom-up feminist neo-Malthusianism that raises the spectre of population control" (e.g. Nirmal and Rocheleau 2019). Never mind. Present trends are welcome. They will indeed open up a new important research field on Depopulation and Environment. Meanwhile, other social and economic trends are still negative for environmental sustainability.

Of course, environmental problems are not only population problems. From the beginning of political ecology (Blaikie and Brookfield 1987) a strong distinction was traced between population pressure on resources and production pressure on resources. Moreover, new illnesses are spreading, old illnesses are coming back. All this is known, but it does not explain why the feminist movement, which supports women's right to safe birth control and abortion (still illegal in so many countries) as part of comprehensive healthcare, can sometimes forget its own historical role in the demographic transitions. In a book such as this, the framing must be whether there are grassroots movements that, while aware of the fact that many Indigenous groups are disappearing (Chapter 25) and remembering also the demographic collapse in the Americas after the European conquest of 1492, nevertheless preach birth control. The larger the world population, the higher the HANPP will be and therefore the higher the pressure on biodiversity. The larger the world population and the higher its average income, the more difficult it will also be to reach a maximum in carbon dioxide emissions and start its decline.

We have seen the environmentalism of the poor and the Indigenous spreading across borders even if taking different local and ephemeral forms. It shows similarities in grievances and claims. In the same way, the feminist movement (Delap 2020), socially and politically more relevant and successful than the environmental movement, has a common identity and some symbolic dates (8 March) and historical figures across the world. There are many different feminist concerns, most of them centre around the combat against "patriarchy" (a term that comes itself from the movement). For instance, unequal access to education; citizen rights; unequal property rights; social protection for single mothers; unequal distribution of domestic work; an end to violence against women with campaigns based on the evidence from statistics that nobody collected before and which are still not accurate now; labour rights; sexual autonomy; reproductive rights, and others such as complaints against mandatory dress codes forcing women to wear a headscarf (hijab) in Muslim countries. There are shorter-term goals (e.g. securing abortion rights, still controversial in Argentina, Mexico, Poland and even the United States in 2022) within an overall long-term objective, the end of a "patriarchal" society – this would be a historical social revolution that might indeed happen.

There is no feminist central committee or politbureau at world level, or inside any country. There are ad-hoc movements as in Argentina or Iran in 2022. There are many ephemeral or long-lived organizations, some known and many unknown heroines, and also well-known or anonymous women authors of pamphlets, posters, books, documentaries, slogans and songs in the many languages spoken in the world. There are overlaps between movements, as

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between feminism and pacifism (as in the famous Greenham Common occupation in the UK in 1985).[2] There are strong overlaps with lesbian, gay, bisexual, transgender, queer and intersex (LGBTQI+) movements. There is also a strong ecofeminism movement that overlaps between environmentalism and feminism. The word ecofeminism comes from the mid-1970s, from Françoise d'Eaubonne (Migliaro 2021). The EJAtlas group has included outstanding contributions by Dalena Tran (2020, 2021, 2022, 2023) in her articles on Women Environmental Defenders killed, and on successful non-violent WED (Chapter 4).

The freedom of women to have only the number of children they wish to have was one of the earlier demands of feminism. It still is. This was linked for Françoise d'Eaubonne to the concern for excessive world population growth. She had absorbed this from the tradition of "feminist neo-Malthusianism" of Emma Goldman and others from 1900. Goldman was a militant anarchist, imprisoned several times for inciting riots and for illegally distributing information against capitalists and states, and on birth control. She identified herself as a "neo-Malthusian". One might agree that the name was ill-chosen but this is no reason to ignore the evidence that there was a "feminist neo-Malthusian" movement with this name. The emphasis was on "neo", distancing themselves from the Reverend T.R. Malthus. Most of this chapter deals with this movement of over one hundred years ago, still very relevant today, and too often forgotten by feminist authors (Hartmann 1994).

Governments (as also the Christian churches) were mostly against such feminist neo-Malthusianism that emphasized birth control, or "conscious procreation" in the terminology of the time. As Kallis (2021) explains,

> to see the difference between Malthusian scarcity and radical degrowth, consider Goldman. Goldman was a proto-environmentalist. The cover of her magazine *Mother Earth* celebrated the abundance of an early Spring day – a stark contrast to the bounded Earth environmentalists depict today. She also advocated birth control in the name of free love, so that women could enjoy sexual pleasure free from the yoke of motherhood. Goldman wanted women to stop feeding expendable soldiers to imperialist war machines, and surplus labor to capitalist factories. Limiting population for Goldman was a deliberate *political* action – a strategy against capital and its need for limitless growth.

In this chapter written with Eduard Masjuan, we study the beginnings of the conscious trend towards declining fertility rates. Around 1900, there was in Europe and America a successful international social movement for "conscious procreation", which in contrast with Malthus' views, believed in the curtailment of population growth amongst the impoverished classes through voluntary decisions and in women's ability to choose the number of children they wanted to have. They disagreed with many of Malthus' ideas, but they agreed on the importance of population growth and they made this clear by labelling themselves "neo-Malthusians", whatever revulsion the name Malthus might cause. They did not call upon the State to impose restrictions on population growth. They relied rather on a bottom-up type of activism, based on women's freedom, to avoid population pressure on wages and the threat to the environment and to subsistence. The movement was seen as, and indeed it was, a feminist movement struggling for women's freedom. Women had and have the right to choose the number of children they want to have. One hundred years ago, this was a shocking proposition. Defending it required courage. International networking and support were also helpful, and this is what this chapter intends to show.

In the context of this book, this chapter is pertinent for two main reasons: first, it links the issues of population growth and environment; second, it discusses the growth of an

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international movement before the age of the Internet, a movement more modest than the international working-class movements at the time or the anti-colonial movement after 1945. If now there is a "digital divide" that subaltern movements try to surmount, in 1900, the pamphlets and posters that were printed and distributed managed to overcome a "literacy divide" particularly discriminatory to women and poor people. Feminist neo-Malthusianism was a movement showing an early facet of the intersectionality between feminism and environmentalism, perhaps the two most important social movements today for the twenty-first century.

MALTHUSIANISM AND THE ORIGINS OF NEO-MALTHUSIANISM

One main concern of human ecology and ecological economics is the balance between human population and natural resources. This is rightly named "the Malthusian question" because Malthus predicted that human population, if unchecked, would grow exponentially while agricultural production would and should grow but only more slowly. However, around 1900, there was in Europe and America a successful international social movement that, in contrast to Malthus' pessimism, believed that population growth could be stopped among the poor classes by voluntary decisions. Women were entitled to choose the number of children they wanted to have. This neo-Malthusian movement did not appeal to the State to impose restrictions on population growth. On the contrary, it was based on "bottom-up" activism based on women's freedom, the downward pressure of excessive population on wages, and the threat to the environment and subsistence. An excess of population was foreseen, and this led to anticipatory behaviour.

Amartya Sen (1994) has explained that in 1798, Malthus quoted Condorcet's discussion in 1795 on the possibility of overpopulation. Condorcet believed in reasoned human action in order to prevent an overpopulation crisis through increases in productivity, through conservation and prevention of waste, and through education (especially female education) which would contribute to reducing the birth rate. Voluntary family planning would be the solution. Malthus, on the contrary, thought that improving the situation of the poor would lead to larger families. So, the neo-Malthusianism of 1900 can be seen as one moment in a prolonged discussion which started in 1795 and continues today.

Ever since 1798, when Malthus formulated his essay on population, there arose concerns in his country about avoiding the overpopulation of poor people. The alternative to the Malthusian trap, if there was one, went no further than puritan advice on moral restraint, celibacy, delay in the age of marriage and sexual abstinence. It took some time for Malthus' "remedies" to be transformed. In 1822, Francis Place, a tailor by profession and associate of the utopian socialist Robert Owen, first published in London *Illustrations and Proofs of the Principle of Population*, in which he did not yet describe the details of the contraceptive methods which he would later anonymously disclose in his so-called *Diabolical Hand Bills*. Other personalities followed Place and Owen in the same concern, including Richard Carlisle, who in 1825 wrote his neo-Malthusian work entitled *What is Love?* These and other neo-Malthusian works were broadly disseminated in England during the first third of the nineteenth century; they had public impact and attracted governmental persecution. Neo-Malthusianism travelled to North America via Robert Owen himself, when he founded his communist-inspired colony, New Harmony. As early as 1835, Robert Owen's son, Robert Dale, published the neo-Malthusian booklet entitled *Moral Physiology* in New York, various editions of which were issued until

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1877 in England and the United States. Following this work, Charles Knowlton, a Boston physician, wrote *Fruits of Philosophy*.

Starting in 1854, concern for the condition of the proletariat and high infant mortality rates was spurred by the English doctor, George Drysdale, who published the first edition of his book *The Elements of Social Sciences* under a pseudonym. The remedies for overcoming the three evils of poverty, prostitution and celibacy, which the author claimed afflicted humanity, were explained in this work. Drysdale's work inspired the creation of the first neo-Malthusian organization in the world, *The Malthusian League*, founded by his brother, Charles Drysdale with Charles Bradlaugh and Annie Besant in London in 1877. The spread of contraception gave way to a drawn-out lawsuit involving those who wanted to re-issue the book by the American physician, Charles Knowlton, in England. The court case involved Annie Bessant and Charles Bradlaugh. It was discussed in many countries.

One key factor in the future development of neo-Malthusianism in continental Europe was Paul Robin's exile in England at that time. He was a member of the council of the First International. His contact with the neo-Malthusian English thinkers led him to propose including the population question in the programme for workers' emancipation as early as the 1870s, but his calls had no resonance on the international socialist agenda. Despite this initial lack of understanding, the English league's activities in the United States and England led to the spread of neo-Malthusianism around Europe. This is how, via its own theoretical and practical production, the second independent European neo-Malthusian league was founded in the Netherlands in 1881, under the name *De Nieuw-Malthusiaansche Bond*, the secretary of which was the physician Jan Rutgers, who published the newsletter *Het Gelukkig Huisgezin* (*The Happy Family*). From its beginnings, this league had the valuable support of a member of parliament, M.S. van Houten. There is no indication that neo-Malthusianism was legally persecuted in Holland like it was at first in England, but there were two public morality (re-population) leagues which attempted to combat the spread of neo-Malthusian theories and practices, called *Rein Levenbeweging*, based in Utrecht, with the newsletter *Levenskracht*; and the *Vereeniging tot Bestrijding van het Nieuw-Malthusianisme*, based in Gravenhage.

In 1889, in Stuttgart, Germany, the neo-Malthusian league *Sozial Harmonischer Verein* was created, the secretary of which was the publicist Max Hausmeister. The league's means of spreading information was the newsletter *Die Sozial Harmonie*. In 1911, the German government – in the phase leading up to World War I – proposed banning the travelling sale of contraceptive products by modifying article 56 of the Industrial Code.

In Sweden, one active propagandist of neo-Malthusianism at the turn of the century was the economist Knut Wicksell who, with the anarchist and socialist Hinke Bergegren, founded the *Stockholm Sällskapet för humanitär barnalstring* (Stockholm Association for Humanitarian Reproduction). Bergegren (1861–1936) was jailed in Sweden in 1910 after a public conference entitled "Love without children". There was a so-called "Hinke Law" against birth control. Bergegren became in 1917 a member of the Communist Party.

The French neo-Malthusian league was created in 1896. In 1877, Paul Robin had drawn attention to the problems posed by Malthus' law and had published his work *La Question Sexuelle*. He did not get support from anarchist personalities such as Kropotkin whose technological optimism left aside the world's rising population as a negligible problem. Robin repeated the principles for future generations of "good birth, good education and good social organisation". Robin's view broke with Malthus' moral restraint. In its place, he emphasized the need for voluntarily and consciously reducing fertility rates through sexual education, contraception and women's freedom. With this, he proposed taking labour away from capital,

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weakening militarism, avoiding forced migration and most importantly, allowing working-class women to decide for themselves when to become pregnant. From France, Paul Robin's neo-Malthusian objectives joined those of the workers' movement, and this was the neo-Malthusianism that took root in southern Europe and some Latin American countries.

In Switzerland, there was a neo-Malthusian group in Geneva that published the journal *La Vie Intime* from 1908 to 1914. Its most visible spokesman was Valentin Grandjean (1872– 1944), from a Calvinist family, who became a writer and later a Socialist deputy in the Grand Conseil of Geneva from 1904 to 1913. This group was directly influenced by French neo-Malthusianism.

The union of the European and American neo-Malthusian movements materialized in August 1900 in Paris, when the first International Neo-Malthusian Conference was held, and the *International Federation of Human Regeneration* was created. Attending this meeting were Paul Robin from France, Emma Goldman from the United States, Valentin Grandjean from Switzerland, the Spaniard Ferrer i Guàrdia, Dr Rutgers from Holland, and England's Dr Drysdale. It was agreed that each neo-Malthusian branch with headquarters in each country would be independent, and that committees and groups would be organized either in cultural centres or labour unions.

Therefore, starting in 1900, neo-Malthusianism was organized in western and central Europe, as well as in the United States, where it was spread by Moses Harmann and his daughter, Lily, through the neo-Malthusian newsletter published in Boston, *The Lucifer.* They were joined by the anarchist Emma Goldman, in addition to sundry doctors and midwives. Thus Emma Goldman (1869–1940) was a participant in the first neo-Malthusian conference in Paris in 1900. She published *Mother Earth* between 1906 and 1917. Environmentalists of the 1960s and 1970s revived the title of her journal. She was active as a neo-Malthusian before Margaret Sanger (1879–1966), who is rightly credited as the main force behind the social and legal acceptance of contraception in the United States. Sanger was an International Workers of the World organizer, and therefore familiar with anarchist ideas. She lived and learned about birth control techniques in Europe, she was friendly in 1911 in London with one associate of Ferrer i Guàrdia (who had been executed in Barcelona in 1909 after an uprising against sending troops to Morocco), and after her return in the United States in 1914, she began to publish the journal *The Woman Rebel* which supported socialism, feminism and contraception. She was indicted for violating the Comstock Act of 1873 that forbade contraceptives. Sanger no longer used the word "neo-Malthusianism", which (paradoxically) had become politically too radical, and used "birth control" instead, with emphasis on the prevention of abortions, to be substituted later by even less controversial words, "family planning" or "planned parenthood".

By 1910, there was a networking international neo-Malthusian bureau with its logo. It was founded at The Hague.

NEO-MALTHUSIANISM IN SOUTHERN EUROPE AND LATIN AMERICA

France

Starting in 1896, but especially after 1900, French neo-Malthusianism was devoted to raising women's awareness of their right to voluntarily procreate when they wanted to, and it advised the proletariat not to have large families in order to be more demanding in their fight for

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emancipation from the slavery of wages. It also fostered co-education between boys and girls and sexual education. As Francis Ronsin (1980, pp. 16–22) points out in his classical work on neo-Malthusianism in France, neo-Malthusian propaganda was partly responsible for the lowering of birth rates among the working class. It forged an important presence not only in cities but also in rural areas.

Paul Robin was one of the leaders but several famous women led the movement, among them Nelly Roussel (1878–1922) who was a proponent of *la grève des ventres*, "the womb strike" (Delap 2021). She was passionately opposed to women's unwilling reproduction of children as "cannon fodder" for military and economic purposes. Roussel declared that feminism should proclaim above all else the liberty from motherhood, and "she proposed a birth strike, in protest at the state's pro-natalist policies" (Delap 2021, p. 281). She also demanded women's rights to sexual pleasure. She had a reputation as a great orator with a crystalline and loud voice, one of a courageous group that much later, and despite the French state's pro-natalist policies, connected with the feminism of Simone de Beauvoir and the ecofeminism of Françoise d'Eaubonne.

The "Womb Strike" was advocated via the periodicals *Régénération* (1900–08), *Génération Consciente* (1908–14), *Le Malthusien* and *Le Néo-malthusien* (1916–19), along with public conferences, dramas and prolific artistic production. The sale and dispensing of contraceptives were always accompanied by an explanation of the main point: there was no inexorable "Malthus' population law". This systematic propaganda on conscious procreation sparked repression by the French state and the Catholic church because neo-Malthusianism was seen as responsible for the weakness of French demography compared to Germany. The repopulation leagues used religious and nationalist arguments, lamenting the decrease in the birth rate. French neo-Malthusianism came to be viewed as a threat to the fatherland.

The neo-Malthusians of one hundred years ago agreed that poor people had too many children, but they did not believe in chastity and late marriages. They promoted more vigorous "preventive checks" than Malthus had foreseen, exhorting the poor populations of Europe and America to use contraceptives, and to separate love making from child bearing and even from marriage. The movement was careful to insist that they were not Malthusians but *neo*-Malthusians, devoted to "sexual freedom and parental prudence" (Paul Robin in 1896, cf. Ronsin 1980, p. 70).

Spain and Portugal

Neo-Malthusianism spread from Catalonia through the working-class press, including *El Boletín de la Escuela Moderna (Newsletter of the Modern School)* and *La Huelga General (General Strike)* financed since 1901 by Ferrer i Guàrdia, one of the founders of the international neo-Malthusian league one year earlier, and Mateo Morral, the correspondent in Germany for the international neo-Malthusian league magazine headquartered in Paris, *Régénération*. This paved the way for the creation of neo-Malthusian branches for men or women or both throughout the peninsula. In 1904, the Spanish branch of the *Human Regeneration League* was formed in Barcelona, and its secretary was the anarchist and first president of Barcelona's *Ateneo Enciclopédico Popular*, Luis Bulffi. This federated league, homonymous with the international one in Paris, was devoted to studying the population problem and preaching freedom of choice in motherhood, claiming that unlimited reproductive growth was not possible because the natural environment was limited. One means to spread neo-Malthusianism

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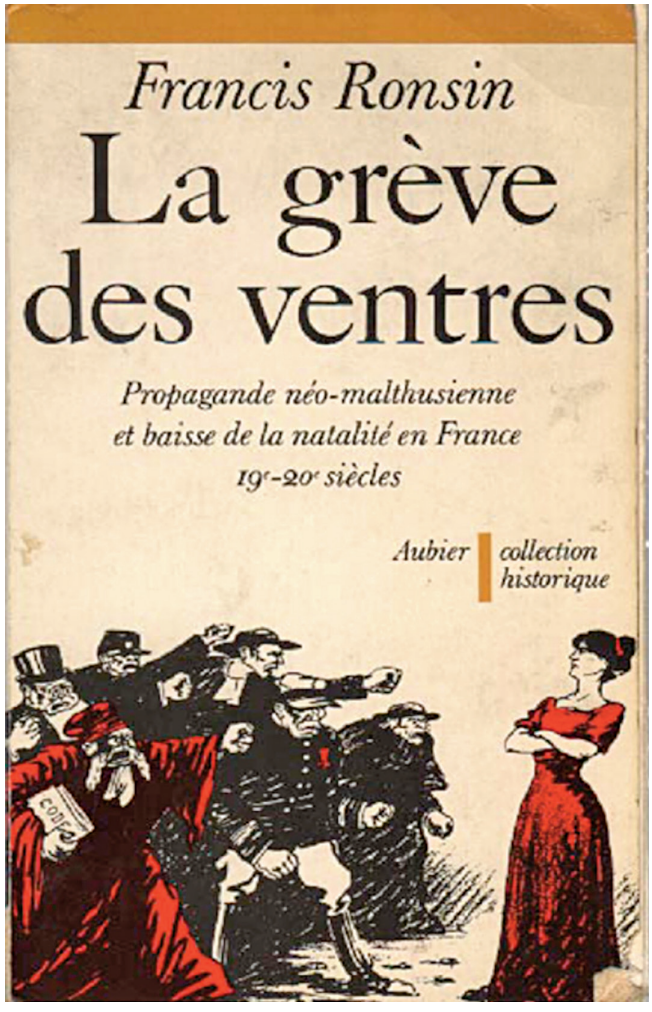

Figure 29.1 *Cover of Francis Ronsin's 1980 book,* Priests, lawyers, capitalists and the military against a neo-Malthusian feminist

in Spain from 1904 to 1914 was the magazine *Salud y Fuerza*, *Procreación consciente y limitada* (*Health and Strength: Conscious, Limited Procreation*), with debates on restricting fertility in light of colonial militarism, overseas migration and the condition of sexual slavery in which proletarian women found themselves. Just as in Spain, the idea of restricting the working-class birth rate in Portugal arrived around 1900 in the working-class media and some medical sectors. From 1902, neo-Malthusianism began to be propagated by a physician who sympathized with anarchism, Ãngelo Vaz. Starting in 1905, the working-class press from Oporto included neo-Malthusian ideas by translating publications by Luis Bulffi, persecuted in Spain. The first Portuguese translation of the booklet *Huelga de Vientres: Medios prácticos para evitar las familias numerosas* (Womb Strike: Practical Means for Avoiding Large Families) was published with the title *Greve de Ventres.*

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The reduction in the Portuguese birth rate was estimated at 18 per cent in the five-year period from 1920 to 1924. The decrease began to be noticed in 1911. Neo-Malthusian doctrines were a contributing factor (Livi-Bacci 1972). The classical neo-Malthusian pattern of lower fertility in poorer than in rich sectors of society, could be found in rural southern Portugal with decreasing fertility rates in an area without industrialization and urbanization. Meanwhile, in Lisbon, since the 1930s the birth rate decreased to levels similar to Belgium, Denmark and Finland. In Portugal, dispensing contraceptives was further penalized in 1929 after a protracted patriotic campaign by Catholic bishops and physicians (Freire and Lousada 1982, pp. 1367–1395).

From Oporto it radiated out to Lisbon and Setubal, and then spread to the rest of Portugal. Unlike in Spain, in Portugal there were no exclusively neo-Malthusian periodicals. *Paz e Liberdade* (Peace and Freedom) was eloquently subtitled as an anti-militaristic, anti-patriotic, revolutionary, syndicalist and neo-Malthusian magazine (Figure 29.2). Not yet explicitly environmentalist because the word was not used politically. Similar journals were *O Agitador* from Lisbon, *Germinal* from Setubal, through which information was provided and contraceptive products were sold.

Italy

In Italy, neo-Malthusianism began to be disseminated among poor people at the turn of the century. It emerged as a political response to the high infant mortality rate, forced migration and deplorable working conditions. Contraceptives were advertised and dispensed from the working-class newspaper with the highest circulation in the country, *¡Avanti!*, accompanied by refutations of religious prejudices. After much propaganda in the workers' press, in 1910, the neo-Malthusians sponsored a national conference in Florence on whether the lower classes had the right to voluntarily restrict their procreation. This event marked a point of no return. Over one hundred men and women from all corners of Italy and with diverse ideologies took part: conservatives, revolutionaries, monarchists, anarchists, republicans, socialists and trade unionists, along with professors of medicine, teachers, scholars of sexuality, middle and elementary school teachers, Protestant pastors and Catholic priests. The conference did not reach a unanimous decision on the advisability of spreading neo-Malthusian practices among the proletariat. However, the sociologist Roberto Michels and anarchists including Secondo Giorni and the physician Luigi Berta, decided that spreading the theory and practice of neo-Malthusianism should have a high priority. The leading book on neo-Malthusianism in Italy was published in 1911 by Secondo Giorni. It was entitled *L'arte di non far figli (The Art of Not Making Children).* Many articles in the anarchist press by the neo-Malthusian doctor, Luigi Berta, provided practical information on how to voluntarily limit births, along with the reasoning behind it, especially the resistance to growing militarism. In 1911, Italy proceeded to invade Tripoli while Spain had an expansionist policy in Morocco. Neo-Malthusian reasoning served to reinforce those who opposed conscription into the military service. This is one of the reasons why neo-Malthusian publications and their editors were to suffer imprisonment and fines.

During this time, neo-Malthusianism was truly international. To this effect, the *Universal League of Human Regeneration* created the *International Neo-Malthusian Bureau of Correspondence and Defence* at a conference at The Hague in 1910. It was presided over

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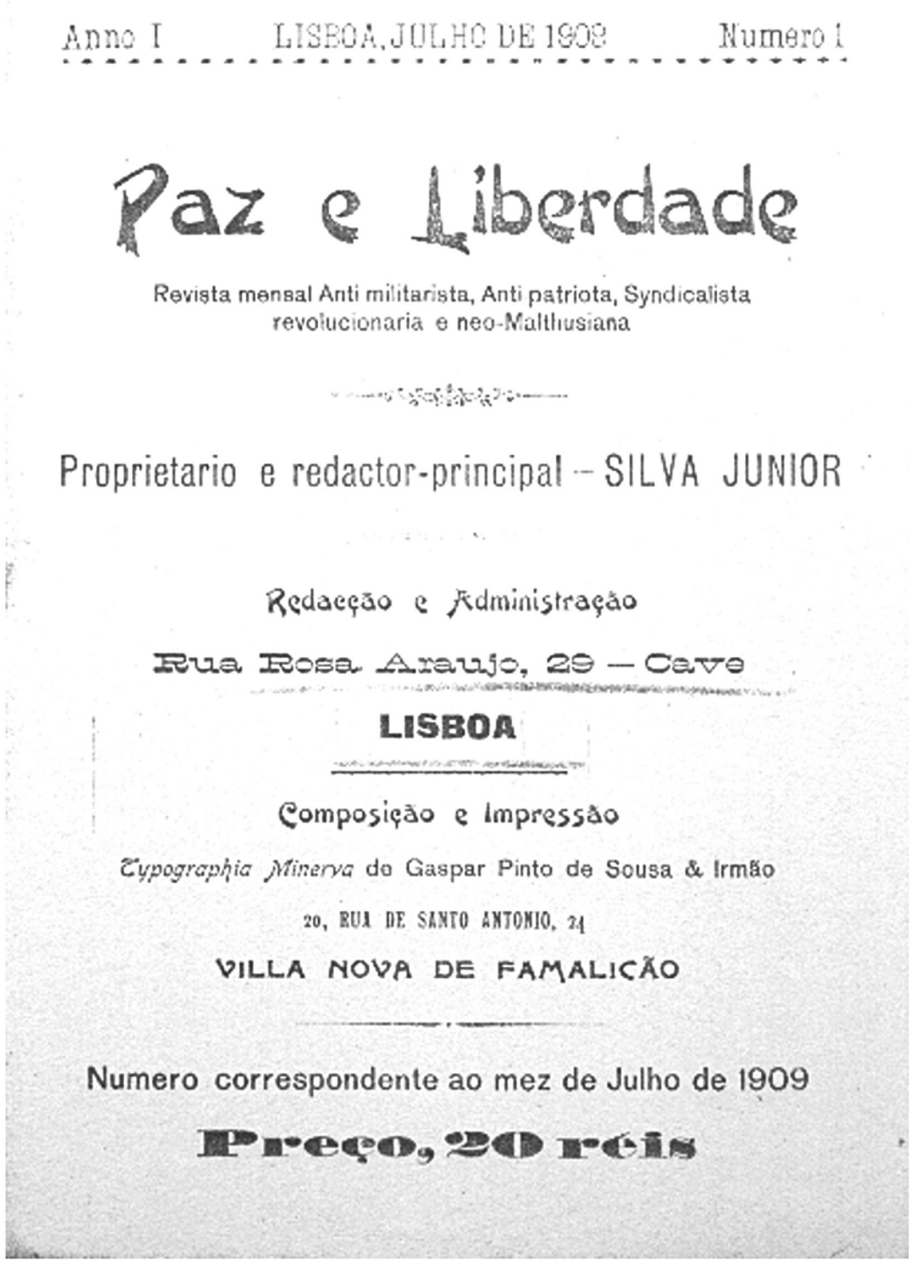
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Paz e Liberdade

Revista mensal Anti militarista, Anti patriota, Syndicalista revolucionaria e neo-Malthusiana

Proprietario e redactor-principal — SILVA JUNIOR

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Figure 29.2 *Paz e Liberdade. Revista mensual antimilitarista, antipatriota, syndicalista revolucionaria e neo Malthusiana, 1909*

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by Charles Drysdale of London; Dr J. Rutgers of Holland was named secretary, and the Frenchman Gabriel Giroud (Paul Robin's son-in-law) was named treasurer. The legal and political support provided by the International Neo-Malthusian League challenged the persecution in Spain, Italy and even the United States.

Once the initial trials mentioned above were over, in 1913, neo-Malthusian leagues were created in Turin and Milan. In Florence, the anarchists founded an institute that facilitated contraceptives among workers at cost price. In 1913, the magazine *L'Educazione Sessuale (Sexual Education)* was created by Luigi Berta, Secondo Giorni, Alfredo Polledro and M. Berardelli. Neo-Malthusianism in Italy as an organized movement persisted until 1922, even during the wartime period from 1914 to 1918. All of this took place despite the fact that after the outbreak of World War I, the international neo-Malthusian league was dismembered. With the war, Luigi Berta departed to the Austrian front as a pacifist volunteer in charge of an ambulance and was killed in September 1916. Secondo Giorni, Luigi Fabbri and others went into exile upon the advent of Fascism (Masjuan 2002a, 2002b).

Uruguay and Argentina

Low birth rates characterized Uruguay already at the beginning of the twentieth century, partly because of the neo-Malthusian doctrines spread by Iberian emigrants and refugees. In Uruguay, as elsewhere, neo-Malthusianism was condemned by governments that viewed the country's low birth rate as the nation's bankruptcy. The Spanish league's representatives in Montevideo and the rural regions promoted public propaganda and, to this end, an anarchist *Comité Neo-Malthusiano del Río de la Plata* was formed in 1907.

In Argentina, the spread of "conscious procreation" among the working class emerged from the arguments on living conditions and the restrictive Residence Law dating from 1902. Foreigners in Argentina were seen as the detritus that Europe expelled from its own soil. The immigrants had to put up with the accusation that they were responsible for all the country's social ills. Given the abusive working conditions existing in Argentina, the main objective the Iberian neo-Malthusians propagated in Argentina was to prevent migration. Their practices gained a following in the anarchist working-class centres. Women with knowledge about obstetrics such as Lola Sánchez, and the poet and painter Félix Nieves initially spread neo-Malthusianism in Argentina.

A group in favour of conscious procreation called *Pro-Salud y Fuerza* was created in 1908 in Buenos Aires, in association with the *International Federation of Human Regeneration*. The objectives of the group were: "Spreading and disseminating scientific ideas in order to practise voluntary procreation and contributing to social emancipation and human regeneration". By 1911, there were already four editions of Luis Bulffi's booklet published by the working-class newspaper with the highest circulation in Argentina, *La Protesta*, and agitation reached the country's second largest city, Rosario de Santa Fe, through the library, *Libertad y Amor (Freedom and Love).*

The authorities of the day became concerned when the number of immigrants began to decrease on the eve of World War I. Thus, much later, in 1940, when marriage rates increased and nevertheless birth rates decreased in the federal capital, the responsibility for this was attributed to neo-Malthusianism by *Acción Católica Argentina*, which at the same time attempted to once again uproot it in the name of Catholic morals and to overcome the "suicide of the white race". However, when neo-Malthusian practices are introduced, a return to past demographic models does not happen easily.

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Cuba

Some of the first neo-Malthusian groups in Latin America were found in Cuba. Since the turn of the century, the publications from Barcelona had been broadly distributed on the island. In 1907, the *Sección neo-Malthusiana de Cuba*, part of the *International Federation of Human Regeneration*, was founded in Havana. Since they were scattered all over the island, the Iberian immigrants led to the presence of neo-Malthusianism in small cities, too, such as Cienfuegos and Manzanillo. Through the widespread practice of readings in the tobacco factories, many works that included doctrines of birth control were shared. With its publication, *Pro-Vida (Pro-Life)*, Cuban neo-Malthusianism made significant contributions to the debates at that time. From this publication, a significant grassroots vegetarian and naturalist movement developed and tried to raise awareness against fictitious needs and for social justice. Theosophers, Masons, socialists and anarchists all took part in this movement.

NEO-MALTHUSIANISM IN INDIA?

Regarding population growth I am of the same opinion as Saral Sarkar, an eco-socialist living in Germany. When Gandhi wrote in 1928 that "The economic imperialism of a single tiny island kingdom [the UK] is today keeping the world in chains. If an entire nation of 300 million took to similar economic exploitation, it would strip the world bare like locusts", India meant the whole British India that included today's Pakistan and Bangladesh. The population of this subcontinent has since then swollen from the then 300 million to today's 1,700 million. Yet, not many left-environmental activists are talking about this problem. (https://eco-socialist.blogspot.com/, 28 July 2021)

Anandhi S's work (1998) on early birth control debates in Tamil Nadu claims with persuasive evidence that the neo-Malthusians of Madras in 1890–1930 were almost all upper-class, upper-caste men, worried about the excessive reproduction of the lower orders. They believed that excessive fertility was a cause of poverty, thus "blaming the victims". She traces a contrast between those who saw women as merely "reproductive bodies" and those who saw women as "sexual bodies" with a right to freedom. Forgetting the feminist component in neo-Malthusianism, Anandhi S. considers "neo-Malthusianism" a patriarchal and right-wing word, as do Mohan Rao (Rao 1994) and some historians (Ramusack 1989). Also, the neo-Malthusians had eugenic preoccupations. The connections to the world neo-Malthusian movement are unclear. For instance, Murugesa Mudaliar from Madras was in 1880 vice-president of the London Neo-Malthusian League. Annie Besant was living in Madras, and she was internationally known for her public defence of neo-Malthusianism in London in 1877. However, she appears not to have been a central figure in the debates on birth control in India.

So, top-down, male neo-Malthusians saw women as "reproductive bodies". In this they coincided with the currents opposed to neo-Malthusianism, which also saw women as pure "reproductive bodies". Anandhi S. makes a distinction between two currents, the Hindu Nationalists and the Gandhians. The Hindu Nationalists opposed birth control for two reasons. First, they wanted more citizens for a future independent India. Second, they opposed birth control because the control of women's sexuality required by the endogamic caste system negated women's freedom to control their own reproduction. Contraception allowed more sexual freedom, and this was dangerous to the caste system. The Gandhians, from the 1920s onwards, and Gandhi himself in his private and public life as explained in his Autobiography,

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were concerned about the increase of population. Earlier in his life, Gandhi had defended the right of neo-Malthusians who preached contraception to express their views in the Vegetarian Society of London of which he was secretary while studying law. He himself, however, came to believe in celibacy (*brahmacharya*). After having four children, he imposed celibacy on himself and his wife. Anandhi argues with reason that Gandhian doctrine is consistent with the view of women as pure "reproductive bodies". Women's sexual desires were neglected, made invisible, sacrificed. Gandhi, when interviewed by Margaret Sanger in 1932, still opposed "artificial" birth control.

From early neo-Malthusian debates and from the nationalist and socialist ferment, a more radical perspective proposed by E.V. Ramaswami (Periyar) developed explicitly in Tamil Nadu against the Brahminical control of women's sexuality in the 1920s and 1930s. Periyar broke away from the Indian National Congress and formed the Self-Respect Movement in 1926. He developed a political philosophy against caste and religion, in favour of freedom for women. His politics was framed by a search for free and equal citizenship for different social groups (Anandhi S. 1998, p. 159). So, he fought against race, caste and gender inequalities, and he preached birth control. The current feminist emphasis on sexual freedom is not new, and it resonated already in Periyar's radical words, "we recommend that women should stop delivering children… because conception stands in the way of women enjoying personal freedom" (Guha 2010). Periyar focused on women's freedom, explicitly arguing against Hindu religious notions of "purity of blood" and consequent control over women's sexuality. It might be possible to trace the influence of the early neo-Malthusian debates and the Self-Respect Movement on today's lower birth rates in South India as a whole. Thus, when attempting to explain the low birth rate in Tamil Nadu, Zachariah and Rajan (1997, pp. 27–28) notice that education levels for women are low (compared to Kerala), and poverty is high, so perhaps political will and the social reform movements initiated by Periyar have played a role in the demographic transition in South India, that by now has reached India as a whole.

However, among feminists today, the very idea of neo-Malthusianism appears abhorrent. In India, there has been a high reliance on female sterilization, although Indira Gandhi also promoted mass male sterilization (with politically counterproductive effects). Research shows that a declining fertility rate because of female sterilization is linked in India (with the well-known exception of Kerala and other states) to greater female infanticide (because of the preference for male children). This explains the cruel demographic phenomenon of "missing girls" (which also exists in China). Moreover, sterilized women are subject to greater physical abuse by insecure husbands. Women who will not have children get perhaps less food at home than otherwise (Krishnaraj et al. 1998). Such consequences of birth control arise because of gender-biased cultural values and not because of birth control itself. However, there is no denying that such state-imposed population policies are not at all inspired by the feminist movement, and that their consequences are terrible from a feminist perspective, and from a general humanist perspective. On the contrary, it is well understood among scholars in India that "engendering population policy involves moving beyond family planning to focus on changes in social structure that would allow women to make marital and fertility choices free of social or economic constraints" (Desai 1998, p. 49). Notice here, as Periyar had said, that lack of freedom in "marital choices" goes together with lack of freedom in "fertility choices". Notice also that India has a population density as high as the most densely populated European countries (Caldwell 1998).

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How large will India's ecological footprint become, as its large population hopefully achieves a higher standard of life while preserving "land, water, air and freedom"? Among environmentalists in India, one current definition of neo-Malthusianism is that it is a doctrine that sees "sheer excess in human numbers" as "the primary (or) sole burden on scarce resources" (D'Souza 2003). It is true that neo-Malthusians emphasize population density, although they also take into account per capita consumption and the technologies employed. If one uses "ecological footprint" analysis (Patricia Hynes, in Silliman and King 1999, pp. 196–199, also D'Souza 2003, p. 25) translating food energy, other biomass and fossil fuels into spatial requirements, we see that the average Indian has a low per capita ecological footprint of 0.5 ha. With a population density of three persons per ha, India's ecological footprint is already larger than her territory. It increased fast because of population growth coupled with economic growth. When an appeal is made to "ecological footprint" analysis in order to emphasize wealth as the main threat to the environment, one cannot evade the importance of both consumption per capita and population density. If India went up to a European per capita ecological footprint of about 3 ha, then of course India's footprint would grow six times even if her population would increase no further. The importance of population density would be even better shown by HANPP, "Human appropriation of net primary production" as discussed elsewhere in this book (Haberl, Erb et al. 2007; Haberl, Steinberger et al. 2012).

ECOLOGICAL DISCOURSES OF NEO-MALTHUSIANISM

The neo-Malthusians of 1900 often discussed the carrying capacity of the Earth, as many other authors did at the time (Martinez-Alier 1987, chapters on Pfaundler and Ballod-Atlanticus; and Cohen 1995), framing the question as "how large a world population could be fed". Thus, Paul Robin's son-in-law, Gabriel Giroud, wrote a pessimistic book on *Population et Subsistences* published in Paris in 1904. The answers were not conclusive. Today the question must be asked in a different way: how large a human population can be fed and live sustainably at an acceptable standard of living, provided that at least 50 or 60 per cent of biomass production is not pre-empted for human use?

The balance between population and natural resources was one of the concerns of the neo-Malthusians. As the world population reached two billion people in 1914, they were aware that the depletion of resources such as coal, iron and fertile agricultural land was a problem that would take some time to emerge, but one that future generations would face. Others had faith in the technological progress which would come about in the future, providing a solution to "the disorderly growth of the human species" (UASE 1913, pp. 20–26). Most neo-Malthusians acknowledged that they did not know the limits of the Earth's potential to produce, and they recognized advances made in the field of chemistry for fertilizers and hoped for advances to be made for obtaining food. A general opinion was that the growing population on the planet could produce enough for its well-being, were it not for capitalism. However, if population growth continued, limiting birth rates would end up being necessary regardless of which social system prevailed.

The availability of energy was for some a concern at the time. Some foresaw a world population that would reach a maximum of five billion inhabitants by the end of the twentieth century (Antich 1931, p. 28). The means of transport and machinery known at that time could

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not meet the needs of a world population of that size. There were disagreements between neo-Malthusian anarchists such as Sébastien Faure and anti-Malthusian anarchists such as Kropotkin who believed that food supply could increase enormously through greenhouse agriculture. Kropotkin was criticized by Popper-Lynkeus (1912), himself a proto-ecological economist and a neo-Malthusian social reformer, because he had forgotten to calculate the energy requirement for heating the greenhouses. Neo-Malthusianism re-opened a discussion on natural resources and the population. Moreover, they were antagonistic towards colonial submission of other lands and cultures in order to secure resources (Giorni 1922). However, at the same time they were described as being anti-socialist because of their emphasis on reducing the size of proletarian families. Some of their critics believed that the greater the number of poor people, the sooner revolution would take place – to which they responded that revolution based on misery would be an utter failure.

CONCLUSIONS: VARIETIES OF MALTHUSIANISM

Similarly to what is happening today with climate change and biodiversity loss, where anticipation leads to action (possibly too little and too late), human demography became in Europe and America socially self-modifying, more so than it had been in other societies (except for small "primitive" groups which closely controlled reproduction). Optimistically, this shows the reflexivity of human action in response to forecasts, predictions or bad scenarios. While Malthus thought that improving the situation of the poor was utterly useless because it would lead to the growth of their population, the neo-Malthusians of 1900 thought that Malthus was wrong. They believed that poor people could and should control births not by chastity and late marriages or by pestilence and wars, as in the Malthusian scenarios, but by contraception. This was a successful movement. They argued that, despite scientific progress, it was legitimate for the defenders of conscious procreation to set forth the issue of excessive population relative to resources. However, there are environmental writers who still ignore the neo-Malthusianism of the late nineteenth and early twentieth centuries. Between Malthus' *Essay on the Principle of Population* of 1798, and Paul Ehrlich's *The Population Bomb* of 1968, there were proposals and movements concerned with population and natural resources which cannot be left aside. Many came from feminism.

European fertility came down *not* because of state policies, but *against* state policies. Democratic governments in Europe forbade neo-Malthusian activism as late as the 1920s, and Fascist governments even later. Between 1865 and 1945, the Prussian, and later the German state wanted more soldiers to fight the French, and vice versa. The French state, which had done so much for the depopulation of France in 1914–18, patriotically forbade the neo-Malthusian movement in 1920 (Ronsin 1980, pp. 83–84). In European history, the words "state population policy" meant attempts to increase population by increasing the birth rate. In America, it meant increasing the immigration of populations of suitable white origins. Recent interventions in China and elsewhere have changed the meaning of "state population policies". The science of demography was sponsored in France by pro-natalist governments, producing fervent anti-Malthusian scholars such as Alfred Sauvy still after 1945. Demographers have usually been silent on ecology ("this is not my department"), and it fell on a biologist such as Ehrlich to raise stridently again in 1968 the population-environment question given the silence (in the best of cases) not only of demographers but also of many economists. As

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was the case in the early twentieth century, the alarm raised by Ehrlich and others influenced behaviours, this time beyond Europe and the United States.

Thus, it is a commonplace to say that Julian Simon was an anti-Malthusian economist of the late twentieth century who saw in a growing population a stimulus to economic growth, while his opponent, Paul Ehrlich, is a noted "neo-Malthusian". Currently, in some circles any concern for the imbalance between natural resources and human demography is still suspected of being backed by contemporary neo-imperialism (Rao 1994), while neo-Malthusians emphasize that increased agricultural production has been achieved at the cost of excessive energy inputs, loss of biodiversity and increased pollution, being unsustainable. Moreover, Malthus' concern with human subsistence should be supplemented by concern for the reduced space left to other species because of human population growth and because of the use of agro-fuels.

As we have seen, around 1900, social radicals, including radical feminists, were in favour of limiting population growth, with three main arguments: women's freedom, the downward pressure of excessive population on wages, and the threat to the environment and human subsistence. Many of them were for social revolution and at the same time for "conscious procreation". Loss of wilderness was less emphasized than potential food scarcity. Two other arguments were added in the European and American context of one hundred years ago: anti-militarism, and resistance to migration overseas.

It is true that top-down neo-Malthusian policies inspired and legitimized by the image of the "population bomb" have caused in recent years many forced sterilizations and large-scale female infanticide in some countries, and they threaten small surviving ethnic groups. However, as we have seen, one hundred years ago in Europe and America, the original neo-Malthusian movement opposed Malthus' view that poverty was due to overpopulation rather than social inequality, and simultaneously fought successfully for limiting births by exercising women's reproductive rights (to use today's language), appealing sometimes also to ecological arguments of pressure of population on resources. There was an awareness that population growth might have negative effects and its consequences were anticipated.

In Table 29.1, the characteristics of the varieties of Malthusianism and neo-Malthusianism in the last two hundred years are summarized. They have been amended from previous versions of this chapter because of my reading of Giorgos Kallis' *Limits* (2021). He says that the world capitalist system invents scarcity to justify continuous economic growth. There is instead an abundance of energy and materials for a world without population growth and with self-limited needs. Kallis also asserts that Malthus did not really believe in "decreasing returns" in agriculture. He believed that food production should and could grow thanks to technical changes.

In fact, critics of Malthus' pessimism, such as Ester Boserup (1965), explained that shortening the rotation periods (from swidden agriculture to short fallows to double cropping) did away with scarcity. We also know that (long after Malthus' death), first the imports of guano, later Chilean nitrates, later the Haber-Bosch process and in general factory fertilizers, bridged in Europe Liebig's and Marx's metabolic gap in the nutrient cycles of phosphorus, potassium and nitrogen (Chapter 21). Malthus would have liked such technical advances (Kallis 2021) but would have retorted that poverty would always be with us because of population growth. He dismissed redistributive policies and he discarded "conscious procreation" and birth control.

One problem in the study of neo-Malthusianism is its relations with the eugenics movement around 1910. It should be clear that neo-Malthusianism raised the proletariat's awareness

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Table 29.1 Varieties of Malthusianism

Malthusianism	MALTHUSIANISM of Malthus: Population undergoes exponential growth unless checked by war and pestilence, or by chastity, birth control and late marriages – all according to Malthus, are undesirable and unnatural/ungodly. Food can grow without limits, but always less than exponential population growth. Hence, periodic subsistence crises.
Neo-Malthusianism of 1900	Human populations could regulate their own growth through contraception. Women's freedom was required for this, and it was desirable for its own sake. Poverty was explained by social inequality. "Conscious procreation" was required in order to prevent low wages, and pressure on natural resources. This was a successful bottom-up movement in Europe and America against States (which wanted more soldiers) and against the Catholic Church. It also appeared in South India (Periyar).
Neo-Malthusianism after 1970	A top-down doctrine and practice sponsored by international organizations and some governments. Population growth is seen as one main cause of poverty and environmental degradation. Therefore, States must introduce contraceptive methods, even sometimes without the populations' (particularly women's) prior consent.
Anti-Malthusianism	The view that assumes that human population growth is no major threat to the natural environment, and that it is even conducive to desirable economic growth.

about the risk of transmitting hereditary illnesses, including alcoholism, and sexual diseases that wreaked devastation amongst the populations at the time. However, southern European neo-Malthusianism rejected ties with eugenics, as expressed in the language of the time by the neo-Malthusian from Aragon, José Chueca, in 1914:

> Although they claim to pursue the same end, the regeneration of the human species, eugenics and neo-Malthusianism have no relationship whatsoever; the former is essentially bourgeois and based on false science, while the latter goes against the bourgeoisie and ranks among the things that truly belong in the realm of science; the former vainly attempts to regenerate humanity by attempting to brutally prevent certain people from reproducing, while the latter aspires to convince people to procreate consciously by affording them the means to prevent fertilisation aiding them in achieving this, since neo-Malthusianism does not wish to impose itself on anyone by violent means, nor does it wish to deny the right to love to the most lowly, the most degenerate of men. (Chueca 1914, pp. 321–322)

Thus, one hundred years ago, Malthus' pessimistic prognosis was transformed into the idea of conscious, voluntary procreation. Poor people, especially poor women and also men, were deemed responsible for and capable of "conscious procreation". This was a feminist and proto-environmental movement. Instead, today's neo-Malthusianism of the rich considers the high reproductive rate among the world's poor as a threat to their own environment through migration. Hardin (1974) developed a so-called "lifeboat ethics". Hence, the need for top-down population policies. Against "lifeboat ethics", one could say that the planet is our collective lifeboat or spaceship.

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The neo-Malthusianism of 1900 was not a doctrine imposing population policies from above. It was the opposite. In France and elsewhere, it challenged the political and religious authorities of the time through the idea of a "womb strike", and also through anti-militarism and anti-capitalism. It defended "rational feminism" (as Alexandra David put it). Only strong-willed radicals dared preach contraception in the late nineteenth century and early twentieth century. One main figure of neo-Malthusianism in Brazil was Maria Lacerda de Moura. She wrote several books in the 1920s and 1930s. One of them was *Amai-vos e não vos multipliqueis* (Love each other and do not multiply). I mentioned her already elsewhere as a feminist-anarchist-pacifist author. Active feminists in French neo-Malthusianism proposed since 1900 not only contraceptives but also the legalization of abortion. They were persecuted; one of them was confined to a psychiatric asylum, where she died in 1939 (Gordon 1976; Ronsin 1980; Morton 1992; Masjuan 2000).

Responsibility for the birth of children falls normally on both women and men. Among the contraceptive methods recommended by the neo-Malthusian movement in Europe and America, some were geared towards women, but condoms were popular. Vasectomies were endorsed in French anarchist circles in the early 1930s – the state's response was a court case (Ronsin 1980, p. 202).

NOTES

1. A previous version of this chapter has been available in English on the web for some time, it has never been printed (Masjuan and Martinez-Alier 2004).
2. Greenham Common Women's Peace Camp eliminates Nuclear Missiles in Berkshire, England (Dalena Tran), EJAtlas.

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30. Conclusion: is there a global environmental justice movement?

THE ENVIRONMENTALISM OF THE POOR AND THE INDIGENOUS IN CONTEMPORARY HISTORY

The briefest summary of this book is that the enormous metabolic gap of the industrial economy causes many socio-ecological conflicts at the frontiers of commodity extraction and waste disposal. The protagonists of these conflicts display their own vocabulary, iconography, repertoires of contention and valuation languages. They are not helpless victims; they struggle through collective action for a future which is socially and environmentally just. A world counter-movement for environmental justice has arisen at the frontiers of commodity extraction and waste disposal.

The main purpose of the book is to make visible this movement across regions and issues. The enormous entropy hole in the industrial economy requires more and more extraction of materials and energy. Trade in early empires was mostly of "preciosities" although Rome imported also wheat and olive oil as "bulk commodities". Industrial capitalism based its expansion and growth on sources outside Europe (African slaves, and imported "preciosities" and bulk commodities) in an ecologically unequal trade, and also by the internal rearrangements converting land and labour into marketable commodities subject to economic transactions and calculations. Communal property in land and water dissolved. In many of the colonies, land was expropriated by force or by depopulation from pandemics after the European conquests in the Americas and Australia. Landless urban proletariats grew later (and are still growing in China and India) because of population growth and displacement of peasants. The appropriation of common resources continues. Counter-movements arose for land reform, or for socialism and the defence of the proletariat. All this was happening in the eighteenth to the twentieth centuries in the midst of a great increase and changes in the social metabolism that continue today. The movements of anti-extractivist resistance considered in this book are different from the counter-movements described by Karl Polanyi, because they do not simply ask for protection but for autonomy, local self-determination and universal socio-ecological justice.

A reviewer (Bernstein 2005) of *The Environmentalism of the Poor*, my book of 2002, wrote that the work contained a number of vignettes, meaning short illustrations of environmental conflicts but not real case studies. The word vignette means a decorative motif in the form of a vine leaf. Bernstein believed that the "vignettes" were not weighty enough to support the thesis that there is a rural and urban global movement for environmental justice. (Keck and Sikkin 1998; Bandy and Smith 2005). The present book includes about other 500 "vignettes" drawn from the EJAtlas. As we look at the nearly 4,000 cases collected in the EJAtlas, we move from a few vignettes to a very large vineyard. This environmental movement of the poor and the Indigenous is sometimes successful. It must cope with repressive violence, meaning not only

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killing of activists as happens in some countries but also criminalization. Many poor people live in fear. But there are also successes in environmental justice. Therefore, the theory is based on many empirical examples. Take for instance the massacre in June 2009 in Bagua, Peru, when Indigenous people claiming their lands against extractive industries were attacked by the military police leaving over 30 dead; or take for instance the successful referendum organized in Esquel, Argentina in 2003 against gold mining. Both are instances of grassroots and collective protests that arose as a response to specific threats with local and some international support. They were movements against the *international division of nature* and appropriation of land, water and clean air. They were not trade unions movements asking for higher salaries.

In this book, the existence of a world EJ movement is assessed by looking at the properties of protest events (Diani 2022) in terms of the same commodities in question, the material causes as damage from mining, biomass, water use, land grabbing and so on. The action repertoires are also similar, with cultural variations. The participants are often local ad-hoc organizations which feel grievances and present claims. In general, they are not long-lasting. They speak for the poor and the Indigenous, the subaltern and downtrodden, they are anti-colonialist. Such protests are not NIMBYs but on the contrary they often are NIABYs, framed as part of broader collective campaigns at national or international levels. They share slogans and iconography. They often oppose the same international companies.

Delap's outstanding history of feminisms (2020) states that historians must take care not to erase the local specificity of struggles and activism. However, she adds, it would be a mistake to simply look at all these movements in isolation because they often share key ideas or draw inspiration from each other's struggles. Feminism is a global movement. For centuries, women from all walks of life have been mobilizing for gender justice. In 2022 the shout *Jin, Jiyan, Azadi* spread around the world from Iran, meaning "Woman, Life and Freedom". The same grassroots replication applies to the environmentalism of the poor and the Indigenous. One can do analyses based on countries or regions but also cross-cultural analyses on topics such as copper mining and smelting, sand mining, oil palm plantations, dams, incinerators and landfills, coal-fired power plants (CFPPs), oil and gas extraction, nuclear reactors, concentrated animal farming operations (CAFOs), windmills and solar panels.

"LET THE SUBALTERN SPEAK" – THE EJATLAS AS A MODEST LOUDSPEAKER

The social actors of socio-ecological conflicts are women and men taking part in highly intense or subdued conflicts as Indigenous peoples, farmers, neighbours and citizens, members of EJOs, landless peasants, industrial workers, pastoralists, fisherfolk or others. They are militant or "resigned" environmentalists (Lora-Wainright 2017). Some are scientists and professionals, or members of religious groups – such as the murdered environmentalist nuns, Sister Valsa John in Jharkhand in 2011 and Dorothy Stang in Pará, 2005.

Other political ecologists researched grassroots environmentalism under other names, e.g. "liberation ecologies" (Peet and Watts 1996) or "subaltern environmentalism" (Egan 2002; Ruiz Cayuela 2018; Hassaniyan 2021). Banerjee et al, (2021) are similarly "bridging insights from subaltern studies and political ecology" to explain how forms of translocal resistance emerge. I refer here to Gayatri Spivak's critique (1988, 2011) against Ranajit Guha, denying the possibility for the subaltern to speak. Pulido (1996, p. 128), in her classic book on Hispano

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pastoralists' claims in New Mexico, quoted Spivak: "being a subaltern includes lack of voice or at best a voice that is barely audible (…) moments of mobilization and uprising are then openings that allow us to interrogate those visions (…) to explore what they mean to the subaltern". Arelí Valencia (2013) discussed *ambientalismo subalterno* in Peru while Italian historian Marco Armiero drew directly from Gramsci and wrote of subaltern environmentalism in the waste crisis in Campania, bypassing Ranajit Guha and Spivak (Armiero and Sedrez 2014), as Stefania Barca had done already (2012). The word "subaltern" was Gramsci's term in the *Prison Notebooks*, taken up by Ranajit Guha's remarkable school of historical "subaltern studies" in India in the 1980s (influencing the much younger Ramachandra Guha's pioneering environmental history of the Chipko movement (Guha, 1989)).

The global environmental justice movement is sometimes compared to the anti-slavery movement of the nineteenth century but its scope is larger. It is one of the movements that show other possible futures together with feminism (Delap 2020) and allied LGTBQI+ movements. The environmental justice movement also overlaps with the working-class movement (Chapter 20) but sometimes it clashes with it. It fits easily with agrarian movements (Chapter 21) and cooperates very strongly with the Indigenous revival and resistance movement (Chapter 25). It also overlaps with the international human rights movement, with popular health movements and with anti-militarist movements for peace. It is very close to anti-racist and anti-colonial movements. It is not identical to any of these other movements because of the emphasis on the environment. It could easily extend the concern for justice to other species, apart from humans, by recognizing the global validity of the notion of Rights of Nature as in the constitution of Ecuador (art. 71). There are sections in this book featuring emotional struggles for multispecies justice deploring cruelty to sharks, dolphins, tigers, rhinos, elephants, peafowl, black-necked cranes and black-necked swans, white-wing ducks, butterflies, bees, turtles, bulls, and other animals such as those housed in Concentrated Animal Farming Operations (CAFOs).

There are still doubts with respect to the existence of a Global Environmental Justice Movement. Walker (2009a, 2009b) affirmed its existence across different scales, while Sikor and Newell titled a special issue in *Geoforum* (54, 2014) "Globalizing Environmental Justice?". I was not so prudent (Martinez-Alier 1992, 1995d, 1997; Guha and Martinez-Alier, 1999) and even less today when we have new methods and new abundant evidence to approach the question. In my 2002 book I distinguished between three 'currents of environmentalism': the 'Cult of Wilderness', the 'Gospel of Eco-Efficiency' (or Eco-Modernism), and the 'Environmentalism of the Poor'. The latter movement is practised through many local forms of resistance by heterogeneous but overlapping protagonists. It constitutes the principal opposition to environmental destruction. In political science (and environmental sociology), concern for environmental problems was attributed (by Ronald Inglehart, 1995) to a "post-materialist" cultural turn. "Post-materialism" was a misnomer. When the environmental movement started in the 1960s and 1970s, it was concerned about material issues like DDT pesticides (Rachel Carson, 1962), nuclear radiation. There was an environmentalism against the very material "effluents of affluence". Moreover, there are many materially deprived peoples complaining against dispossession of the commons (land, water) by the extractive industries and against pollution. This could be called The Environmentalism of the Dispossessed, as Leah Temper did in her doctoral thesis (2014), of the BIPOC, or the environmentalism of "the nobodies" (the *nadies*) as Eduardo Galeano called them and Francia Márquez (in Colombia) repeats in 2022. Or the "environmentalism of the people", to acknowledge the different participants.

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Certainly not all poor people behave as environmentalists. To assert this would be blatant nonsense. The theory (Martinez-Alier 2002) says that in many ecological distribution conflicts (which are caused by the increased and changing social metabolism), poor people are often on the side of environmental conservation and a clean environment against business corporations or the state. This was argued already in other terms by the US Environmental Justice movement since the early 1980s. It has not yet sufficiently permeated political science and environmental sociology. For instance, Ulrich Beck (1992) argued for many years that environmental risks were "class-blind". His concept of the "risk society" was initially used to argue that globalization creates risks that concern people from all different classes; for example, nuclear radiation or climate change. To the contrary, the environmental justice movement in the US had argued that pollution was not "colour-blind" (Bullard 1993). However, the US EJ movement placed itself in a "minority" inferiority position, it has not tackled injustices coming from the US to the rest of the world, such as excessive GHG emissions and the uncounted damages from US corporations.

Conceptually this "environmentalism of the poor" is close to the US EJ movement but it applies to rural and Indigenous populations and poor citizens across the world. It was introduced by academics and also by activists like Anil Agarwal and Sunita Narain of the Centre for Science and Environment (CSE) in India and Hugo Blanco in Peru in the late 1980s and early 1990s. Since the mid-1990s, the explicit connection between the two movements – EJ in the USA (Bullard 1990, 1993) and the environmentalism of the poor in Latin America, Africa, and Asia – was established both in theory and practice (Martinez-Alier 1997; Guha and Martinez-Alier 1997, 1999). Classical books analyzed movements against dams (McCully 1996) and tree plantations (Carrere and Lohmann 1996) authored by activists while Leonardo Boff's *Cry of the Earth and Cry of the Poor* (1995) established the emotional connections between poverty and environmental complaints. Poverty is multidimensional: it is not only a question of dollars per day but of access to clean and sufficient water, land and air. People who are deprived of such access because of extractive industries or as victims of waste disposal, complain accordingly if they are still alive. They have lost freedoms.

The deaths of Chico Mendes (1988) fighting deforestation in Brazil, Ken Saro-Wiwa and his Ogoni comrades in the Niger Delta (1995) fighting oil extraction and gas flaring by Shell, down to Berta Cáceres in Honduras (2016) fighting the Agua Zarca hydroelectric dam, grandmothers Gloria Capitan (2016) in the Philippines struggling against coal stockpiling in Mariveles and Fikile Ntshangase (2020) in South Africa also against coal mining, plus hundreds of other deaths of environmental defenders (as listed by Global Witness, and also in the EJAtlas), have cemented the links between EJ and the environmentalism of the poor. Across the whole sample of the 3,800 contentious episodes registered, in over 450 cases deaths of one or more environmental defenders are reported.

The EJAtlas promotes analyses of the types of mobilization in such conflicts, their actors, which variables explain the rates of "success" in stopping the extractive industries and creating new alternatives? In the EJAtlas, the conflicts are classified according to their outcome into (many) failures, (some) successes and (many) "don't knows". Among 3,800 cases, about 585 are deemed as "successes" in environmental justice – there is no sustained social movement unless it obtains some successes from time to time. Reported "success" correlates closely with "project cancelled" as an outcome. (Rodriguez-Labajos and Özkaynak 2017; Aydin et al. 2017; Scheidel et al. 2020; Hanacek et al. 2020). In a few cases (about 60) the success stories are due to some extent to the strength that appearing in the EJAtlas has brought to local

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activist groups. We welcome this but the EJAtlas does not set itself the impossible task of impinging directly and case by case on reality.

The EJAtlas is an archive of environmental conflicts in the form of a "protest map" (Drozdz 2020), a product of a wave of "bottom-up" cartography at the service of social counter-movements and also of academic scholarship. In Drozdz's words (2020), it is an "advocacy map" on conflicts around environmental issues. It is a cosmopolitan, accurate map useful for activism, research and teaching, a database collaboratively collecting information on environmental conflicts coming directly from activists and, more often, indirectly from journalists and academics. For instance, the EJAtlas data are used to investigate the forms and networks of global opposition to gas fracking or to nuclear energy from uranium mining to breeder reactors. The collaborative maps from the EJAtlas provide an example of what critical mapping can do to reframe the dominant cartographic narrative. Maps sometimes present a view of the environment as a space dotted with strategic resources, which implies that their management and exploitation are the main focus of land use and resource policies (Drozdz 2020), looking at nature from the logic of so-called capital accumulation. The EJAtlas shifts the focus from what economic potential the environment holds to the consequences resulting from its exploitation and the resistance against them (Drozdz 2020). The EJAtlas registers victims of extractive violence, the dead, the criminalized, jailed or exiled (Scheidel et al. 2020), the wounded, the frightened and displaced by "the coercion present in natural resource extraction", "socio-ecological warfare techniques to control human and natural resources", "corporate counterinsurgency strategies" and "state terrorism" (Dunlap 2019; Brock and Dunlap 2018).

We contend (Martinez-Alier et al. 2016; Martinez-Alier 2021) that there is indeed a global environmental justice movement where most struggles rest on local movements. There are often connections and networks creating global alliances, and the actors against which these struggles are addressed are often the same, namely transnational corporations. What the EJAtlas shows is that land and natural resource use cannot be simply viewed as a matter of post-political technical management but also of politics. There is a contagion effect across countries and topics carried out by ad-hoc or permanent EJOs through interpersonal networks as well as communication vehicles through the mass media.

In my view, we are like contemporary social historians steadily and modestly building up our own open access archive of environmental conflicts, "rearguard" actors to use Sousa Santos' image (2014) making conflicts visible after they have taken place or are still burning actively or when their embers might revive. While Sousa Santos talks about a "sociology of absences", Val Plumwood talked about "shadow places", the disregarded places of economic or ecological support brought forward by the "forces of reproduction" (Barca 2020), the places that consumers of commodities in rich countries are not aware of (Plumwood 2008). Thus, in the course of making the EJAtlas we have increased our ignorance (but also our knowledge) of chemical engineering, and the changing industrial ecology of the elements in the Periodic Table.

A PLURALITY OF CONTESTED VALUES

Drawing on ecological economics and political ecology, and also industrial ecology, this book presents many instances of social mobilization of what could be called "subaltern environmentalism" or the environmental movements of the poor overlapping with Indigenous,

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agrarian, working-class, citizens and collective health movements. They often share key ideas or draw inspiration from each other's struggles. Through hundreds of cases, we bring alive the two main tenets of ecological economics. First, the economy can and should be described in terms of social metabolism (the growing and changing flows of energy and materials), and not only as economic accounting in money terms. Second, the conflicts for getting energy and materials and disposing of waste are fought out by displaying diverse valuation languages which cannot be reduced to a single unit. The EJAtlas opens up new avenues for research in comparative, statistical political ecology focusing on the power dynamics and *valuation contests* in EDC (O'Connor 1993; Veuthey and Gerber 2011). The combined value of ecology and culture is emphasized in Victor Toledo's notion of "biocultural memory" (2008). We have collected thousands of such valuation contests in the EJAtlas where, on the one side, economic costs and benefits and demands for monetary compensation for damages appear in the records but, on the other side non-monetary valuation languages are also strongly deployed. Which values will triumph? For most conflicts we can answer the question: which valuation languages have been brought into the dispute, and have politically prevailed? So, the EJAtlas is a research and teaching instrument not only in political ecology but also in ecological economics focused from its beginning (Otto Neurath, K.W. Kapp, Georgescu-Roegen) on plurality and incommensurability of values.

MOVEMENTS FOR ENVIRONMENTAL JUSTICE AND THE SENSE OF HUMAN HISTORY

What is the *sense of human history*? As Enrique Leff (2021) has written, history is mobilized today not so much by social conflicts in the field of political economy, expressed in the form of "class struggle" or the labour movement, but "in the field of political ecology by socio-environmental conflicts". Making sense of history now requires placing industrial ecology, ecological economics and political ecology at the centre of today's politics. We ask whether economic growth improves or harms the environment, and whether it is plausible to rely on technical change and on the 'internalization of externalities' in the pricing system to achieve a sustainable economy. "Externalities" must be framed instead as systematic cost-shifting causing ecological distribution conflicts, which sometimes give rise to environmental movements (Fraser 2010). For instance, resistance to oil or coal exploitation exists for local reasons but also because of the need to curtail the carbon dioxide emissions that will be produced when burning the fossil fuels. This has been argued by Oilwatch since 1997. I was present at the COP in Copenhagen in 2009, when President Correa boycotted from Quito the international launching of the Yasuni ITT proposal.

To understand the movements for environmental justice, we appeal to the interplay between ecological economics, the study of social metabolism, and comparative political ecology. Conflicts are caused by the changing and growing social metabolism of industrial economies (Fischer-Kowalski and Haberl 1997, 2007, 2015; Haberl et al. 2012; Steinberger et al. 2010; Martinez-Alier, Temper, and Demaria 2014). Energy cannot be recycled. Similarly, materials can be recycled only in part. Attempts to change the energy system make new conflicts appear on the mining of new materials and land grabbing. Meanwhile, renewable resources (Georgescu-Roegen's "funds") such as aquifers, timber and fisheries are overexploited, the fertility of the soil is jeopardized and biodiversity is depleted. The gains and losses of the

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use of the environment are often unjustly distributed not only with regard to other species or future generations of humans but also among humans living today. Such EDCs sometimes overlap with agrarian or wage-labour conflicts or other social conflicts on class, ethnicity or Indigenous identity, gender, caste or territorial rights. Sometimes there are also complaints against international ecologically and economically unequal exchange while in large countries such as India, Mexico, Brazil and Nigeria internal colonialism is blamed, as it could be in China. The increasing incorporation of biophysical processes into the market since the late 1980s is interpreted sometimes as "neoliberalization of nature". This perspective helps to understand contemporary environmental issues but, in my view, the main drivers of conflicts are the changing configurations of social metabolism and not neoliberalism (Apostolopoulou and Cortes-Vazquez 2019).

The most distant commodity extraction frontiers in the Arctic, the Amazon, Mozambique or Madagascar or Patagonia and Kalimantan are reached in the search for fossil fuels, metals or biomass, and local resistances arise against such incursions. The EJAtlas is an archive that helps to find t*he sense of human history* – how we got into the mess of climate change and rapid biodiversity loss, scarcity and dissipation of materials and struggles on land, water and clean air. Who is fighting for a better future in the name of socio-environmental justice? Recent history could be interpreted on other lines – the coming of socialism through class struggle; the end of patriarchy; the end of coloniality and racism; the abolition of poverty and also the conservation of other species; the triumph (or defeat) of Western liberalism against religious political fanaticism; the succession of empires including the breakdown or resurrection of the Russian empire and the rise of the Chinese empire; the continuous improvement of technology through the application of science and the colonization of outer space; the miraculous arrival of the circular economy and green economic growth; the increasing respect for human rights and the rights of nature; the nuclear energy accidents and the regional nuclear wars, the next pandemics etc.

This book optimistically focuses on the contemporary environmental justice movement as a harbinger of the future. It shows multiple intersections of this movement, it recalls old ideas and discusses news issues; it updates stories of success and remembers famous environmentalists killed, acknowledges grassroots mapping of environmental conflicts, and it builds on meetings with like-minded people at academic conferences and other meetings like social forums and COPs while crossing and recrossing provincial and national borders. This book also supports an end to human population growth, something less frequent on the left but that I defend based on feminist activists such as Emma Goldman and Maria Lacerda de Moura (Chapter 29). As Françoise d'Eaubonne wrote plainly in her 1974 book: "One of the two most serious threats to humanity is the current rate of global demography. The other, parallel to it, is the destruction of the environment". She added: "We will come back to this in our conclusions about the need to develop an 'ecofeminism'".

Pierre Charbonnier (2019) has brilliantly reconstructed the Western political and economic philosophy since the seventeenth century, leading him to the conclusion that political ecology should have occupied and must now occupy the centre of politics. He feels empathy with the ecological "technocrats" of the US in the 1930s, such as M.K. Hubbert, who were followers of Frederick Soddy's proto-ecological economics. He prefers the US "technocrats" of the 1930s to melancholic anti-industrialist French thinkers such as Jacques Ellul and Bernard Charbonneau. I agree to some extent but I think that Charbonnier leaves aside as protagonists of the coming changes the "subaltern classes", the peasants, the Indigenous, the ecofeminists,

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the downtrodden of the world peripheries, the racialized oppressed peoples, the Dalit and Adivasi. I hope that *zadistes*, *zapatistas*, feminists and ecofeminists, but also Indigenous peoples, the youth of Fridays for Future, peasants, workers' trade unions, neighbours and citizens, EJOs and radicalized ecological scientists make a pact for environmental justice and sustainability according to their own interests and values. This will be an environmentalism of the people, a powerful "antisystemic movement" (Yasin 2022). This is the line proposed also by the anthropologist Philippe Descola, a common cause between the *zadistes* from Nantes and the Achuar in Ecuador fighting against oil pollution and metal mining.[1] The protagonists are, in Ariel Salleh's words, a "meta-industrial class" meaning intersecting social groups including but beyond waged industrial workers.

MARXISM AND THE PROTAGONISTS OF THE 'SECOND CONTRADICTION OF CAPITALISM'

Figure 1.5 in the introductory chapter lists the protagonists of EDC and their frequency in the EJAtlas, the local and international EJOs, the neighbours and citizens, peasants and farmers, the Indigenous and traditional communities etc. To a question from Lorenzo Pellegrini about the social class analysis of socio-ecological conflicts (in an interview in *Development and Change*, 2012) I gave this answer, ten years ago:

> Who are the protagonists of what James O'Connor called "the second contradiction of capitalism"? Ecological distribution conflicts are often conflicts of "accumulation by dispossession" (as David Harvey calls them) or "accumulation through contamination" (profits increase because there is no liability for climate change, and because extractive industries generally do not pay for damages). This could be brought into a Marxist framework. But the social actors of the world environmental justice movement are very diverse, they do not fit into neat categories as rentier landowners and capitalist farmers (in Ricardo's model) or bourgeois capitalists and proletarians (in Marx's model). In environmental struggles, reproduction of human society and of nature's functions are equally or more important than fights over the (purported) economic surplus.

I stick to this answer. I am glad I said "nature's functions" and not "nature's services" (Muradian and Gómez-Bagghetun, 2021) By "purported" economic surplus I meant – to give again an instance from Peruvian economic history – that labour employed as indentured labour or wage labour in the extraction and shipping of guano had a monetary cost lower than the export price of guano. The *Mehrarbeit* was transformed into *Mehrwert*. But the physical, ecological production of guano (bird excrement after feeding on fishes, mostly *Engraulis ringens*) was not factored into the economic accounts. There was no real surplus in the extraction of the accumulated guano. There was extraction, depletion, dissipation. In ecological economics, after 1992, this led to the split between weak and strong meanings of "sustainability". "Weak sustainability" meant that manufactured capital could be substituted as a rule for so-called "natural capital".

Marx offered a sense of history in the maxim "The history of all hitherto existing human society is the history of class struggles". Until the end of the twentieth century, the environmental justice movement was not a central theme for Marxist economists or historians precisely because of their myopia regarding the flows of energy and materials in the economy. Authors working on "industrial metabolism" (Ayres 1989) or "social metabolism" (Fischer-Kowalski 1998; Haberl 2001) look at the economy in terms of flows of energy and materials.

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Together with the ecological economists, we see the economy as a subsystem of a larger physical system. Marx (1818–83) and Engels (1820–95) were contemporaries of the physicists and physiologists who established the First and Second Laws of Thermodynamics in the 1840s and early 1850s (J.R. Mayer, 1814–78, J.P. Joule, 1818–89, R. Clausius, 1822–88, W. Thomson, later Lord Kelvin, 1824–1907). They followed many of the remarkable scientific and technical novelties of their time. Engels wrote in 1888 (letter to Danielson) that the nineteenth century would be remembered not only as the century of the theory of evolution but also of the theory of the transformation of energy, the century of Darwin, Mayer, Joule and Clausius. However, Marx and Engels did not consider the relations between their analytical concepts (means of production, production, accumulation of capital, productive forces, surplus labour, surplus value, exploitation) and the language of energy as they could have done in their mature work after the 1850s.

"Social metabolism" was a term that Marx himself used. He knew Moleschott's theory of metabolism in *Der Kreislauf des Lebens*. Marx, having read Liebig, understood the metabolism of fertilizers in agriculture. Liebig was a remarkable scientist and agricultural chemist, and also what we now call an ecological modernizer. Marx quoted his argument that large-scale commercial agriculture implied an export of nutrients from the fields. There was a gap in the circularity of nutrients not coming back to the land. Import of guano from Peru could become exhausted or be endangered by local geopolitics. Liebig was alarmed by the threats to the supply of this organic product, the excrement from birds feeding on the abundant fish off the coast of Peru. Guano was extracted through the cheap labour of Chinese indentured workers. The circularity rift in agricultural nutrients in Europe and the US was remedied later by nitrates from saltpetre from Chile until 1914 (Martinez-Alier 1987, pp. 37–44). The deficiency of nutrients in commercial agriculture that alarmed Liebig in 1840 could be repaired by factory fertilizers, as he himself preached. In fact, with the Haber–Bosch process, natural gas is upgraded by combination with nitrogen from the air to form nitrogen fertilizer. The "natural" nitrogen cycle that Boussingault had discovered is supplemented by fossil fuels whose energy is used for fertilizers that have increased crops. Phosphorus continues to have a problematic supply and is also a cause of pollution and eutrophication (Chapter 21).

Marx (and Engels) did not say that the industrial economy was entropic as they could have said after Clausius introduced this word in 1867. In Marx's economic theory of unbalanced economic growth, the so-called "schemes of reproduction" are an original contribution to economic theory that divides the economy into a sector producing means of production and another producing consumption goods, looking at their dynamics (This is in *Capital*, vol. 2, part 3 as edited by Engels). However, Marx's schemes of simple or expanded reproduction of the *economic* system had little to do with ecology (i.e. the physical availability of energy and materials, and the entropy law). Much later, the Sraffian system of "production of commodities by means of commodities" (1960) was an input–output system, whose analytical objective was to find out the cost of production of different commodities (the "production price"), and whose political objective was precisely to show that such prices depend on the distribution of income (between wages and profits). Therefore, the value of the capital stock depended on the 'class struggle', so to speak. This was a Marxian analysis, where "commodities" were produced by other commodities and by (exploited) human labour, while we know in fact that primary commodities are produced by bio-chemical-geological processes.

The owners of means of production are able to extract labour from those they employ, a *Mehrarbeit* (an extra work) that they convert into *Mehrwert*, an extra economic value. They

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also rely on the reproduction of labour at the homes of the workers, mainly by unpaid women's work. Moreover, they exploit, again without paying for their reproduction, through naked power or through ownership (mining concessions for instance), the products of nature or the sinks for waste provided by nature in the oceans, the land and the atmosphere (Barca 2020).

In this line, Marx read but did not quite understand one early article on quantitative agricultural energetics sent to him by S.A. Podolinsky (1850–91). This young author started his article of 1880 by discussing how sun energy reaches the earth, and the thermodynamics of this flow of energy. He then showed with statistics that natural forest and pasture produced kcal by photosynthesis without human labour (so many kcal per hectare). However, in agriculture, by adding hours of human and animal work, the production of one hectare of wheat would be larger than that of one hectare of forest or pasture land would be without such inputs or work. Nature was producing forests and pastures, and with human ingenuity and work, it could produce larger crops (all measured in kcal, both the inputs of human and animal work and the output). According to him, this was a *Mehrarbeit*, a surplus created by work of humans and animals directed by humans. The *Mehrarbeit* could be transformed into *Mehrwert* (an added economic value). This, he thought, should be of interest to Marx. (I add that the surplus was produced not only by human and animal work but also by seed selection, fertilizers and photosynthesis. Podolinsky knew this of course, but in his model he limited the agricultural accounts to the ratio between the input of energy in human and animal work, and the output of production measured in calories) (Martinez-Alier and Naredo 1982; Martinez-Alier 1987, 1990).

What did Marx do after reading Podolinsky's article and corresponding with him? He made some notes,[2] quoting Clausius and trying to understand Podolinsky's work, and he asked for Engels' comments on the article. In December 1882, Engels famously replied that one should not mix economics and physics (Martinez-Alier 1987, 1990). Podolinsky was counting calories, and Marx and Engels did not quite understand it, or approve of it. Marx was perplexed and Engels gave the wrong answer. Engels also falsely accused Podolinsky of not knowing that coal was exhaustible. This rejection of Podolinsky's agricultural energetics did not help to increase Marxists' interest in energy accounting. The field of "energy and society" was not cultivated by some Marxist economists and historians until one hundred years later, in the 1980s. For instance, Cottrell's book on energy and society, subtitled "The Relation Between Energy, Social Change, and Economic Development" (1955) does not seem to have been influenced by or have influenced Marxist historians. Later authors such as Rappaport (1968), or in the 1980s Charles Hall and Vaclav Smil counted energy flows, and they were not Marxists and were not inspired by Marx. Rolf Sieferle's book (influenced by Marx) was published in 1982. *Der unterirdische Wald* was not translated for almost 20 years. The topic of energy did not play the role it deserves in explaining the "thermo-industrial" revolution and economic growth. The wide discussion on energy and society between 1880 and 1940 did not count on Marxist contributions and was also left aside by mainstream economists.

Podolinsky is relevant for the history of ecological economics because he authored one of the first studies on the socio-metabolic flow of energy. Trained as a medical doctor and physiologist, he had a short life but left a strong trace in Ukrainian nationalist and federalist politics (as a friend of Mikhailo Drahomanov) and also in the Narodnik movements against the Russian autocracy (as a young colleague of Piotr Lavrov though also with close friends in the Narodnaya Volya group[3]). It stands to reason that being born in 1850 and with training in physiology, he was better equipped than Marx and Engels to write on agricultural

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energetics. Unfortunately, his health deteriorated after 1882. His pioneering work on energy and the economy, and in particular on agricultural energetics, was praised by Vernadsky in *La Géochimie* (1924) in a section where he reviewed authors such as Felix Auerbach and others who had explained life as a process which reversed or slowed down the dissipation of energy. Vernadsky then added a long paragraph on Podolinsky with a memorable phrase: Podolinsky had studied the energetics of life and tried to apply his findings to the study of the economy (Martinez-Alier 1987, 1990).[4] Between Podolinsky's agricultural energetics in 1880–81 and H.T. Odum's "farming with petroleum" in 1971 and David Pimentel et al.'s article in *Science* on agricultural energetics in 1973, 90 years went by. Odum and Pimentel also looked at agriculture as a transformation of energy. They showed that in modern agriculture the energy input increased more than the production. The energy efficiency decreased. This can be expressed as the decreasing EROI (energy return on investment) of modern agriculture (Martinez-Alier, 2011), a relevant fact to understand the "biofuel delusion" or the fallacy of large-scale agro-biofuels production (Giampietro and Mayumi 2009).

Marx died when the early accounts of social metabolism of the economy in energy and material terms were starting to be developed by a variety of non-Marxist authors. He died before oil was used in large amounts and before radioactivity was discovered at the end of the nineteenth century. Marx could not have discussed the development of nuclear energy or the increasing concentration of carbon dioxide in the atmosphere before his death in 1883. But he and Engels could have acknowledged explicitly the relevance of the entropy law for the growth and dynamics of a capitalist system based on coal mining and burning. They did not. They did not support Podolinsky's empirical agricultural energetics accounts.

Throughout the twentieth century, almost to the end, Marxist economists and historians did not develop an empirical view of the industrial economy in terms of energy use. Marxists did not write "The entropy law and the economic process", Georgescu-Roegen did in 1971. Marx and Engels' lack of appreciation for Podolinsky's agricultural energetics was a missed chance for ecological Marxism. Capital "accumulation" in money and property means actually a lot of dissipation of energy from the fossil fuels and much mining of materials which will not be recycled or produced anew by nature. Capitalist "growth" means growth of the entropic gap. It is therefore not real growth if we take into account the loss of energy and materials, the increased greenhouse effect, the loss of biodiversity, the chemical pollution and the loss of cultures and knowledge. The "productive forces" have a counterpart in destruction and dissipation. Frederick Soddy complained that Marxist authors failed to consider the entropy law. He published *Wealth, Virtual Wealth and Debt* in 1926. His economic ideas apply today. It is easy for the financial system to increase the debts (private or public), and to mistake this expansion of credit for the creation of real wealth. However, in the industrial system, growth of production and consumption imply growth in the extraction and final destruction of fossil fuels. Energy is dissipated and cannot be recycled. Real wealth would be instead the current flow of energy from the sun. Economic accounting is false because it mistakes depletion of resources and the increase of entropy for wealth creation. The obligation to pay debts at compound interest could be fulfilled by squeezing the debtors for a while. Other means of paying the debt are either inflation (debasement of the value of money) or economic growth – which is falsely measured because it is based on undervalued exhaustible resources and unvalued pollution. This was Soddy's doctrine. He was certainly a precursor of ecological economics.

The study of energy and material flows as a concomitant factor of economic growth was not developed by Marxist scholars but rather by precursors of industrial ecology and ecological

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economics. In particular, Bob Ayres and Allen Kneese "basically presented in 1969 the full program of what in the 1990s was carried out as material flow analyses of national economies" (Fischer-Kowalski 1998, p. 71). Their pioneering study in 1969 set up an appropriate conceptual framework and arrived at reasonable empirical results. Thirty years later, the concept of social metabolism and the methods for calculating the flow of materials have become widely accepted. So, by 2020, to beginning students of social metabolism, one would undoubtedly recommend Vaclav Smil for energy accounts, and Fischer-Kowalski, Haberl, Krausmann et al. for accounts of material flows. The precursors in the empirical study of the metabolism of human societies have been studied by Martinez-Alier (1987) and Vianna Franco and Missemer (2022).

The insistence on Marx's glimpses of social metabolism as a solid foundation for an ecological Marxism is bound to fail. Marx and Engels' scarce and uncomprehending mentions of the "entropy law" accompanied the lack of any influential Marxist debate on energy and society for many decades after their death. These debates were carried out by others. However, there is another approach to an "ecological Marxism". We find inspiration in Marx's ideas on "class struggle". If complemented by the empirical study of social metabolism, they may be relevant to today's ecological economics and political ecology. Provided, also, that we abandon the theory of labour value or rather than we complement it with a "value theory of nature" (Yasin 2022). Class struggles, in Marx, were struggles over the *Mehrarbeit* and the *Mehrwert*, so that questioning the "labour theory of value" while continuing to believe in "class struggles" is difficult for Marxists.

Another reason of interest for an "ecological Marxism" is the momentous fact that the Chinese political system is directed by a solidly established single party which is explicitly Marxist, founded in 1921 through Leninist influence. So, given the self-professed Marxism of the Chinese Communist Party that rules the country and plans to celebrate its 200th anniversary in 2121, which are the ecological elaborations of Marxism that can be useful to them and, in turn, to the rest of the world? One can be cynical about Chinese Marxism, in the same way that one can confront the strength of the ideology of market fundamentalism in the United States with the realities of state intervention in the military-industrial complex. Chinese socialism has no doubt many capitalist characteristics, not least the great external trade surplus in money terms that allows or indeed needs a wave of international investments along the "Belt and Road", incidentally helping China to secure raw materials. "Flag follows trade". But China, like the rest of the world, faces climate change, while burning four billion tons of coal per year (Chapter 6). Appeals to a distant "ecological civilization" of two thousand years ago, or to the Marxism of one hundred years ago, will not solve the main problems. What China does will impact the world. An ecological Marxism, if such could exist, could be useful in Chinese politics.

As Saito states politely, "Marx did not elaborate on the squandering of natural resources in as much detail as the cruel exploitation of labor power" (Saito 2017, p. 129). Perhaps Saito himself could write a book on Marx in the Entropocene, imagining how Marx could have written on the Entropy Law and the future of capitalism. Instead of the abundance foreseen in the *Critique of the Gotha Programme* (1875), Marx could have anticipated Saito's "degrowth communism" as also Wolfgang Harich's (Harich, 1975). I imagine myself that Marx would have been interested in the growing clash between economy and environment and on the interpretations that some later Marxists made one hundred years after his death in 1883. He would have enjoyed or been challenged by: (1) The eco-socialism of André Gorz, his

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1972 views on *décroissance*, the importance of social autonomy, his praise of informatics, his premature goodbye to the proletariat in 1980; (2) Harvey's concept of "accumulation of capital by dispossession" (2003) not as something of the past but very much present; (3) James O'Connor's 1988 "second contradiction of capitalism", which places the focus on resistance and not only on the "logic of capital" as seen from above.

In 1988, Jim O'Connor came out from California with a resounding new thesis. The issue was not only that investment in the search for profits increased productive capacity while exploitation of labour decreased the buying power of the masses. This was the first contradiction of capitalism. There was a second one. The capitalist industrial economy undermined its own conditions of production (he should have said the conditions of existence or the conditions of livelihood and social reproduction, and not only the conditions of production). There was exhaustion of natural resources, there was introduction of dangerous technology like nuclear power, there were new forms of pollution and capitalism had no means to correct such damages. A new type of social movements was arising, and the main actors were not only the working class but an assortment of social groups, often led by women, often composed of ethnic minorities complaining about the injustices in the use of the environment. The fact that the "environmental justice" movement had arisen in the US in 1982 inside the Civil Rights movement, reinforced Jim O'Connor's thesis, and his journal published several articles on this movement that fought against "environmental racism" (e.g. Novotny 1994). I became Jim's friend in 1989 and published several articles in his journal, *Capitalism, Nature, Socialism* and translated his articles for the journal *Ecología Política*.

The doctrine of the "second contradiction of capitalism" states that commodity production is certainly inconceivable without the non-wage activities of social reproduction that form and sustain human beings who perform wage labour. Nor could such production exist apart from the natural biogeochemical processes that ensure the availability of raw materials and energy sources, and the environmental services provided by nature outside the market (Barca 2020). Nor, finally, would profits or capital be possible without the legal order, the police, and the public goods that sustain private property and contractual exchange. These non-economic essential conditions are not external to capitalism, but constitute integral elements of it (Fraser 2022). The growth of the capitalist economy does not ensure these conditions. On the contrary, to some extent it undermines them.

The "second contradiction" looks optimistically towards environmental grassroots movements. Jim O'Connor appreciated the movements fighting against "environmental racism" in the USA. He would not call them "militant particularists". Let us consider for instance the conflicts on copper mining at Ashio (Chapter 2) or in Rio Tinto (Chapter 23). Both conflicts took place over 120 years ago. The "first contradiction" of capitalism would manifest in excessive capacity for copper extraction, a market glut and an inability to realize potential profits by selling the stocks of mined copper and the new production. The "second contradiction" would manifest instead in complaints against land, air and water pollution because of mining and smelting, mass demonstrations meeting with repression. This is for instance what led to a massacre in Tuticorin in Tamil Nadu in 2018 (Chapter 9). We were blind to "the second contradiction of capitalism" until the late 1980s.

Until the 1970s, in the metropolitan centres, the challenges to "economic growth" had been marginal. Dialogue and joint action between environmentalist and labour movements were rare although there have been instances of working-class environmentalism since the nineteenth century. Later, some other countries started their own course towards the use of

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more fossil fuels and economic growth, very notably China. Movements over land grabbing, water use, forest access and pollution burdens, most of them manifestations of "ecologically unequal exchange", only began to see themselves as "environmentalist" in the late 1980s and 1990s. The global character of the rupture between human society and nature was not well understood either in Social Democratic Keynesian circles or (even less) in the triumphant neoliberal wave of the 1970s and 1980s in the West. The greatest threats produced by economic growth, were not widely recognized until the mid-1980s. In fact, "accumulation of capital" means the dissipation of energy and materials as a throughput of the economy. Even the stocks accumulated by humans (buildings, means of transport, factories) require more and more inputs of energy and materials for their maintenance. Or they become abandoned as derelict symbols of past prosperity. Rarely do their owners face up to the environmental liabilities. "Accumulation of capital" is not the adequate *physical* description of the growth of the capitalist economy, whether we refer to "primitive or original" accumulation or later to the accumulation that comes (in the Marxist analysis) from the profits fed by the increased productivity and exploitation of proletarian labour.

As Zehra Yasin (2022) has written:

> The first decades of the twenty-first century have seen the emergence and expansion of a world-historical wave of environmental or socio-ecological movements such as environmental justice, agrarian justice, food justice, water justice and climate justice movements. The global ecological crisis of the capitalist world system or "the sustainability crisis" (Scheidel et al. 2018) became noticeable at the last quarter of the twentieth century although its historical origins date back to the historical beginnings of the formation of the capitalist world system.

Indeed, the concept of "commodity extraction frontiers" comes from the analysis of the silver, sugarcane and cotton frontiers in the Americas from the sixteenth to the nineteenth centuries (Bunker 1985; Moore 2000; Beckert 2014), inspired by Wallerstein, and it is ever more relevant.

To conclude this section, James O'Connor's "second contradiction of capitalism" was on the right track but he emphasized how the environmental degradation caused by profit making and capital accumulation increased the *costs of production* to capitalists. Climate change, loss of biodiversity, water scarcity and pollution, ocean acidification or nuclear waste are issues that stretch beyond the undermining of production under capitalism. They undermine the *conditions of life and human livelihoods.* Economic growth (i.e. increase in "production") is said to come from turning the profits into capital accumulation expressed in technologies that develop "the productive forces". But we know that economic growth relies on systematic exploitation and cost shifting. As a reaction, social protests and movements arise not only from workers but also from other exploited members of society or from the communal owners of 'the free gifts of nature' now dispossessed at the extraction frontiers, and also from those suffering from contamination of land, water and air.

INTERSECTIONALITY

All over the world communities are fighting in an environmentalism of the people for socio-environmental justice defending their land, air, water, forests and their livelihoods from harmful projects and extractive activities. Grassroots environmental justice movements help

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the economy to be less unsustainable (Scheidel et al. 2018). Such movements for environmental justice have a telos, a goal of sustainability, livelihood, freedom and more social equality than at present. They easily intersect with ecofeminist movements and also with Indigenous movements.

Malcolm Ferdinand's work (2019, 2021) on the worldwide link between anti-colonialism and anti-racism, and the environmental movements, appeared as this book was written. Born and raised in Martinique (like Aimé Césaire and Frantz Fanon), Malcolm Ferdinand's harrowing book shows the slave trade to the United States, the Caribbean and Brazil as one of the main roots of modern social and environmental destruction through coloniality and racism. The owners of slave ships embarked as many slaves as possible to make the voyage from the Gulf of Guinea more profitable. Seeing this recent history not only from Africa and America but also from Liverpool and Nantes, he brings together the anti-colonial, anti-racist movements that are growing worldwide with the world environmental justice movements. He is inspired by the US environmental justice movement of the 1980s but his scope is larger and includes the study of the recent use of toxic chlordecone in colonial banana plantations, as an agrarian and public health conflict. The conflicts gathered, described and analyzed in the present book involve several social actors, including anti-colonial and anti-racist activists, maroons, peasants and workers, citizens and neighbours and the social issues pertaining to ecology, human health, economy and society. Therefore, any given conflict is "intersectional" (Crenshaw 1989) as regards the social actors and also the issues involved. To acknowledge the powerful presence of gender and also ethnic identity, working class, peasant or pastoralist or fisherfolk affiliation among the social actors of such conflict does not imply essentialism. This presence is an empirical reality. The same person may be a woman activist, Indigenous, and of a peasant family, as Berta Cáceres was in Honduras (Tran 2021, Chapter 21).

Am I using the word intersectionality in its proper meaning? Thus, there is a famous verse by Maria Mercè Marçal (born in 1952) describing intersectionality before it was theorized. She wrote in a poem in 1976 that she was marked from birth by being a woman, of an oppressed nation and of lower social class, and therefore, she added, she was a triple rebel. She died at 45 years of age. Living first in a village far from Barcelona, she later got a university degree and became a secondary school teacher and, as she said with a smile, no longer of so low a class but more of a woman and more nationally oppressed than ever. She was not Black or Brown. She was not yet a militant environmentalist. She was a Catalan poet and as militantly lesbian as she could afford to be but not single-issued, she had intersectional identities. This is how I understand the word.

The overlapping, although distinctive identities, of the environmentalists in such conflicts as we have analyzed in the present book mean that we cannot subsume the conflicts as manifestations only of the agrarian question (Chapter 21), or the working-class social question (Chapter 20), or the urban question (Castells, 1972), or Indigenous struggles for survival (Chapter 25), or ecofeminism, or popular health movements (Firpo Porto 2021), or nationalist struggles (as in the eco-nationalism of Kurdish territories or in West Papua and so many other places). The conflicts and the participants often belong to several of these "questions" at the same time. People have two or three or more identities but they cannot have all identities at the same time. The succession of "questions" and "movements" in contemporary historical importance is summarized in the following scheme suggested by Zehra T. Yasin (2023) when she introduces the "socio-ecological question". It is the "movements" that create the "questions".

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Social question – Trade Unions, the working class movement.
Agrarian question – Peasant and landless labourers movements. 'Land and Freedom'.
Urban question – Urban planning, squatting, social housing. "Right to the city".
Gender question – Feminism, against Patriarchy.
Coloniality, racism – Anti-colonial and anti-racism movements. 'Black lives matter'.
Socio-ecological question – Environmental Justice. Environmentalism of the People.

WHAT KIND OF SOCIAL MOVEMENT IS THE GLOBAL ENVIRONMENTAL JUSTICE MOVEMENT?

I mean here a movement in the same sense in which one could speak of the working-class movement in Europe before 1914, or the peace movements across the world at several points in time including the anti-Vietnam War student movement in the USA in the 1960s; or the agrarian or peasant movements in Latin America from the Mexican Revolution of 1910 onwards, or the triumphant anti-colonial world movement after 1945 particularly in Africa, or the Civil Rights movement in the USA; or the growing and increasingly successful feminist movement of the last hundred years; or the movement of Indigenous peoples that is growing since the 1960s.

In social movement theory, the focus is not on the content of the movements but in their political forms. Social movements are not political parties. As Diani and Della Porta have emphasized, social movements are involved in conflictual relations with clearly identified opponents; they are linked by dense informal networks favoured nowadays by the internet; they share a distinct collective identity. They have resources (money, publications, contacts) and they exercise repertoires of actions. Most of them are historically ephemeral. Such social movements are not so much organizations or groups of people as "clusters of performances" (Tilly 1993-94).

The formal organizational characteristics are important although less than the actions. Deleuze and Guattari (1986) used the word "rhizomatic" to describe organizations that spread horizontally as if they were roots and branches of grass, plants and trees. Such socio-political movements as feminism, the peace movement or Indigenous peoples' movement have very rarely had a unique organization and leadership even at national level. They are dispersed and to some extent heterogeneous. The usual chronology is from grievances and claims to movements. For instance, peasant grievances and claims arrived earlier than the recognized historical terms for the movements (such as *jacqueries*) or standardized slogans such as "land to the tiller". The slogan Land and Freedom, *tierra y libertad*, has its origin in Russia's Narodnik movement after 1870 and travelled to Spain and Zapata's Mexico in 1910. Peasant movements existed much before the Via Campesina was born in the late twentieth century. Grievances typical of the industrial working-class movement (the 8-hour day) or terms such as strikes or *grèves*, boycotts, scabs and *esquirols* were born before the movement as such and its organizations were recognized. Similarly, in the environmental justice movement, we can identify common slogans (in many different languages). By doing network analysis of the datasheets in EJAtlas we also could trace organizational cross-country connections (or lack of connections). For instance, we ask, (a) in which conflicts recorded in the EJAtlas do the organizations belonging to the confederation Friends of the Earth International appear (e.g. Censat in Colombia, ERA in Nigeria, Justiça Ambiental in Mozambique, WALHI in Indonesia etc.)? (b)

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How relevant are Greenpeace and other international organizations in actual environmental conflicts, compared to grassroots organizations at national, provincial and local levels? (c) How often and in which roles do the "cult of wilderness" organizations such as IUCN, WWF and Nature Conservancy appear in the conflicts recorded in the EJAtlas? Or how relevant is membership in UNESCO's World Heritage List or in the RAMSAR convention?

Ad-hoc environmental organizations are often among the leading participants in environmental conflicts. They tend to establish links with other EJOs at country level and sometimes at subcontinental level, through interpersonal networks involving individuals or organizations, and sometimes sympathetic journalists. Research on the environmental justice movements must not be guided by the presence of names of organizations but focus instead on local actions and common or similar slogans and banners. Groups belonging to Friends of the Earth International exist in Argentina and Spain but they are irrelevant in actual conflicts recorded in the EJAtlas compared respectively to Asambleas de Vecinos Autoconvocados (AVA) and to Ecologistas en Acción. In Colombia and in Nigeria, there were first some environmental complaints and movements, then Censat and ERA were founded in the 1980s, and they both later joined Friends of the Earth International (to some extent as a form of international protection). First, there are grievances and claims, then there are collective mobilizations and actions, and possibly a social movement with identifiable slogans, and even later perhaps an organization appears. Organizations are not a requirement for social movements to exist; they might even become noxious because of protagonist leaders alienating other members.

The great difference between an impartial treatise of Social Movement Theory and the present book is that environmentalism has the historical potential to change human society (and its relations with nature). History has a sense. Can this "environmentalism of the people" define the political horizon as other doctrines and systems have done in other periods: liberalism, Western imperialism, then the socialisms that split up in 1914, the failed Soviet system and Keynesian social-democracy, neoliberalism, anti-colonialism and anti-racism, the Chinese one-party rule and planning system, and more recently neo-fascist, oligarchic capitalist parties? Can we learn from social history how new socio-political movements such as feminism emerge and how they slowly win the struggle for ideas and for practice? Can we discern the coalitions that can be formed around environmentalism with ecofeminism, working-class movements, agrarian movements, Indigenous movements, popular health movements and post-growth movements?

HOW TRANSFORMATIVE ARE ENVIRONMENTAL JUSTICE MOVEMENTS?

Political theory did not take environmental issues as crucial concerns. It looked at economic growth and concluded, already with de Tocqueville in America in 1830 as with modernization theory after 1950, that capitalism (private property of means of production plus the generalized market system) was compatible with democracy. Perhaps with restricted democracy (such as that in an America with slavery and without white women's voting rights, and with dispossessed Indigenous populations). But a growing democracy nonetheless, resting on economic growth and opportunities. Freedom of the markets and political freedoms went together. Economic growth would stabilize democracies, as it was doing in de Tocqueville's North America, and would do again in Europe after 1945. Meanwhile, economic growth was

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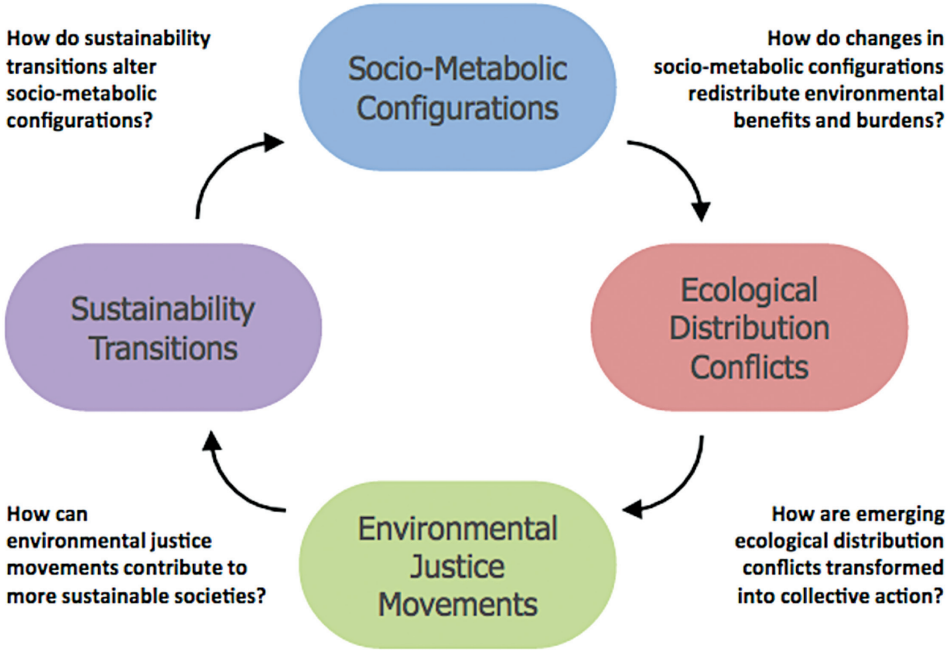

Source: Scheidel et al. 2018

Figure 30.1 *From changes in social metabolism to conflicts and movements, and hopefully to sustainability transitions: a structural explanation*

already destroying the conditions of livelihood for many populations at the commodity extractions frontiers, and it was also destroying wild biodiversity and also started to change the climate. Economic growth curtailed further the freedoms of the dispossessed.

In the EJAtlas we delve beneath the surface manifestations of socio-ecological conflicts to uncover their root causes in the growth and changes in the social metabolism. The industrial economy goes to the extraction frontiers to get greater quantities of energy and materials, and it deposits the waste anywhere it can (the atmosphere, the oceans, the rivers and soils and so on). Hence as a response the growing strength of the environmental justice movement. This is represented in Figure 30.1, which must be read from the top, clock-wise.

SLOGANS, BANNERS AND ICONOGRAPHY OF ENVIRONMENTAL JUSTICE MOVEMENTS

Like any other world social movement, the environmental justice movement develops its iconography, songs and documentary films apart from written materials such as the present book. "Artivism" should be an integral part of the study of global political ecology (Merlinsky and Serafini 2021). These emotional cultural expressions are shared among movements and become levers of environmental defence. Consider for instance the current conflict against the Pan American Silver mine in Chubut, Argentina. The "Navidad" mining project is one of

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the largest silver deposits in the world. While local inhabitants reject the project, the national government and mining companies are pressing for changes to the law that prevents its exploitation. The banner states that the place where the mine is located should not be a "sacrifice zone", a term that is used by the US environmental justice movement and also in Chile (see Table 30.1) (Lerner, 2010). The source for Figure 30.2 is *No a la mina*, initially a local movement and now a well-known webpage in South America born in the Esquel conflict in 2000, where a new institution was born in Argentina, the public anti-mining consultation (imitating Tambo Grande in Peru) (Walter and Urkidi 2017). Notice also the small banners announcing the two *Lof* taking part in the complaint. Lof is the basic social organization of the Mapuche peoples (in Chile and Argentina), a familial clan or lineage recognizing the authority of a Lonko. This is both an Indigenous and an environmental protest.

Conflicts also arise on biomass extraction, in the form of deforestation and timber grabbing, or in the form of plantations of eucalyptus or rubber, which are not true forests. See for instance the banners and graffiti in Indonesia such as the hastily drawn protest against the PT Gelora Mandiri Membangun (GMM), a subsidiary of Korindo Group operating in North Maluku in the Gane region since 2013 (Figure 30.3). The company has been accused of human rights violations, operating without permits, and illegally burning the area.

Consider now, in Figure 30.4, the iconic figure of Gloria Capitan in the Philippines. As seen in Chapter 4 and Chapter 16, she was shot in July 2016 because she opposed the construction of coal stockpile facilities, as the leader of a local anti-coal movement and member of the Philippine Movement for Climate Justice. She was a 57-year-old grandmother, not well known around the world. Her visual images are worth many written words.

In India, banners are omnipresent in the diverse regional languages in street marches. Another distinctive emotional cultural expression is the funeral monuments built by communities such as the one erected in Kalinganagar (iron mining and steel making) in memory of the victims (Figure 30.5) on 1 January 2006. We visited the place the following year.

In a demonstration under the banners of Oilwatch-ERA-FoE (Nigeria), people chant the slogan "leave the oil in the soil, keep coal in the hole" (Figure 30.6). The cultural expressions are different in other countries though the contents are similar. Thus, in Oakland, California, a movement opposing a new terminal for coal exports to Asia showed posters (Figure 30.7) stating that "the kids can't breathe" (Sanz and Rodriguez-Labajos 2021). Protests against fossil fuels arise across continents (Chapter 16). There are also anti-nuclear energy movements around the world sometimes sharing symbols, as in China (Figure 30.8 and Chapters 6 and 10). To this brief iconographic section (Figures 30.2 to 30.8) featuring complaints on mining, palm oil, iron ores, oil and coal and nuclear power, I add an illustration on hydropower. There are over 400 cases of protests against hydropower in the EJAtlas. Many of them show naked violence (Del Bene et al. 2018). Here, in Figure 30.9, the transnational Ilisu Dam gave rise to complaints. It was built by the Turkish state in a geopolitical hotspot despite opposition from archaeologists, peasants, neighbours and citizens, and Kurdish and Iraqi objections. The Ilisu Dam Project with 1,200 MW of capacity will submerge approximately 300 km^2 in the Tigris Valley. Activists fought the dam for decades. Their concerns included the archaeological and environmental losses, and the people's well-being. The majority of residents are Kurdish, and the waters cover several sites significant to Kurdish culture and history. Who has the right or rather the naked power to impose only one particular valuation language when several incommensurate values are in dispute, like the archaeological, ethnic and livelihood values against the kwh of the Ilisu Dam?

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Table 30.1 Vocabulary of the global environmental justice movement

Concept	*EJOs and other organizations promoting it*	*Short description*
Environmental justice (EJ)	USA Civil Rights Movement, North Carolina against waste dumping and environmental injustices, 1982. Activist authors such as Robert Bullard but also civil rights activists without academic affiliation and members of Christian churches, became EJ militants (Bullard 1999; Bryant and Mohai 1992; Agyeman et al. 2003; Pellow 2005, 2007).	"People of colour" and low-income populations suffer disproportionate harm from waste sites, refineries and incinerators, and transport infrastructures.
Environmental racism	Rev. Benjamin Chavis, 1982.	To treat badly other people in conflicts related to pollution or resource extraction because of membership of particular ethnic groups, social class or caste. The fight for EJ, against pollution in Black, Hispanic and Indigenous areas, was seen as a fight against *environmental racism.*
Ecological debt	Instituto Ecología Política, Chile, 1992; Acción Ecológica, 1997: mainly due to Latin American EJOs, also international Friends of the Earth (FoE) and Jubilee South. Academics joined in later doing some calculations (Paredis et al. 2008; Srinivasan et al. 2010; Roberts and Parks 2009; Warlenius et al. 2015).	Rich countries' liability for resource plunder and disproportionate use of space for waste dumping (e.g. GHG, to deposit an excessive amount of carbon dioxide in the oceans and the atmosphere, which belong to all humans equally). Pope Francis' encyclical *Laudato si* of June 2015 devotes paragraphs 51 and 52 to the ecological debt from North to South and to the environmental liabilities of transnational companies.
Popular epidemiology	Ph. Brown. 1992, 1997. "Lay" local knowledge of illnesses from pollution may be more valid than official knowledge.	Refers to when the lay public does work that is traditionally done by corporations, experts and officials. The disproportionate incidence of morbidity or mortality that cannot be proved from official statistics because of the lack of doctors or hospitals.

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Table 30.1 (Continued)

Concept	*EJOs and other organizations promoting it*	*Short description*
Environmentalism of the poor	Anil Agarwal, the founder of the CSE in Delhi and editor of the *First Citizens' Report on the State of India's Environment*. His successor, Sunita Narain, often uses this term to refer to the struggles in India against dams, deforestation, mining projects and nuclear power (Narain, 2008[5]). Shrivastava and Kothari (2012) compiled struggles in India putting forward their proposal for a Radical Ecological Democracy. Hugo Blanco used the term in Peru in 1991.[6]	Struggles by poor/Indigenous peoples against deforestation, dams and mining; proactive collective projects for water harvesting and forest conservation.
Food sovereignty	Via Campesina, c. 1993, GRAIN 2005.[7]	People's right to healthy, culturally appropriate, sustainably produced food. Right to define their own food and agriculture systems against corporate agriculture, particularly agrofuel monocultures and tree plantations (Schutter 2012).
Biopiracy	Coined by Pat Mooney, of the Rural Advancement Foundation International (RAFI), 1993. Popularized by Vandana Shiva. State authorities in Brazil and India have started to use this term. Academics also use it (Robinson 2010).	Appropriation of genetic resources (medicinal or agricultural) without recognizing knowledge/property rights of Indigenous peoples. Example of Dragon Blood trees in Ecuador.[8]
Climate justice	Durban Alliance, CorpWatch 1999–2002. CSE booklet of 1991, *Global Warming in an unequal world: A Case of Environmental Colonialism*, by Anil Agarwal and Sunita Narain. In the 1990s, supported by the World Council of Churches, the Third World Network, Action Aid, and Christian Aid.	Idea of "subsistence emissions vs. luxury emissions". Radically reduce excessive per capita CO_2 emissions and other GHG in rich countries. In the Jubilee campaign against Northern financial bullying of the South, comparing the large ecological debt from North to South to the financial debt from South to North (Simms et al. 1999; Simms 2005).

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Water justice, hydric justice	Rutgerd Boelens and EJOs in Latin America (e.g. CENSAT). (Boelens et al. 2011, 2022) Boelens practising action- research, sees water justice or hydric justice as concepts from civil society. They include the Brazilian MAB (Movement of People Affected by Dams) and the MAPDER network in Mexico and Rios Vivos in Colombia.	Water should not run towards money, or towards power. It should go to those needing it for livelihood. Anti-dam movements denounce water enclosures, diversion of rivers, and dispossession and displacement of rural and Indigenous communities. The World Commission on Dams (WCD) reported its conclusions in 2000. It arose because of movements against dams, such as the Narmada Bachao Andolan in India where Medha Patkar's campaigns had been most influential (McCully 1996). The WCD's conclusions went against the unidimensional cost–benefit analysis procedures for deciding on dam building. The recommendations were not implemented.
Water as human right	Pablo Solon (Bolivian envoy to UN), Maud Barlow (Council of Canadians), 2001.	Human Right to Water recognized at UN level in 2011, as an independent human right.
"Green deserts"	Brazil, network against eucalyptus plantations, *Rede Alerta contra o Deserto Verde,* 1999.	Brazilian local term for eucalyptus plantations, used by networked CSO and communities, also by researchers and activists.
Tree plantations are not forests	*Pulping the South*, 1996 by R. Carrere, L. Lohmann, World Rainforest Movement.	The WRM collects and spreads information on tree plantation conflicts. It proposes a change in the FAO definition of forest, to exclude tree monocultures.
Land grabbing	GRAIN (small pro-peasant EJO), 2008.	The wave of land acquisitions in Southern countries for plantations for exports, leading to the first statistics on land-grabbing.
Resource caps	Resource Cap Coalition, RCC Europe, c. 2010. Discussed since the 1990s (Spangenberg, 1995) in terms of calculations of "fair shares" in the use of limited resources and limited environmental space.	Advocating reduction in global resource use and in poverty. It calls for a *European energy quota scheme* and the ratification of the *Rimini protocol (2003).*
To Ogonize/Yasunize, LFFU movements	ERA Nigeria, Acción Ecológica, Oilwatch, 1997–2007.	Leave oil in the soil to prevent damage to human rights and biodiversity, and against climate change. Adopted by anti-fracking, tar sands and open cast coal mining, LFFU movements.

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Table 30.1 (Continued)

Concept	*EJOs and other organizations promoting it*	*Short description*
Rights of nature	Constitution of Ecuador 2008, art. 71, pushed by Acción Ecológica and Alberto Acosta. Actionable in court.	"Nature, or *PachaMama,* where life is reproduced and exists, has the right to exist, persist, maintain and regenerate its vital cycles, structure, functions and its processes".
Corporate accountability	Friends of the Earth International, 1992–2002.	At the UN Johannesburg summit, FoE proposed a Corporate Accountability Convention, against lukewarm CSR principles.
SLAPP	Strategic lawsuit against public participation.	Private corporations sometimes sue environmental defenders to force them to spend money defending themselves.
"Critical mass", cyclists' rights	San Francisco 1992 (Chris Carlsson)	International movement reclaiming the streets, cyclists marching to impose cyclists' rights.
Urban waste recyclers' movements	c. 2005, GAIA against incineration and "energy valorization" of urban waste.	Unions or cooperatives of urban waste gatherers, with positive impact on environment, climate change (movements in Delhi, Pune, Bogota etc.).
Urban "guerrilla food gardening"	c. 2000, started by "food justice" networks.	Vacant lot food growing, permaculture, community gardening movements in cities around the world.
Toxic colonialism, toxic imperialism	BAN, Basel Action Network, c. 2000.	Fighting the export of waste from rich to poor countries, forbidden by the Basel Treaty, e.g. ship-breaking in South Asia, chemical residues, nuclear waste, e-waste.
Post-extractivism	Latin America, 2007, E. Gudynas (CLAES), A. Acosta, M. Svampa, Horacio Machado.	Against the reprimarization of Latin American economies. Transition to a sustainable economy based on solar energy and renewable materials. Impose quotas and taxes on raw materials exports.
Buen Vivir, Sumak Kawsay	Ecuador and Bolivia 2008	Adopted in Constitutions of both countries, inspired by Indigenous traditions and by the "post-development" approach.
Indigenous territorial rights, and prior consultations	Convention 169 of ILO, 1989; Adivasi forest rights in India etc.	In conflicts, communities ask for applying legislation defending Indigenous rights.
"Sand mafias"	Name given c. 2005 by environmental journalists after Indian people got killed because of a conflict around extraction of sand and gravel.	The illegal "mining" of sand and gravel in India in many rivers and beaches, driven by the growing building and public works industry. Sand is mined as a building material around the world but also, in smaller amounts, as beach sand which is an ore for titanium or other metals (Chapter 15).

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"Cancer villages"	In China, popular name, then adopted by academics and officials (Lora-Wainright 2013).	Rural villages where industry has caused pollution (e.g. heavy metals), where lay knowledge of illness is relevant, and subdued protests take place.
Cancer alley	The name given to an 85-mile stretch between Baton Rouge and New Orleans, previously known as the "petrochemical corridor". The documentary film "Fuel" by Josh Tickell.	In the 1980s, residents in Louisiana, African-American and low income, noticed abundant cancer cases in their communities. e.g. Mossville, Louisiana.[9]
Sacrifice zones	Steve Lerner wrote the book *Sacrifice Zones: The Front Lines of Toxic Chemical Exposure in the United States* in 2010. Became a keyword in G. Boric's election campaign in Chile, 2021.	The term is often used outside the US. It has been made popular in Chile by local struggles against industrial pollution.[10]
Blockadia	Oilwatch (1997) and other activists in the US and Canada. Naomi Klein's book on climate change (2014).	Resistance movements against fossil fuels for "glocal" reasons, north and south.
CO2lonialism	A concept co-produced by activists and scholars. In 2000, Norwatch (a Norwegian environmental organization) published a first report.	Promote a progressive decolonising climate agenda.
Ende Gelände. (Enough!)	Alliance from the anti-nuclear and anti-coal movements, the Rhineland and Lausitz climate camps and the Hambacher Forest anti-coal campaign from 2015.	Movement against lignite mining in Germany, motivated mainly by climate change. Civil disobedience, direct action against open cast mines.
Grands Projets Inutiles Imposés (GPII)	Name given to a network in Europe since 2012, with meetings in Nantes, Stuttgart, Rosia Montana (Romania).	Network against large "superfluous" public works (e.g. speed train between Turin and Lyon) or open cast mining projects.
Proyectos de muerte (Projects of Death)	Mexico, used against open cast mining, hydropower for the mining industry, and fracking projects.	Particularly in the Sierra Norte of Puebla.
Chipko Andolan (Chipko movement)	Himalayas, India 1970s.	Movement of saving trees by sticking to them (Chipko), applied in 2018 in Odisha to protect an old sal forest. Also in Appiko movement (Karnataka).[11]

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Table 30.1 (Continued)

Concept	*EJOs and other organizations promoting it*	*Short description*
Koyla satyagraha	Satyagraha is a term invented by Mahatma Gandhi in 1906 translated as "force of truth" (from *satya*, 'truth', and *agraha*, 'insistence').	Struggle and civil disobedience carried out in a systematic way, with ethical-political objectives and with a spiritual dimension. In 2016's Gandhi Jayanti, 1400 people from 25 villages in Raigarh district of Chhattisgarh took part in the 5th Koyla Satyagraha, claiming rights over land, forests and resources, extracting coal by hand, submitting the money earned to the national treasury, claiming, "If the government wants the coal beneath our land, we will give it to them, but we won't part with our fertile land".
Jal satyagraha	Medha Patkar, 36 others started Jal Satyagraha in Narmada against dams.	As the Narmada River continued to rise, the Narmada Bachao Andolan pressed for rehabilitation of villagers whose homes and land are submerged.[12]
Jaan Denge par Jameen Nai' (We will give our lives but not our lands)/'Na Jaan Denge, Na Jameen' (We will neither give our life, nor our land)	As reported by Brototi Roy in *Ecología Política*, 2019. In recent years, the slogans have changed their tune, with the new ones being more empowering.	Slogans that highlight the strong attachment that people have to their territory, which is often an extension of their cultural and ancestral heritage. One reason for using such slogans is also that the threats of violence and death are very real.
Poromboke song (Tamil Nadu, India)	T.M. Krishna's popular Carnatic song in 2017, complaining about the destruction of Ennore Creek north of Chennai by coal-fired power plants and other polluting industries.	Mangroves and beaches are "commons" and are being destroyed: *Poromboke ennaku illai, poromboke unnaku illai* (Poromboke is not for me, it is not for you). *Poromboke ooruike, poromboke bhoomikku* (Poromboke is for the city, it is for the Earth).[13]
WOMIN	A network of women activists with a secretariat in Johannesburg. Growing quickly experienced and effective despite the terrible realities, self-deprecating and good-humoured, resorting also to art activism (Figure 30.11).	"African women weaving a just world for people and nature". "We strive for an Africa in which all women have secure access to resources for life and livelihood and can exercise full control over their bodies and development choices".[14]
Toyi-Toyi	South African term, deployed in EJ and in other demonstrations. Toyi-toyi was used against South African apartheid police and security forces in demonstrations.	Toyi-toyi, the stomping of feet, dancing and chanting during protests that include improvised or previously created political slogans or songs.

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Ocean Grabbing	The international movement in defence of fisherfolk, the Transnational Institute.[15]	Ocean grabbing describes fisheries control by powerful economic actors. (Ertör 2021). In parallel to "land grabbing", processes of enclosures affecting communities whose cultural identity and livelihoods depend on small-scale fishing.
Fisheries Justice Blue Justice	National and transversal organizations: KIARA (People's Coalition for Fisheries Justice), Indonesia, established by WALHI, Bina Desa, JALA (Fishermen's Advocacy Network for North Sumatra) in 2003. Federation of Fishermen Archipelago (FSNN). KSMTF (the Kerala Independent Fishworkers Federation in South India), Coastal Links South Africa. Coastal links (CL) was established in 2003, with structures in the Western and Northern Cape in South Africa as a vehicle for small-scale fishers to secure their livelihoods and overall human rights.	It applies to both ocean and inland fisheries. In South Africa, fishers' organizations (e.g. Masifundise and Coastal Links) have connected fishing communities across the country. As key members of the Coordinating Committee for the World Forum of Fisher Peoples (WFFP), they are instrumental in increasing international recognition for, and mobilization within the WFFP. (Mills 2018; Ertör 2021).
Zadistes	Activists against the airport in Nantes[16] and against other GPIIs.	Comes from *Zone à défendre* (ZAD) (Zone to Defend), a joke on the state-sponsored acronym ZAD meaning "zone to be developed". The young botanist Rémi Fraisse was a *zadiste*. He was killed by a grenade thrown by a gendarme when demonstrating against the Sivens dam near Toulouse on 25 October 2014. Many years later the family got an indemnity of €45,400. Another case in 2018 in the north of Paris in Gonesse, environmentalists and farmers against a mega-urban development supported by Auchan and the Chinese investor Wanda.[17]
Justiça nos trilhos, "justice in the railways"	Marcelo Firpo Porto et al. 2013.	Against accidents caused by massive iron ore transport by railway to the export harbours in Brazil.

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Table 30.1 (Continued)

Concept	*EJOs and other organizations promoting it*	*Short description*
"No Nukes"	No Nukes but Children (要孩子不要核子yào háizi bùyào hézǐ). In China, this slogan is related to two nuclear conflicts in Guangdong and Jiangsu.	Anti-nuclear movement of the 1960s and 1970s, strong in the US, France, Germany, Japan, Korea, China, Taiwan and elsewhere. In Japan, famous musician Ruichy Sakamoto, member of the anti-nuclear organization Stop Rokkash, composed songs against nuclear projects and organized the No Nukes 2012 concert (Yellow Magic Orchestra, Kraftwerk etc.).
Paren de fumigar	Madres de Ituizango in Cordoba, Argentina, growing movement against glyphosate, under the name *paremos de fumigar* ("stop fumigating"). *Laudato si* (para. 135) mentions fumigated fields.[18]	Movement against agricultural GMO, referring to Monsanto Roundup herbicide in soybean production.
Energy sovereignty	Catalan Network for Energy Sovereignty, inspired by the definition of "food sovereignty" of La Vía Campesina. Xarxa per la Sobiranía Energètica, 2014. First time used in 2009.[19]	Conscious individuals, communities and peoples have the right to make their own decisions on energy generation, distribution and consumption in a way appropriate within their ecological, social, economic, cultural circumstances, provided that the decisions do not affect others negatively.
Biocide	Rachel Carson (1963) in *Silent Spring*. Apart from DDT, new chemicals like neonicotinoids and other "systemic" insecticides/biocides cause ecological havoc.	"These non-selective chemicals have the power to kill every insect, the 'good' and the 'bad', to still the songs of the birds and the leaping fish… they should not be called insecticides but biocides".
Ecocide	Zierler, 2011.	As the public increasingly questioned the war in Vietnam, a group of American scientists concerned about the use of Agent Orange started a movement against what they called "ecocide".
Hidrocracia	Colombia's anti-dams movement. Movimiento Colombiano en Defensa de los Territorios y Afectados por las Represas: Ríos Vivos (2011). CENSAT-Amigos de la Tierra Colombia. MAPDER (Mexico) MAB (Brazil).	Term used to characterize the politics in the hydroelectric business in Colombia (and beyond), opposed by Live Rivers, Rios Vivos.[20]
Buat ton mai	Ordination of trees in Thailand in 1980s (Carrere and Lohmann, 1996).	Practised against tree plantations (such as eucalyptus) by Buddhist priests and ecology movement.

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Environmental disruption	International Symposium on Environmental Disruption in the modern world, under auspices of the International Social Science Council (Paris) in Tokyo, March 8–14, 1970. Used in the 1970s by economist K.W. Kapp.	A term used interchangeably with the Japanese term Kogai.
Kogai	After many instances of industrial pollution in Japan (Ashio copper mine around 1900), in 1955 the word *kogai* meaning pollution was introduced (S. Tsuru 1999; Unesco 1971).	The word came to gain wide currency, covering not only environmental pollution of all kinds, but also various undesirable side effects of economic activities.
Toxic activists	Ph. Brown, 1993 in the context of popular epidemiology.	Refers to lay people who organize themselves to build knowledge to establish causal relations between a disease and toxic pollutant.
Nemagon nos mata (Nemagon kills us) (DBCP)	Central American movement, particularly strong in Nicaragua.	Asking for reparations for damage to health in banana plantations caused by DBCP (Navas 2022).
"Stay grounded" network	Global network to counter aviation launched in 2018, over 50 EJOs by 2020.	Local airport opposition groups, climate justice activists, NGOs, trade unionists, academics, groups supporting night trains, communities against offset projects, or biofuel plantations. (Sara Mingorria, ICTA UAB). https://ejatlas.org/featured/airport-conflict-around-the-world.
"Damn the dams". "Dam Watch International"	Documentary by Jack Palermo, 2018 (Connecticut, USA) on dam removal, and other songs, documentaries. Used also in the struggle in Pulangi River, Mindanao, Philippines, in Alberta, Canada, etc.[21]	Documentary (2012) titled Iste Böyle. Damn the Dams, by Oslem Sariyildiz (Turkey). Documentary, Greenpeace, 2016, Damn the dam, Keep the Tapajós river alive (Brazil). Song on the Manapouri dam in New Zealand (hydropower for bauxite smelting). Also, Dam Watch International: a Canadian initiative aspiring to be a transnational advocacy network (2021).
"Nos semences, nos savoirs, Monsanto ne passera pas par nous"	Slogan against GMOs (Monsanto Bt cotton) in Burkina Faso.	"Our seeds, our knowledge, Monsanto will not pass over us".[22]

(*Continued*)

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Table 30.1 (Continued)

Concept	*EJOs and other organizations promoting it*	*Short description*
Faucheurs volontaires (Volunteer mowers)	A French movement against GMOs. Similar actions took place in 2007 in Germany, Portugal, UK. The French movement claimed 6,700 militants.	On 5 June 1999 led by José Bové, militants went into the Centre for International Cooperation in Agronomic Research for Development in Valletta, near Montpellier, destroying a greenhouse where a European research project was conducted.
Sin maíz, no hay país	In Mexico, 300 EJOs, peasant movements, workers' unions, human rights, women's and food organizations. National Campaign "Without Maize, there is No Country".	They joined on 25 June 2007 to launch the National Campaign defending food sovereignty, the reactivation of the countryside, and the critical analysis of the use of GMOs.[23]
Tolak reklamasi movement, Indonesia	#ForBALI (Forum Rakyat Bali Tolak Reklamasi).	Many organizations and individuals, NGOs, artists and Balinese people concerned with the preservation of their island stage demonstrations by Banjars (local communities). Multiple banners and billboards show their artistic talent and determination to be heard.[24]
P-ainful X-ylene, p-Xylene (para-xylene)	China, anti PX protests, many of them recorded in the EJAtlas. The first protest in Xiamen 2007.	Over ten anti-PX protests in the country: Dalian, Maoming, Ningbo, Jiujiang, Zhangzhou, Chengdu, Kunming, Shanghai, Jinshan.
Clear water and blue mountains are mountains of gold and silver/Lucid waters and lush mountains are invaluable assets "绿水青山就是金山银山"(lǜ shuǐ qīngshān jiùshì jīnshān yín shān)	China, common slogan.	In many environmental protests, people will hold banners with this sentence to legitimize their demonstrations or street marches in front of the local government.
"Collective stroll" or "go for a walk"/"take a walk" (散步，sànbù or集体散步，jítǐ sànbù)	A euphemism for "demonstration" or "protest". There are similar forms of protests in other countries. "We Walk" activists carry anti-junta protest from Bangkok to Khon Kaen.	Like "sipping tea" usually a meme in social media or chat room context of quietly taking part in verbal disclosure of some valuable, interesting or useful information. The listeners quietly sip tea as they drink in the information also.

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Source: Lucrecia Wagner, No a la Mina

Figure 30.2 *La meseta no es zona de sacrificio, Chubut, Argentina*

The "Initiative to Keep Hasankeyf Alive" (ITKHA) was started in 2006. Hasankeyf is a 12,000-year-old town condemned to disappear in the waters. In early 2015, the PKK guerrilla (the workers' party of Kurdistan) destroyed machines and a pipe from the construction site. The governmental response was an increase in the militarization of the site, forcing the companies to employ non-local workers. In October 2015, a Global Hasankeyf Action Day aimed to declare Hasankeyf a UNESCO world heritage site, together with the Iraqi marshes.

Similarly, other valuation contests appear in the iconography through a slogan heard and seen in many gold mining conflicts in Latin America: *el agua vale más que el oro* (water is more valuable than gold). Nobody knows where this was first expressed in banners (and t-shirts) (Figure 30.10), in the early boom of open cast mining in the 1980s and 1990s. This performative bottom-up slogan implies that, although one kilogram of water is far less valuable than one kilogram of gold on a monetary scale, this is not the case on other scales of value. As water becomes contaminated and scarce, its local market value would rise. But the slogan does not refer to increasing marginal utility as supply decreases. It refers to a non-monetary value for livelihood. It expresses the feelings of participants in anti-mining movements in Latin America and it is sung in many different styles.

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Source: RAN & WALHI

Figure 30.3 *The GMM palm oil company is blamed for damages, Indonesia*



Source: Derek Cabe, Coal-free Bataan Movement

Figure 30.4 *Gloria Capitan marching*

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Source: Leah Temper

Figure 30.5 *First anniversary of displacement and killings on behalf of TATA industries on 2 January 2007, Kalinganagar, Odisha, India*

THE VOCABULARY OF ENVIRONMENTAL JUSTICE

The thousands of banners, murals, slogans, songs and documentaries in environmental protests documented in the EJAtlas, the transnational companies and commodities involved, suffice to make the point that many environmental complaints are "glocal" (Swyngedouw 1997), with local roots and with global parallels and implications. There are multiple links between the conflicts. In 2014, we published the article "Between activism and science. Grassroots concepts for sustainability coined by Environmental Justice Organizations" (Martinez-Alier et al. 2014) showing that "EJOs and their networks have introduced several concepts to political ecology that have also been taken up by academics and policy makers" looking to novel concepts since the 1980s such as environmental justice, ecological and climate debt, food sovereignty and anti-extractivism. The collaborative work with the EJAtlas has since expanded the Vocabulary of Environmental Justice as shown in Table 30.1.

Other grassroots words could include *greenwashing,* coined in 1986 by Jay Westerveld, reportedly on a trip to Samoa seeing that rich hotels asked jet-travelled guests to reuse their towels for the sake of the environment. Mexican activists have added in 2021 the slogan *no hay sequía, hay saqueo* (there is no drought, there is water plunder) as recorded by Raul Romero (*La Jornada*, 14 December 2022) and mentioned in several entries in the EJAtlas.

There are some concepts of academic origin (such as "ecological footprint") that are also used by the global EJ movement. Here in Table 30.1, we focus on concepts of non-academic origin. The following paragraphs clarify some of these terms. For instance, so-called "popular

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Source: Martinez-Alier et al. (2014). *J. of Pol. Ecology*, 21(1): 19–60

Figure 30.6 Oilwatch demonstration

epidemiology" is a concept of relevance in many struggles inside and outside the US – think of the attempts by the plaintiffs in the Texaco-Chevron case in Ecuador (Chapter 27) to gather information in the 2000s related to the 1970s and 1980s of the incidence of cancer in the Sucumbios region of the Amazon by resorting to the memories of the local populations, proving that such memories concentrated around areas with wells and pools for the disposal of extraction water (Martin Beristain et al. 2009). Think of the long battle to have valid figures on the victims of the Bhopal accident. Popular epidemiology fits into the "post-normal science" theory (Funtowicz and Ravetz 1993), "street science" (Corburn 2005) and the notion of "activists mobilizing science" (Chapter 28).

One of the primary environmental challenges faced by populations of the global South stems from an economic system that produces ecologically unequal trade, an academic concept that goes together with the *international division of nature and labour* (Chapter 26). One form of such unequal trade was called biopiracy by Pat Mooney of RAFI in 1993 and Shiva (1997). The complaints against tree plantations grown for wood or paper pulp, depriving local people of land and water, led to the slogan and movement "Plantations are not forests". In Brazil, "green deserts" was the spontaneous, bottom-up name for eucalyptus plantations in some regions, which were opposed by local peasants and Indigenous peoples. This was certainly a form of enclosure of commons. The driving force was the export of paper pulp and cellulose. Today, their role as carbon sinks is added. The related concept "food sovereignty" was introduced in the early 1990s by Via Campesina, an international movement of farmers, peasants, and landless workers. A small organization called

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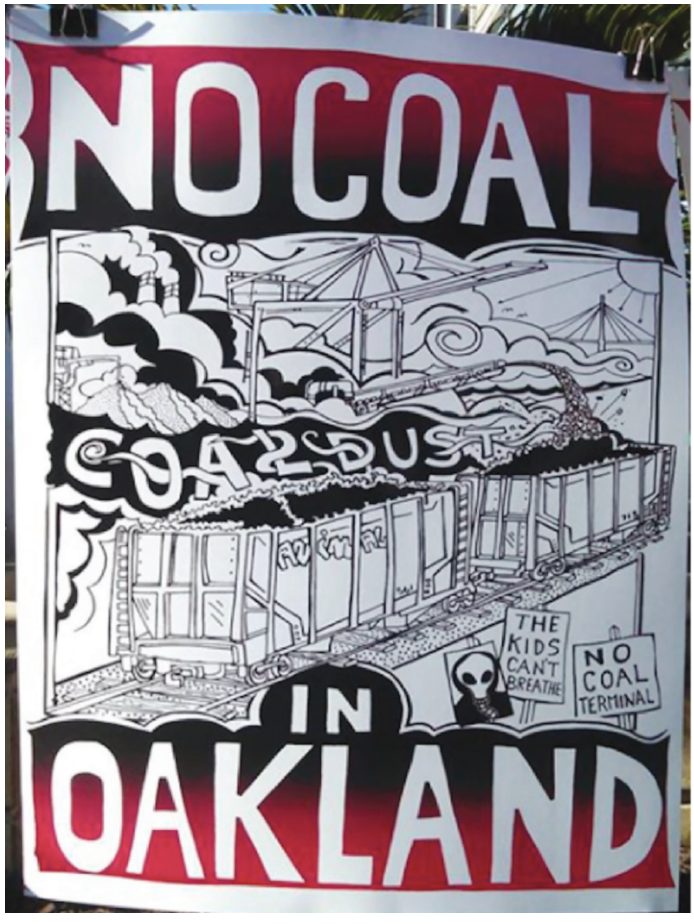

Source: Jon-Paul Bail, in Sanz and Rz-Labajos 2021

Figure 30.7 No Coal in Oakland, USA

GRAIN introduced in 2008 the term "land-grabbing" to showcase the new wave of land acquisitions – often by force – in Southern countries, for new plantations for exports. The term was then taken up by the *Journal of Peasant Studies*, including a Forum on Global Land Grabbing (2011).

A term originating from the EJOs that has been successful in the fights against ecologically unequal trade and for identifying those responsible for climate change is that of the "ecological debt" (Robleto and Marcelo 1992; Borrero 1994). There was an alternative treaty in Rio de Janeiro in 1992 (outside the official Earth Summit) on the ecological debt from North to South. Acción Ecológica of Ecuador took the term and the struggle up in 1997, with several publications which included a definition. Some governments from countries of the South have deployed the concept of "ecological debt" (or one part of it, the "climate debt") in international negotiations on climate change (Bond 2010). In the 2009 Copenhagen COP, perhaps over 30 heads of government or ministers talked about the ecological debt, awakening the

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Source: China National Nuclear Corporation Longwan Industrial Park, Jiangmen, Guangdong, China, Weibo, EJAtlas

Figure 30.8 *Slogans on banners: "Fight against nuclear till death" and "We want life, not GDP"*

fury of the US Ambassador, Todd Stern (Reuters 2009). Pope Francis took it up in 2015 in *Laudato si.*

The position of the rich countries, in contrast, denies liability for climate change. Todd Stern, the US climate envoy, repeated in Paris in 2015 what he had said in Copenhagen in 2009: the US had long acknowledged there was a need to support countries acutely vulnerable to climate change impacts, but there was "one thing that we do not accept and will not accept in this agreement and that is the notion that there should be liability and compensation for loss and damage. That is a line that we can't cross". He was supported by the EU climate commissioner, who said that loss and damage provisions would be included in the Paris Agreement, as long as they did not expose wealthy countries to new claims for compensation. Therefore, the Paris agreement refused recognition of an ecological debt (Baghwati, *Financial Times*, 6 December 2015).

Unsurprisingly, it was also EJOs that had introduced and developed the related concept of "climate justice". A 2000 event in The Hague sponsored by the New York group CorpWatch was the first known conference based on this term (Bond 2011, 2013). CorpWatch in a document in November 1999 stated that Climate Justice means, first of all, removing the causes of global warming and allowing the Earth to continue to nourish our lives and those of all living beings. This entailed reducing emissions of carbon dioxide and other greenhouse gases

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Source: Mehmet Masum Suer/Alamy Stock Photo

Figure 30.9 *The "Big Jump" at the Tigris River*



Source: EJOLT

Figure 30.10 *Pope Francis and Senator (and film-maker) Pino Solanas, 2013*

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Source: WoMin African Alliance

Figure 30.11 The Right to Say NO: African Women Defend Africa's Wealth

(Bruno et al. 1999). Four years later, the Durban Group for Climate Justice was launched. It made itself well-known by its campaigns against fake Clean Development Mechanism projects. All such slogans are disseminated through today's network society (Castells 1996, 1997).

The movement for "water justice" is related in Table 30.1 to "water as a human right", to the fight against *hidrocracia*, "Damn the dams" actions and, in India, to *Jal satyagraha*. "The commons movement" is also active in EJ struggles. The commons is seen as a crucial sector of the economy which must be defended to preserve decommodified access to food, water, forests, and clean air (Di Chiro 1998). Influenced by Karl Polanyi, the movement fights against old and new enclosures. Since the late 1980s, as a reaction against Garrett Hardin's misnamed "tragedy of the commons", authors like John Kurien defended in India and elsewhere small-scale fisheries against large-scale industry, using the term "modern enclosures" or "the tragedy of enclosures" (Martinez-Alier 1991). In municipal water management, paradigmatic movements against privatization of urban water services as in Cochabamba, Bolivia, have been sources of inspiration for the defence of the commons in general (including access to information) and also for the defence of the human right to water.

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OTHER BOOKS ARE POSSIBLE

Several activist or academic groups have been producing inventories of ecological distribution conflicts (by country, continent or theme). Our own contribution is the EJAtlas at ICTA-UAB (Temper et al. 2015, 2018; Martinez-Alier et al. 2016, 2021) with many outside collaborators.

Social mobilizations over resource extraction, environmental degradation, or waste disposal are not only about the distribution of environmental benefits and costs; they are also about participation in decision making and recognition of group identities. A less unequal ecological distribution often requires previous recognition and respect. Nancy Fraser (2010) referred critically to a transition in moral philosophy from "redistribution" to "recognition" (Honneth 2001). In practice recognition and participation are instrumental for redistribution. Such issues appear very regularly in the cases collected in the EJAtlas (Schlosberg 2007; Walker 2012; Newell and Sikor 2014). EJ research encompasses issues of exclusion (Agarwal 2001) but also recognizes potential new leadership of environmental movements by different social actors, e.g. the contribution of women such as those in WOMIN or Acción Ecológica in Ecuador is crucial to resistance in both rural and urban communities (Agarwal 1992; Tran 2020, 2021, 2022, 2023).

The protests against the World Trade Organization in Seattle in 1999 and at the World Social Forums of the 2000s certainly pushed forward the globalization of EJ. There were earlier underpinnings in the alternative "treaties" signed at Rio de Janeiro in 1992 and in the 1991 People of Color Environmental Justice Leadership Summit with its 17 Principles of Environmental Justice. EJ spread through organizations like Friends of the Earth, which, while born in California as a "white" conservationist movement, brought in EJOs which existed since the 1980s like CENSAT in Colombia and WALHI in Indonesia, or founded later like GoundWork in South Africa. Other environmental organizations such as the CSE in Delhi, ERA in Nigeria (and Oilwatch) linked the idea of environmentalism of the poor with wider notions of EJ and climate justice since the early 1990s (Figure 30.12). With these activist and social movement roots, the concepts of EJ in their variations were then taken up in academic research in political ecology studying Southern countries. There is a book on environmental conflicts in Peru authored by Raquel Neyra based on EJAtlas and other books are in preparation. Researchers now generate statistics on ecological distribution conflicts (Özkaynak and Rodriguez-Labajos 2012; Latorre et al. 2015; Martinez-Alier et al. 2016; Pérez-Rincón et al. 2018, Scheidel et al. 2020, 2023; Temper et al. 2020; Navas et al. 2022) made possible by the EJAtlas. Other books are Demaria 2023; Rodriguez, Walter, Temper 2023.

Ecological distribution conflicts have an important role in sustainability because they relentlessly bring to light conflicting values over the unsustainable resource uses and the burdens of pollution affecting people and the planet. Environmental justice movements, born out of such conflicts, become key social and political actors against such contaminations and resource uses, they have built up a vocabulary for new movements and they sometimes also take successful radical actions for environmental justice. By drawing on creative forms of mobilization, new cultural expressions and diverse forms of action, movements for EJ can turn into effective instruments to diminish or at least slow down the environmental unsustainability and social inequities of the growing capitalist industrial economy (Scheidel et al. 2018). We see this in the burgeoning LFFU movements related to climate justice (Chapter 16).

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Source: Acción Ecológica

Figure 30.12 *The banner from Acción Ecológica, Ecuador, claiming an Ecological Debt – who owes to whom? It travelled around the world after 1999*

This book is written as a survey of immediate contemporary social environmental history and also as a bridge to a threatening but hopeful future. It is not merely an inventory of environmental conflicts and a tool for activists. It is a major contribution to ecological economics, industrial ecology and political ecology, and is also useful for anthropology, political geography, environmental sociology, international relations, industrial ecology, business economics and contemporary history. The social environmental sciences have an academic origin, with international societies, academic journals and handbooks, and professorships that go under such names. Many concepts and theories have been produced in these booming fields of science in the last years. There are also grassroots concepts for sustainability introduced by EJOs which are also objects of academic research. Such concepts support the global EJ movement, at the same time supporting rural and urban movements protecting territory and defending place-based interests and values (Escobar 2008; Anguelovski and Martinez-Alier 2014).

Although this book is long enough, other similar books could be written just with the "leftovers". There are more country/regional chapters and more thematic chapters that I would like myself to write if I still have the anti-entropic *élan vital* to do so. The Americas have been covered in this volume already, including the northern reaches of Canada and Alaska but India and China need much better coverage. I would start again from the East (as seen from Europe) with three chapters on Australia and New Zealand (and some Pacific islands), Korea, Indonesia, and Southeast Asia reaching west to Myanmar and Bangladesh, a large

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region with a large population which here has been well covered for Japan, Taiwan and the Philippines, and some states in India. Then I would write about Pakistan, Iran and Turkey, and also about Central Asia including Mongolia, and the whole Russian Federation. Then I would write a chapter about Arabic countries (and Israel's environmental injustices against Palestine) including of course North Africa, and another one about Central Africa with the R.D. Congo, and also South Africa. Then, about the main countries in continental Europe (France, Germany, Poland, Italy), and England, Wales, Scotland and Ireland.

The thematic chapters, also with co-authors, could be on oil palm plantations and the local and international fights against this industry; conflicts on fisheries around the world; urban waste recyclers and their social movements; water management and hydropower conflicts, the large oil and gas spills from tankers and platforms; sand and gravel extraction for the cement industry which is very energy intensive, and the movement against waste incineration in cement kilns. I would also expand the chapter or write a whole book on business economics and Corporate Social Irresponsibility with studies of several private or public companies. I would write a chapter against the military (their "ecological *bootprint*" and their impact on the environment), as explained in the section on Vieques (Puerto Rico) and on nuclear bomb testing in the present book. All this would again be samples within a sample.

If I knew how, I would also write several emotional film scripts for a series on social metabolism, ecological distribution conflicts, valuation contests and the world movements for environmental justice. The series could be called "networked activism against transnational extractivism". It would be about the next 20 years and it could be announced with these words:

> In the visions for the future there is a divide between the optimists and the realists, between those who confidently believe in management of risks together with ecological modernization and those who believe in the unviability of an economy based on increased social metabolism, causing an enormous "entropy hole" and growing uncertain risks. The realists believe that what is required is an economy based on degrowth of the flows of energy and materials, degrowth of population, decreasing risks of climate change, of atomic wars, of loss of biodiversity. The social movements in the global South that stop the extraction, transport and consumption of fossil fuels and other materials contribute to the "realist vision" of degrowth in practice.

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'In what may serve as a capstone to his distinguished career, Joan Martínez-Alier gives us both a monument to environmental justice scholarship and a practical guide to roughly 500 environmental justice campaigns over the last two centuries. Land, Water, Air and Freedom *makes a strong case that one of the characteristics of our age is a worldwide environmental justice movement. It is gathering pace, but often in the shadows and out of plain sight, because it is most vigorous on the remote commodity frontiers of the industrial economy – where oil drilling, copper mining, or timber felling take place. This book makes clear both the most fundamental feature of the industrial economy – entropy – and the determination of grandmothers, sharecroppers, housewives, fisherfolk, mineworkers, and many others, to resist. It belongs on the shelf of everyone concerned with environmental justice, environmental politics, environmental sociology, environmental history, or the state of their planet.'*

J.R. McNeill, Georgetown University, USA

'Like no other person, Joan Martínez-Alier has grasped the global pattern through which the unequal resource flows required for the unsustainable metabolism of the Global North provokes countless ecological distribution conflicts throughout the Global South. His pioneering syntheses of ecological economics and political ecology combine historical erudition and international environmental activism with an irrefutable materialist critique of conventional economics. He shows that concerns with global social justice must imply transdisciplinary consideration of the physics of social metabolism. Drawing on hundreds of cases from the famous Environmental Justice Atlas that he initiated, Martínez-Alier argues that there is a global environmental justice movement currently challenging capitalist resource extraction and the mainstream obsession with economic growth. He is unique in having established dialogue and convergence between thousands of environmental justice activists from all over the world and academic researchers from several fields. His international network of contacts with activists follows naturally from his experiences of field research in agrarian studies, which gave him an extensive familiarity with the conditions of rural populations across the globe. This book, like the EJ Atlas, will indeed serve as a "loudspeaker" and an invaluable resource for activists and researchers alike.'

Alf Hornborg, Lund University, Sweden

'With Land, Water, Air and Freedom *Joan Martínez-Alier, one of the pioneers of ecological economics and political ecology, emerges with his team as the premier cartographer of environmental conflicts worldwide. This highly accomplished book is many things at once: a vivid account of a lifetime's intellectual and political journey, a monumental compendium of ecological struggles, and an inspiring ontological reframing of the economy beyond growth, based on the pluriverse of modes of life and languages of valuation embodied in the incredible global ferment of popular praxes against industrial extraction. Other worlds and futures are possible – indeed, they are underway. This book is bound to become an indispensable resource for those committed to the profound socioecological transitions demanded from our troubling time.'*

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'This book is the last door of a trilogy*, as the author states, that opens a passage from the nearest to the remotest ecologies of the world transformed into commodity frontiers. It forcefully proves that environmental justice movements are at the same time movements for life and freedom. Joan Martínez-Alier's activism and solidarity-based work in the late 20th and early 21st centuries is to a large extent comparable to what Marx achieved in the second half of the 19th century. Both trace the transformations unfolded by the commodity form: Marx's trilogy built a socio-historical critique of political economy, revealed class conflict as a social distribution and valuation conflict, and recognized the class struggle for social justice. Martínez-Alier's trilogy has built an ecological critique of economics, revealed ecological distribution and valuation conflicts, and recognized the world-movements for environmental justice.'*
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'Twenty years after the publication of the now classic The Environmentalism of the Poor*, Joan Martínez-Alier, the most outstanding environmental justice scholar of our time has gifted humanity with a new book:* Land, Water, Air and Freedom – The Making of World Movements for Environmental Justice. *With emphasis on the political force that aspires to bring social justice through environmental struggles, this* tour de force *is a product of many decades of Joan's deep commitment to environmental justice through the scholar-activist method of work.'*
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'Land, Water, Air and Freedom *is a* tour de force*, deftly weaving together insights from decades of research on ecological distribution conflicts and the global environmental justice movement. Spanning an impressive range of regions and issues, Professor Martínez-Alier's inspiring research sheds light on the complex power relations and socio-ecological processes surrounding environmental justice struggles. This vital book challenges dominant economic paradigms, identifies alternative pathways toward wellbeing, sustainability, and justice, and offers important tools for activism.'*
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