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## **Ecological Conflicts and Valuation - mangroves vs. shrimp in the late 1990s**

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### *Abstract*

Shrimps are produced in two different ways. They are fished in the sea (sometimes at the cost of turtle destruction) or they are "farmed" in ponds in coastal areas. Such aquaculture is increasing around the world as shrimps become a valuable item of world trade. Mangrove forests are sacrificed for commercial shrimp farming. This paper considers the conflict between mangrove conservation and shrimp exports in different countries. Who has title to the mangroves, who wins and who loses in this tragedy of enclosures? Which languages of valuation are used by different actors in order to compare the increase in shrimp exports and the losses in livelihoods and in environmental services? The economic valuation of damages is only one of the possible languages of valuation which are relevant in practice. Who has the power to impose a particular language of valuation?

**Key words: Mangroves. Shrimps. Ecological distribution conflicts. Tragedy of enclosures. Valuation. Environmentalism of the poor. Trade and environment.**

### *Introduction*

In many coastal areas of the tropical world, in Ecuador, Honduras, Sri Lanka, Thailand, Indonesia, India, Bangladesh, Philippines, Malaysia, there is social resistance against the introduction of shrimp farming for export, since this implies the uprooting of mangroves in order to build the ponds. In such areas, poor people live sustainably in or near the mangrove forests, by collecting shellfish, by fishing, by making use of mangrove wood for charcoal and building materials. The mangroves are usually public land in all countries, being in the tidal zone, but governments give private concessions for shrimp farming or the land is enclosed illegally by shrimp growers. Illegality is prevalent not only because of the public character of the land, but also because there are often specific environmental laws and court decisions protecting the mangroves as valuable ecosystems.

Shrimp or prawn production entails the uprooting of the mangroves, and the loss of livelihood of people living directly from, and also selling, mangrove products. Beyond direct human livelihood, other functions of mangroves are also lost, perhaps irreversibly, such as coastal defence against sea level rise, breeding grounds for fish, carbon sinks, repositories of biodiversity (e.g. genetic resources resistant to salinity), together with aesthetic values. Pollution from the shrimp ponds destroys the local fisheries. Also, wild shrimp disappear

because of the loss of breeding grounds in mangroves and because they are overharvested as seed for the ponds.

Shrimp aquaculture was strongly supported by the World Bank until the mid-1990s, as part of the drive for non-traditional exports to repay the external debts and to enter the path of export-led growth. The Blue Revolution was going to produce "pink gold". A new world industry of about US\$ 10 billion exports per year has indeed been created, at high cost. It is a non-sustainable industry, migrating from place to place, leaving behind a trail of barren landscapes and destitute people. What was traditionally, in some areas, small scale use of marine resources, or traditional aquaculture, became privately owned single-purpose enterprises. Not only mangroves, also some farming areas have been destroyed particularly in India and Bangladesh where small farmers who once harvested rice, millet and other crops near the sea in small plots of land, have been dislodged by force, or by salinization from the encroaching shrimp ponds.

In political terms, the conflict between mangrove protection and shrimp industry is an example of two more general competing political regimes, namely global free trade and environmental protection. A main difference from environmental protectionism in the U.S.A. or Europe is that the opposition to mangrove exhaustion and shrimp industrial exploitation is led by poor people, who live from mangroves in a sustainable way. That is to say, mangrove destruction is not only an ecological threat to a valuable ecosystem but also a social threat for them. Hence, the active work of local environmental organisations and local people resistance. External debt pressure on exporting countries, neo-liberal doctrines and ecological blindness of Northern importing consumers together with a flagrant lack of local governmental action to protect the environment in most shrimp producer countries, are the main driving forces of mangrove destruction.

These cases are also examples of unequal ecological trade because of environmental and social cost shifting to exporting areas.

Although the conflicts analysed below have local scenarios, it is relevant to pay attention to the relationship between local actions (or omissions) and global environmental networks. As it was mentioned above, consumer daily decisions and local governmental permissive attitudes damage ecosystems and people's livelihoods. On the other side, local action to protect mangroves by poor people trying to preserve their way of life has beneficial consequences for their own survival. It also sets in motion international networks which have a role in global environmental governance. There are then different spatial and temporal scales at which social actors intervene, and there are also different languages of valuation deployed. Local livelihoods are perhaps not a concern of international environmental organisations.

Official decision makers may decide that a proper cost-benefit analysis would help them in taking a decision on whether the shrimp industry should be stopped, and they may demand also environmental impact assessments, or they may commission a multi-criteria analysis as an aid to their decision-making. Other stakeholders, such as international environmental organizations or local environmental groups or local groups of inhabitants who do not call themselves environmentalists, may use in practice if not in theory other languages of valuation, and try to implement different procedures of decision-making. At each of the particular locations where the conflict of mangroves vs. shrimp exists, we could ask, which is the value of shrimp compared to the value of lost livelihoods and the value of lost environments? In which metric or metrics should such values be measured?

The present paper is based on information from around the world, some of it gathered through participant-observation, most of it from the archives of the environmental organization Acción Ecológica from Ecuador.

*Ecuador, Honduras and Colombia*

In the fight against shrimp farming, people who make a living from the mangroves have resorted when circumstances have allowed them to destroy the shrimp ponds, replanting rhizophora seedlings as a symbolic gesture and perhaps with some real hope of reconstructing the vanished mangroves. There have been similar reactions in other contexts, such as the satyagraha "pluck (eucalyptus) and plant (local shrubs and trees)" in Karnataka in the late 1980s (Guha and Martinez-Alier, 1997, chapter 1). Greenpeace participated in a joint action in July 1998 with Fundecol (a local grassroots groups of about 300 people in Muisne, Ecuador), together with some other environmental groups and sympathetic observers (such as myself). This consisted in destroying at sunrise one crop of shrimps from an illegal pond by opening a hole in one wall, letting the water flow out, and replanting mangrove seedlings. The presence of the Rainbow Warrior's motley crew gave the necessary moral strength to the local groups but both the destruction of that particular illegal pond, and the replanting, were ideas proposed earlier by Fundecol. Whether replanting the mangroves is a successful instance of restoration ecology, or whether it results in a much simplified ecosystem, is a controversial issue of importance for assessing the benefits and costs of mangrove destruction by shrimp farming.

People who make a living in the mangroves are learning to introduce the words "environment" and "ecology" in their vocabularies of protest. It is the intermediary NGOs which have given an explicit environmental meaning to their livelihood struggles, connecting them into wider networks such as the Mangrove Action Project or the International Shrimp Action Network (ISANet). In Ecuador there was a rumour in early 1999 that shrimp ponds built on destroyed mangroves in public lands over the five previous years were going to become legal private property, or at least that payment of a fee of US\$ 1000 per hectare would convert 60 000 ha of illegal ponds built after 1994 into legal 99 years leases (under art 12 of a proposed Law for the Rationalization of Public Finances). Greenpeace, in its campaign against shrimp farming, sent a letter to Ecuador's President, arguing in terms of the livelihood of the local population, the ecological and economic value of the functions of mangroves, and citing also Odum's and Arding's 1991 analysis of the "emergy" (embodied energy) of mangroves which is dilapidated when they are destroyed (Odum and Arding, 1991). "We are aware of economic research of Ecuador's mangrove ecosystem -wrote on 18 March 1999 Michael Hagler, Greenpeace's ocean and fisheries campaigner, member of the steering committee of ISANet- that has valued the various goods and services provided by such ecosystems to the economy annually at US\$ 13 000 per hectare... we fail to see the economic justification of sacrificing tens of billions of dollars of long term economic benefits to be gained over the proposed period of the 99 years leases in order to gain a one-off payment of 60 million dollars in the short term". Greenpeace warned the President of other dangers: new diseases (as actually happened with the "white spot" later in 1999), and the potential for a major eco-conscious consumer backlash against farmed shrimp. An alternative policy was urged on the President, based on coastal ecosystem restoration and preservation, and the bolstering of coastal communities' self-reliance and development. This was supported by Odum's and Arding's accounts of the enormous "emergy" (embodied energy) exports which the shrimp industry represented. Such analysis

was corroborated by studies elsewhere in Latin America and in Asian shrimp producing countries. Hence, the Supreme Court of India's order of December 1996 (see below) to close and ban all industrial shrimp aquaculture within the country's coastal regulation zone. The court had accepted evidence which clearly demonstrated that the costs of the harm done to coastal environment and coastal communities far outweighed the value of any benefits, including foreign exchange earnings, that could be attributed to the shrimp industry.

One week earlier, Fundecol had distributed a message to international environmental networks couched in a different language. It included (in Spanish) the following call from a woman against what would be described in the United States as "environmental racism": "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 *conchera* because it is my race which gives me strength to do battle in defence of what my parents were, and my children will inherit; proud of being *conchera* because I have never stolen anything from anyone, I have never taken anybody's bread from his 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 disappears, 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... what I know is that I shall die for my mangroves, even if everything falls down my mangroves will remain, and my children will also stay with me, and I shall fight to give them a better life than I have had... We think, if the *camaroneros* who are not the rightful owners nevertheless now prevent us and the *carboneros* from getting through the lands they have taken, not allowing us to get across the *esteros*, shouting and shooting at us, what will happen next, when the government gives them the lands, will they put up big "Private Property" signs, will they even kill us with the blessing of the President?".<sup>1</sup>

Killing threats must be understood literally even in Ecuador, which has been an island of peace between Colombia and Peru. In Honduras (Stonich, 1991) the conservation of mangroves has exacted a price in human lives such as those of Israel Ortiz Avila and Marín Zeledonio Alvarado killed on October 4, 1997 in an area called "La Iguana". The movement in Honduras has been successful because of the effectiveness of Coddefagolf (Comité para la Defensa y Desarrollo de la Flora y fauna del Golfo de Fonseca) led by Jorge Varela, recipient of the Goldman Prize in 1999. An international meeting in Honduras in 1996 (with representatives from Latin America, the United States, India, Sweden) had issued the Declaration of Choluteca (16 October 1996) asking for a worldwide moratorium on shrimp farming. After the deaths of October 1997, Varela stated: "Today, the artisanal fishermen cannot move freely across the swamps and mangroves where before they found their livelihood (*sustento*), for the *camaroneros* have appropriated not only the land concessions

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<sup>1</sup>Message from Fundecol@ecuanex.net.ec of 11 March 1999. Concheras are women who collect shellfish (*Anadara tuberculosa*) mostly for selling, also for subsistence. Camaroneros are the owners of the shrimp ponds (camaron being the shrimp). Carboneros are charcoal makers. Concheras get across *esteros* (the swamps) by boat to get to the mangroves and collect the shells at low tide. The population of the province of Esmeraldas in Ecuador is in its majority of African descent.

granted to them by the government but also the surrounding areas. With the complicity of our government, we have given away our people's patrimony to a few national and foreign individuals, and we have deprived thousands of persons of their livelihood. We have turned the blood of our people into an appetizer...".<sup>2</sup> Such statements from Honduras and Ecuador carry the implication that human life and human dignity have dimensions which elude money valuation. The appropriate languages are livelihood, food security, human rights, community territorial rights, and not "the internalization of externalities" in the price system, or the "polluter pays principle", or "cost-benefit" analysis.

Mangroves are also under threat at various points in other central American countries. In San Blas, Nayarit, Mexico, local groups fight against gigantic projects for shrimp farming and for tourism involving the destruction of thousands of hectares of mangroves, particularly a project by Granjas Aquanova.<sup>3</sup> Even in eco-friendly Costa Rica there was the intention of changing in 1998 the legislation protecting mangroves so as to allow shrimp aquaculture permitting the construction of channels through the mangroves to provide shrimp ponds both with access to sea water and convenient discharge points for pond effluent. Greenpeace and other members of ISANet urged Costa Rican legislators to oppose this change.<sup>4</sup>

In the Pacific Coast of Colombia pressure by the shrimp industry is increasing, though mangroves have been mostly preserved until now. Very near the border with Ecuador, in Tumaco (so far, a relatively peaceful corner of Colombia), sustainable extraction of shells sold locally or to Ecuador is part of the everyday economy of a few thousand women. On both sides of the border, the defense of the mangroves is connected to the birth of an African-American movement in a vigorous process of "ethnogenesis" (as shown by Grueso et al 1997). There is much contact among family members across the Colombia-Ecuador border in this area. On both sides of the border, women are the main losers when mangroves are converted into shrimp farms, because they lose access to a communal source of food and cash income, in a pattern well known from other ecological distribution conflicts around the world related to access to water, fuelwood, pasture lands... (Agarwal, 1992). In Tumaco, one local cooperative has been successful in setting up small-scale shrimp farming (with ponds of about one hectare, instead of 10 ha), though industrial shrimp growers predominate, and they exercise increasing pressure to build large shrimp ponds. Pressure of exports on local resources is visible also from plantations of oil palms along the coast on both sides of the border and inland from the mangrove area. Local leaders are against such external pressures and they convey a doctrine of sustainable use of the mangroves. Thus, an interview in Tumaco with Jose Joaquin Castro, leader of Asocarlet (the association of charcoal makers, who sell it for local consumption), elicited a description in the late 1990s of the burgeoning conflict in the following terms:

"The mangroves are part of our culture, as you can see. From the time the first slaves arrived here, what they found as an alternative for livelihood was the wide mangrove forest, and today, when we are moving out of the 20th century towards the 21st century, the mangroves still subsist despite development. For us in the Pacific Coast, the priority are the mangroves as

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<sup>2</sup>Journal *La Tribuna*, section *Ecocomentarios*, 29 October 1997, also website Environment in latin America at CSF, 9 November 1997.

<sup>3</sup>Email from Grupo Ecológico Manglar, San Blas, Nayarit, 27 April 1998.

<sup>4</sup> Letter from Matthew Gianni, Oceans Campaign Coordinator, Greenpeace International, to Hon. Rafael Villalta Loaiza, 5 October 1998.

a means of subsistence, as a means of protection. From the mangroves we obtain our food, and the charcoal for cooking food, and also the wood to build our homes which are 80 per cent mangrove wood. The young mangroves are not cut down. We cut in one zone today, we come back in one year, and there is new material to be cut. If we keep the mangroves, then we have fish, we have shrimp, we have crabs. But the industrial camarateros started to invade our lands, without asking us, the *Negro* people, not taking into account that this is the terrain of the charcoal maker, the wood collector, the concheras, the fishermen. They surveyed the area from the air, flying over it and making topographic measurements, then they asked for concessions from the State of one thousand or more hectares each, and they cut and uprooted all the mangroves, then the mangroves will not grow again. They did not take into account that behind this strip of mangroves there are many families who obtain their livelihood from them, and without any piety at all, they displaced the charcoal maker, and the fishermen... They put up notices of "private property".<sup>5</sup>

So, despite the fact that property rights on the mangrove forests are legally clearly established in favour of the State, and despite the fact that there has been a traditional usage by local communities, the shrimp growers attempt to *change* the property rights to their own benefit. This is locally perceived as a social and environmental "tragedy of enclosures" not only in Ecuador, Honduras, Colombia but also in other places around the world where similar conflicts have arisen.

#### *Shrimp farming in South and South-East Asia*

While Ecuador was producing about 105 000 metric tons of shrimp in 1995 (of which about 95 per cent farmed, and only 5 per cent fished), other giants of the industry were Thailand and Indonesia, the first one with 330 000 tons (of which 67 per cent farmed), the second one with 195 000 (of which 41 per cent farmed). Vietnam is rapidly increasing its farmed shrimp production. India and Bangladesh are important producers but opposition is strong in both countries. China is an important producer, and Taiwan's industry flourished in the 1970s, and then declined. The world total production of shrimp was in 1995, 2 607 000 tons of which 712 000 tons farmed and 1 895 000 fished. The trend is towards an increase in farmed shrimp, and a decrease of wild caught shrimp because of overexploitation of fisheries and because of turtle protection.<sup>6</sup>

In the Philippines, aquaculture activities were primarily responsible for the clearing of more than 338 000 ha of mangrove forest since 1968, and seriously affected the coastal fisheries catch (Gopinath and Gabriel, 1997:201). Broad and Cavanagh (1993: 114-115) reported: "Eliodoro 'Ely' de la Rosa, a forty-three year old father of five, had been a fisherman and a leader of the fishers' group LAMBAT... Ely was deeply concerned that Manila Bay was dying, that there would be no fish for his children and grandchildren. He talked of his organization's efforts to halt the destruction of the coastal mangroves. He spoke eloquently of the dangers of prawn pond expansion, of the need to stand up to the prawn-pond owners and other mangrove destroyers, and of his plans to start a mangrove replanting program. For his visions and for his ability to inspire others to take action against the impediments to these

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<sup>5</sup> Interview by Martha Luz Machado, reported in Patricia Falla, *Estado actual y tendencias en el manejo del ecosistema manglar por comunidades del Pacífico colombiano*, Master's Thesis, Universitat Autònoma de Barcelona, July 2000.

<sup>6</sup> Shrimp News International, an industry publication issued by Bob Rosenberry, San Diego, Calif.

visions, he was murdered" (on 22 January 1990). (For the general context in the Philippines, Primavera, 1991).

In Thailand, despite the opposition of environmental groups such as Yadfon in Trang province, the destruction of mangroves has followed a familiar pattern. Ponds have an average life-span of less than five years: "shrimp farmers simply march down the coastline, leaving hundreds of miles of poisonous brown blotches in their wake. The ponds saturate the surrounding soil with salt and pollute the land and water with a chemical sludge made up of fertilizer and antibiotics as well as larvicides, shrimp feed and waste" (Mydans, 1996).

In Malaysia, where twenty per cent of the available mangroves have been slated for aquaculture development, there are artisanal fishermen's movements in some parts of the country trying to stop industrial fishing and also the destruction of mangroves. Thus, in Penang, an association led by Haji Saidin Hussain resorted in the mid-1990s to replanting mangrove seedlings outside the large Penshrimp farm. The association takes a stand on many issues: overfishing by trawlers near the coast, shrimp aquaculture, mangrove destruction, toxic dumping, and even tourist development (Ahmed, 1997: 25-26). In some areas, the value of the mangrove forest products has played a role in averting the conversion of remaining mangroves into shrimp ponds, and to this is added an interesting sustainable alternative, the culture of clams in the mudflats as practiced in the Matang mangrove reserve, with no infrastructure requirements, no feeds or chemicals. The clams feed on the detritus produced by the mangroves, and this alternative relies on naturally produced clam "seeds" (Gopinath and Gabriel, 1997: 201-202).

In Bangladesh the coastal shrimp farms are located in the Cox's Bazaar district in the east, and Satkhira, Khulna and Bagerhat districts in the west, where large landowners have appropriated the lands of small farmers and turned them into shrimp farms, with loss of trees and fodder, scarcity of potable water, and salinization of fields. There are also movements by fishermen who complain against the loss of fisheries: "They are creating alternatives. They want to fill all the ponds with soil and plant mangroves" (Ahmed, 1997: 19). In the Chakaria Sunderbans, in Cox's Bazaar, some 50 000 acres of mangroves have been converted into shrimp ponds since the early 1980s, with initial support from the World Bank. Television reports of flooding and loss of life in Bangladesh are not uncommon in Northern homes, but the connection to destroyed mangroves, abandoned shrimp farms, and decreased coastal defence against cyclones is not often made. Deforestation has left the area highly vulnerable to sea water intrusion when cyclones strike. Thus, the lack of food security because of the enclosure of the mangroves in order to produce a luxury export product such as shrimps is compounded by environmental insecurity.

There have been some deaths in shrimp conflicts in Bangladesh, the most famous that of Karunamoi Sardar who died on 7 November 1990 defending her village of Horinkhola, in Khulna. That village and some surrounding villages have been declared themselves a "shrimp-free" zone, and every November 7 thousands of peasants gather there in memory of Karunamoi Sardar and solidarity with her village's resistance against the shrimp industry (Ahmed, 1997:15).

In Indonesia there is still a plan in the year 2000, under the name Protekan 2003, to increase shrimp production at the expense of mangroves in the next three years, occupying an extra 320 000 ha, after a viral disease destroyed most of Indonesia's shrimp production in 1995. In

comparison, shrimp ponds in Ecuador (the largest Latin American producer), whether active or already abandoned, occupy 210 000 ha. Land to be used for shrimp production in Indonesia is often taken away from mangrove forests or from villagers by force and physical violence. Clashes will undoubtedly take place in the new, more democratic atmosphere.<sup>7</sup> The pressure for increasing shrimp farming comes from the demand in rich countries, and from the decline in the sea shrimp fishery. In Indonesia most of the shrimp ponds originally concentrated in the north coast of Java where mangrove forest were destroyed between the mid-1970s and the mid-1990s. Nowadays, most of these ponds are abandoned because of low productivity and environmental degradation, and there is a search for new frontiers. The largest mangrove forests in Indonesia (more than half of about 4 million ha) are in West Papua. The Protekan 2003 plan looks towards the south coast of Sulawesi, Kalimantan, Maluku... Some of the largest shrimp entrepreneurs in Indonesia are Thai firms, in a characteristic migrating pattern after destroying their own mangroves. These firms use sometimes a "nucleus-satellite" contracting system, buying the farmed shrimp from local suppliers.

In India, commercial shrimp farming started with a US\$ 425 million loan from the World Bank in the mid-1980s, to which government subsidies were added. As in Bangladesh and other countries, the shrimp farms invade not only mangroves but also agricultural areas near the sea in states such as Tamil Nadu and Andhra Pradesh. Former farms become salinized and without further agricultural use once the shrimp farms fall into disuse. Pumps and pipes to draw sea water into the ponds and channels to discharge polluted water, interfere with the fishermen's tasks. Groundwater is also polluted. In India, "responding to this destruction of their livelihoods, landless and impoverished coastal dwellers took their struggle for justice to the streets, the state-level bodies and finally to the courtroom" (Ahmed, 1997:4). In December 1996, the Supreme Court of India delivered a remarkable verdict. The court comprised judge Kuldip Singh, the litigation was filed by the noted elderly Gandhian S. Jagannathan together with an NGO called Prepare, and it was argued by lawyer M. C. Metha. The court ordered the closure of all commercial aquaculture operations within 500 metres of the high tide line, or within 1000 metres of the coast of Lake Chilika in Orissa, forbidding shrimp farms in converted agricultural areas also beyond such limits. The verdict directed that the prawn farms should treat their workers as "retrenched", in the meaning of the Industrial Disputes Act. They should be paid a compensation equal to six years' wages, as ordered (also by judge Kuldip Singh) in the case of workers in polluting industries in Delhi which opted for closure instead of relocation. The decision rested on a Cost-Benefit Analysis commissioned by the court and carried out by NEERI (the National Environmental Engineering Research Institute). The export earnings ("forex") were given a premium value. Nevertheless NEERI calculated (in monetary terms) that India's prawn industry in 1994 generated four times as much environmental damage as the value of its export earnings. As remarked above, the results of such exercises in cost-benefit analysis will depend very much on the time horizon considered, on the discount rate applied, and on the fictitious values chosen for extra-market costs and benefits. The court's decision was not only based on this cost-benefit analysis (whose results went against shrimp farming) but also on studies of environmental impact and other considerations. The decision has not been really implemented

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<sup>7</sup> Raja Siregar (Friends of the Earth), Indonesia to intensify shrimp farming, *Link*, 90:6, 1999. Also, Raja Siregar and Emmy Hafild (Friends of the Earth International/WALHI), *Global Shrimp Trade and Indonesian Shrimp Farming Policies*, typewritten report, Jakarta, November 1999 (20 pages).

since subsequent legislation was more permissive. However, it helped the resistance movement against shrimp farming not only in India but around the world.

The NGO Prepare, led by Jacob Raj from Chennai, organized a very large gathering in Delhi in November 1998 - the International People's Conference against Industrial Shrimp and Trade. Prepare has also tried to set up a south-south network. True, a small network based on the North (the Mangrove Action Project led by Alfredo Quarto) has carried out a long and strong struggle defending local populations and promoting "silvofisheries" (that is, supporting traditional fisheries while preserving mangrove forests), but a larger network, ISANet set in the mid-1990s was (from Jacob Raj's point of view) not radical enough. It was too far from the grassroots, too much inclined to negotiations with the shrimp industry at international meetings. Hence the attempt to create this south-south network, the initial stimulus coming from India.

The movement in India against industrial shrimp farming involves displaced peasants, as in Bangladesh, but it is also part of a large movement for the defence of artisanal fisheries active both in the west coast, in Kerala particularly, and also in the east coast. It comprises hundreds of thousands of fishworkers who complain against trawlers which fish in the deep sea and discard large quantities of fish caught in the trawl - a baglike net dragged by the vessel- and which export part of their catch. Trawlers are often owned by joint venture firms, with foreign participation. On 4 February 1994 there was a strike organized by the national Fishworkers' Forum, a federation of small-scale, artisanal fishermen of all coastal states in India. There was no fishing or unloading of fish during the strike. The same movement recently denounced the tensions caused by the expansion of shrimp production in Chilika Lake in Orissa, where there are new developments after fishermen successfully forced Tata industries to withdraw their plans for aquaculture in the early 1990s. On 11 June 1999, four fishworkers, including one woman, demonstrating against illegal prawn farms, were killed by the police.<sup>8</sup>

#### *Mangroves threatened in East Africa*

Outside South and South East Asia and Latin America (where large mangrove forests in Colombia, Venezuela, Brazil are still intact), the shrimp frontier advances also in East Africa. In Tanzania, a project by the African Fishing Company for almost 10 000 ha of prawn farming in the Rufiji Delta has given rise to much opposition. A previous projects had been proposed by NORAD, a Norwegian private company, and the Bagamoyo Development Corporation in the early 1990s. It was not implemented. It led to the dismissal for corruption of the Minister of Lands - "the Minister had attempted to insert himself into the venture by allocating the land reserved for construction of the prawn farm to a business partner" (Gibbon, 1997:81).

The Rufiji Delta contains some 20 islands and 31 villages with more than 40 000 people, it is famed for supporting the largest continuous block of mangrove forests (53 000 ha) in East Africa. "The Rufiji Delta is one of the most physically stunning areas in Africa. Over an area of perhaps 1 500 square kilometres a web of rivers and channels intersect seemingly endless mangrove stands, interrupted occasionally by rice fields" (Gibbon, 1997:5). In this area there is fishing of wild-caught prawns. Conflicts between artisanal fishermen and trawlers have been researched by Peter Gibbon (1997). The prawn farming project introduced a new type of

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<sup>8</sup> Email from Thomas Kocherry, coordinator, World Forum of Fish-Harvesters and Fish-Workers.

conflict. It raised a storm of protest from environmentalists and from some local communities which would be displaced. This enormous project became an issue in national politics, being strongly opposed by the Journalists' Environmental Association. The promoter of the project, the African Fishing Company, was said to belong to Reginald John Nolan, an Irish investor whose money came from selling arms and other dubious dealings (Gibbon, 1997:52). Support from outside organizations such as Prepare from India, and the Natural Resources Defense Council from the U.S., was brought to bear on the government of Tanzania. The WWF also intervened, proposing a project in the Rufiji Delta to the MacArthur Foundation (which increasingly promotes controversial "eco-efficiency projects" in the Third World), with a view "to document when and how constructive criticism can be best used to improve proposed projects". The WWF's conciliatory support for so-called improved prawn farming was opposed by the Mangrove Action Project: "What right does any one NGO have in experimenting with the shrimp farm project in the first place? It is the local inhabitants of Rufiji who will be subjected to such a grand test, which risks the future of both the environment and the local communities".<sup>9</sup> This is a type of situation which is not uncommon, outside environmental organizations such as the WWF being closer in cultural terms to large investors than the local people whose livelihood is threatened.

As in Tanzania in the Rufiji delta, also in Kenya in the Tana Delta there are plans for industrial shrimp farming. Hence the Mombassa Declaration of 6 February 1998 on mangrove conservation and industrial shrimp aquaculture drawn up at a workshop co-sponsored by the East African Wildlife Society, Prepare, the Mangrove Action Project, and the Swedish Society for Nature Conservation, an interesting alliance among NGO concerned with the defence of wilderness and with environmental justice and the environmentalism of the poor. The Mombassa Declaration emphasizes the "concern over the increasing environmental destruction evident worldwide, and in particular the destruction of mangrove forests, estuaries, sea grass beds, coral reefs and lagoons, in general the conversion of coastal wetlands and areas to industrial shrimp units, an unsustainable activity which is growing in an uncontrolled manner throughout the tropics and subtropics". It also emphasized the concern over imminent deprivation, displacement and marginalization of local communities that depend on coastal wetlands in the event of the establishment of industrial shrimp units in these areas.

*The turtle conundrum, and the call for a consumers' boycott of farm-raised shrimps*

It took a few years for Northern environmentalists to become aware of the connection between shrimp exports and mangrove destruction. Initially, their main worry about shrimps was fishing in the high seas and the death of turtles. The Earth Island Institute, through Todd Steiner of the Sea Turtle Restoration Project, successfully had put the turtle issue in the U.S. trade agenda in the early 1990s. In May 1996 the U.S. government agreed that shrimp could not be imported into the U.S. from countries whose trawlers did not use Turtle Excluder Devices (TEDs). Still three years later, at the anti-WTO demonstrations in Seattle in 1999 there were many people disguised as turtles. Is it more difficult to see the world from the perspective of a woman shellfish collector in a mangrove than from the perspective of an ensnared turtle? As reported from Bangkok already in 1993, "An unlikely-sounding creature is deforesting mangroves, despoiling coral reefs and leaving cropland barren across Thailand. The culprit is shrimp. This is bad news for many who think that cultivating the succulent black

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<sup>9</sup> ET News, the Newsletter of the Journalists Environmental Association of Tanzania, November 1998, and email from Alfredo Quarto, Mangrove Action Project, 28 April 1999.

tiger shrimp in man-made ponds is somehow more ecologically sound than plucking them out of the sea, but Thailand is paying a high environmental price for its status as the world's largest producer of cultured shrimp".<sup>10</sup>

In response to the U.S. turtle outcry of May 1996, India started "to issue certificates to marine exporters declaring that trawlers catching fish and shrimp in the high seas have taken measures to use Turtle Excluder Devices... (moreover) certificates for "turtle safe" shrimp were being issued to shrimp caught in inland waters or shrimp from aquaculture farms".<sup>11</sup> Several Southern governments took the U.S. to the GATT (later the WTO) complaining against the requirement to certify that shrimp were caught in turtle-safe nets. In 1998, the WTO unfortunately overruled the U.S. decision that required wild shrimp imported into the U.S. to be caught in such a way that turtles were not killed.<sup>12</sup> However, a lot of progress has been made in imposing the use of TEDs in many countries. Not only in the North, also in the South there are groups concerned with turtles, so it is not accurate to view attempts to stop the killing of turtles when fishing shrimp (or the killing of dolphin when fishing tuna) as the foisting of Northern environmental values on Southern peoples. Similarly, not only in the South, also in the North there are NGO and groups of people concerned with the destruction of mangroves, though the strongest protests come from the South, where a number of people have lost their lives directly (and many more have lost their livelihoods indirectly) while defending the mangroves against shrimp aquaculture.

In the meantime, diverse business interest in the United States (this being the country at the top of the league of shrimp consumers), and also in other countries, continue to mount efforts to promote aquaculture as an environmentally friendly alternative to catching shrimp in nets that ensnare sea turtles.<sup>13</sup> Notice however that shrimp farmers are usually local investors, or investors from neighbouring countries, not transnationals. Globalization does not mean here the presence of Exxon, Shell or Rio Tinto. It means rather the global demand for an item of consumption which is not an input to any manufacturing process, and which is not consumed because of its protein content. There is also a sign of an alternative globalization in the resistance to shrimp farming, where many local struggles gives rise to international networks.

Harm to sea turtles is only one problem of fishing shrimp with trawlers. Another problem is that the nets scrape the sea bottom seriously impairing benthic communities. In addition, industrial sea fishing has one of the highest rates of discarded bycatch of any fishery. However, as emphasized by Gurpreet Karir and Vandana Shiva in 1996, Northern environmental groups were not yet aware, first, that some aquaculture farms were situated in former mangrove forests from which turtles and many other marine organisms depend for their survival; second, that the shrimp import ban in the U.S. did not consider the impact of commercial aquaculture on another threatened species, the poor people living in the coastal areas. In fact, in India the "turtle safe" certificate for cultured shrimp was seen as the death certificate both for the turtles of Bhitara Kanika and for the people throughout India's coast.

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<sup>10</sup>*Business Times*, 1 June 1993.

<sup>11</sup>Gurpreet Karir and Vandana Shiva, *A cosmetic ban - why the U.S. shrimp ban will neither save turtles nor people*. Sent by email to environmental groups. 22 June 1996.

<sup>12</sup> Ann Swardson, Turtle protection law overturned by WTO, *Washington Post*, 13 October 1998, p. C2, cited by Shabecoff, 2000: 163. Also, Hilary French, 2000: 121-3.

<sup>13</sup>Kevin G. Hall, Shrimp farms harvest aquaculture clash, *Journal of Commerce*, 24 October 1997.

There was then a danger around 1995 which is today acknowledged by environmental groups North and South, that the ban on wild-caught shrimp could lead to an undesirable expansion of the volume of farmed shrimp around the world. In Ecuador, where 95 per cent of shrimp exported are farm-raised, local environmental groups were baffled by the insistence of U.S. groups on banning imports of wild caught shrimp, while they themselves were proposing at high local risk a Northern boycott of farmed shrimp imported from Ecuador and elsewhere. The call for a boycott became international news. Gina Chavez, a young lawyer and at the time an activist with Acción Ecológica, got a letter published in the *Financial Times* (24 July 1995) replying to a previous article published on 15 June, in which the Ecuadorian President of the Chamber of Aquaculture and the Minister of Industry, Trade and Fisheries were quoted as saying that the call for an external boycott of farm-raised shrimp was "irresponsible, ridiculous and unpatriotic". Gina Chavez factually replied that destruction of mangroves in the south of the country was nearly complete, and that the industry was recently relocating towards Esmeraldas, "the site of the best-conserved mangrove stands in Ecuador". More than half the mangrove forests of Ecuador had been destroyed by the shrimp-farming industry.

The Shrimp Tribunal in New York in April 1996 was convened by the UN Commission for Sustainable Development. The Natural Resources Defence Council of Washington DC invited NGO, industry and government representatives to take part in the sessions, because "the harvesting of wild shrimp accounts for about 35 per cent of the world "by catch" - fish and other marine life caught, and generally thrown back to the sea as waste. Most recently, attention has focussed on the deaths of endangered sea turtles in shrimp nets each year. The boom in shrimp aquaculture had led to the ruin of millions of acres of biologically-rich mangrove forests and to severe contamination and pollution at shrimp farms". All issues were therefore to be considered. There was a clash at the Shrimp Tribunal in New York between Gina Chavez, from Acción Ecológica of Ecuador, and Juan Xavier Cordovez, the president of the National Chamber of Aquaculture, on the statistics of mangrove destruction. The unwillingness of the Ecuadorian government to produce official figures on mangrove forests is well known but the country is small enough for plausible statistics to exist. The official representative of the government of Ecuador, Franklin Ormaza, from the National Institute of Fisheries, helped Juan Xavier Cordovez to make his case against the unexpected environmental offensive at a UN-sponsored meeting, and he later suggested to the Minister of Industry, Trade and Fisheries that Gina Chavez be prosecuted for "treason to the Fatherland".<sup>14</sup>

In October 1997, the somewhat disappointing meeting that set up ISANet (held in Santa Barbara, California, not in a Southern country) did not call for a moratorium on shrimp-farming, as proposed in the Declaration of Choluteca in 1996, nor for a boycott, as proposed from Ecuador since 1995. It called instead for a "shrimp break" (whatever that meant) on farm-raised shrimp. Other Northern proposals have been even more shy. Consider for instance the following statement. "Working with exporting countries, industry and citizens' groups, (importing countries) need to identify policy instruments that will build incentives for sustainability into the markets, through, for instance, labeling and certification. Ideally, the consumer should pay the full cost of production - including environmental costs which the producers inflict in others. Mechanisms for channeling back the revenues to restore and repair

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<sup>14</sup>Oficio 0960380, Instituto Nacional de Pesca, Guayaquil, 10 May 1996, from Franklin Ormaza, Ph.D. to Lic. José Vicente Maldonado, Quito.

the ecosystems and species impacted should also be set up".<sup>15</sup> Notice here how environmental destruction may be compensated and restored. Irreversible damages are not taken into account. There is no appeal to the sacredness of nature. The livelihoods of poor people are brought into a money-valuation standard. The notion of "full environmental costs" is uncritically accepted. Incommensurableness of values is put aside. Respect for human rights has no veto power.

An anthropologist working in coastal areas of Ecuador (Muisne and Olmedo, both in Esmeraldas) wrote in her thesis: "Many of the people interviewed in this study expressed feelings of powerlessness towards the kind of society they live in. They underlined the fact that there a few opportunities for them to find work and to make a living... " (Handberg, 1998). That is, externalities that fall on poor and powerless people, are cheap, even when "internalized". If poor people want to defend ecosystems on which they depend for their livelihood, they better appeal to other languages of valuation.

#### *Cost-benefit vs. Multi-criteria evaluation*

A team of economists performed in 1999 a valuable cost-benefit analysis of shrimp aquaculture in Thailand, looking at Tha Po village, on the coast of Surat Thani province where about 130 households depend almost entirely on fishing for their livelihood. The area around the village used to be covered by mangrove. In the past decade over half of the area has been cleared for commercial shrimp farming. Thailand's exports of frozen shrimp produce annually about US\$ 1200 million in foreign exchange. In order to put a money value on the destroyed mangroves Dr. Suthawan Sathirathai and her colleagues gave money values to fuelwood and other products, and also translated into money values their environmental services as nurseries for fish and a barriers to storms and soil erosion. In financial terms, taking into account marketable products only, the net present value per rai (6.25 rai = 1 ha) of a commercial shrimp farm was far higher than the NPV of a rai of mangrove forest - US\$ 3 734 against US\$ 666. Now, however, taking into account the indirect benefits from mangroves, considering a time horizon of only five years for the shrimp farms (before profits start to decrease), and taking into account that replanting must then wait for fifteen years, the NPV of mangroves per rai would increase up to US\$ 5 771. Such figures depend very much on the chosen discount rate. The mangroves are less valuable, relative to the shrimp farms, the higher the discount rate. A slight increase in the rate of discount applied in such analysis, would condemn the mangroves.<sup>16</sup> However, as mangroves become more and more scarce, a case could be made (inside a neoclassical framework) for applying Krutilla's rule (Krutilla, 1967), favouring mangrove conservation. Nevertheless, previous to economic manipulations such as ad-hoc discount rates and fancy methods for the monetary valuation of environmental services, another question arises. A cost-benefit analysis could be one of the relevant criteria, though not necessarily a decisive one.

Namely, do the actors of the conflict wish take refuge inside monetary cost-benefit terms of reference, or do they prefer (given their own interests and values) to move outside into a multi-criteria perspective? Not all actors would give the same answer.

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<sup>15</sup>CIEL, IUCN, WWF, *Protecting marine and coastal biodiversity under the Convention on Biological Diversity*, April 1996: 36-37.

<sup>16</sup>Suthawan Sathirathai, *Economic Valuation of Mangroves and the Roles of Local Communities in the Conservation of Natural Resources*, Centre for Ecological Economics, Chulalongkorn University, Bangkok, January 1999.

Several values and interests come then into play in the conflict between mangrove conservation and shrimp farming. A decision on mangrove conservation could be reached by applying the reductionist logic of cost-benefit analysis, arguing that the stream of benefits from shrimp farming are more than compensated by the losses from mangrove destruction, which would be monetarized and discounted (the discount rate is a distributional issue in itself) in order to obtain present-values. Such losses would include the loss of landscapes (for ever, or until replanting takes place), the loss of the coastal defence function (perhaps counted at replacement cost, by building a wall), the loss of food security and subsistence (direct food intake and availability of wood, and also money income from sales of mangrove products), the loss of cultural values (measured perhaps by willingness to accept compensation), the loss of fisheries... No less reductionist would be to defend the mangroves only in terms of "emergy" (embodied energy). Another way of trying to assess the ecological costs of shrimp farming in physical terms would be to calculate its "ecological footprint" (Larsson, Folke and Kautsky, 1994).

Such different dimensions could be incorporated into a multi-criteria analysis. In the application of multi-criteria methods, the relevant alternatives, and the relevant criteria, could arise from stakeholders' and experts' interaction, and each alternative would be valued in quantity or quality and ranked across all the criteria. One could indeed include also a financial analysis or even an extended cost-benefit analysis as one of the criteria, without double counting because the other criteria would still be valued in their own physical or social scales. "Compromise" solutions would be suggested. More important is to see the matrix as a way of structuring and making explicit the social conflicts over interests and values (Martinez-Alier, Munda and O'Neill, 1998). (A similar multi-criteria matrix, with more alternatives and more criteria (partly in money terms, partly in physical terms) may be seen in Gilbert and Janssen, 1998).

#### Shrimp farming vs. mangrove conservation - A multicriteria approach

##### *Criteria*

Biomass production	Food security	Cultural values	Financial results	Coastal defence	Landscape value
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##### *Alternatives*

- 1) Keep mangroves
- 2) Grow shrimp
- 3) Other alternatives

(e.g. very small cooperative ponds)

### *Conclusions*

In this paper, the loss of human livelihoods as a consequence of the growth of the shrimp industry has been emphasized, but also purely environmental values have been taken into account. It is clear, however, that the defence of mangrove forests against the shrimp industry is not a manifestation of "postmaterialist" environmentalism, but rather one typical example of the "environmentalism of the poor" (Guha and Martinez-Alier, 1997), with women often in leading roles (Agarwal, 1992). The shrimp vs. mangroves conflict adopts slightly different aspects in different places in the world according to cultural differences but it has common structural roots. It is an "ecological distribution conflict" (Martinez-Alier and O'Connor, 1996), that is a conflict on environmental entitlements, on the loss of access to natural resources and environmental services, on the burden of pollution and on the sharing of uncertain environmental risks.

Despite landmark judicial decisions such as in India in 1996, the trend towards mangrove destruction continues worldwide, fueled by shrimp consumption in rich countries, stopped only by virus outbreaks in shrimp farms (such as the white spot in Ecuador in 1999-2000) or by successful environmental movements (as in Honduras). Southern calls for Northern consumer boycotts on farmed shrimp have gone unheeded, even inside environmental networks. The situation is not one of Northern "environmental protectionism" against imports produced with low environmental standards (as in the case of complaints against shrimp or tuna fish imports which imply the death of turtles or dolphins). On the contrary, the Northern consumers profit from prices of imported farmed shrimp which do not include compensation for local externalities (a general rule that also applies to more substantial items such as cheap oil, gold, or aluminum imports), and Southern complaints have not yet successfully alerted Northern consumers to the damages suffered in the exporting territories. Some Northern groups are perhaps ready to believe the good intentions expressed in the new Thai Code of Conduct issued by the industry in 1999, or in Yolanda Kakabadse's sincere promises in Ecuador when she was Minister of the Environment for some months until January 2000, or in the temporary injunction on the Rufiji project in Tanzania. Such Northern groups push not for a boycott but for integrated coastal management and some form of "eco-labeling" of shrimp. Alfredo Quarto, of the Mangrove Action Project, with seven years of experience behind him, asked on 26 May 1999 to his partners in ISANet: "have we won a victory, or are we merely now witnessing a short reprieve before the next storm? I myself urge us to prepare for the next storm wave, while making an honest attempt to undertake projects that offer positive alternatives (such as) the promotion of low-intensity, community-based silvo-fisheries...". Meanwhile, world demand for farmed shrimp keeps increasing, most consumers still blissfully unaware of the social and environmental havoc they cause.

In general, the values considered in different conflicts, and the importance given to such values, are outcomes of the conflicts. We may write, "shrimp exports are a *valuable* item of world trade", and also, "*valuable* ecosystems and *valuable* local cultures are destroyed by shrimp farming". Which is then the true value of farm-raised shrimp? The legitimacy of this question itself, let alone the answer, depends on the outcome to the conflict. Which actors will tend to choose which particular metrics? The reduction of all goods and services to actual or fictitious commodities, as in cost-benefit analysis, can be recognised as one perspective

among several, legitimate as a point of view and as a reflection of real power structures. Who has then the power to impose a particular language of valuation? As the Indian novelist Arundhati Roy asked in 1999, "which is the cost of living" in the Narmada valley, in which currency must it be paid? Or as a Human Rights Watch report asked in 1999, which is "the price of oil" in the Niger Delta?

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