



SUSTAINABILITY REPORT

ROYAL DUTCH SHELL PLC SUSTAINABILITY REPORT 2012



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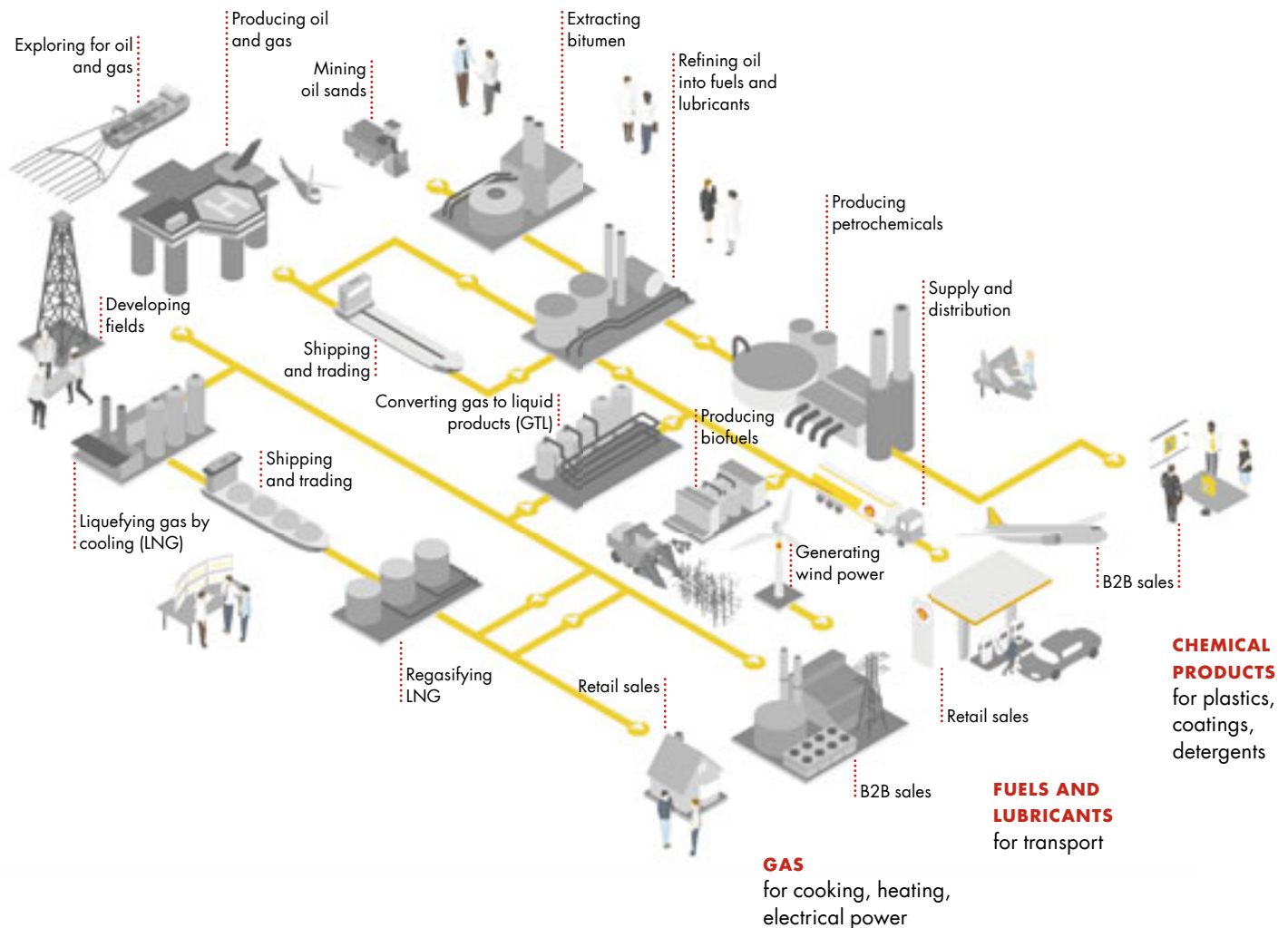
Cautionary note

The companies in which Royal Dutch Shell plc directly and indirectly owns investments are separate entities. In this publication "Shell", "Shell group" and "Royal Dutch Shell" are sometimes used for convenience where references are made to Royal Dutch Shell plc and its subsidiaries in general. Likewise, the words "we", "us" and "our" are also used to refer to subsidiaries in general or to those who work for them. These expressions are also used where no useful purpose is served by identifying the particular company or companies. "Subsidiaries", "Shell subsidiaries" and "Shell companies" as used in this publication refer to companies over which Royal Dutch Shell plc either directly or indirectly has control. Companies over which Shell has joint control are generally referred to "joint ventures" and companies over which Shell has significant influence but neither control nor joint control are referred to as "associates". In this publication, joint ventures and associates may also be referred to as "equity-accounted investments". The term "Shell interest" is used for convenience to indicate the direct and/or indirect (for example, through our 23% shareholding in Woodside Petroleum Ltd.) ownership interest held by Shell in a venture, partnership or company, after exclusion of all third-party interest. This publication contains forward-looking statements concerning the financial condition, results of operations and businesses of Royal Dutch Shell. All statements other than statements of historical fact are, or may be deemed to be, forward-looking statements. Forward-looking statements are statements of future expectations that are based on management's current expectations

and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in these statements. Forward-looking statements include, among other things, statements concerning the potential exposure of Royal Dutch Shell to market risks and statements expressing management's expectations, beliefs, estimates, forecasts, projections and assumptions. These forward-looking statements are identified by their use of terms and phrases such as "anticipate", "believe", "could", "estimate", "expect", "goals", "intend", "may", "objectives", "outlook", "plan", "probably", "project", "risks", "schedule", "seek", "should", "target", "will" and similar terms and phrases. There are a number of factors that could affect the future operations of Royal Dutch Shell and could cause those results to differ materially from those expressed in the forward-looking statements included in this publication, including (without limitation): (a) price fluctuations in crude oil and natural gas; (b) changes in demand for Shell's products; (c) currency fluctuations; (d) drilling and production results; (e) reserves estimates; (f) loss of market share and industry competition; (g) environmental and physical risks; (h) risks associated with the identification of suitable potential acquisition properties and targets, and successful negotiation and completion of such transactions; (i) the risk of doing business in developing countries and countries subject to international sanctions; (j) legislative, fiscal and regulatory developments including regulatory measures addressing climate change; (k) economic and financial market conditions in various countries

and regions; (l) political risks, including the risks of expropriation and renegotiation of the terms of contracts with governmental entities, delays or advancements in the approval of projects and delays in the reimbursement for shared costs; and (m) changes in trading conditions. All forward-looking statements contained in this publication are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. Readers should not place undue reliance on forward-looking statements. Additional risk factors that may affect future results are contained in Royal Dutch Shell's 20-F for the year ended December 31, 2012 (available at www.shell.com/investor and www.sec.gov). These risk factors also expressly qualify all forward-looking statements contained in this publication and should be considered by the reader. Each forward-looking statement speaks only as of the date of this publication, April 11, 2013. Neither Royal Dutch Shell plc nor any of its subsidiaries undertake any obligation to publicly update or revise any forward-looking statement as a result of new information, future events or other information. In light of these risks, results could differ materially from those stated, implied or inferred from the forward-looking statements contained in this publication. We may have used certain terms, such as resources, in this publication that United States Securities and Exchange Commission (SEC) strictly prohibits us from including in our filings with the SEC. U.S. Investors are urged to consider closely the disclosure in our Form 20-F, File No 1-32575, available on the SEC website www.sec.gov. You can also obtain these forms from the SEC by calling 1-800-SEC-0330.

OUR BUSINESSES



ABOUT SHELL

Shell is a global group of energy and petrochemical companies employing 87,000 people in more than 70 countries. Our aim is to help meet the energy needs of society in ways that are economically, environmentally and socially responsible.

Upstream

Upstream consists of two organisations, Upstream International and Upstream Americas. Upstream searches for and recovers crude oil and natural gas, operates the infrastructure to deliver oil and gas to market, liquefies and transports natural gas, converts gas to liquid products, and extracts bitumen from oil sands for conversion into synthetic crude oil. It often works in joint ventures, including with national oil companies. Our wind power activities are part of Upstream.

Downstream

Downstream manufactures, supplies and markets oil products and chemicals worldwide. Manufacturing and Supply & Distribution includes refineries, chemical plants, and the supply and distribution

of feedstocks and products. Retail and Commercial sell a range of products including fuels and lubricants. Chemicals markets petrochemicals for industrial consumers. Downstream trades hydrocarbons and other energy-related products. It also includes our activities in biofuels.

Projects & Technology

Projects & Technology manages the delivery of Shell's major projects and drives its research and innovation programme to create technology solutions. It provides technical services and technology capability to Upstream and Downstream.

www.shell.com/about



OUR APPROACH

The world needs to produce enough energy to keep economies growing, while reducing the impact of energy use on a planet threatened by climate change. Shell works to help meet rising energy demand in a responsible way. That means operating safely, minimising our impact on the environment and building trust with the communities who are our neighbours. If we fall short of the standards society expects of us, we learn from our experiences to improve the way we operate.



INTRODUCTION FROM THE CEO



I am pleased to introduce the Shell Sustainability Report for 2012. Against the backdrop of a still-struggling global economy, we continue to operate in economically, environmentally and socially responsible ways; and to invest for the future.

As global demand for energy continues to rise, we must develop energy resources that exist in increasingly challenging environments, or that are difficult to produce. Wherever we operate, we never cease in our efforts to keep everyone safe: whether our employees or contractors, or the communities near our operations. We recognise the special physical and technical challenges of working in some of the world's toughest conditions, and we are determined to learn from our experiences to continue to improve the safety and reliability of our operations.

Building trust

Trust between governments, industry and civil society is all the more essential in an era of economic volatility. Today that trust often appears to have broken down. To remedy this we need action, including a greater level of collaboration and transparency, and leadership to develop policies that work.

Sustainable development remains firmly at the core of our business strategy. Working with communities, governments, non-governmental organisations and others helps us to operate safely and responsibly. We take stringent steps to prevent harm to the environment and to build trust with communities close to our operations. For example, we continue to lead the industry in

setting and following responsible guidelines for our tight oil and gas projects.

In 2012, Shell began the drilling of two exploratory wells in the Arctic waters off Alaska. This was a significant step forward in our efforts to develop these resources in a responsible way. We have worked closely with the people of Alaska's North Slope, with regulatory authorities and with some environmental non-governmental organisations. At the end of 2012, however, there were regrettable incidents involving our drilling ships. We are incorporating the lessons learned from these events into our future plans.

Taking action

A more sustainable future will require cleaner energy, and more efficient use of energy. With more people moving into cities, world population rising and living standards improving, all forms of energy will be needed to meet demand. Renewables such as wind and solar will continue to grow, but fossil fuels will still be meeting around two-thirds of energy demand in 2050.

We are already taking action to deliver more energy – and cleaner energy – using advanced technologies and innovative approaches. We are producing almost as much cleaner-burning natural gas as oil, producing low-carbon biofuel, helping to develop carbon capture and storage (CCS) technologies, and putting in place steps to improve our energy efficiency.

CCS is critical to reducing global CO₂ emissions. In 2012, we decided to move ahead with the Quest CCS project that will potentially capture and store deep underground over 1 million tonnes of CO₂ a year from our oil sands operations in Canada. We are also involved in a number of other CCS projects. We are not just talking about CCS. We are taking action – although without a strong price for carbon, these projects generate no revenue for companies.

We are also helping to shape a better understanding of the increasing stresses the world faces as demand grows for the interlinked essentials of energy, water and food. Most forms of energy production need water; energy is needed to move and treat water; and producing food requires both

energy and water. These stresses are likely to increase because of climate change. In 2012, I brought together CEOs from a range of industries to identify steps each of us could take to start to mitigate these stresses and increase our resilience for the future. Innovative cross-industry partnerships can deepen resilience to stresses and build sustainability in the years to come. In early 2013, we published a new set of scenarios that focus on the challenges of an era of volatility and transition, characterised by rapid urbanisation and energy-water-food stresses.

Partnerships and principles

Industry can achieve more when working in partnership with governments, communities and others. In Nigeria, 2012 saw a dramatic rise in the theft of oil from pipelines. The bulk of this oil is illegally exported overseas, and the rest turned into low-grade fuel in local makeshift refineries, causing environmental damage. These criminal activities reduce government income from the energy industry. The Nigerian government believes millions of barrels of oil a month are being stolen, amounting to a loss of billions of dollars a year in revenues. The energy industry cannot tackle this alone. It needs more action from the Nigerian government and help from local communities. The international community also needs to step forward. This industrial-scale crime is harming the Nigerian nation.

Shell was a founding member of the UN Global Compact and supports its principles in human rights, labour, environment and anti-corruption. In this report you can read about our progress in these areas.

The External Review Committee has again provided important contributions to the development of our Sustainability Report, and I thank them.

I invite you to send your comments on the report to:

sustainabilityreport@shell.com

Peter Voser
Chief Executive Officer

**"TRUST IS ALL THE MORE
ESSENTIAL IN AN
ERA OF ECONOMIC
VOLATILITY."**

BUILDING A SUSTAINABLE ENERGY FUTURE

The world is at the beginning of a transformation in energy use. Global population is rising, living standards are improving for many and more people are moving to cities. Demand for energy could rise by up to 80% by around 2050 as it powers rapid economic development. Energy resources and other essentials such as water and food – all interlinked – are expected to come under growing stress with climate change. As we help build a more sustainable future, Shell is working to better understand the tensions between supply and demand in energy, water and food.

The world's population is heading for more than 9 billion by 2050, from today's 7 billion. Global energy demand is rising, yet in many regions easy-to-reach supplies of oil and natural gas are becoming harder to find. To help meet growing demand, more renewable energy as well as more fossil fuels will be needed. According to Shell's scenarios, energy from solar, wind, hydro-electricity and biomass could rise to around 30% by 2050, with strong government support. Nuclear power will also continue to play a part. Fossil fuels are expected to meet around 65% of energy demand by mid-century. At the same time, carbon dioxide (CO₂) emissions must be cut significantly if the planet is to

avoid the most serious effects of global warming and climate change.

Vital resources under pressure

Energy production is linked to both water use and food production. If the world is to build a sustainable energy future, these three elements must be carefully managed to avoid growing stresses, which are expected to increase with climate change. In 2012, we published findings from our work with the World Business Council for Sustainable Development and the University of Utrecht, in the Netherlands, to develop a new way of assessing more accurately the amount of water that energy production needs. We are sharing our data with the wider business community and the International Energy Agency (IEA), and have incorporated it into our own scenarios modelling.

Governments, business and civil society must work together to overcome the challenges of climate change and the energy-water-food stresses. We are encouraging this collaboration. In 2012, for example, we brought together CEOs of multinational companies from several industries to identify joint projects that could help to start tackling resource stresses. Shell is already working to reduce the amount of water we use. For example, a recycling plant makes our gas-to-liquids facility in Qatar self-sufficient in water, avoiding the need to draw on scarce fresh-water resources.

Rapid urbanisation

By 2050, around 75% of people will be living in cities, up from 50% today. As urban population density grows, cities and towns will suffer most from increasing pressure on resources. This creates an opportunity to build more efficient and integrated systems, including better transport networks. But closer co-operation is needed between urban planners, local governments and companies to find

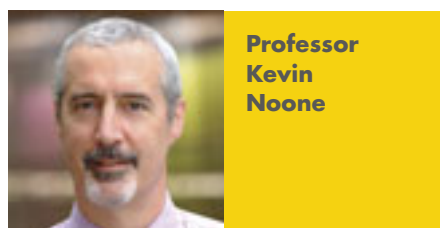
innovative ways to move more people and goods safely, cost effectively and with less environmental impact.

We are working with governments and authorities in major cities on several continents to better understand how cities develop, and their impact on energy supply and demand. In China, for example, we have worked for two years with the state-run Development Research Centre to help analyse and improve the country's mid- to long-term energy strategy. In 2012, we also began working with Singapore's Centre for Liveable Cities with a view to improving city management in the future.

Acting now for the future

The IEA says that unless governments change policy, the world faces an insecure, inefficient and high-carbon energy future. Without clear measures to promote investment in more efficient and low-carbon technologies, it risks setting itself on a course to potentially catastrophic climate change.

At Shell we advocate publicly and to governments that a strong and stable price on CO₂ emissions will help drive the right investments in low-carbon technologies. But we are not waiting for government policy to develop. We consider the potential cost of a project's CO₂ emissions, which we set at \$40 a tonne, in all our major investment decisions. We are producing more natural gas, the cleanest-burning fossil fuel, and we produce low-carbon biofuel. We are also helping to develop carbon capture and storage technologies, and working to improve the energy efficiency of our operations.



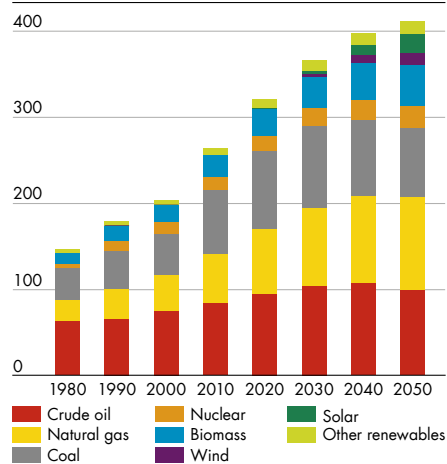
Professor Kevin Noone

Director of the Swedish Secretariat for Environmental Earth System Sciences, Stockholm, Sweden

Shell uses scenarios to peer into the future as an aid to strategic planning. Major corporate actors like Shell will be critical in shaping a future of resilience. Shell has incorporated the Planetary Boundaries concept – meaning that pursuing some of our activities beyond certain limits increases the risk of large-scale changes in the way the entire earth system behaves – into its scenarios work. Helping Shell with this process has given me hope that making the transition from an oil and gas company to a sustainable energy company will not be an impossible endeavour. Difficult, certainly. Impossible, definitely not.

PROJECTED GLOBAL ENERGY DEMAND TO 2050

million barrels of oil equivalent a day



Source: Shell analysis, November 2012

SUSTAINABLE DEVELOPMENT AND OUR BUSINESS STRATEGY

Energy sustains our daily lives and powers progress around the globe. Sustainable development for Shell means working with governments, partners, communities and others to deliver more energy in economically, socially and environmentally responsible ways. This approach helps shape the business decisions we make.

As the world's population rises and the demand for energy grows, we must meet the needs of our customers and partners against a backdrop of economic volatility. We face increasing competition for access to energy resources in a world where environmental and social pressures are mounting. Our approach to sustainable development underpins the responsible way we work.

In developing energy projects and operating our facilities, we must balance short- and long-term interests. That means integrating economic, environmental and social considerations into our business decisions from the earliest stage. This approach is crucial to our success. It helps us develop projects without delays, and minimise the environmental and social impacts of our operations. It also enables us to better share the benefits of our activities, such as creating new jobs and contracts that help boost local economies.

Producing more natural gas

Increasing the use of natural gas will help build a sustainable future energy system. Replacing coal with cleaner-burning

natural gas for power generation is the quickest and most affordable route for many countries to meet their CO₂ reduction targets. In 2012, we produced almost as much natural gas as oil, and we continue to invest in developing natural gas resources (see chart). Shell expects global demand for natural gas to increase by 60% by 2030 from its 2010 level, reaching 25% of the global energy mix.

We will continue to develop oil and gas projects to help meet rising energy demand. We are moving into increasingly challenging environments, using advanced technologies and finding creative ways to access difficult resources.

To support our overall growth in delivering energy, we expect to have a net capital investment of around \$33 billion in 2013. Around 80% of this will go to our oil and gas exploration and production activities. As new projects start up over the next four to five years, we expect our production to rise to 4 million barrels of oil equivalent a day. This is an increase of 23% on our production in 2012.

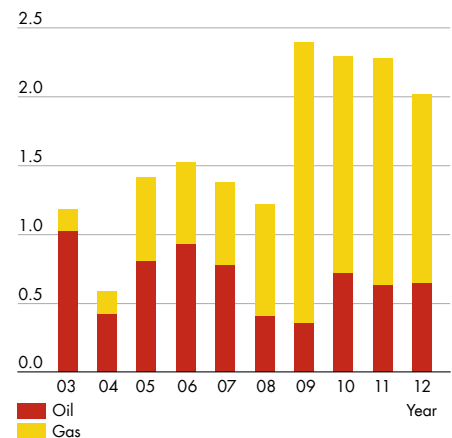
Technology and innovation

Innovation and the development of advanced technologies are central to our strategy. Cleaner, more efficient technologies will be crucial as we explore for and develop resources in ever more challenging environments. In 2012, we spent \$1.3 billion on research and development (R&D), more than any other international oil and gas company.

Over the last five years we have spent \$2.2 billion on developing alternative energies, carbon capture and storage, and on other CO₂-related R&D. We produce low-carbon biofuel through our Raízen joint venture in Brazil, and we are helping to develop advanced biofuels for the future from non-food sources.

SHELL'S EXPLORATION RESOURCE ADDITIONS

billion barrels of oil equivalent



Note: Excludes mergers and acquisitions

OUR GOVERNANCE AND STANDARDS

The overall accountability for sustainable development within Shell lies with the Chief Executive Officer (CEO) and the Executive Committee. They set priorities and standards in sustainable development that help shape our business activities. The CEO chairs the Health, Safety, Security, Environment and Social Performance (HSSE & SP) Executive, which reviews and assesses how we manage our sustainability performance.

All employees and contractors working for Shell, including those at joint ventures we operate, are required to act in accordance with our mandatory HSSE & SP Control Framework. This defines standards and accountabilities at each level of the organisation. The accountability for running our projects and facilities responsibly lies with our business managers. They work with communities, non-governmental organisations, partners and others to better understand and address the impact of our operations.

HSSE & SP specialists work with business managers to implement our standards to help improve our sustainability performance. We have comprehensive assurance processes in place to monitor compliance.

The Corporate and Social Responsibility Committee (CSRC) of the Board of Royal Dutch Shell plc reviews policies and performance with respect to the Shell General Business Principles, Code of Conduct, HSSE & SP standards and issues of public concern on behalf of the Board. Besides its regular meetings, the CSRC visits facilities to become more familiar with our operations. In 2012, the CSRC visited Nigeria and observed the environmental damage from illegal refining in the Niger Delta. While there, it also visited facilities and met with government officials, community representatives and local non-governmental organisations. During a visit to Shell's UK operations in the North Sea, the CSRC saw how safety is managed on an oil and gas platform.

LIVING BY OUR PRINCIPLES

Our business principles are the foundation for the way we work. They govern how we behave, the policies and processes we follow, and the decisions we make. They also guide the way we manage the impact of our operations on the environment and our approach to working with communities.

Shell General Business Principles

We were one of the first companies to publish business principles, in 1976. They set the standards for the way we conduct business with integrity, and our respect for the environment and local communities. They also detail our responsibilities towards customers, suppliers, partners, employees, shareholders, and to broader society. All Shell employees and contractors, and those at joint ventures we operate, are expected to comply with our business principles. In joint ventures we do not control, we encourage our partners to apply principles consistent with our own. Mechanisms exist to make employees aware of the principles and act in accordance with them.



**Allan
Lerberg
Jorgensen**

Department Director, Danish Institute for Human Rights, Copenhagen, Denmark

// We work with Shell to implement respect for human rights across four areas: community impacts, employee relations, procurement and security. Shell has had a public commitment to respect human rights since 1997. However, implementation has not been consistent across the company and therefore progress has been uneven. We hope that our knowledge can help Shell improve its approach to human rights, and inspire the same change among its peers. The human rights challenges faced by the oil and gas industry require joined-up thinking and joined-up action. We are pleased by Shell's active role in the human rights task force of IPIECA, and we encourage Shell and its peers to address the industry's human rights impacts in relation to climate change and natural resource management. //

Shell Code of Conduct

Our Code of Conduct helps employees and contractors to meet the standards and behaviours expected of them as set out in our business principles. Confidential channels, including a global telephone helpline and website, are available for anyone to report breaches, anonymously if they wish. The Code of Conduct covers areas including fighting corrupt practices, national and international trade, and safeguarding information and assets. Shell provides mandatory training in the ethical and legal aspects of all these areas.

Antitrust

The purpose of antitrust laws is to promote and safeguard competition, and to punish anti-competitive behaviour. We have an active antitrust programme in place to identify and resolve any activity that fails to meet our standards of compliance with antitrust laws. It includes mandatory measures people working for Shell must take to prevent antitrust incidents, and training to help them understand their roles and responsibilities. Anyone working for Shell who does not comply with antitrust laws faces disciplinary action, up to and including dismissal or termination of their contract.

Anti-bribery and corruption

Our compliance programme supports Shell's long-established position against the direct or indirect offering, paying, soliciting or accepting of bribes in any form, including facilitation payments. It includes mandatory procedures and training on topics such as political payments, gifts and hospitality, and conflicts of interest. Anyone working for Shell who does not comply with anti-bribery laws faces disciplinary action, up to and including dismissal or termination of their contract.

Human rights

The Shell General Business Principles require our employees and contractors to respect the human rights of fellow workers and communities where we operate. We focus on four areas across Shell's activities where respect for human rights is especially critical to the way we operate: communities, labour, supply chains and security.

ENGAGING OUR INVESTORS

During 2012, Shell organised several events to engage with socially responsible institutional investors on the sustainability aspects of our operations worldwide. In London, one event focused on safety, biofuels, climate change, oil sands, tight oil and gas, Nigeria and the Arctic. We hosted a visit to Nigeria to review the difficult operating environment and the large-scale oil theft occurring in parts of the Niger Delta. We also held sessions on our Alaska offshore drilling programme for investors in the UK and the Netherlands.

Shell has long been involved with developments in business and human rights. While it is the duty of governments to protect human rights, Shell recognises the responsibility of companies to respect them, in line with the UN Guiding Principles on Business and Human Rights. We also work with other companies, non-governmental organisations and other bodies to improve the way we apply these principles. For example, we are working with the Danish Institute for Human Rights to help shape our approach (see opinion).

In 2012, we continued our community feedback pilot projects, based on the UN Guiding Principles, in four countries. What we learn from these pilots will guide our efforts to put new community feedback mechanisms in place, or improve our existing programmes, at our major projects and facilities in the future. We also help promote a common approach to human rights across the oil and gas industry through IPIECA, the industry association for social and environmental issues, as co-chair of its working group on community feedback mechanisms.

We have requirements to keep employees, contractors and facilities safe, while respecting the human rights and security of local communities. Since their development in 2000, we have actively implemented the Voluntary Principles on Security and Human Rights (VPSHR), which guide companies in assessing risks when working with public and private security. We train our security staff and contractors in the VPSHR, and we incorporate the principles in our security contracts.

SAFETY

Safety is critical to the responsible delivery of energy. We develop and operate our facilities with the aim of preventing incidents that may harm our employees and contractors or nearby communities, or cause environmental impact. We continue to build a culture where each person understands their role in making Shell a safer place to work.

Delivering energy and products to our customers responsibly depends on operating safely. Our goal is to have zero fatalities and no leaks or other incidents that harm our employees, contractors or neighbours, or put our facilities and the environment at risk. In 2012, we continued to record low injury rates. However, any injury or incident, no matter how small, serves as a reminder of the need to avoid complacency. (For details of our safety performance, see page 34.)

We manage safety through rigorous processes and by embedding a safety culture in the daily lives of our workforce. Everyone working for us and joint ventures we operate must follow our safety rules, intervene in unsafe situations, and respect our neighbours and the environment. Our HSSE & SP Control Framework, a global set of standards and accountabilities, defines the operational controls and physical barriers we require to prevent incidents.

Our Life-Saving Rules and annual Safety Days continue to improve risk awareness and foster a culture where everyone takes responsibility for safety. Road safety is one area where this approach has achieved good results in recent years (see box, page 25). The Oil & Gas Producers Association (OGP) has drawn up a set of recommended

safety rules for its members based on the Shell Life-Saving Rules. Our Safety Day is an important global event. Shell employees and contractors across the world come together in a number of locations – from deep-sea platforms and desert oil fields to refineries, chemical plants and offices – to improve their understanding of safety and reinvigorate their goal of staying safe.

Process safety

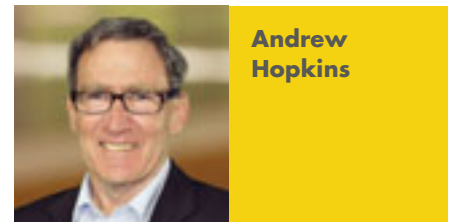
We have a stringent approach to process safety to make sure our facilities are well designed, well operated and well maintained, so they can run safely and without harm to people or the environment. The global safety standards we apply to all the facilities and projects we operate meet local regulatory requirements, and in many cases exceed them. Since 2006, Shell has been implementing a \$6 billion programme to improve the safety of our oil and gas production facilities, including regular training for those who manage and operate them. In 2012, we invested around \$1 billion in the safety and reliability of our refineries, chemical plants and distribution facilities.

Shell takes a dual approach to potential incidents. We identify and assess risks that have the potential to become an incident,

and take the necessary steps to reduce or eliminate them. At the same time, we prepare for, and are ready to respond to, an incident in the event that one occurs.

We learn from investigations into major industry incidents. Shell has a programme in place to improve awareness among managers of how they can better create a working culture that prevents safety incidents. This includes recognising and responding to the smallest signs of a potential problem. It also includes asking workers more questions about their safety concerns.

We routinely prepare and practise our emergency response to incidents such as an oil spill or a fire. We work closely with local emergency response crews and government organisations to regularly test our plans and procedures, with the aim of continually improving our readiness to respond. If an incident does occur, we have multiple recovery measures in place to minimise the impact on people and the environment.



Andrew Hopkins

Emeritus Professor of Sociology at the Australian National University, Canberra, Australia

“ I have run numerous process safety workshops for Shell, and I am struck by the way the company has tried to learn the process safety lessons that have emerged from previous disasters. It has identified 11 “process safety basic requirements” (PSBRs). They are summarised on a single card, and the requirements refer to things like safe siting of portable buildings, permit to work and alarm management. Each of these is linked to specific industry incidents. This linkage is what breathes life and meaning into the PSBRs. They are not just abstract procedures: they are the result of the hard lessons of previous tragedies. The PSBRs represent organisational learning. The next step is to ensure that people know and can tell the stories of the incidents from which the PSBRs are derived. In this way organisational learning will be translated into individual learning. ”

↓ Contractors taking part in an exercise on Safety Day at Pulau Bukom manufacturing site, Singapore.



COMMUNITIES

Working with our neighbours helps us share the benefits of our activities. Our operations help to develop local economies by creating jobs and contracts. We aim to build trust by engaging closely with communities about our plans, listening to their hopes and concerns, and taking action to address them.

Our projects and facilities are a part of many communities around the world. We aim to have a positive effect in those communities. Through our operations we create jobs and business opportunities that help to build or rejuvenate local economies, and support community development projects. We also work to incorporate the views of those living close to our operations when we make decisions that may affect them. This is a responsible approach that builds trust and makes good business sense: without community support, projects and facilities can experience delays and other challenges. (For details of our social performance, see page 34.)

Shell has global operating standards and mandatory requirements that set out how we work with the communities our operations might affect. Each of our major projects and facilities must have a social performance plan that frames the way we work to minimise our impacts, engage with communities and share benefits.

When we plan a new project or changes to an existing facility, we talk to local communities and listen to their expectations and concerns as early as possible (page 19). Through the life cycle of our operations, we engage with local communities to identify their needs and opportunities for development. We work with indigenous peoples to preserve their way of life and culture, and learn from their traditional knowledge to improve the way we operate. Our approach includes guidelines on how to avoid the involuntary resettlement of communities.

We also discuss our business plans with advisory panels of local representatives or at community meetings. Our social performance guidelines help our specialists to engage respectfully and effectively during these and other meetings with communities. In 2012, we trained 272 social performance specialists. We also run courses to increase awareness of social performance-related topics for business managers, with 120 attending in 2012. We have increased the number

of our community liaison staff and trained them to improve their skills in resolving conflicts and grievances at the community level, and developing joint benefits. The Consensus Building Institute, a not-for-profit organisation, developed this programme.

Investing in communities

Sharing the benefits of our operations means we also invest in community programmes in which our expertise can provide a positive and lasting impact. We focus on three global themes: enterprise development, road safety, and safe and reliable access to energy for the communities around us. We also have locally tailored programmes in areas such as community development, education, and biodiversity and conservation.

In Iraq we support road safety awareness schemes for many people, including schoolchildren, and we are working to improve the skills of our drivers (page 25). We support young entrepreneurs in developing their businesses. The management training and business planning advice that the Shell LiveWIRE programme delivers can help new companies develop and build for the future. In 2012, Shell LiveWIRE marked its 30th anniversary, and trained almost 9,000 people leading to the creation of around 2,500 new businesses. Shell runs the programme with local partners.

Building local economies

In 2012, we spent around \$14 billion on goods and services from companies in countries with lower incomes. We also organised three workshops for suppliers in partnership with the UK Department of Trade and Industry to promote support for local jobs and enterprises. One focused on Iraqi and Omani contractors, the second on Nigerian contractors (see opinion, page 17) and the third on Kazakhstani contractors.

Around 400,000 people are contracted to work for Shell. We hire local people wherever possible, and some governments require this. In 2012, more than 90% of our employees were local nationals.

WORKING WITH COASTAL COMMUNITIES

Deep-water projects are vital to US Gulf Coast communities, providing jobs and helping to sustain a way of life. As we develop our Mars B deep-water platform, Shell is investing in a range of projects to help protect coastal communities. We have pledged \$5 million to community and environmental projects, including the restoration of wetlands and coastlines damaged by hurricanes.

For example, Shell is providing \$1 million to support a project that will almost double the size of Pelican Island, Louisiana, an important habitat for nesting wading birds that is threatened by coastal erosion. We are providing \$500,000 to fund The Nature Conservancy's restoration efforts on Shamrock Island in Corpus Christi Bay, Texas, another vital nesting habitat for up to 21 species of birds. We have also donated \$500,000 to the Greater Lafourche Port Commission to restore and maintain a 1.6 km section of storm-damaged beach in Louisiana.

Shell is working to increase knowledge of the local environment. For instance, we are supporting a scientific documentary by the Gulf of Mexico Foundation, a non-profit conservation organisation. We involved 90 children from three schools in a community project to clean debris from 61 km of coastline on Matagorda Bay in Texas, and are producing an educational video on the project. Our \$1 million donation is helping to fund the construction of the Bayou Country Children's Museum in Thibodaux, Louisiana, which started in 2012.

When a natural disaster happens, we can work to help rebuild local economies through support in restoring livelihoods. In 2012, we supported several countries that were affected by natural disasters. For example, we jointly developed and ran a programme with the Chaipattana Foundation in Thailand to support flood relief. We contributed \$1 million to the programme, and provided support and training for local communities to repair and maintain agricultural equipment that had been damaged during the floods.

ENVIRONMENT

As we work to help meet the world's growing energy needs, we aim to reduce the environmental impact of our operations. Working with local communities and experts from leading environmental organisations helps us better understand and address the challenges we face in running our facilities and developing major projects.

Working to reduce the environmental impact of our operations takes rigorous planning. We focus on key areas including managing carbon dioxide (CO₂) emissions, using less energy and water, preventing spills, flaring less gas produced with oil, and conserving biodiversity. (For details of our environmental performance, see page 32.)

We manage CO₂ emissions through using more energy-efficient technologies and processes, and by reducing flaring in our operations. We are developing a capability in carbon capture and storage. We aim to

prevent spills through strict standards and by making sure that our facilities are well designed, safely operated and properly maintained.

The availability of fresh water is a growing challenge for the energy industry as developing new resources, such as tight gas, can be water intensive. Operating in water-scarce areas may bring operational and commercial challenges as regulations on water use tighten and the costs of using water increase. Shell is taking steps to better manage our use of water. We are

using innovative approaches and advanced technologies in the design and operation of our facilities to reduce our use of fresh water, and to recycle more water.

At our Groundbirch tight gas project in British Columbia, Canada, for example, we are reducing the amount of fresh water we use from local sources. We operate a storage and recycling facility for the water used in tight gas production. Pipelines transport the water to where it is needed in the field, reducing truck movements. We have also funded the building of a water-recycling plant for the nearby city of Dawson Creek. The plant will treat water so that it can be reused in our operations and for other industrial and municipal needs (see opinion).

When we plan a major project, or an expansion to an existing facility, we conduct an environmental impact assessment. As part of this we consider the potential effects on local biodiversity, and take steps to address them. Through our partnership with the International Union for Conservation of Nature (IUCN) we have developed eight action plans for major operations in areas of rich biodiversity, and we are developing plans in Iraq, Ireland, Kazakhstan, Nigeria and the UK.



↑ Mapping ecosystems with Wetlands International in northern Russia.

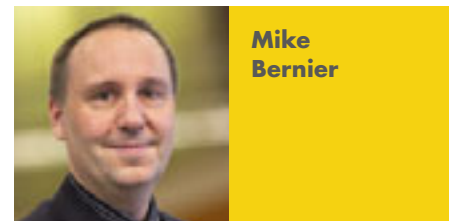
WORKING WITH ENVIRONMENTAL PARTNERS

Through our partnerships with leading environmental organisations we continue to find new ways to manage environmental challenges and improve the way we develop our projects. In 2012, Shell worked with Wetlands International on ecosystem baseline studies of the Timan-Pechora region of northern Russia, where Shell is planning a new exploration project.

Shell was one of several companies and organisations that commissioned an independent study through IUCN on the relationship between extractive industries and natural World Heritage sites. The study report proposes practical ways of strengthening the role of the World Heritage Convention in safeguarding these special areas.

Our partnership with Earthwatch enables Shell employees to work with scientists on research projects around the world. This includes our support for its research and learning programme in the rainforests of the Sabah region of Borneo, Malaysia. Our employees are working with scientists to understand the effects of logging and changes in land use, and the resilience of these rainforests to the potential effects of climate change.

With The Nature Conservancy we are working to find ways to use artificially engineered oyster reefs as breakwaters to reduce coastal erosion in Louisiana, USA. This approach can also protect pipelines in the area.



Mayor of Dawson Creek City,
British Columbia, Canada

After experiencing several years of decreased rainfall, in addition to increased growth of the natural gas industry in north-east British Columbia, the City of Dawson Creek realised that a new solution would need to be explored to sustain our precious water resource. After the City reached out for help, Shell came forward and a partnership was formed that resulted in the City of Dawson Creek reclaimed water plant, an innovative and successful project that we can all be proud of. We are now a national model of what can be accomplished when communities and business work together with everyone's best interests in mind.

CLIMATE CHANGE

The world faces the critical challenge of how to meet rising demand for the energy that powers economies, while urgently cutting the emissions of carbon dioxide (CO₂) that energy use generates. Shell is taking action in four areas: producing more natural gas, the cleanest-burning fossil fuel; helping to develop technologies to capture and store CO₂; producing low-carbon biofuel; and working to improve the energy efficiency of our operations.

Global population will grow rapidly over the next few decades, and living standards are expected to continue improving. Many people in developing countries will rise out of poverty. Demand for energy is expected to rise by almost 80% by 2050.

All energy sources will be needed to meet demand in the coming years. Renewables including wind and solar power will continue to grow, reaching perhaps 30% of the world's energy mix by 2050, with strong government support. By the same year, fossil fuels are expected to still meet around 65% of energy demand. With the level of CO₂ in the atmosphere approaching 400 parts per million, the International Energy Agency (IEA) has made clear that the chances of limiting global temperature rise to a relatively safe 2 °C are slipping away and that urgent steps are needed to reduce CO₂ emissions.

Greater energy efficiency will help. But if the world is to avoid the effects of serious climate change, it needs decisive action now by governments, industry and consumers to at least halve global CO₂ emissions in the coming decades.

Putting a price on carbon

A strong, stable price for CO₂ within a comprehensive policy framework is needed to achieve significant emissions reductions in the long term. Governments should allow market forces to encourage the use of all technologies to reduce CO₂ emissions, starting with those that are least costly and quickest to implement. In a positive step in 2012, Australia linked its developing carbon market with that of the European Union. We welcomed the progress made during the 2012 UN Climate Change Conference in Doha, Qatar, including the decision to continue the Kyoto Protocol, but substantial work will be needed over the coming years to reach a global agreement.

At Shell, however, we are not waiting for government policies or international coalitions to emerge. We are taking action

today, with the focus on delivering results in four main areas.

Natural gas

More than one-third of CO₂ emissions from the energy system come from electricity generation, making it a priority to reduce greenhouse gas (GHG) emissions in the power industry. From production through to use in generating electricity, natural gas produces around half the GHG emissions compared to coal. This applies across a range of production, processing and transportation methods (see chart). Replacing coal with natural gas in the power sector is the quickest, most affordable route for many countries to achieve their CO₂ reduction targets. Our production of natural gas is rising: in 2012 it accounted for almost half our production of energy resources. We are one of the world's largest distributors of liquefied natural gas.

Carbon capture and storage

The IEA estimates that if carbon capture and storage (CCS) moves rapidly from demonstration phase to widespread use, it could reduce global CO₂ emissions by around 20% by 2050. Shell is helping to advance CCS technologies in a number of projects. More government funding and a strong price on CO₂ emissions are needed to move forward these projects for use in wider industry, as CCS projects currently generate no revenue for companies.

In 2012, we began construction of our Quest CCS project in Canada, which will potentially store over 1 million tonnes of CO₂ a year from our oil sands operations from around 2015 (page 26). Quest is designed to demonstrate a combination of technologies to capture, transport and store CO₂ deep underground. The knowledge it will provide is expected to help develop a wider and more cost-effective use of CCS within the energy industry and other sectors in the years to come.

Other CCS projects Shell is involved in include the Technology Centre Mongstad

in Norway, the world's largest facility to develop and test CO₂ capture technology, which opened in 2012. The Gorgon LNG project (Shell interest 25%) off the coast of Western Australia will include the world's largest CCS project, once in operation around the middle of this decade. It is expected to store 3 to 4 million tonnes of CO₂ a year.

Biofuels

Around 17% of global CO₂ emissions from fossil fuels come from road transport. Shell believes low-carbon biofuels are one of the quickest, most practical routes to reducing CO₂ emissions from the transport fuel mix in the next 20 years. Through our joint venture Raizen, Shell produces low-carbon biofuel: ethanol made from sugar cane in Brazil. This biofuel can reduce CO₂ emissions by around 70% compared to petrol, from cultivation of the sugar cane to using the ethanol as fuel. We continue to work with partners to develop advanced biofuels for the future from non-food sources (page 28).

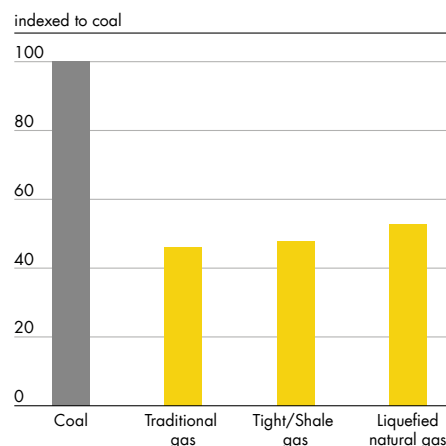
Energy efficiency

Shell has long-term multibillion-dollar programmes in place to improve the energy efficiency of our operations (page 11). These include our oil and gas production projects, oil refineries and chemical plants. We also offer products and services to help customers use less energy, including advanced fuels and lubricants (page 27).

Adaptation

In addition to our actions in these four areas, we are working to understand the potential physical impact of climate change in the future on our facilities and new projects.

GHG EMISSIONS FROM SOURCE TO POWER GENERATION



Source: U.S. Department of Energy, National Energy Technology Laboratory, October 2011

IMPROVING ENERGY EFFICIENCY AT PERNIS REFINERY

FOCUS



↑ Our Pernis refinery in Rotterdam, the Netherlands, has used an innovative approach to improve energy efficiency.

Our Pernis refinery near Rotterdam in the Netherlands is one of the largest in the world. It transforms crude oil into a range of important products. These include petrol, diesel, jet fuel, heating oil and lubricants, as well as petrochemical raw materials that are used to make essential everyday items.

Pernis operates continuously, refining about 20 million tonnes of crude oil a year, equivalent to around 400,000 barrels a day. This means it is processing 750 litres of crude oil a second. The refinery sits at the heart of a major industrial complex, which includes a port for the delivery of crude oil in large tankers, and plants to make chemical products derived from oil. The whole complex covers 550 hectares, equivalent to 1,000 football fields. Its 160,000 km of pipeline, if laid end to end, would circle the globe four times.

Refining oil requires large amounts of heat, and therefore energy. At Pernis, the energy comes from natural gas. Most of it is used to heat the oil directly, with the rest used to power two plants that create steam and electricity. In recent years we have been working hard at Pernis to improve energy efficiency, to cut CO₂ emissions and reduce costs. Given the size of the refinery, even relatively small improvements can have a significant impact.

Each refinery has different characteristics because of varying size and complexity.

Operators need to manage temperatures, pressures and also the rates at which liquids and gases are flowing through pipes. The challenge to improving energy efficiency is to keep the different parts of the refinery working together at optimum levels.

An innovative approach

In 2009, we introduced a new computer software system to help improve energy efficiency at Pernis. It allowed operators to see a visual representation of the refinery process, with colour coding to highlight areas of inefficiency. This helped them focus more easily on parts of the refinery where energy performance could be improved, such as those needing maintenance or adjustments to function more efficiently.

However, although the new computer system allowed operators to monitor performance, it did not provide key information clearly enough. In 2010, Roland Berkhoudt, a Process Control Technologist, took the system to the next level. In an innovative move that won praise from senior management, he created an additional software tool that helped our operators prioritise their work by highlighting the five largest causes of inefficiency at any given time. To further encourage them, the enhanced system expressed inefficiencies in financial terms, the amount in US dollars wasted each day.

For example, one section of the refinery uses heat, pressure and catalysts to break

down heavier hydrocarbon molecules into products such as gasoil and kerosene. The technology and operational teams worked together to reduce the amount of steam used. This has delivered a reduction in energy costs of around \$1.5 million a year.

We improved the system further in 2011, enabling the software to highlight areas in the process that were operating ahead of efficiency targets. This helped encourage staff by signalling success, and also allowed them to identify areas where targets might be adjusted to further improve performance.

Stepping up the efficiency drive

In 2012, management at Pernis continued to drive improvements in operational performance. Daily meetings took place between the technology and operational teams, and management focused even harder on efficiency, identifying it as a critical way to improve the refinery's performance.

The results have been significant, and achieved without the need for major spending on new equipment. Since the introduction of the energy management system in 2009, the energy savings and fewer CO₂ emissions are equivalent to around 50,000 less cars on the road each year.

The progress made at Pernis has led to similar work to improve energy efficiency at Shell refineries and chemical plants around the world. Today, all our refineries use advanced software tools to help operators tackle areas of inefficiency as part of our global CO₂ and energy management programme.

Shell is the operator of the Pernis refinery with a 90% interest. Statoil owns the remaining 10%.



OUR ACTIVITIES

We aim to produce energy resources and deliver products in the right way: with respect for people and the environment, and with safety as our first priority. We are producing more natural gas, the cleanest-burning fossil fuel, and finding innovative ways to convert it into useful products. We operate in challenging conditions such as deep water, and our plans to develop new energy resources include exploring in the Arctic. We are producing low-carbon biofuel and helping to develop advanced biofuels for the future.

SUSTAINABLE DEVELOPMENT IN ACTION

When planning and developing new projects, or expanding existing facilities, we assess the potential impact on the environment and consider the views of local communities when we make decisions. This helps us to operate in a responsible way, delivering energy and products that contribute to the world's economic progress.

When we design a project, we use a systematic approach that includes the steps needed to help reduce the effects on the environment and achieve lasting benefits for local communities. We consider environmental, social and health impact assessments at every review stage of the process as we decide how, or if, we move forward with the project (see diagram). We often make these assessments available to the public.

At each review stage, we also take into account regulatory requirements as well as the technical and commercial challenges involved. We capture the goals we set in the impact assessments in a management plan. We put this plan into practice and monitor progress through the life cycle of the project.

Working closely with communities

In support of this approach, we employ specialists in environmental and social performance at projects and operations that are particularly complex. They work with business managers to integrate environmental, community and regulatory aspects of our activities, and to consider these in technical and commercial development plans and decisions. Following the successful use of this approach in North America, in 2012 we stepped up this programme by employing more specialists at projects around the world.

Working closely with communities where we operate allows us to better share the benefits of our activities and to reduce our environmental impact. Understanding and responding to community hopes and concerns allows us to help develop local

economies through jobs and business opportunities from the outset of a project. This also allows us to avoid delays to our projects, so makes good business sense. Through engaging with people during community meetings, and sometimes in their homes, we learn how to help protect their way of life. We also improve our understanding of how to protect the local wildlife and biodiversity they may rely on for subsistence. For example, we have rerouted pipelines and agreed not to operate during certain periods to limit disturbance to communities and wildlife.

We continue to build a culture where sustainable development matters to our employees across the company. Our annual CEO awards for health, safety, security, environment and social performance recognise the best examples of embedding a sustainable approach in our activities.

Developing projects in China

Our community liaison officers engage with communities on our plans in order to listen to and address their concerns. In China, for example, we have tight gas operations at Changbei in Shaanxi province, as well as exploration projects in Sichuan province. In Sichuan, concerns we are addressing include noise from our operations that can disturb local people and livestock.

Staff from Shell and our partner in these projects, PetroChina, regularly meet with village leaders and work closely with their communities. Shell works with the Environmental Protection Bureau in Sichuan to measure and reduce noise levels. To build relationships, we have helped organise community events and projects, including the equipping of a care home for the elderly in the Jinqu area of Sichuan.

Water is a vital resource for farmers in the region. We have designed our operations to avoid competing for water with local communities. For example, in 2012, as we prepared for hydraulic fracturing operations, nearby paddy fields were lacking water because of low rainfall. Our project team discussed with local village leaders how we could help. As a result,



**Xianyong
Wu**

*Assistant Director of Santai County
People's Government Office,
Sichuan Province, China*

“ The collaboration with Shell has been positive since we set up the Santai County government-community co-ordination office in March 2012. Shell has been proactively communicating with the county government, and we respect the high international social and environmental standards Shell applies. We are impressed by Shell's rigorous road-safety rules, as well as the early engagement with local communities before operations, including information about the way people raise grievances. One aspect I believe Shell could improve is the time it can take to address grievances. Most grievances are dealt with swiftly, but some that are more complex take longer and I'd like to see Shell speed these up, in order to resolve quickly any possible conflicts of interest between local people and the Jinqu tight gas project, and to smooth the progress of the project. ”

we invested in pumps to take some water from a nearby reservoir and paid for the power needed to irrigate the rice crops. The farmers had a good autumn harvest and allowed us to use some of the water for our operations. Building trust by working closely with the local community resulted in fewer delays to our operations.

PROJECT DEVELOPMENT PROCESS – REVIEW STAGES BETWEEN EACH PHASE



NATURAL GAS

The world needs more energy – and cleaner energy – to power economic progress while keeping the planet healthy for future generations. Shell is producing more natural gas, the cleanest-burning fossil fuel.

We expect global demand for natural gas to increase by 60% by 2030, from its 2010 level. Shell is developing a number of long-term projects that will help meet this demand. We are also using advanced technologies to convert gas into other products, such as cleaner fuels for transport.

The tight gas revolution in North America and developments in other regions have transformed the global energy picture. There are around 250 years' worth of natural gas resources available for development at today's rate of consumption. That significantly increases the potential to power economies with the cleanest and most affordable fossil fuel. A natural gas-fired power plant produces around half the carbon-dioxide emissions of a coal-fired plant. It also costs less than half as much to build. It can be fired up or stood down quickly, making it ideal to complement intermittent renewable sources, such as wind or solar energy, to maintain a steady flow of electricity.

Shell is working to reduce the impact of tight gas production by applying some of the world's most stringent safety and environmental standards. We are also encouraging government and industry to adopt better practices.

Conventional gas

Most of the natural gas we produce comes from conventional fields. Our projects provide valuable energy resources to countries worldwide and local employment to the communities where we work. For example, the Corrib field, off the west coast of Ireland, has the potential to meet up to 60% of Ireland's gas needs when the project starts production in around 2015. Ireland currently imports almost all of its energy.

The final stage of the project involves building the onshore section of the gas pipeline, which includes a 4.9 km tunnel under Sruwaddacon Bay, an area of outstanding natural beauty. Tunnelling work started at the end of 2012, following agreement on the pipeline route with our neighbours and local planning authorities.

Completing the Corrib project will sustain nearly 1,500 full-time jobs during construction. Once in production, around 175 full-time jobs will be maintained during the lifespan of the field in an area where little significant industrial or commercial employment previously existed.

Tight gas

Shell produces tight and shale gas at a number of projects in the USA, Canada and China, and has started to explore for tight gas in Ukraine. The abundance of natural gas in North America today has reduced gas and electricity prices in the region, with lower energy costs boosting industry against competitors in other parts of the world. It has also benefited the environment: replacing coal with cheaper gas in many

power stations has contributed to a fall in the USA's CO₂ emissions. In 2012, we produced around 230,000 barrels of oil equivalent a day of tight gas in North America from four major projects.

Tight gas is natural gas trapped in dense rock in pores 100 times thinner than a human hair. It is produced with a process called hydraulic fracturing, or fracking, which uses large amounts of water – mixed with sand and small amounts of chemical additives – injected under high pressure to crack the rock deep underground and release the gas into the well. Fracking has been used for many decades. Its increased use in recent years has led to concerns among some communities about potential air and water impacts, and earth tremors.

Shell uses advanced, proven technologies and practices to make fracking safe. We have adopted a set of five global operating principles for our onshore tight oil and gas activities. The principles focus on safety, environmental safeguards, and engagement with nearby communities to address concerns and help develop local economies (see opinion, opposite page). We consider each project separately – from the geology to the surrounding environment and communities – and design our activities using the latest technology and innovative approaches best suited to local conditions.

In 2012, we worked towards making sure that our onshore operations are consistent with these principles across the world. We assessed our projects to identify any gaps and began work to bring

WORKING WITH OUR NEIGHBOURS AT EAGLE FORD

The arid ranching region of southern Texas, USA, was one of the poorest parts of the country when energy companies arrived to develop the Eagle Ford shale fields. Many of the small rural towns – some with just a church, a post office and a handful of businesses – welcomed the economic benefits. New businesses sprang up and school numbers swelled as workers and their families arrived.

When Shell leased 250,000 acres to drill for natural gas near the border between the USA and Mexico, we also set out to help local communities share the benefits of our operations. We applied our global approach, developed from lessons learned at projects around the world.

To improve road safety as industry traffic increases in the area, we have improved access to and from our operations. With other

companies, local police and state agencies, we are working to raise awareness of road safety and increase support for broader safety improvements to public roads. Shell has also funded training and equipment for emergency services. In schools, we are sponsoring programmes to help teachers explain the energy industry to students. In 2012, we worked with a regional non-profit organisation to establish a new after-school facility in Eagle Pass. We also helped to set up a family literacy scheme due to start in 2013.

We are looking at ways to help build sustainable community development. For example, in 2012 we worked with a local university to develop two programmes that will start in 2013. One will provide training and resources to help civic leaders manage the sudden growth and influx of revenue, while planning for the long-term benefit of their communities. The other will help local businesses manage the change, including those that are not Shell suppliers.



↑ Staff working at the Changbei tight gas project, Shaanxi province, China.

them into alignment with our principles. We also continued to seek comment on our principles from non-governmental organisations.

Shell advocates regulations consistent with these principles that are designed to reduce risks to the environment and keep those living near operations safe. In 2012, the International Energy Agency (IEA) published similar recommendations. Many US industry organisations, shareholder coalitions and government bodies also proposed or adopted fracking guidelines in 2012, building on progress in this area in previous years. We support and encourage efforts to adopt stronger standards. We also support the strong enforcement of existing regulations.

Concerns have been raised about leaks of methane, a greenhouse gas (GHG) around 20 times more potent than CO₂, from tight gas production. The IEA has found that GHG emissions from tight gas operations slightly exceed those of conventional gas. GHG emissions from gas-fired power stations – whether from conventional or tight gas sources – are around half of those from coal across the lifecycle from production to use. Shell has joined with the Environmental Defense Fund and eight other energy companies in a University of Texas study that is assessing fugitive emissions of methane at gas production sites to provide objective scientific data and to identify operational best practices. At Shell, we use proven technologies to reduce these emissions. For example, at our Pinedale operations in Wyoming, USA, infrared cameras detect any small methane leaks so we can quickly address them.

Protecting groundwater is another priority for Shell in producing tight gas. We publicly disclose the chemicals we use in fracking operations to the extent allowed by our suppliers, even where it is not locally required. We support state legislation requiring the release of this information.

Shell works with local authorities to secure enough water for our operations in ways that minimise impact on communities and the environment. For example, we reached agreement with communities in the state of New York to supply up to 5.3 million litres of water a day to our Tioga County tight gas operations in Pennsylvania, USA. The water will be transported by rail rather than road, minimising noise, truck traffic and vehicle emissions.

We work to reduce the need for fresh water in our operations, for instance by recycling. Our approach at Groundbirch in Canada is one example (page 9). At our Marcellus project in the Appalachian region of the USA, Shell transfers water from one operation to another for recycling. In the Eagle Ford shale field of southern Texas, we set up a water recycling pilot project within the first year of operations (see box, opposite page). We are transferring technologies and what we learn from our experiences to other parts of the world.

We are reducing truck traffic wherever possible, which improves safety and cuts vehicle emissions. At our Pinedale operations, for example, we collect all of the water produced with gas from our wells and pipe it to a central facility for disposal. This eliminates an estimated 165,000 truck trips and 2 million litres of diesel fuel use a

year – a reduction of over 85% in distances covered by truck and associated vehicle emissions. Shell has also applied advanced technologies to reduce polluting emissions from drilling rig engines and other sources.

We drill multiple wells from a single site to minimise our footprint on the land. In Alberta, Canada, we use digital maps of environmental data, with rich ecological detail supplied by local people when we identify land for potential projects. This helps us avoid sensitive areas, such as caribou migration pathways.

Shell operates major tight gas projects in China in partnership with PetroChina (page 13), and we are planning to explore for shale gas in South Africa's Karoo region. Gas could be essential both in meeting growing energy demand in South Africa and by providing a cleaner alternative to coal, which currently supplies more than 70% of the country's energy demand.

In Australia, the Arrow joint venture (Shell interest 50%) produces natural gas from coal seams.



Tioga County Planner, Wellsboro, Pennsylvania, USA

// I have the opportunity to work with representatives of Shell in the Appalachian region on a number of fronts – including land development reviews, assisting the Tioga County Board of Commissioners with information gathering and working with non-profits on community development issues. Across all these sectors, Shell personnel have been responsive, willing to provide detailed information and adaptable to the rapidly changing conditions in our community. Shell is interested in raising the bar for performance of all operators and so far they have exceeded our expectations. The challenge now is continued implementation and improvement of the approach Shell is following. //



↑ Shell's *Gemmata* LNG vessel ships natural gas to customers around the world.

Liquefied natural gas

Shell pioneered liquefied natural gas (LNG) more than four decades ago as a way to transport natural gas from remote areas to distant markets. Cooling the gas to -162°C turns it into liquid and shrinks its volume by 600 times, allowing us to ship it around the world. At its destination, the LNG is turned back into gas for our customers. Today, we are one of the largest LNG suppliers, with facilities worldwide. With the abundance of natural gas in North America, the industry is exploring new opportunities to export LNG to countries where it is needed.

The Gorgon LNG project (Shell interest 25%) is under construction on Barrow Island, around 50 km off the north-west coast of Western Australia. The Greater Gorgon fields are the largest gas discoveries in Australia to date and are expected to be in production for over 40 years. The project will include the world's largest operation to capture CO_2 produced with natural gas and store it safely underground. It is expected to capture and store 3 to 4 million tonnes of CO_2 a year, over 2 km beneath Barrow Island.

Floating LNG

Shell is developing an innovative approach to producing more natural gas from remote offshore locations. Our giant floating liquefied natural gas (FLNG) facility, under construction in South Korea, will combine production, processing and storage capacity without the need to build an onshore plant or lay a pipeline on the sea floor.

FLNG allows access to offshore gas fields that would otherwise be too costly or difficult to develop. Our facility will enable the development of the remote Prelude gas field off the coast of Western Australia. When built it will be the largest offshore floating facility in the world, stretching the length of four football fields. The project will use significantly less material, take up less land and disturb a smaller area of seabed than an onshore facility. FLNG avoids the need for shoreline pipe crossings, dredging and jetty works, so developing the gas at the location of the gas field offshore will reduce impact on coastal habitats.

LNG in transport

LNG has been used as a fuel for LNG ocean tankers for several decades, but it is now emerging as a cleaner fuel for other forms of shipping and for road transport. Shell is developing an LNG-for-transport business. In 2012, we acquired Gasnor, a Norwegian firm that supplies LNG as a fuel to shipping companies and industrial customers. We also chartered the first two LNG-powered barges for carrying goods on Europe's inland waterways, which started operations in early 2013.

In 2012, we began constructing a small-scale production plant at the Jumping Pound complex in Alberta, Canada, to produce LNG for transport fuel. This will be sold at truck stops along a busy route in northern Alberta, Canada. The first station opened in early 2013. Until our plant is completed, other suppliers will deliver the fuel. Also in

early 2013, we announced plans to build two more small-scale plants to produce LNG for road transport in the US Great Lakes and Gulf Coast regions. We have further plans to provide LNG to power marine transport in the Gulf of Mexico in the future.

Gas to liquids

The world's largest gas-to-liquids (GTL) plant, our Pearl project in Qatar, can produce 140,000 barrels of oil equivalent (boe) a day of synthetic oil products. The plant can also produce 120,000 boe a day of natural gas liquids and ethane for industrial use. The plant uses heat from the processes to convert water into steam that drives its compressors and generates electricity. It also has the largest water-recycling system of its kind that reuses water in steam production and cooling. It can process 45,000 cubic metres of water a day, without discharging liquids from the plant.

Wind power

Wind remains an important part of the current and future global energy mix. Shell has been developing wind power for more than a decade and is involved in 10 wind projects in North America and Europe. Our share of the energy capacity from these projects is 507 megawatts. Most of this comes from around 720 turbines at eight wind projects in the USA. We are also assessing other potential projects, all in North America.

JOINT VENTURES, CONTRACTORS AND SUPPLIERS

Contractors and suppliers play an important role in Shell's activities. In 2012, around 400,000 contractor staff worked for Shell. Contractors often employ a large number of workers, particularly in the construction phase of projects. This creates local opportunities for jobs and developing skills. The increased demand for goods and services also helps build local businesses. However, this can also bring challenges such as pressure on local facilities, increased traffic and higher living costs. We identify such potential impacts and put measures in place to minimise them.

Joint ventures

Shell often works in joint ventures with national and international energy companies. When we operate the venture we apply the Shell Control Framework, which includes the Shell General Business Principles, Code of Conduct and our standards in areas such as health, safety, security, environment and social performance. Where we are not the operator, we encourage our partners to apply materially equivalent standards.

Working with our suppliers

Shell buys large amounts of goods and services from around 120,000 suppliers across the world. We are working to make sure these suppliers and our contractors operate in environmentally and socially responsible ways. We place about 1 million purchase orders a year. In 2012,

we spent over \$65 billion on goods and services. Shell works with contractors and suppliers who comply with applicable laws and regulations, and behave towards employees, local communities and the environment in line with the Shell General Business Principles and Code of Conduct.

Our Supplier Principles provide a mandatory set of requirements for all suppliers and contractors. We assess suppliers who want to do business with Shell based on the level of potential risk, especially in the areas of anti-bribery and corruption, human rights, safety and the environment. We also work with suppliers to help them meet our standards in these areas. In 2012, we conducted assessments of our suppliers and contractors on their level of compliance with the principles (page 34).

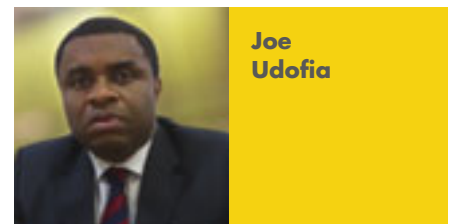
Building local opportunities

Shell works to share the benefits of our activities by creating jobs and helping local economies to develop. During the design of a project we consider how we can increase the use of local suppliers. We also train local companies so that they can tender for contracts, and build skills to develop sustainable businesses for the long term (see opinion).

For example, one international supplier has agreed to provide locally some of the equipment and services needed for operations off the coast of Brunei, with eventually 90% of staff employed being local. The joint venture Brunei Shell Petroleum (Shell interest 50%) is working

with the supplier to support this through training and the development of local facilities. Another joint venture, Brunei LNG (Shell interest 25%), has helped to develop local seafaring skills. In Nigeria, the Shell Petroleum Development Company (SPDC) agreed with six international suppliers in 2012 to develop local operations to manufacture equipment for oil production. In the Middle East we signed new contracts with international suppliers to set up local facilities for making chemicals used in the production of oil.

In early 2013, we joined a UN Development Programme initiative to create jobs and build skills in Somalia. The collaboration between Shell, BP and several shipping companies is aimed at helping to rebuild Somalia's economy with the long-term goal of reducing the risk of piracy in the Indian Ocean.



Managing Director/CEO, Vandrezzer Energy Services Limited, Lagos, Nigeria

Vandrezzer has been a direct beneficiary of Shell Petroleum Development Company's strategy to promote the use of Nigerian service companies in production operations, projects and well engineering. We were invited to attend a Shell-supported UK trade initiative forum in London soon after becoming a contractor to SPDC in 2008, and I was able to make a speech. We have attended subsequent forums in Aberdeen, Abuja and London. This exposure has not only served to redefine our business concept, but paved the way for the formation of strategic alliances and relationships that have helped us grow and attain a size and standard that enables us to handle turnkey projects in the oil and gas industry. I am grateful to SPDC for the opportunity. The baby Shell nurtured has matured into an indigenous company, with fully developed construction capabilities, which is able to supply a wide range of services for the industry.

↓ Staff working together on a drilling rig off the coast of Qatar.



DEEP WATER



↑ The hull of the new platform for the Mars B project being moved to the Gulf of Mexico, USA.

Shell is a pioneer in developing energy resources in deep waters. We introduced many of the advanced technologies, processes and safety procedures in use by the industry today. In 2012, Shell's share of global deep-water production was 330,000 barrels of oil equivalent (boe) a day. We continued to reach into ever-deeper, more challenging environments off the shores of Malaysia, the USA, Brazil, Nigeria and French Guyana. We also worked to develop these resources responsibly by reducing our impact on the environment and being a good neighbour to the coastal communities closest to our operations.

Malaysia

The Gumusut-Kakap project (Shell interest 33%), located around 120 km off the coast of Sabah and set in water more than 1,200 metres deep, began producing in late 2012. The start of production was made possible by the innovative approach of connecting the project's wells to the nearby Kikeh production facility. To avoid flaring and to help us recover more of the resources, the gas produced with the oil is being injected back into the reservoir to maintain pressure.

Gumusut-Kakap is a major project for Malaysia. It is seen as a catalyst in bringing significant foreign investment and transfer of technology to the country, while helping to build Malaysia's self-sufficiency. Shell is playing a key role in developing a deep-water service industry in Malaysia through our technology and expertise, in support of the government's economic transformation programme.

USA

Shell has been operating in the Gulf of Mexico (GoM) for more than 30 years. As fields age, new wells need to be drilled and older facilities upgraded to maintain efficient production. Shell is continually searching for ways to do this with reduced impact on the environment.

For example, advanced technology has allowed us to extend the lifespan of the Mars field, one of Shell's most productive projects since it started operations in 1996. The Mars B project (Shell interest 72.5%) is the first major redevelopment of an existing project in the region and will include a new platform to deliver oil and gas to shore from depths of around 1,000 metres.

In developing the Cardamom Deep reservoir, which Shell discovered in 2010 with advanced seismic technology, we will minimise our environmental impact by using the nearby Auger platform. We are installing underwater equipment and pipelines to deliver Cardamom production to Auger, expected to be 50,000 boe a day.

Operating safely

The Subsea Well Response Project (SWRP), a consortium founded by nine leading companies, has designed and built a comprehensive capping system for use at depths of up to 3,000 metres. The project was set up, with Shell as the operator, to make vital equipment ready for deployment worldwide following the BP Deepwater Horizon tragedy in the GoM in 2010. It seeks to improve drilling safety and to minimise environmental impact in the event of a serious incident.

RECOVERING MORE OIL FROM DEVELOPED FIELDS

Only around a third of the oil in a field, on average, can be recovered economically using conventional methods. One way to help meet increasing energy demand is to boost oil recovery with the aid of steam, gas or detergent-like chemicals. Enhanced oil recovery (EOR) usually raises the amount of oil recovered by 5 to 20%, and in some cases by significantly more.

Working with partners, Shell applies EOR techniques in projects around the world. In 2012, we signed agreements for potential chemical EOR projects in offshore fields with Petronas, the Malaysian national oil company. Petroleum Development Oman (PDO, Shell interest 34%) operates several EOR projects. Some rely on steam to heat the oil. PDO is finding energy-efficient ways of boiling water to produce this steam. At Qarn Alam it is capturing waste heat from neighbouring power plants. At Amal it plans to use mirrors to capture energy from the desert sun.

Advanced technology also helps us to manage our resources more efficiently. Our Smart Fields® technologies allow engineers to monitor and control production remotely using a network of sensors, valves and other instruments.

The SWRP intervention system is designed to be adaptable to various situations and locations. During 2013, the equipment will be moved to bases in four locations around the world to improve speed of deployment.

Shell has also joined with other companies that operate in the GoM to form the Marine Well Containment Company (MWCC). With over \$1 billion of funding, the 10 member companies have set up a rapid-response system that is designed to cap and shut in the well, or capture and contain the oil, in the event of a future underwater well blowout in the GoM. In 2012, MWCC lowered a seven-metre tall capping stack more than 2,000 metres onto a well to demonstrate its capability. Shell volunteered to perform the drill, working closely with federal regulators, including the US Coast Guard and the US Bureau of Safety and Environmental Enforcement.

WORKING WITH COMMUNITIES IN THE PHILIPPINES

FOCUS



↑ Esteridio Gonzaga shows some of his sea cucumber harvest in Palawan, the Philippines.

The Shell-operated Malampaya deep-water project signalled the beginning of the natural gas industry in the Philippines when it started operations in 2001. It continues to produce cleaner, safe and reliable energy to meet rising demand in the country. The natural gas it supplies for electricity generation powers nearly half of the homes, cities and industries of Luzon, the Philippines' largest island and the site of the capital, Manila. The project helps reduce the country's dependence on imported fuel and provides billions of dollars in revenue for the government.

The Malampaya pipeline, one of the world's longest, begins off the coast of Palawan Island and runs for over 500 km, passing the island of Mindoro. It ends at a processing plant in Batangas province on Luzon, where the gas is used to generate electricity at three power plants.

Production has started to decline, however, as the field ages. To remedy this we plan to drill more wells and install compressors on a new platform that will boost the flow of gas and extend the life of the field. As we developed our plans in 2012, we continued to work closely with the diverse communities who live on the islands in the region. They include coastal villages inhabited mostly by fishermen, some of whom belong to indigenous tribes. Our approach draws on the lessons we have learned in the many years we have been operating Malampaya.

Listening to our neighbours

Before we built the pipeline, many local people expressed fears that it would harm the environment, create health and safety problems, or cause economic hardship. Local fishermen who would be unable to work near the drilling area complained about losing their livelihoods. In Mindoro, with its rich biodiversity, there were some protests. Other residents were concerned that they would receive no direct benefits if the pipeline did not pass through Mindoro. The indigenous Tagbanua tribe were worried that our pipeline route would cross sacred ancestral waters where they had buried their dead.

We held public meetings to listen to and develop plans to address these and other concerns. In Mindoro we provided extensive information about our project on radio and in an exhibition. We rerouted our pipeline around Mindoro to conserve its biodiversity, and we made sure it avoided Tagbanua ancestral waters. We also provided funds to a micro-finance scheme to help local people start businesses and to support livelihoods.

We worked to address concerns over unemployment. But we found a shortage of people with vital construction skills, such as welding. Over time, we have helped build job skills and business expertise among local people through a number of training programmes. Edgardo Artizuela, a fisherman in northern Palawan, is one

of those who developed new skills through a Shell training course. He is now also a carpenter and repairs houses and boats for additional income. "Instead of simply relying on fishing, these new skills have opened up livelihood opportunities for us," he said. Another fisherman, Esteridio Gonzaga, has been able to create a small business: "I learned how to cultivate and export sea cucumbers," he said.

Learning from experience

In the early days, we made some mistakes. For example, initially we failed to understand the Palawan community's concerns over malaria. We believed people wanted schools and hospitals. But we learned that what the community wanted most of all was to eliminate malaria in the villages. This led to the launch of a successful anti-malaria programme, which has now been replicated in four more provinces and has significantly reduced deaths from malaria.

Today, training programmes to develop skills are helping to equip local people to work on the latest phase of the Malampaya project, which will create more than 1,000 jobs during construction.

Shell's approach to working with communities in the Philippines has attracted praise. A paper published in 2007 by the World Resources Institute in Washington DC said: "The Malampaya project illustrates how a potentially controversial, high-impact infrastructure project can avoid costly community opposition through ongoing efforts to secure and maintain community consent throughout the project cycle."

At the Asian Institute of Management in the Philippines, Professor Jacinto Gavino uses the project as a case study in the classroom. "We focus on the process of collaborative engagement with stakeholders," he said.

Malampaya is held up to Shell employees as an example of how we can build community trust and goodwill, and serves as a guide for future projects elsewhere.

Shell has a 45% interest in Malampaya. Partners are Chevron (45%) and the Philippines National Oil Company (10%).

THE ARCTIC

INTERVIEW



Q&A with Marvin Odum,
Upstream Americas Director

During 2012, we made progress with our long-term plans to explore for energy resources off the coast of Alaska, although we were not able to complete as much drilling as we had expected.

For an energy company the Arctic poses many challenges. It's an expensive and difficult place to operate. Many people feel that it should be left alone. Why does Shell want to explore off the coast of Alaska?

The world's population is increasing, living standards are rising and economies need energy to grow. Yet in many regions, easy-to-access energy resources are scarce. To meet growing demand we need a mix of strategies, and we must develop all forms of energy, traditional and renewable. To make up for the decline in conventional oil and gas resources, we have to develop resources in new, more challenging locations. The nations of the Arctic have taken the decision to open up the region for offshore development and trust companies such as Shell to do it responsibly.

In late 2012, the Kulluk drilling ship ran aground while it was under tow. How could this happen?

We undertake significant planning and preparation in an effort to ensure these types of incidents do not occur. So I'm very sorry and disappointed that this happened, and we take it very seriously. Certainly we will identify and understand the "how" and "why" of all aspects of the incident, and use the lessons learned to

improve our operations in the future. We have fully participated in and supported the US Coast Guard investigation into the causes of the incident. This was a marine transit issue that occurred after completion of our exploration programme and well outside our theatre of operations. It did not involve drilling operations. We worked with the Coast Guard to bring the incident to a safe conclusion. There were no significant injuries and there was no environmental damage.

Even before the Kulluk incident, Shell's Alaska exploration programme had suffered several operational setbacks in 2012. What did Shell learn from these events?

Our goal is always to have flawless operations and some of the events we experienced in 2012 fell far short of our expectations. That is not acceptable. However, we showed again that we are well prepared to do this kind of work. One reason for not getting as much done as we had hoped was our determination to get things right and to work so closely with regulators at every stage. The people and most of the equipment we put in place, in fact, performed very well. As with any major project, you identify some efficiencies and better ways of doing things. All aspects of our operations are subjected to close internal and external scrutiny, which leads to learning and improvement. We are always working to improve our operational performance.

Do you view the attention of Greenpeace and other environmental organisations merely as a distraction, or should Shell be considering some of their arguments?

While at times difficult, the intense scrutiny from every quarter is to be expected. We listen carefully to comments from all angles, including environmental NGOs. Close scrutiny of our industry helps raise broader public awareness of the energy and environmental dilemmas the world faces. It can help shape government policies for the better, and it can help raise operational standards across the board.

Shell says it has unprecedented plans in place to deal with an oil spill, including a large offshore fleet to respond in case of an incident. But are your plans robust enough to reassure the public?

Shell's oil-spill response plans are very robust and have been approved by the US Federal Government Agencies, with input from Alaska state agencies. Shell has indeed invested in an unprecedented oil spill response plan in Alaska. No other company has ever deployed the immediate, onsite response resources that we have. Shell has incorporated lessons from the BP Deepwater Horizon tragedy into its response plans. It is very important, however, for people to realise that drilling wells in the shallow waters off Alaska, where reservoirs are at relatively low pressure, is very different from working in the deep-water Gulf of Mexico.

Some people think the risks of drilling for oil in the Arctic are too high. Can you credibly argue that the industry can manage the risks of operating in Arctic waters?

Yes we can. We must not forget that the industry has been conducting safe operations in the Arctic for decades – proof that the industry can manage the risks. Effective risk management is about improving safety by analysing what could go wrong, minimising the possibility of it occurring, and reducing the potential consequences. At Shell we have embedded this approach within our management system, and work continuously to enhance safety. Safe well operations demand highly competent people, strict safety procedures, and rigorous design, construction and maintenance standards for all equipment. Our number one priority is safety. Our entire approach to offshore drilling is based on preventing any incident that could lead to marine pollution and this means operating at the highest standards, with an intense focus and commitment to safety and the environment.

What has Shell done to engage effectively with local communities in Alaska? Do they support your plans for exploration and potential development?

We have worked hard to earn the trust and respect of the people who live in the areas where we plan to operate. It's critical

to work effectively with communities, governments, regulators, industry partners and non-governmental organisations to establish high standards and address any concerns about our operations. It's vital to establish shared views and standard practices both in the way that we approach environmental and social challenges, and in the way we use science as a basis for decision-making. We held more than 450 meetings with people in the communities of Alaska's North Slope and others who had an interest in our plans. This early and effective engagement, ensuring greater public involvement, has been a hallmark of our approach to operations in Alaska. Of course, not everyone supports the project, but we have come a long way in establishing trust and understanding. We have demonstrated significant involvement of local communities in our decision-making. We have also developed capacity and skills that can be readily transferable. Providing jobs and skills for workforce development has been something that the people of the region have supported.

Do you feel that Shell can provide sufficient benefits to local people from the development of energy resources off Alaska? For example, how do you plan to help local residents acquire the skills necessary for the jobs you will offer?

Shell is determined to make sure that we share the benefits of our activities in the Arctic waters off Alaska with the people who live near to them in the north of the state. We direct a large proportion of our contracting work to local native firms. In turn, the benefits of these contracts feed through to local residents in the form of shareholder dividends from local co-operatives. Shell follows a workforce development strategy that includes support for internships, vocational education, and funding the regional community college in Barrow.

Shell's presence in small coastal communities could overload the limited infrastructure that currently exists for housing, hospitals, water and transport. What are Shell's plans to make sure that local communities are not overwhelmed?

We are very aware of this potential impact and have taken steps to reduce it. In 2012, we provided a 75-bed accommodation block for our employees in Barrow on



↑ A specially trained team from the local area assist in an Arctic oil-spill response drill, Alaska, USA.

Alaska's North Slope to ensure that we did not put a strain on the limited local housing market. We also brought our own medical personnel. Our presence can help local services. For example, our helicopters were available to help with local search and rescue efforts. One of Shell's core values is respect for people. We want our presence in a community to result in tangible benefits for local residents. Creating jobs and contracts that can build local economies is one way we do this. Another is to invest in areas such as education, health facilities and cultural activities. We work very closely with the communities themselves to identify their needs and preferences.

What can Shell do to reassure people about development in the Arctic?

The continuous focus on safety and incident prevention that Shell demonstrates is essential. It is the responsibility of industry, the governments and people of the region, and other key stakeholders to make sure development is carried out in a sustainable and transparent way. Industry and governments working together need to set and meet rigorous safety and environmental operating standards to ensure responsible development.

What are Shell's plans for future exploration off Alaska?

Our Alaska exploration plans are a multi-year programme. In February 2013, we decided not to pursue drilling operations off Alaska in the summer of 2013. This decision will give us time to ensure the readiness of all our equipment

and people. We are reviewing our future plans, and we continue to work closely with the US Coast Guard and US Department of the Interior. We have conducted an internal review of the events of 2012, as part of our normal business preparations, to learn from our experiences and improve our plans. Shell, working closely with US regulators, will continue to build an Alaska exploration programme that instils confidence in all concerned, and that meets the high standards the company applies to its operations around the world.



Charlotte Brower

Mayor of North Slope Borough, Alaska, USA

“ The North Slope Borough was encouraged by the responsible and measured approach undertaken by Shell during the 2012 drilling season in Arctic Alaska. Most importantly, Shell's willingness to refrain from drilling during the fall subsistence bowhead whale hunt by Inupiat Eskimos testifies to Shell's commitment to work with our subsistence whalers and communities across the North Slope of Alaska. ”

NIGERIA

OPEN LETTER



An open letter from Mutiu Sunmonu, Chairman of Shell Companies in Nigeria

This year I want to focus on just one topic: the massive and growing problem of oil theft and illegal refining in the Niger Delta. These activities are not new, so why single them out now? Because the scale of these activities has reached unprecedented levels. In 2009, the UN estimated that thieves were stealing around 150,000 barrels of crude oil a day from pipelines in the Niger Delta. In 2012, the Nigerian government said it believed that a significantly greater amount of oil was being stolen each day. This is costing the nation many billions of dollars a year in lost revenue.

It may never be possible to assess the exact figures, but it's clear that a well financed and highly organised criminal enterprise exists on a phenomenal scale – a parallel industry with a supply chain to export crude oil overseas that includes loading and shipping operations. Most of the stolen oil ends up in ocean-going tankers that transport it to refineries in other parts of West Africa, Europe and beyond. Those involved – both in Nigeria and outside – mastermind this multibillion-dollar business using influence, corruption and violence to protect their interests.

There are also small-scale, makeshift refineries producing low-grade fuel for local use. These primitive operations cannot use the heavier parts of the crude, which is dumped, destroying the mangroves and riverside areas where these activities take place.

It's also impossible to know how much of the stolen oil is spilled once it is taken from SPDC facilities. But we can estimate that 26,000 barrels of oil were spilled in the area immediately surrounding our pipelines and other facilities in 2012, of which around 95% was the result of sabotage and oil theft. Over the last three years, we estimate that these criminal acts accounted for around 85% of the volume of oil spilled from SPDC facilities. The scale of the problem puts enormous strain on our staff, diverting

time and resources to tackle the environmental consequences. It can also place our staff in danger. Two contractors working for SPDC were tragically killed in 2012 in an armed attack while assessing the remediation of an oil-spill site.

Where possible, we are taking steps to make it more difficult for the thieves to tap into and steal oil from our pipelines. But preventing theft still depends on the prompt response of government security agencies. Over the last year, SPDC has shut down production on a number of occasions to make repairs to damaged pipelines. But no sooner do we work on one area, than the thieves shift their focus elsewhere.

Stemming and reversing this menace requires co-ordinated action, both at the national and local level inside Nigeria, and at a regional and international level outside Nigeria. We urgently need more assistance from the Nigerian government and its security forces, other governments and other organisations. Better security, collection of evidence and law enforcement are required on the ground; as well as international action to trace, track and apprehend the international networks trading in stolen crude.

The government's security forces have stepped up their efforts, but they need more dedicated resources and logistical support to combat oil theft now that it has assumed such an international dimension. Greater efforts are required to boost economic development in the Delta to provide alternative livelihoods for those involved. And Nigeria needs to do more to encourage investment in the power sector to ensure reliable electricity supplies to reduce demand for illegally refined local diesel.

SPDC has made great efforts to raise awareness of the issue with the government of Nigeria, international bodies like the UN, with civil society and with the media. Tackling oil theft and its causes is in the interests of the industry, the government, the environment and – most importantly – the people of the Niger Delta. We will continue to be at the forefront of discussions to find lasting solutions.

Mutiu Sunmonu

SHELL'S ECONOMIC CONTRIBUTION

The Shell Petroleum Development Company of Nigeria Ltd (SPDC) is the operator of a joint venture between the government-owned Nigerian National Petroleum Corporation (NNPC, 55%), Shell (30%), Total (10%) and Agip (5%). Shell Nigeria Exploration & Production Company (SNEPCo, 100% Shell-owned) operates and has a 55% interest in the offshore Bonga field, Nigeria's first deep-water project. Shell also has a 26% interest in Nigeria Liquefied Natural Gas (NLNG), which exports LNG around the world.

- \$42 billion: revenues from SPDC to Nigerian government from 2008 to 2012.
- \$5.2 billion: Shell share of royalties and taxes paid to the

Nigerian government in 2012 (SPDC \$3.4 billion, SNEPCo \$1.8 billion).

- 95%: Share of revenue after costs that goes to the Nigerian government from each barrel of oil SPDC produces.
- \$2.4 billion: value of SPDC and SNEPCo contracts awarded to Nigerian companies in 2012.
- 4,000/30,000: estimated direct and indirect jobs created by SPDC and SNEPCo in Nigeria.
- Over 90%: proportion of employees who are Nigerian.
- \$178.3 million: SPDC and SNEPCo funds to the Niger Delta Development Commission in 2012 (Shell share \$68.2 million).
- \$103.2 million: 2012 contribution from SPDC and SNEPCo to community development projects (Shell share \$31.4 million).



↑ Illegal makeshift refineries contribute to environmental damage in parts of the Niger Delta.

Operations in 2012

For SPDC operations in Nigeria, 2012 was a year of contrasts. Oil theft, a long-term problem, escalated (see letter, opposite page). As a result, production was around 20% below capacity in SPDC onshore facilities due to pipeline shutdowns resulting from crude oil theft. Yet significant progress was made. Improved security – helped by the government amnesty for militants – and stable co-funding from its partners enabled SPDC to continue its multi-year programme to install new gas-gathering facilities and repair existing ones damaged by militants. As a result, SPDC's flaring fell in 2012 by around 25% from the previous year, while production fell by 8%.

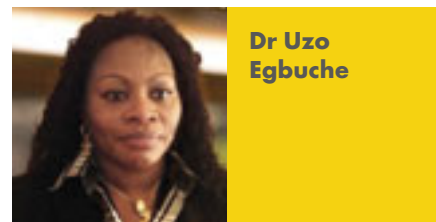
SPDC's flaring intensity – hydrocarbons flared per tonne of production – fell by around 20% in 2012 compared to the previous year, to the lowest level SPDC has recorded. In 2012, SPDC announced planned additional investments of around \$4 billion on projects to develop new oil and gas fields that will include gas-gathering facilities. These facilities will also help reduce flaring further by processing gas from other SPDC fields that is currently flared. Once these projects are completed, SPDC's flaring intensity is expected to be below the current global industry average.

The volume of operational spills onshore from SPDC facilities improved again in 2012, falling to 0.2 thousand tonnes, a drop of

over 50% from the previous year. The number of operational spills also improved, falling to 36 in 2012, a decrease of over 40%. There were 137 spills caused by sabotage and theft in the area immediately surrounding SPDC pipelines and other facilities in 2012, totalling 3.3 thousand tonnes. Operational spills accounted for around 5% of the total volume spilled from SPDC facilities in 2012. Of 316 sites in need of remediation at the start of 2012, SPDC had cleaned almost 80% by the end of the year.

SPDC's goal is to have no operational spills. It continues to focus on reducing spills further and responding to them more effectively. In the past three years, SPDC has replaced almost 500 km of pipeline, and work continues to replace further pipelines. In 2012, SPDC began working with Bureau Veritas, an international verification organisation that is contracted to independently review SPDC oil-spill management practices. At SPDC's invitation, the International Union for Conservation of Nature (IUCN) also set up an independent scientific panel to advise the company on its spill clean-up and remediation practices, and to recommend possible improvements.

SPDC continued its drive to help more Nigerian companies play a key role in its supply chain – boosting the economic impact of its business operations at national, local and community levels. Thanks to these efforts, SCC Nigeria Ltd manufactured the country's



**Dr Uzo
Egbuche**

Chair of the IUCN Independent Advisory Panel on Remediation and Rehabilitation of Biodiversity and Habitats of Oil Spill Sites, Niger Delta, Nigeria

“ In interacting with SPDC, I have observed a keen desire to see change. However, there are challenges. The key to success is strengthening the oil-spill remediation strategy so that it will ensure the affected sites are not only cleaned up and clean drinking water sources restored, but that biodiversity – such as fish, crabs, and shrimp on which communities depend and the mangroves where these species breed – thrives again. The IUCN-Niger Delta Panel will endeavour to provide practical recommendations that will improve this situation. The Panel hopes that SPDC will support these recommendations and make the necessary changes that will have a positive impact in the field. ”

first carbon steel pipes under a \$37 million contract with SPDC for use in construction of the Trans Niger Pipeline. SPDC helped train contractor staff and build their skills to deliver the pipes. Building Nigeria's domestic capacity to produce carbon steel pipes helps reduce the need to import such equipment from abroad. Shell companies in Nigeria are also supporting the Nigerian Institute of Welding to establish a testing centre in Benin, Edo State, with the aim of training welders needed by the industry.

A key obstacle blocking growth for Nigerian companies is lack of access to capital. In September 2012, SPDC announced the launch of a \$27 million trade loan-guarantee facility with some of the country's leading banks. This gives companies with SPDC contracts immediate and affordable access to credit to enable them to start work. SPDC's community-led social investment activities also grew in strength during

the year. The Global Memorandum of Understanding (GMOU) model enables communities to manage funds provided by SPDC and its joint-venture partners, and implement the projects they themselves decide upon. A number of community development boards set up under the GMOU scheme have achieved independent foundation status, enabling them to obtain funds from third parties. This reinforces the GMOU approach, which seeks to build the capacity of communities to take charge of their own development.

UN Environment Programme

In 2012, the Nigerian government set up the Hydrocarbon Pollution Restoration Project (HYPREP) to lead and co-ordinate the activities needed to implement the recommendations of a United Nations Environment Programme (UNEP) report on oil contamination in Ogoniland. This is an area of the Niger Delta from which SPDC

withdrew in 1993 following many years of attacks on staff and facilities. The setting up of HYPREP is an essential first step, which SPDC has welcomed and pledged to support. While awaiting government leadership on the UNEP report, in 2012 SPDC undertook a range of activities related to the report in Ogoniland, where it was able to do so. These included helping to fund the provision of emergency water supplies and installing permanent water facilities in one affected area, launching a programme across Ogoniland that delivered primary health-care services to more than 50,000 people, and cleaning up a number of sites where SPDC was granted access. But as the UNEP report described, before clean-up activities can be effective, it is crucial to put an end to the widespread theft and illegal refining of crude oil which continues to cause environmental damage in Ogoniland and the wider Niger Delta (see letter, page 22).

SHELL FOUNDATION

Shell Foundation is an independent charity that applies business thinking to tackle global development challenges. It focuses on job creation by small enterprises, making supply chains more sustainable, enabling access to energy services and products, and improving urban design and transport systems.

Many major cities in developing countries have deprived neighbourhoods on their outskirts with no access to public transport, and central districts brought to a halt by traffic gridlock. In 2002, Shell Foundation and the World Resources Institute co-founded EMBARQ, a global network of transport specialists that help cities address such challenges.

EMBARQ has worked with 58 cities on a range of solutions including creating bus rapid transit systems, cycling routes, improved auto-rickshaw services and better urban planning, benefiting nearly 4 million people each day in countries including Brazil, India, Mexico, Peru and Turkey.

Access to energy

Around 1.3 billion people lack access to reliable, affordable energy – a critical requirement for improving health, education and livelihoods. In 2008, Shell Foundation formed a partnership with Husk Power Systems (HPS), a small business in Bihar, India, that generates affordable electricity by converting rice husks – a plentiful agricultural waste product in rural villages – to gas for power. HPS now runs 90 power plants that provide around 150,000 people with electricity, many for the first time. HPS has secured funding to expand in Asia and Africa.

Shell Foundation also supported a collaboration between two of its partners, M-Kopa and D.light Design, to launch their first product in 2012 – a solar lighting system which low-income consumers can pay for in instalments using their mobile phones. Around 20,000 people in Nairobi, Kenya, have benefited from using this system.

Shell Foundation was set up in 2000 with Shell providing a \$250 million endowment and further contributions of \$176 million over time.

www.shellfoundation.org

CLEANER COOKSTOVES

Prolonged exposure to smoke from cooking with open fires leads to around 2 million deaths a year worldwide. Shell is providing \$6 million to the Global Alliance for Clean Cookstoves, a public-private partnership led by the United Nations Foundation, to help achieve the goal of providing clean cookstoves to 100 million homes by 2020. These stoves burn fuel more efficiently, reducing cooking time and lowering harmful emissions.

Shell is providing business expertise, including a secondee, to help develop global standards and make sure that customers can obtain good-quality cookstoves, approved and tested in each local market. We work to encourage more involvement in the campaign from corporate and public organisations, and raise awareness of the risks of using inefficient cookstoves. Our support builds on the work of Shell Foundation, which has been working to build an international market for affordable clean cookstoves since 2002. This work has benefited 4 million people and created a global business with long-term partner Envirofit International to supply efficient biomass-burning stoves to homes across Asia, Africa and Latin America.

IRAQ

A rejuvenated energy industry continues to help Iraq rebuild. The country is now the world's third-largest oil exporter, according to the International Energy Agency. But huge challenges remain, including a need for investment to improve ageing infrastructure in the oil and gas industry, which accounts for more than 90% of government revenues. The lack of reliable power for homes and businesses also hinders economic progress.

The Shell-operated Majnoon project is developing one of the largest oil fields in the world, estimated by the Iraqi government to hold around 38 billion barrels of oil. Shell has a 45% interest, with partners Petronas holding 30% and the Iraqi state, through the Missan Oil Company, holding 25%. The aim in the project's first phase is to reach production of 175,000 barrels of oil a day.

Developing local skills

In 2012, Shell continued to help create jobs, build skills, improve health programmes and offer educational opportunities. Unemployment, especially among the young, remains a major challenge for the country. By the end of the year, we had employed around 2,500 local people to work on the Shell-operated Majnoon project in southern Iraq. Shell has also started courses for well engineers and built a centre for training in technical and other skills.

Many people are too poor or are otherwise unable to travel to hospitals for medical care. With the AMAR International Charitable Foundation and the Basrah Health Directorate, Shell set up a programme in 2012 to provide health

checks and medicines, using three mobile clinics that regularly travel to the poorest communities.

Lack of education reduces job opportunities for local people. In 2012, we launched a literacy campaign to help women learn to read and write. This programme has helped some of the most vulnerable people in the Majnoon communities gain basic skills that can lead to future opportunities. We also continued to focus on helping to improve road safety in Iraq (see box).

In the field

After a programme at Majnoon to clear unexploded ordnance left from years of conflict, we built new infrastructure and improved existing equipment. In September 2012, we shut down production to allow work to upgrade other facilities, which is expected to last until mid-2013.

The amount of flaring of natural gas produced with oil at Majnoon fell in 2012, as a result of this shut-down, to around 0.2 million tonnes of CO₂ equivalent. Shell and our partners are working on a long-term approach to capturing the gas flared during operations for use in power generation.

In the south of Iraq, a total of some 700 million standard cubic feet of natural gas produced with oil is flared every day, amounting to emissions of around 20 million tonnes of CO₂ equivalent a year. We are a partner in the Basrah Gas Company (Shell interest 44%), which is capturing natural gas produced with oil at other fields for use in generating electricity for the national grid. South Gas Company (51%) and Mitsubishi (5%) are our partners.

↓ Mobile clinics provide health checks and medicines in Iraq.



SAFETY ON THE ROAD

Our staff and contractors drove around 1.1 billion km in 2012 to deliver products and run our operations, equivalent to 75 times around the world every day. Many of these journeys took place in countries with some of the world's most hazardous roads. We work to improve the safety of our drivers and to help build more awareness of road safety in countries where we operate. We enforce our global road safety standards, minimise journeys, and hold training and awareness programmes. In 2012, the number of road safety incidents involving fatality, injury or a vehicle rolling over was down by more than 30% on the year before.

Our Life-Saving Rules include key steps to improve road safety: drivers must follow an agreed journey plan, wear seat belts, not use mobile phones and stay within speed limits.

In Iraq, road traffic accidents are a leading cause of fatalities. Drivers working on the Shell-operated Majnoon project have been trained in techniques to stay safe. These include checking whether cars are roadworthy, planning journeys properly, and driving defensively to avoid danger, for example by staying a safe distance from other vehicles. Around 1,300 local drivers had taken this training by the end of 2012.

We have been installing in-vehicle monitoring systems in our trucks since 2005. These systems record information about a driver's behaviour including speeding, harsh braking and acceleration, which is then used to improve safe driving skills. Our global training includes defensive driving and how to secure loads, avoid tiredness and prevent vehicles rolling over.

To help reduce the number of road incidents globally we work with business, governments and partnerships to support community programmes. We also work with international agencies and are a sponsor of the UN Decade of Action for Road Safety. We chair and partly fund the Global Road Safety Initiative, a long-term programme to improve road safety in Brazil, China and countries in south-east Asia.

OIL SANDS

Canada's oil sands can provide an important source of energy in the decades ahead, but they must be developed responsibly. At over 170 billion barrels of crude oil, they are one of the most significant energy resources remaining.

Oil sands consist of bitumen – a heavy oil – mixed with sand, water and clay. Some of the oil sands lie close to the surface, where they can be mined. Conventional wells are used to produce deeper-lying resources, often with steam injected into the reservoir to ease the flow of bitumen.

The Athabasca Oil Sands Project (AOSP, Shell interest 60%) uses giant trucks and mechanical shovels to extract the oil sands mixture at its Muskeg River and Jackpine mines. Once separated, the bitumen is diluted with solvent for piping to the Scotford Upgrader, where it is converted into synthetic crude oil for refining into products.

In 2012, AOSP produced around 212,000 barrels of oil equivalent (boe) a day. Production from deeper-lying, or in situ, oil sands operations was around 20,000 boe a day (Shell share). Production from oil sands accounted for 4.4% of Shell's global oil and gas production in 2012.

Some opposition exists to the development of oil sands. For these resources to play an acceptable role in the energy mix, the industry needs to continue to reduce its environmental impact. With other companies, we are working on ways to improve the management of carbon dioxide (CO₂) emissions, water and land.

We continue to work with local aboriginal communities to reduce the impact of oil sands development on traditional land use and culture. We incorporate their traditional knowledge into our management of land and reclamation. We also help develop local skills and enterprises among these communities. By the end of 2012, AOSP had invested over C\$1.25 billion since 2005 with more than 70 aboriginal businesses and contractors that provide a broad range of products and services to our operations.

Managing CO₂ emissions

Fuels produced from oil sands typically emit 4 to 18% more CO₂ than those from the average crude oil consumed in the USA, from production through to use as



↑ The Scotford refinery in Alberta, Canada, processes oil produced from bitumen.

a transport fuel, according to Cambridge Energy Research Associates (CERA). Shell's operations are at the lower end of that range as a result of steps to reduce emissions already in place, such as methods that use less energy to process the oil sands mix.

In 2012, we decided to go ahead with our Quest carbon capture and storage (CCS) project, the first in an oil sands development. From around 2015, Quest is expected to capture and safely store deep underground over 1 million tonnes of CO₂ a year from the Scotford Upgrader. The governments of Alberta and Canada are providing C\$865 million in funding for Quest over its construction period and first 10 years of operation. By demonstrating CCS on a large scale, Quest could help accelerate its use as a way to tackle global CO₂ emissions that contribute to climate change (page 10).

Water use and recycling

Shell uses one to two barrels of fresh water from the Athabasca River, supplemented by recycled water, for every barrel of bitumen extracted from our mining operations. No water from our mining and extraction operations is returned to the river. Most of the waste water from bitumen processing is treated and reused in operations, and we return effluent water from steam production to the river after testing to meet environmental standards. While Shell has permits to withdraw 0.6% of the Athabasca River's average annual flow, we used less than 0.07 % in 2012. Shell also monitors groundwater by checking that water samples meet regulatory requirements.

Tailings

Oil sands mining generates tailings, a mixture of water, sand, clay and residual hydrocarbons that remain after the bitumen is extracted. They contain concentrated naturally occurring chemicals that are toxic. We store them either in tailings ponds or in mined-out pits. Once the sand and clay have settled, the water is recycled, reducing the need for river water. Around 82% of the water used in Shell's operations in 2012 was recycled from the tailings ponds at our two mines. Tailings ponds at the Muskeg River and Jackpine mines covered 24 km² at the end of 2012.

Shell has invested over C\$200 million since 2005 in developing technologies to speed up the tailings drying process, and shares this research with other companies.

Land and reclamation

Reclamation involves refilling the mined-out areas with dried tailings and restoring the contours of disturbed land, then placing topsoil and planting suitable vegetation. We aim to reclaim land used in our oil sands mining to a condition that matches its state before mining, as required by the Alberta government. The land will be able to support local plants and animals, although it will not be the same as the previous landscape. Reclamation work is under way and will proceed in stages as we complete mining operations.

FUELS AND PRODUCTS

Cars allow many people to go about their daily lives. Trucks, ships and aircraft help economies to thrive. But as the number of vehicles on the roads rises and global trade increases, the need to find ways to reduce the environmental impact of transport becomes more critical. Shell works to develop more efficient fuels and lubricants that can help move the world's growing number of people and goods by road, sea and air.

Fuel efficiency for transport

Shell supplies fuel to millions of drivers every day. Shell FuelSave petrol and diesel are our most efficient fuels to date. They are designed to help motorists save fuel by improving combustion in the engine and reducing energy loss. In 2012, these fuels became available in three more countries: Bulgaria, Mauritius and Poland. This brought to 18 the number of countries where Shell FuelSave was available at the end of the year.

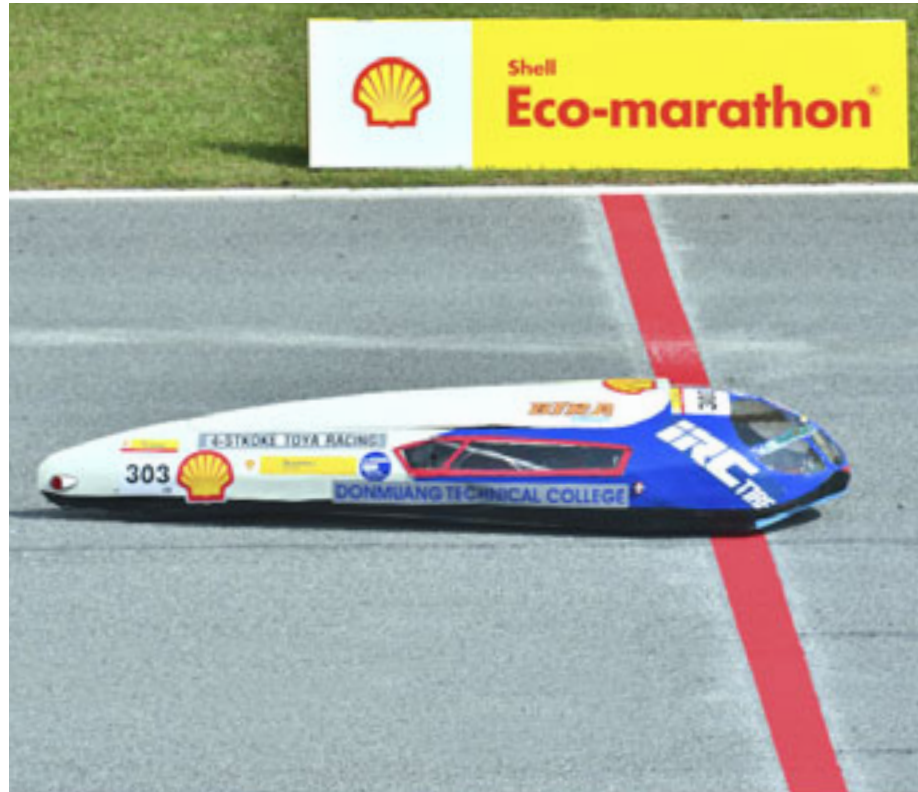
Shell works directly with consumers to help them save energy. From 2009 to 2011, we trained more than 200,000 people across the globe on fuel efficiency through face-to-face training, driving simulators, online tutorials and Shell FuelSave driving challenges.

In 2012, we started a programme to help an additional million people worldwide learn how to save fuel and reduce their fuel costs. Through the Shell FuelSave Target One Million campaign, consumers can access a series of online mini-games designed to improve their skills in saving fuel, such as using gears more effectively, conserving the car's momentum and protecting the engine with the right motor oil. In 2012, around 250,000 drivers took part in Target One Million.

We also help road transport companies to save fuel. Shell FuelSave Partner is a fuel management system for fleet operators that electronically monitors fuel use. It recommends different speeds, routes and more efficient driving habits to optimise fuel economy.

More efficient lubricants

Shell develops advanced lubricants for cars and trucks that can improve the efficiency of engines and help save fuel. We invest in research and development, and employ more than 200 scientists and engineers



↑ Students compete to go further using less energy at the Shell Eco-marathon in Malaysia.

SHELL ECO-MARATHON

The Shell Eco-marathon challenges student teams from around the world to design, build and test innovative, ultra-energy efficient vehicles. With annual events in the Americas, Europe and Asia, the winners are the teams that go the farthest using the least amount of energy. The events spark debate about the future of energy and road transport, and inspire young engineers to push the boundaries of fuel efficiency.

Teams set out to show how far they can travel on the equivalent of one litre of fuel or one kilowatt-hour of energy. The competition is split into two classes. The Prototype class focuses on maximum efficiency, with passenger comfort taking a back seat. The UrbanConcept class encourages more practical designs. The cars compete in one of seven fuel categories: petrol, diesel, biofuels, fuel made from natural gas (GTL), hydrogen, solar or electricity. Off-track awards are given for other achievements including safety, teamwork, design, and technical innovation.

In 2012, Shell Eco-marathon events were held in Rotterdam in the Netherlands, Houston in the USA and Kuala Lumpur in Malaysia. More than 40,000 people attended the Rotterdam event, which included a range of activities including public debates on the future of energy. Many records were broken in 2012. For example, students from Thailand set a new record for the event in Asia of 2,903 km a litre, the equivalent of driving from Kuala Lumpur to Hanoi on just one litre of fuel.

who work to improve our lubricants. We also work with partners, including major engine manufacturers. Shell Helix lubricant, for example, was developed through our technical partnership with Ferrari. The Shell Rimula range of heavy-duty engine oils includes products that can help truck, bus and coach drivers improve their fuel economy while protecting their engines.

For the shipping industry, Shell launched a new lubricant in 2012 called Shell Alexia S4 that helps marine vessels reduce fuel consumption. Shell Alexia S4 has been tested successfully across a wide range of operating conditions, and has shown that it works effectively at a range of speeds.

BIOFUELS

We produce low-carbon biofuel, distribute biofuels worldwide and continue to develop advanced biofuels for the future.

Road vehicles today account for around 17% of global carbon dioxide (CO₂) emissions from fossil fuels. The number of cars on the road is expected to rise to 2 billion by 2050, with the amount of freight carried by trucks doubling. With this expected rapid growth in vehicles, Shell believes low-carbon biofuels, coupled with gains in engine efficiency, are one of the quickest and most practical ways to reduce CO₂ emissions from road transport in the next 20 years.

Today, biofuels make up 3% of the global road transport fuel mix. This figure could rise to over 10% by 2050, according to our scenarios.

Shell is one of the world's largest distributors of biofuels. In 2012, we used around 7.7 billion litres in our petrol and diesel blends worldwide. Raízen (Shell interest 50%) produces low-carbon biofuel – ethanol made from sugar cane in Brazil. This biofuel can reduce CO₂ emissions by around 70% compared to petrol, from cultivation of the sugar cane to using the ethanol as fuel. With an annual production capacity of around 2.2 billion litres, Raízen is one of the world's largest ethanol producers.

Meeting sustainability standards

The environmental benefits of biofuels vary. Overall CO₂ emissions can differ widely, depending on the raw materials used, as well as the production and distribution methods. Other challenges that need to be managed are competition for land, impact on biodiversity and local communities, and use of water.

Shell has been working to improve sustainability standards in our biofuels supply chain for many years. Our internal systems and purchasing policy help us to assess potential sustainability risks throughout the supply chain. This has allowed us to implement controls and monitor progress. Since 2007, we have introduced environmental and social sustainability clauses into new and renewed contracts for the biofuels that we buy for blending with our petrol and diesel. These clauses are designed to make sure that the biofuels we buy are not knowingly linked to the violation of human rights, nor produced

from raw materials cultivated in areas of rich biodiversity. By the end of 2012, more than 97% of the volume of biofuels we purchased were covered by these clauses.

We also aim to increase the percentage of certified volumes of biofuels we buy that meet standards developed by the Roundtable for Sustainable Palm Oil, the Roundtable for Responsible Soy, Bonsucro (for sugar-cane ethanol) and the Roundtable for Sustainable Biofuels. These standards include comprehensive requirements to manage environmental and social impacts.

Raízen

Our responsible approach to the sustainability challenges of biofuels can be seen through our work with Raízen in Brazil. Raízen's annual production capacity is enough to meet around 9% of Brazil's current ethanol demand. By 2030, biofuels are expected to make up over 30% of Brazil's transport fuel mix.

The process Raízen uses to convert sugar cane into ethanol is highly efficient in turning biomass into fuel. Brazilian sugar cane yields 7,000 litres of ethanol per hectare of cane, compared to 3,800 litres

per hectare of corn in the USA and 2,500 litres per hectare of wheat in Europe.

Raízen is continuously working to make its production processes more efficient and sustainable. It recycles by-products from cane crushing and ethanol distillation for use as natural fertilisers. It also uses waste sugar-cane fibres as fuel to generate electricity for the mills and delivers a surplus to the national power grid. Raízen works to continually improve crop yields so that more cane can be produced from the same area of land.

Sugar cane needs little artificial irrigation in Brazil because of high annual rainfall. Around 90% of the water used to convert sugar cane into ethanol in Raízen's 24 mills is recycled. In advance of requirements of São Paulo state, where most of the company's mills are located, Raízen is phasing out most of its manual harvesting. By the end of 2012, 90% of Raízen's harvesting was mechanised. To help lessen the impact on local cane cutters, Raízen is helping them acquire new roles, skills and trades. These include jobs to operate and maintain the sowing and harvesting machines, and training to become electricians or mechanics.

FUELS FOR THE FUTURE

Shell was one of the first companies to invest in developing advanced biofuels, using crop waste or inedible plants and new conversion processes. These can potentially produce more efficient, low-carbon biofuels for blending at higher concentrations with petrol and diesel. Our biofuels research teams work with leading biotechnology companies and academic institutions.

In 2012, we completed a pilot plant at our Westhollow Technology Center in Houston, USA, to produce biofuels that do not need to be blended with petrol or diesel. The plant uses a process that converts plant sugars and inedible biomass into a range of fuels. Biofuels produced by this process have the same performance properties as conventional fuels. They can be used in existing supply chains, which eliminates the need for blending and storage infrastructure.

Whether an advanced biofuel achieves commercial scale depends on overcoming a range of technical and economic challenges. In 2012, for example, we decided not to pursue a project with Iogen Energy (Shell interest 50%) to build a large-scale cellulosic ethanol facility in Canada. This has allowed us to focus our approach on processes and technologies that are more likely to achieve commercial scale.

Hydrogen for road transport continues to face significant challenges to achieving commercial scale. Shell operates hydrogen filling stations in China, Germany, Japan and the USA. These stations allow us to evaluate a range of different technologies.

Electric vehicles will become increasingly common in the coming years. The CO₂ savings of electric vehicles and plug-in hybrids depend on how the electricity is produced and delivered – for example, whether it comes from a CO₂-intensive, coal-fired plant or a cleaner-burning natural gas plant.

Bonsucro has developed the world's first certification standard for the sustainable production of biofuels from sugar cane. Bonsucro separately certifies the mills where the sugar cane is processed, including the supply chain, and the ethanol produced. It requires companies to fulfil criteria such as legal compliance, active management of biodiversity and ecosystems, compliance with human rights, sustainable production and processing, and continuous improvement.

In 2011, Raízen was the first company to achieve certification of a mill from Bonsucro. By the end of 2012, seven of Raízen's mills had been certified. As a result, 23% of Raízen's ethanol is now produced in line with the Bonsucro standard. To achieve certification, a mill has to comply with a large number of regulations from a range of government agencies and establish an awareness of Bonsucro requirements throughout its operation.

Raízen supports the work of the Brazilian government to implement effective land-use policies and to address concerns over sugar-cane production displacing other crops to areas with rich biodiversity. Raízen is also working with the International Union for Conservation of Nature to assess how achieving Bonsucro certification helps to protect local biodiversity. Land used to grow sugar cane for Raízen lies hundreds of kilometres from the Amazon rainforest.

Raízen also supports government efforts to protect the land rights of indigenous peoples in Brazil. Following extensive consultations to understand the complexities of a conflict over land involving one of its suppliers and the Guaraní indigenous people, Raízen signed an agreement in 2012 with FUNAI, the National Indian Foundation, confirming it would not buy sugar cane grown on the land in question. Raízen has also pledged to invest in social programmes that support and protect the welfare of communities. This approach will involve regular meetings to understand and address community concerns. It could also include minimising the impact of sugar plantations on communities by, for example, restoring vegetation and areas communities want to conserve.



↑ Raízen produces low-carbon biofuel from sugar cane in Brazil.

CERTIFYING THE SUPPLY CHAIN

Raízen's mills are located in São Paulo, Mato Grosso do Sul and Goiás states, Brazil. More than 4,000 local farmers supply the mills with sugar cane. Raízen is working with the international foundation Solidaridad Network to help these farmers achieve the sustainability standards needed for Bonsucro certification. In 2012, Raízen started a pilot project with 256 suppliers to identify and address the challenges they face.

These suppliers include landowners and tenants, with farms ranging in size from less than 20 hectares to more than 1,000 hectares. Some perform all activities – planting, growing, cutting, loading and transporting – while others outsource some of these tasks. One of the aims of certification is to ensure that all farmers in the Raízen supply chain earn a fair living.

Each farmer uses a self-assessment tool and performance analysis management system developed by Raízen and Solidaridad. Farmers complete a detailed questionnaire about their production activities in more than 30 areas, including working conditions and forest protection. The results are entered into the management system, which analyses them and generates recommendations where improvements need to be made.

"This is a pioneering project aimed at delivering sustainability improvements on the ground in a practical, step-by-step way," said Pieter Sijbrandij, Solidaridad's manager for Brazil. "We see potential for other companies to adopt a similar approach if they want to improve the sustainability of their supply chain." In 2013, Raízen will start introducing this programme to all of its suppliers.



OUR PERFORMANCE

In 2012, we continued to operate in ways that balance economic, environmental and social considerations in a responsible way. We maintained our strong investment in projects that will deliver energy resources for decades to come. We worked to maintain improvements in our safety record. We also continued to work to reduce our impact on the environment, to respond transparently to the views of our neighbours and to generate jobs and business opportunities for local economies.

ECONOMIC

Our income in 2012 was around \$27 billion and we announced dividends of more than \$11 billion for our shareholders. Our net capital investment of around \$30 billion will help to build and sustain our business for the future. We also spent \$1.3 billion on our research and development programme.

Shell generated \$46 billion of cash flow from our operating activities in 2012. This cash is used to fund our capital investment and research and development programme. It also funds our dividend payments to shareholders. Our average reserve replacement ratio, which represents our ability to grow and maintain production, was around 125% over the last five years.

In 2012, the Pearl GTL (gas-to-liquids) plant (Shell interest 100%) in Qatar completed its ramp-up to full production. Pearl can produce 140,000 barrels of oil equivalent (boe) a day of synthetic oil products and 120,000 boe a day of natural gas liquids and ethane for industrial use.

With joint-venture partners we started production at the Caesar Tonga deep-water project in the USA (Shell interest 22.5%) and the Harweel enhanced oil recovery project in Oman (Shell interest 34%). Also with partners, we started producing oil from our deep-water Gumusut-Kakap project (Shell interest 33%) in Malaysia. The Port Arthur refinery expansion project in Texas, USA, came on-stream and will add a

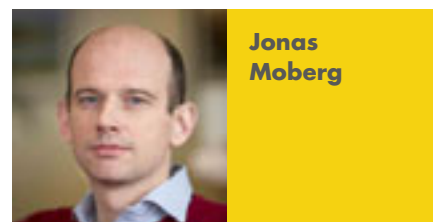
capacity of around 320,000 barrels a day (Shell interest 50%). The Pluto LNG plant in Australia (Shell indirect interest 21%) also started production.

We took the final investment decision in 2012 on two natural gas projects in Nigeria that will help to reduce flaring. We also decided to go ahead with the Quest CCS project in Canada that will reduce CO₂ emissions from our oil sands operations. Other projects we decided to move forward with were the Tempa Rossa project (Shell interest 25%) in Italy and the Malakai project (Shell interest 35%) in the deep waters off Malaysia, which is expected to produce around 60,000 boe a day at peak production.

Shell's oil and gas production in 2012 was 3.3 million boe a day, up slightly from 2011. We increased our sales of liquefied natural gas (LNG) by 7% to around 20 million tonnes. Exploration and commercial activities continued to add potential resources, underpinning Shell's long-term growth plan.

Shell scorecard

In 2012, sustainable development continued to account for 20% of the company scorecard, which helps determine the annual bonus levels for all our employees, including members of the Shell Executive Committee (EC). For the EC in 2012, sustainable development measures were split evenly between Shell's safety performance and targeted measures covering operational spills, energy efficiency and use of fresh water.



Jonas Moberg

Head of Secretariat, Extractive Industries Transparency Initiative, Oslo, Norway

Shell was one of the very first companies to support the EITI when it began as an idea 10 years ago. Today, Shell is an active participant in the EITI countries where it operates. Iraq is an important case. With one-tenth of the proven oil reserves in the world and a history of conflict and mismanagement, governance of the extractives sector has been as challenging there as anywhere. It is particularly heartening that in December 2012, Iraq became compliant with the EITI standard. Shell has played an important role as one of three companies serving on the EITI multi-stakeholder council overseeing the process in the country. I hope that Shell will continue to play a role to embed, deepen and widen that process to ensure that Iraq's complex governance issues in the sector are addressed in a constructive environment.

REVENUE TRANSPARENCY

Our operations generate revenue through taxes and royalties for governments around the world. These funds can help support a country's economy and contribute to local development.

We believe greater transparency in payments to governments, and how they are used, is important for building trust between businesses such as ours and the communities we work alongside.

We work openly with governments on matters of taxes and royalties. We are a founder and board member of the Extractive Industries Transparency Initiative (EITI). This initiative requires both governments and companies to disclose revenues received from oil and mineral activities.

In 2012, Shell for the first time published details of the payments we make to governments of some of the main countries where we operate. We took this step to reinforce efforts to increase

transparency on revenues to governments ahead of any mandatory requirements taking effect.

To help improve accountability, we support a mandatory global reporting rule for extractive industries, in line with EITI goals to achieve greater transparency (see opinion). We are engaging actively with others to find a workable and common global standard in relation to current US and planned EU regulations.

In 2012, Shell paid globally \$21.0 billion in corporate taxes, and \$3.6 billion in royalties. We collected \$85.1 billion in excise duties and sales taxes on our fuel and other products on behalf of governments.

For a breakdown of payments made to governments by country, see link below:

www.shell.com/payments

ENVIRONMENTAL

Greenhouse gas emissions

The direct greenhouse gas (GHG) emissions from facilities we operate were 72 million tonnes on a CO₂-equivalent basis in 2012, a decrease from 74 million tonnes of CO₂ equivalent in 2011. The main reasons for this drop were reduced flaring in Nigeria and divestments in our Downstream business. These were partly offset by the ramp-up of production at the Pearl GTL plant in Qatar.

Around 55% of our GHG emissions came from the refineries and chemical plants in our Downstream business. The production of oil and gas in our Upstream business accounted for over 40% of our GHG emissions, and our shipping activities for less than 5%. We continue to work on improving operational performance and energy efficiency to reduce GHG emissions.

The indirect GHG emissions from the energy we purchased (electricity, heat and steam) were 9 million tonnes on a CO₂-equivalent basis in 2012, a decrease from 2011. We estimate that the CO₂ emissions from the use of our refinery and natural gas products were around 580 million tonnes in 2012. Further information on GHG emissions is available on our corporate website.

Flaring

The flaring of natural gas in our Upstream business decreased in 2012 to 7.7 million tonnes of CO₂ equivalent, from 10.0 million tonnes of CO₂ equivalent in 2011. We made progress in reducing flaring in Nigeria in 2012. Flaring emissions were down by around 25% in Nigeria from the previous year, to 4.6 million tonnes of CO₂ equivalent. This was mainly because more investments in gas-gathering equipment were brought on-stream and tighter flaring controls were applied. Flaring also dropped due to reduced production at the Majnoon field in Iraq to allow the upgrade of some facilities, and the completion of start-up of the Pearl GTL plant in Qatar.

Overall, flaring made up around 10% of the total direct GHG emissions in 2012. Nigeria accounted for around 65% of this flaring in 2012, with the remainder mainly from the Pearl GTL plant in Qatar, Majnoon in Iraq and operations in Malaysia. In 2012, we further reduced the flaring intensity – hydrocarbons flared per tonne of production – to the lowest level we have recorded for our Upstream business.

Operational flaring occurs for safety reasons, or during the start-up of Upstream facilities. We aim to minimise this operational flaring. Continuous flaring takes place due to a lack of equipment to

capture the gas produced with oil. Most of the continuous flaring in 2012 took place in Nigeria.

We expect that flaring from the Majnoon field in Iraq will rise in future years as production increases and before equipment to gather the associated gas can be installed. When we acquire or become the operator of an existing facility that is already flaring or venting (releasing gas to the atmosphere), it takes time before these activities can be stopped.

Outside Nigeria and Iraq, the few facilities that continuously flare accounted for less than 1% of our total direct GHG emissions in 2012. Some of these facilities are at ageing oil fields where the associated gas pressure is too low to power the compressors used to gather the gas and avoid flaring. In 2012, the venting of hydrocarbons amounted to less than 1% of our total direct GHG emissions.

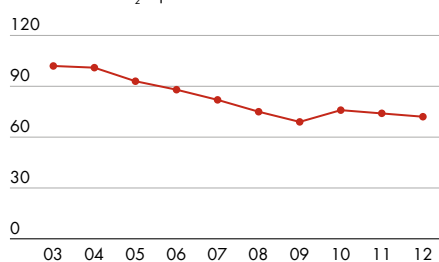
Our HSSE & SP Control Framework requires our new facilities to be designed so as not to flare or vent continuously.

Energy efficiency

One of the ways we can manage our direct GHG emissions is to work on improving the energy efficiency of the facilities we operate.

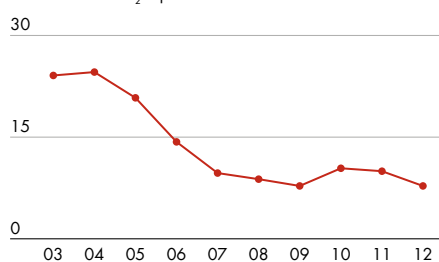
DIRECT GREENHOUSE GAS EMISSIONS

million tonnes CO₂ equivalent



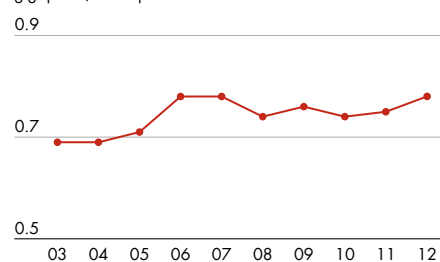
FLARING – UPSTREAM

million tonnes CO₂ equivalent



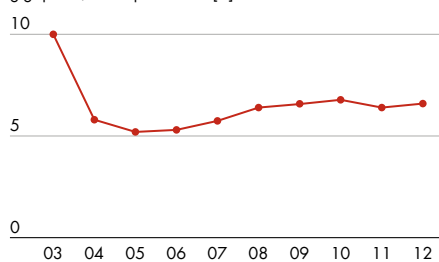
ENERGY INTENSITY – UPSTREAM (EXCL. OIL SANDS AND GTL)

gigajoules/tonne production



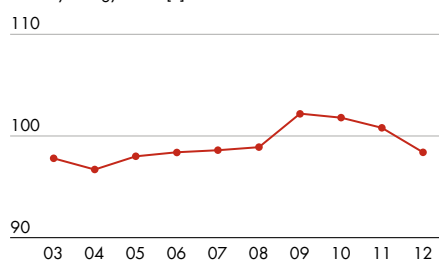
ENERGY INTENSITY – OIL SANDS

gigajoules/tonne production [A]



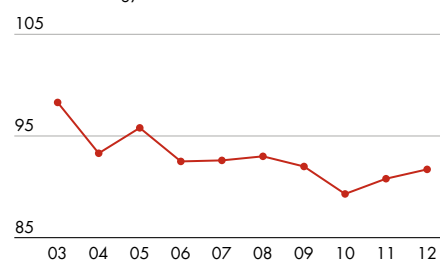
ENERGY INTENSITY – REFINERIES

Refinery Energy Index [B]



ENERGY INTENSITY – CHEMICAL PLANTS

Chemicals Energy Index



[A] Includes mining and upgrading operations

[B] Indexed to 2002, based on 2006 Solomon EII™ methodology

In 2012, the overall energy efficiency for the production of oil and gas in our Upstream business (excluding oil sands and GTL) worsened compared to 2011, with rising production of hydrocarbons that need more energy to access and increased drilling activity. All our major facilities have energy management plans in place to make the best use of those facilities, including the use of improved field management techniques. We expect that maintaining the energy efficiency levels of recent years will be more difficult in the future as existing fields age and production comes from more energy-intensive sources.

In our oil sands operations, energy intensity in 2012 worsened slightly compared to 2011, but was around the same level as in earlier years.

In 2012, the overall energy efficiency for the manufacture of oil products at our refineries improved compared to 2011, helped by continued progress with our CO₂ and energy management programme, as well as good reliability performance and increased use of refinery capacity.

The overall energy efficiency of our chemical plants worsened in 2012 compared to 2011, as some of our larger plants operated less efficiently.

Our refineries and chemical plants continue to implement the CO₂ and energy management programme (page 11) to improve their energy efficiency performance.

Spills

Shell has clear requirements and procedures to prevent operational spills, and multibillion-dollar programmes in place to maintain and improve our facilities and pipelines. However, spills still occur for reasons such as operational failure, accidents or unusual corrosion.

In 2012, our operational spills of oil and oil products amounted to 2.1 thousand tonnes, down from 6.0 thousand tonnes in 2011. This was the second-lowest level we have recorded. We continue to investigate and learn from all spills to improve our performance.

The number of operational oil spills also decreased in 2012 to 206, down from 211 in 2011. This was the second-lowest level we have recorded. We are working to extend the significant improvements made in previous years in the number of operational spills through our continued investment in improving the reliability and maintenance of our facilities.

In 2012, sabotage and theft in Nigeria remained a significant cause of spills,

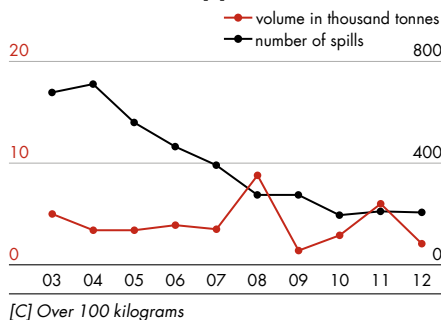
amounting to 3.3 thousand tonnes from 137 spills. This was an increase in both volume and numbers from 2011, as the scale of oil theft in Nigeria reached unprecedented levels. See pages 22 and 23 for more information on spills in Nigeria.

Water

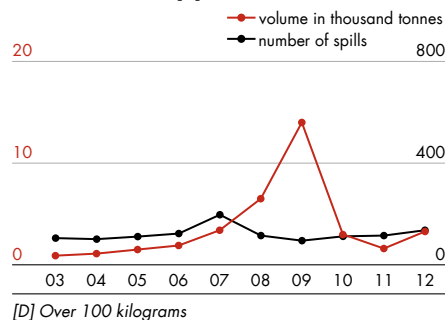
The way we manage our use of fresh water is especially important in areas of the world where the availability of water is constrained due to limited supplies or extensive use. We assess the availability of water where we operate, and design and run our facilities in ways that help reduce their water use.

In 2012, the amount of fresh water we used decreased to 203 million cubic metres, down from 209 million cubic metres in 2011, mainly due to less river water withdrawn for our oil sands operations. Our Downstream business accounted for around 75% of our fresh-water use for the manufacture of oil products and chemicals; our Upstream operations used around 25%. At our major facilities in water-scarce areas, we are developing water management plans that include how our operations will minimise water use and increase water recycling. We expect that our fresh-water use will change over time in line with our portfolio and our efforts to use water more efficiently.

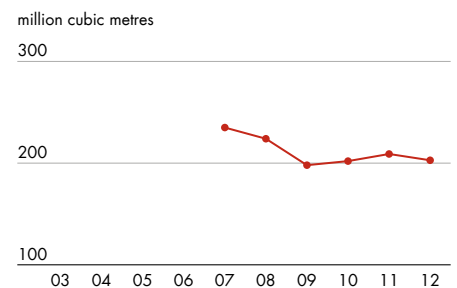
SPILLS – OPERATIONAL [C]



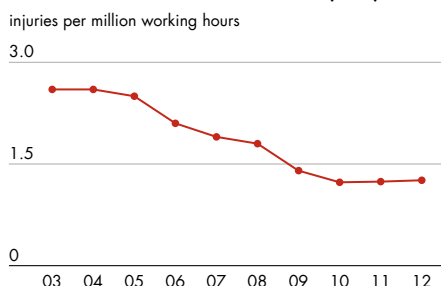
SPILLS – SABOTAGE [D]



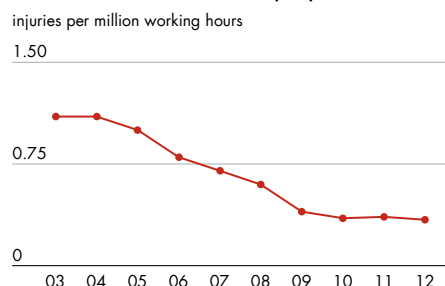
FRESH WATER WITHDRAWN



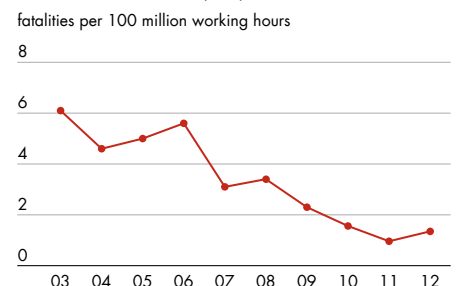
TOTAL RECORDABLE CASE FREQUENCY (TRCF)



LOST TIME INJURY FREQUENCY (LTIF)



FATAL ACCIDENT RATE (FAR)



SOCIAL

Personal safety

Following steady improvements in our safety performance in recent years, in 2012 we remained close to our lowest-ever number of injuries per million working hours, the total recordable case frequency (TRCF). We achieved our lowest-ever rate of injuries that led to time off work in 2012, the lost-time injury frequency (LTIF).

Sadly, however, eight people lost their lives while working for Shell in 2012. This was two more than in 2011. Three fatalities were industrial accidents during construction and operations, two were armed attacks in Nigeria, two were road transport incidents, and one was an occupational illness related to air travel. Our fatal accident rate (FAR) – the number of fatalities per 100 million hours worked – worsened in 2012 compared to 2011, when we achieved the lowest FAR that Shell has recorded.

Process safety

At Shell, we place great emphasis on process safety management. This means making sure our facilities are well designed, well operated and well maintained, so that they can run safely, without harm to people or the environment. We have rigorous controls in place and monitor indicators that focus on the strength of these controls to prevent incidents.

We follow industry standards for measuring process safety performance. In 2012, we recorded 91 Tier 1 process safety incidents (as defined in line with oil and gas industry guidelines) related to our operations, an improvement compared to 2011. We investigate and learn from these incidents in order to improve our performance.

Social performance

Social performance involves working with communities to share the benefits of our activities and to reduce the impact of our operations. It includes helping to build local economies through the creation of jobs and business opportunities. In 2012, we created new opportunities for communities and local companies in a number of countries where we operate, including Iraq and Nigeria.

We continued to implement our standards for social performance across the company in 2012. Each year we review the extent to which our operations, as well as our

contractors and suppliers, have processes in place to prevent violations of human rights – for example, the use of child or forced labour. We continued to strengthen our capability in social performance in 2012 by standardising processes and through more training. In 2012, we invested further in building the competency of our staff, training 272 more employees in our social performance requirements. We also worked towards implementing new measures of our social performance.

Social investment

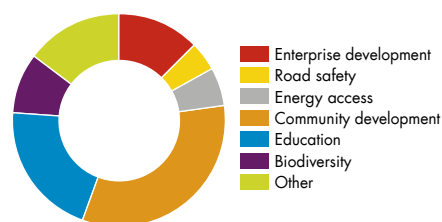
We aim to make our social investment projects beneficial to society in measurable ways and to be sustainable beyond Shell's involvement. In 2012, we spent around \$149 million on voluntary social investments worldwide, compared to \$125 million in 2011. This rise was mainly due to increased spending in Nigeria and countries in the Middle East and North Africa. We spent \$34 million on our three global strategic themes of enterprise development, road safety and energy access, and \$115 million on our locally tailored programmes that cover community development, education and biodiversity. We estimate that \$67 million of our spend in 2012, compared to \$45 million in 2011, was in countries that according to the UNDP Human Development Index 2010 have a gross domestic product of less than \$15,000 a year per person. Our figures do not include investments that are part of contractual agreements with host governments. We also provide significant support through voluntary work by Shell employees and donations of equipment.

Local procurement

Wherever possible, we buy goods and services from local businesses. In 2012, we spent over \$65 billion on contracting and procurement worldwide. Around half of this was spent in the USA, the UK, Canada, the Netherlands and Nigeria. We estimate around \$14 billion was spent in countries that, according to the UNDP Human Development Index 2010, have a gross domestic product of less than \$15,000 a year per person. In these countries, Shell companies spent over 90% of this \$14 billion with local companies. We check that our suppliers are complying with key sustainability criteria, including good working conditions. In 2012, we conducted 50 rigorous assessments of suppliers in Africa and the Middle East, 110 in the Americas, 240 in the Asia-Pacific region and 152 in Europe, to check their

VOLUNTARY SOCIAL INVESTMENT IN 2012

proportion of spend



compliance in areas such as human rights, labour practices and business integrity.

External voluntary codes

The Shell General Business Principles and Code of Conduct guide the business activities of Shell companies. But we also support a number of external voluntary codes. These include the UN Declaration on Human Rights, the UN Global Compact, the Organisation for Economic Co-operation and Development Guidelines for Multinational Enterprises, and the International Labour Organization Declaration on Fundamental Principles and Rights at Work.

Our people

The quality of our people is essential to our business strategy. In 2012, we recruited around 1,200 graduates and 3,500 experienced professionals. Most of these new employees came from technical disciplines. Our salaries reflect market conditions in the country where employees are based and the high level of skill and experience needed. We regularly review comparative remuneration for men and women across the company. We provide flexible working practices wherever necessary and possible. Our employees are encouraged to take part in social responsibility projects and employee interest groups.

Employee communication and involvement

Two-way dialogue between management and staff is embedded in our work practices. It takes place directly and, where appropriate, via staff councils or recognised trade unions. Staff have the opportunity to understand Shell's quarterly operational and financial results through various channels, including face-to-face gatherings with senior managers, a personal email from the Chief Executive Officer, webcasts and online publications. We have multiple channels in place for staff

to report, confidentially and anonymously, breaches of the Shell General Business Principles or our Code of Conduct, or other concerns. These include a global telephone helpline and a dedicated website.

Diversity and inclusion

We have a culture that embraces diversity and fosters an inclusive work environment with equal opportunities. We measure diversity and inclusion in part by the representation of women and local nationals in senior leadership positions. By the end of 2012, the proportion of women in senior leadership positions at Shell was 16.2%, down 0.4% from 2011 and up 0.9% from 2010. In 42% of countries where we operate, local nationals filled more than half the senior leadership

positions – up 8% from 2011, and up 6% from 2010. In 2012, more than 90% of our employees worldwide were local nationals.

Our annual Shell People Survey measures employees' views on a range of topics, including the inclusiveness of their workplace. In 2012, 69% felt positive about this, up 1% from 2011 and up 3% from 2010; 12% felt negatively about inclusion in the workplace, the same as 2011 and down 1% from 2010.

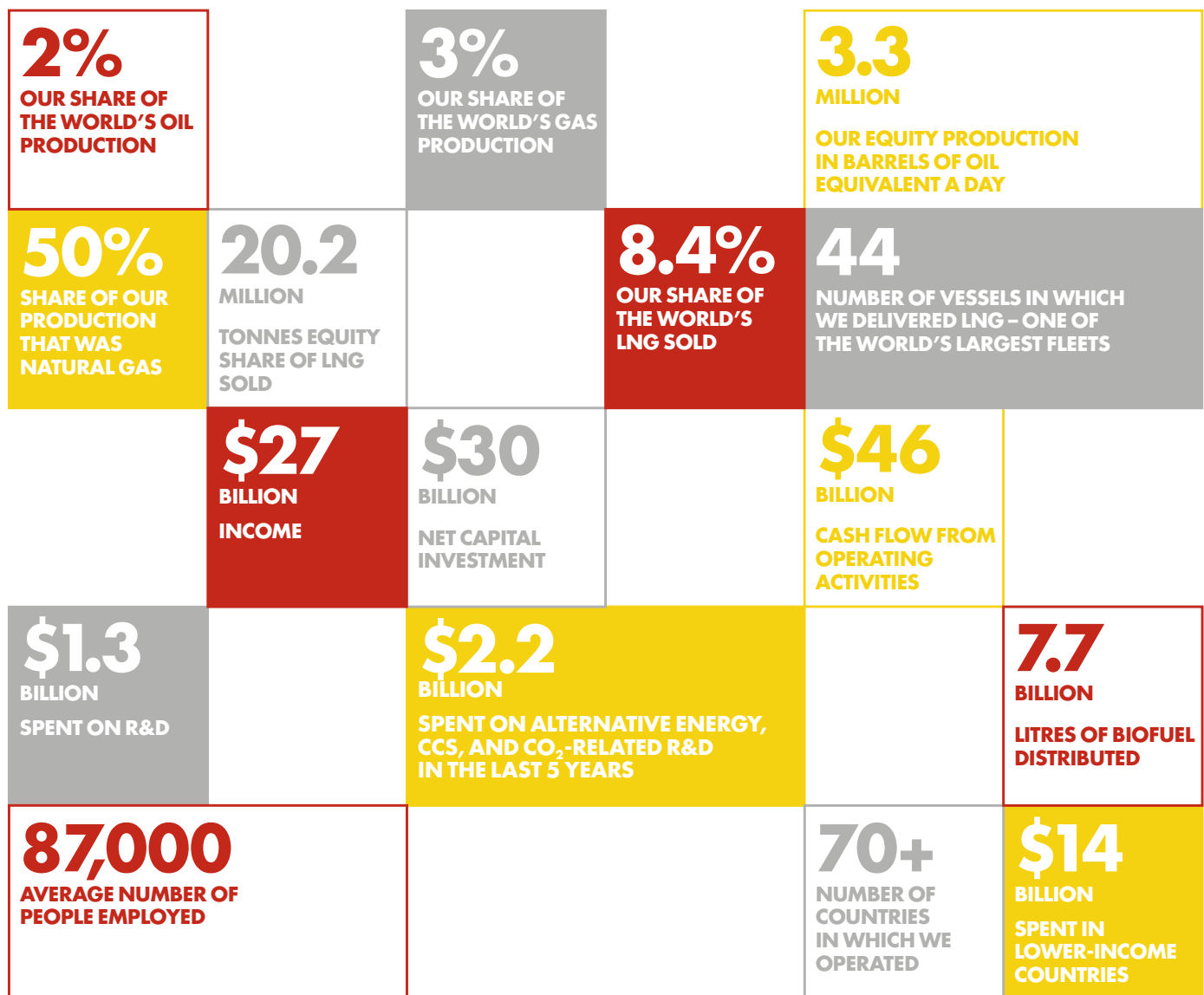
Training and development

We continue to invest in developing the skills of our employees and joint-venture staff. In 2012, we invested over \$280 million in training and development. Our focus is on building technical capability and safety-critical competencies and skills.

In 2012, we provided more than 750,000 training days for employees and some of our joint-venture partners. This included training more than 8,500 people in leadership skills. More than 150 senior project engineers completed our externally accredited Project Academy programme that helps to improve the delivery of our major energy projects.

Code of Conduct violations

Shell employees, and contractors working for Shell, must abide by our Code of Conduct. In 2012, 209 violations of the Code of Conduct were reported (226 in 2011; 205 in 2010). As a result, we dismissed or terminated the contracts of 93 employees and contractors (78 in 2011; 77 in 2010).



ENVIRONMENTAL AND SOCIAL DATA

ENVIRONMENTAL DATA	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003
Greenhouse gas emissions (GHGs)										
Direct total GHGs (million tonnes CO ₂ equivalent) [A]	72	74	76	69	75	82	88	93	101	102
Carbon dioxide (CO ₂) (million tonnes)	69	71	72	66	72	79	85	89	96	97
Methane (CH ₄) (thousand tonnes)	93	133	128	127	126	119	124	173	192	187
Nitrous oxide (N ₂ O) (thousand tonnes)	1	1	2	2	2	2	2	2	2	3
Hydrofluorocarbons (HFCs) (tonnes)	23	22	23	25	23	28	24	20	13	9
Indirect total GHGs (million tonnes CO ₂ equivalent)	9	10	9	9	n/c	n/c	n/c	n/c	n/c	n/c
Flaring										
Flaring (Upstream) (million tonnes CO ₂ equivalent)	7.7	10.0	10.4	7.8	8.8	9.7	14.3	20.8	24.6	24.1
Flaring (Upstream) (million tonnes hydrocarbon flared)	2.3	3.4	3.6	2.6	2.8	3.4	4.8	7.0	8.1	8.1
Nigeria [B]	1.5	2.0	2.4	1.9	2.3	2.5	3.7	5.8	6.6	6.4
Rest of world [C]	0.8	1.4	1.2	0.7	0.5	0.9	1.1	1.2	1.5	1.7
Energy intensity										
Upstream excl. oil sands and GTL (gigajoules per tonne production) [D]	0.78	0.75	0.74	0.76	0.74	0.78	0.78	0.71	0.69	0.69
Oil sands (gigajoules per tonne production) [E]	6.6	6.4	6.8	6.6	6.4	5.7	5.3	5.2	5.8	10.0
Refineries: Refinery Energy Index [F]	98.4	100.8	101.8	102.2	98.9	98.6	98.4	98.0	96.7	97.8
Chemical plants: Chemicals Energy Index	91.7	90.8	89.3	92.0	93.0	92.6	92.5	95.8	93.3	98.3
Acid gases and VOCs										
Sulphur oxides (SO _x) (thousand tonnes SO ₂)	113	136	139	141	175	212	233	226	247	257
Nitrogen oxides (NO _x) (thousand tonnes NO ₂)	147	146	159	142	150	145	154	157	172	193
Volatile organic compounds (VOCs) (thousand tonnes) [G]	89	129	147	126	130	148	185	199	213	226
Ozone-depleting emissions										
CFCs/halons/trichloroethane (tonnes)	0.0	0.0	0.0	0.4	1.4	0.6	0.3	0.8	2.3	3.0
Hydrochlorofluorocarbons (HCFCs) (tonnes)	8	11	21	24	26	27	35	35	42	44
Spills and discharges [H] [I]										
Sabotage spills – volume (thousand tonnes) [J]	3.3	1.6	3.0	14.0	6.5	3.4	1.9	1.5	1.1	0.9
Sabotage spills – number [J]	137	118	112	95	115	197	123	111	101	105
Operational spills – volume (thousand tonnes) [K]	2.1	6.0	2.9	1.4	8.8	3.5	3.9	3.4	3.4	5.0
Nigeria	0.2	5.3	0.7	0.3	7.1	1.6	1.4	0.1	0.0	0.4
Rest of world	1.9	0.7	2.2	1.1	1.7	1.9	2.5	3.3	3.4	4.6
Operational spills – number [L]	206	211	195	275	275	392	465	560	711	678
Nigeria [M]	36	64	32	37	42	52	41	63	48	48
Rest of world	170	147	163	238	233	340	424	497	663	630
Hurricane spills – volume (thousand tonnes)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	1.0	0.0
Oil in effluents to surface environment (thousand tonnes)	1.0	1.3	1.6	1.5	1.7	1.6	1.8	2.3	2.1	2.3
Water										
Fresh water withdrawn (million cubic metres)	203	209	202	198	224	235	n/c	n/c	n/c	n/c
Waste disposal										
Hazardous (thousand tonnes)	820	740	1,048	962	688	907	716	631	714	675
Non-hazardous (thousand tonnes)	2,295	1,850	1,079	1,139	996	1,899	1,154	632	421	443
Total waste (thousand tonnes) [G] [N]	3,115	2,590	2,127	2,101	1,684	2,806	1,870	1,263	1,135	1,118

[A] Oil and gas industry guidelines (IPIECA/API/OGP) indicate that a number of sources of uncertainty can contribute to the overall uncertainty of a corporate emissions inventory. CO₂ equivalent is a term used to express the total emissions of the major greenhouse gases, including CO₂, methane, nitrous oxide and hydrofluorocarbons.

[B] Nigeria includes SPDC onshore operations (1.4 million tonnes flared in 2012) and SNEPCo offshore operations (0.1 million tonnes flared in 2012).

[C] Flaring from the Pearl GTL plant in Qatar and the Majnoon field in Iraq amounted to 0.2 and 0.1 million tonnes of hydrocarbon respectively in 2012.

[D] 2012 data reported on a consistent basis with previous years in accordance with IPIECA/API/OGP guidance 2005.

[E] The data includes mining and upgrading operations. It does not include in situ production. We have updated our figures following recalculation of the data.

[F] Data is indexed to 2002, based on Solomon Associates Energy Intensity Index 2006 methodology.

[G] We have updated our 2011 and 2010 figures following review of the data.

[H] All spill volumes and numbers are for spills over 100 kilograms.

[I] As of the end of March 2013, there were three spills under investigation in Nigeria that may result in adjustments to the 2012 data.

[J] All sabotage- and theft-related spills have occurred in Nigeria except in 2007 (0.7 thousand tonnes outside Nigeria) and 2006 (0.6 thousand tonnes outside Nigeria).

[K] Nigeria includes SPDC onshore operations and SNEPCo offshore operations. A single spill at the Bonga field offshore Nigeria amounted to 4.8 thousand tonnes in 2011.

[L] We have updated our 2011 figure following review of the data. The numbers of operational spills reported for 2004 and 2005 contain a small number of hurricane spills.

[M] Nigeria includes SPDC onshore operations (36 operational spills in 2012) and SNEPCo offshore operations (0 operational spills in 2012).

[N] In 2012 we recycled, reused or sold over 300 thousand tonnes of material that would otherwise have been disposed of as waste.

n/c Not calculated.

See page 41 for more information about our data.

SOCIAL DATA										
	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003
Fatalities										
Total number	8	6	12	20	26	21	37	34	31	45
Employees	3	1	0	1	2	1	2	3	2	5
Contractors	5	5	12	19	24	20	35	31	29	40
Fatal accident rate (FAR)	1.32	0.96	1.56	2.3	3.4	3.1	5.6	5.0	4.6	6.1
Fatalities per 100 million working hours (employees and contractors)										
Injuries										
Total recordable case frequency (TRCF)	1.26	1.24	1.23	1.4	1.8	1.9	2.1	2.5	2.6	2.6
Injuries per million working hours (employees and contractors)										
Lost time injury frequency (LTIF)	0.34	0.36	0.35	0.4	0.6	0.7	0.8	1.0	1.1	1.1
Lost time injuries per million working hours (employees and contractors)										
Illnesses										
Total recordable occupational illness frequency (TROIF)	0.51	0.66	0.76	0.6	1.2	1.5	1.8	2.0	2.1	2.0
Illnesses per million working hours (employees only)										
Security										
Using armed security (% of countries)	17	14	9	17	17	16	15	19	18	22
Using armed company security (% of countries)	0	1	1	1	1	2	2	2	2	2
Using armed contractor security (% of countries)	10	9	6	10	9	12	9	11	11	22
Gender diversity [O]										
In supervisory/professional positions (% women)	28.1	27.3	26.3	26.4	24.7	24.6	23.2	21.8	20.7	19.5
In management positions (% women)	18.2	17.6	17.0	16.1	15.3	17.7	16.2	12.9	12.2	11.3
In senior leadership positions (% women)	16.2	16.6	15.3	14.0	13.6	12.9	11.6	9.9	9.6	9.6
Regional diversity [O]										
% countries with majority of local nationals in senior leadership positions	42	34	36	37	32	33	25	36	n/c	n/c
Staff forums and grievance procedures										
% countries with staff access to staff forum, grievance procedure or other support system	100	99	100	99	100	100	99	100	100	100
Child labour (% countries with specific procedures in place)										
Own operations	100	100	99	98	100	99	95	88	83	78
Contractors	100	97	96	97	99	98	89	69	61	57
Suppliers						96	82	62	63	50
Forced labour (% countries with specific procedures in place)										
Own operations	100	100	99	98	n/c	n/c	n/c	n/c	n/c	n/c
Contractors and suppliers	100	97	95	89	n/c	n/c	n/c	n/c	n/c	n/c
Integrity										
Code of Conduct violations [P]	209	226	205	165	204	361	n/c	n/c	n/c	n/c
Contracts cancelled due to incompatibility with Business Principles	14	11	40	24	49	35	41	63	64	49
Joint ventures divested due to incompatibility with Business Principles	0	0	0	0	0	0	0	0	0	1
Contracting and procurement										
Estimated expenditure on goods and services from locally owned companies in lower-income countries (\$ billion) [Q]	14	12	13	12	12	13	10	9	6	5
Social investment [R]										
Estimated voluntary social investment (equity share) (\$ million)	149	125	121	132	148	170	140	127	106	102
Estimated social investment spend (equity share) in lower-income countries (\$ million) [S]	67	45	61	54	61	65	n/c	n/c	n/c	n/c

[O] Diversity data obtained from our human resources system.

[P] Code of Conduct violations reported to our global telephone helpline and dedicated website, and through internal channels.

[Q] Estimated expenditure in countries where gross domestic product amounts to less than \$15,000 a year per person (source: UNDP Human Development Index 2010).

[R] Social investment spending varies from year to year depending on business climate, locations, and type of activities under way. This is voluntary social investment and does not include social investments made through contractual agreements with host governments, voluntary work by Shell employees and donations of equipment.

[S] Estimated voluntary social investment spending in countries where gross domestic product amounts to less than \$15,000 a year per person (source: UNDP Human Development Index 2010).

[3] Social investment as well as contracting and procurement data collected via our financial system since 2007.

[5] Data obtained from an internal survey completed by the senior Shell representative in each country.

n/c Not calculated.



Motoko Aizawa (Chair)

Advisor to the Sustainable Development Network, World Bank, Japan



Tom Burke CBE

Environmental Policy Advisor, Rio Tinto Plc, UK



James Hoggan

President, James Hoggan & Associates, Canada



Clarissa Lins

Executive Director, Foundation for Sustainable Development, Brazil



Ndidi Nwuneli

Founder, LEAP Africa and Co-Founder, AACE Foods, Nigeria



Charles Secrett

Founder Member, The Robertsbridge Group, UK



Dan Sperling PhD

Director, Institute of Transportation Studies, University of California, Davis, USA

EXTERNAL REVIEW COMMITTEE

Shell, for the eighth successive year, has invited an External Review Committee to assess its sustainability reporting. This letter provides our assessment of Shell's 2012 Sustainability Report. We express our views as individuals, not on behalf of our organisations.

The External Review Committee (ERC or the Committee) is pleased to comment on Shell's 2012 Sustainability Report. The ERC's engagement with Shell in this reporting cycle began in October 2012 with multiple face-to-face meetings with members of Shell's senior management and the Shell Board of Directors, including Chief Executive Officer Peter Voser and Chad Holliday, Chair of the Corporate and Social Responsibility Committee of the Board. The ERC and Shell management next met in January 2013, when the ERC had a chance to provide its reaction to the first draft of the report.

As with previous years, the engagement process was well designed, and Shell managers were open and informative. The ERC thanks the Shell reporting team and senior management for a unique opportunity to understand Shell's sustainable development activities, challenges and outlook.

The purpose of the ERC's extensive engagement with Shell management is to enable us to understand Shell's operational context sufficiently so that we can provide informed comments on Shell's Sustainability Report and the company's sustainability performance. We do not act as verifiers of information presented in this Report. (See box on page 39 for more detail on the ERC's role and relationship with Shell.)

This letter contains our opinions on Shell's 2012 report. We will meet with Shell's Executive Committee in June 2013 to share our views on the company's sustainability performance.

Overall report quality

The ERC is of the view that the 2012 report presents the material environmental and social challenges that affect Shell's business performance and are of interest to its key stakeholders. The report provides a thorough account of Shell's business activities, with focus on safety and responsibility. It presents Shell's environmental footprint data and some

social performance information in a manner consistent with this responsibility theme, though the Committee would have liked more commentary on performance data throughout the report. The ERC notes that the report uses external opinions effectively to illustrate both progress and challenges. The 2012 report incorporates a number of new features, some in response to feedback from the ERC.

Sustainable development strategy and climate change

The ERC understands the core of Shell's strategy on sustainable development is to use innovation and technology to deliver cleaner energy – through natural gas, carbon capture and storage (CCS), biofuels and energy efficiency.

The ERC commends the action Shell took in 2012 toward CCS and appreciates the expanded explanation of Shell's approaches to operational energy efficiency in this year's report. Shell's position on climate change would command greater public confidence if Shell could more fully explain how it applies its \$40 a tonne carbon shadow price. Shell could also clarify how it reconciles the differences between the clear public positions it adopts on climate change, for example by advocating for market mechanisms and a price on carbon, with the positions adopted by some industry organisations to which it belongs. Beyond these observations, the ERC continues to feel that Shell's activities in these areas should be presented as part of a more coherent long-term strategy to address climate change, believing this would provide necessary context for its stakeholders to understand Shell's overall sustainable development strategy.

This year, the ERC had an opportunity to better appreciate Shell's approach to technology and innovation, and how they connect to its long-term view on climate change and future challenges. Given the central role they play in Shell's approach to sustainable development,

the Committee looks forward to additional material on technology and innovation in future reports.

Risk and complexity

The Committee recognises that Shell's need to replenish its reserves means that it is seeking them in increasingly challenging areas, such as deep oceans and the Arctic, and from sources such as oil sands. In the 2011 report, the ERC identified some tensions between Shell's desire to develop reserves in environmentally and socially sensitive locations and its ability to manage risks from these operations. The ERC in turn asked for a more robust treatment of the operational challenges and Shell's approach to anticipate, identify and manage risks.

The 2012 report describes these tensions, risks and complexities more fully through its use of case studies and "Focus" stories. The report offers a sobering account of the serious challenges that Shell faces in Nigeria. The detailed treatment of the Arctic, the Kulluk incident and Shell's acknowledgement of operational shortcomings in Alaska in 2012 provide a balanced account of the situation, and the Committee anticipates further analysis and reflection in next year's report. Given the concerns about these and other operations in sensitive locations or challenging circumstances, future reports might be more specific about lessons learned, and how they are translated into actions and systematically implemented and monitored across the company.

The 2012 report provides detailed coverage on tight/shale gas and oil, which is helpful for stakeholders. Shell has pushed for transparency of information on the chemicals used in fracking, which sets Shell apart from others. Nonetheless, the ERC wonders whether the report sufficiently acknowledges communities' concerns about fracking, particularly with regard to potential impacts on air and water. Shell is working to better understand these impacts and has published a set of operating principles designed to raise industry standards. Considering the uncertainties around cumulative impacts and fugitive emissions of methane, however, Shell's assertions that its technologies are safe are not likely to fully address communities' concerns without further research, monitoring and reporting.

This year's report contains a section on how Shell works with its joint venture partners, contractors and suppliers. Due

to the ever-increasing attention on how extractive companies manage governance risks, the explanation of how the Shell Control Framework applies to ventures with Shell's involvement is very welcome, and the ERC encourages Shell to generate additional materials on this theme in future reporting.

Social performance and investment

In the last report cycle, we understood that new social performance metrics were being developed in 2011 and would be implemented in 2012, and that a new social performance strategy would be forthcoming. The Committee also looked forward to learning about the progress in establishing additional grievance mechanisms for new projects. These items were not included in the 2012 report.

Shell acknowledges that its operations are potentially more vulnerable to above-the-ground or non-technical risks than below-the-ground or technical risks, and that social performance is key to managing above-the-ground risks. Considering the materiality of such risks, the ERC hopes that Shell will move forward on social performance and include more information about this in future sustainability reports.

For the first time, this year's report includes a breakdown of Shell's social investments, which helps readers understand the types of investments made. It would be important for Shell and its stakeholders to know that the investments are having the desired impacts on communities. Shell could benefit from completion, publication and proactive application of its social investment strategy, which would not only guide the prioritisation of its social investments at local and global levels, but would also help articulate the impacts, as well as enhance the sustainability, effectiveness and efficiency of these investments.

Conclusion

While acknowledging the high quality of Shell's sustainability reports, which distinguishes Shell among its peers, there is a growing desire on the part of the ERC to see more strategic context and content in these reports. The Committee would like to see a more comprehensive presentation of Shell's vision, strategy and metrics for sustainable development in a world facing climate change, growing energy demand, and continuing concern about environmental and social impacts. It is clear from our engagement with Shell that

ERC OVERVIEW

During the annual cycle, the Committee met in person three times in The Hague, the Netherlands, and on other occasions by teleconference. We held meetings with key Shell senior management and other personnel to discuss in detail Shell's approach to sustainable development and its sustainability reporting.

In reviewing Shell's 2012 Sustainability Report, the Committee concentrated on three main questions:

- Has Shell selected the most important topics for the report?
- How well has the report dealt with these topics and responded to stakeholder interest?
- Did Shell provide sufficient information and access for us to do our job effectively?

Our review did not include verification of performance data underlying the report, or the information on which the case studies in the report were based.

In addition to our comments on the company's sustainability reporting, the Committee will meet with Shell's Executive Committee in mid-2013 (as we did in 2012), to discuss our observations on the company's strategy and sustainability performance.

In recognition of our time and expertise, an honorarium was offered, payable either to us individually, to our organisation, or to a charity of our choosing. We were also offered reimbursement for the expense of our travel and accommodation.

its management and reporting team can take the company's sustainability reporting to a new level of excellence.

The ERC now looks forward to engaging with the Executive Committee to continue its dialogue on Shell's sustainability performance.

ABOUT OUR REPORTING

We began reporting voluntarily on our environmental and social performance with the first Shell Report that covered 1997. Our reporting focuses on the environmental and social challenges that most affect business performance and matter most to our key stakeholders. We use a thorough process to select content for our reporting (see diagram).

We provide regular information to the Carbon Disclosure Project, Dow Jones Sustainability Index, FTSE4Good Index and other organisations that assess the economic, environmental and social performance of companies.

Internal controls such as audit trails and statistical checks help assure the accuracy of the Shell Sustainability Report. The External Review Committee of independent experts helps make sure our reporting is balanced, relevant and responsive to stakeholders' interests. Lloyd's Register Quality Assurance Ltd has provided limited assurance of our direct and indirect greenhouse gas emissions data for 2012.

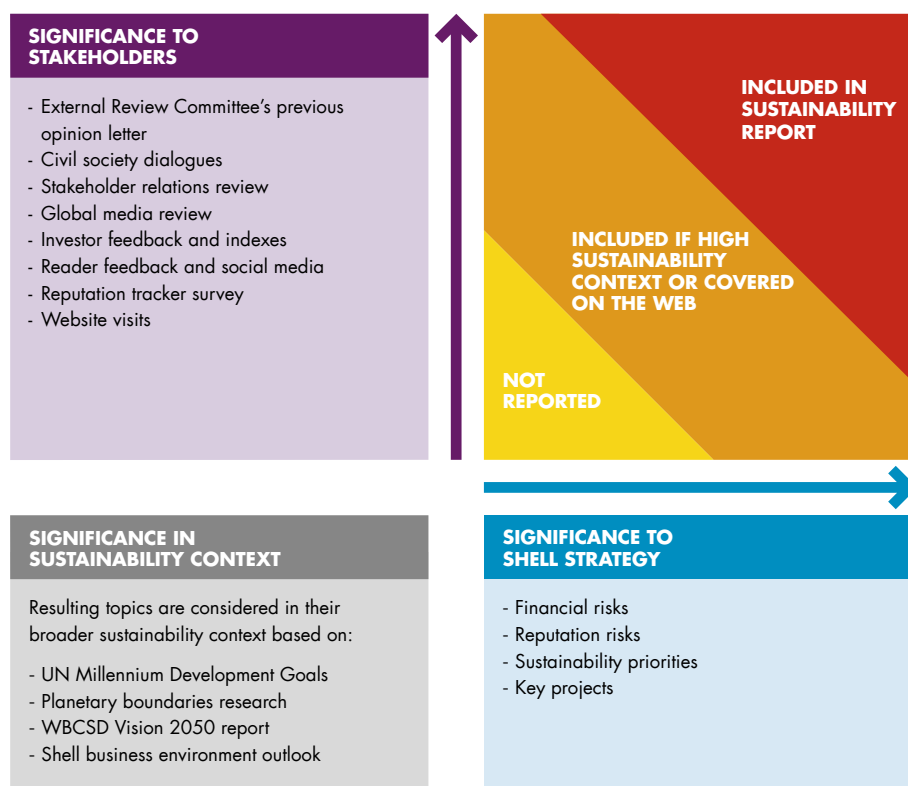
We report in accordance with the Global Reporting Initiative (GRI) and in line with the oil and gas industry guidelines developed by the International Petroleum Industry Environmental Conservation Association (IPIECA), the American Petroleum Institute (API) and the International Association of Oil & Gas Producers (OGP). GRI confirmed our A+ reporting level for the information contained in this Sustainability Report, the Royal Dutch Shell plc Annual Report and Form 20-F for 2012, and on our corporate website. The GRI content index is available on our corporate website.

Shell supports the UN Global Compact and its 10 principles covering human rights, labour, environment and anti-corruption. Sections of this Sustainability Report cover Shell's progress in 2012 in these areas.

This report is supported on our corporate website by more detailed information on Shell's approach to sustainable development.

www.shell.com/sustainability

CONTENT SELECTION DIAGRAM



Content selection process

Our reporting focuses on the environmental and social challenges that matter most to our key stakeholders. These include local communities, partners, governments, non-governmental organisations, customers, shareholders, investors, employees, media, academics, contractors and suppliers.

We use a thorough process to select content for our reporting based on information from external and internal sources. This process includes:

Step 1 Identify and understand topics of significance to our stakeholders through a range of stakeholder engagements and reviews.

Step 2 Identify topics of significance to Shell's business strategy through our established internal processes.

Step 3 Combine the results into a matrix and assess each topic in terms of its wider economic, environmental and social impact. Each topic is then assigned a weighting according to its significance in "sustainability context". To determine "sustainability context" we review authoritative research and forecasts on

environmental and social topics published by public institutions and governmental organisations.

Step 4 We include all the highest priority topics in our report (see diagram). Those at the next level of importance are included if they have a higher weight in "sustainability context"; otherwise, they are covered on the Shell corporate website.

Step 5 Our External Review Committee reviews the content selection to ensure that coverage is complete, relevant and balanced.

Share your opinion

If you have any views on issues described in this report, or on the report itself, please email us at:

sustainabilityreport@shell.com

Report ordering

order@shell.com
+31 (0)72 567 10 01

ABOUT OUR DATA

There are inherent limitations to the accuracy of environmental and social data. We recognise that our environmental and social data will be affected by these limitations and continue to improve the integrity of our data by strengthening our internal controls.

All non-financial data in this report are reported on a 100% basis for companies and joint ventures where we are the operator. Environmental data are for our direct emissions unless otherwise stated. We report in this way, in line with industry practice, because these are the data we can directly manage and affect through operational improvements.

Operations acquired or divested during the year are included only for the period of our ownership. Other data are collected from external sources, staff surveys and other internal sources as indicated.

We only include data in this report that have been confirmed by the end of March 2013. If incidents are reclassified or confirmed, or if significant data changes occur after preparation of this report, they will be updated in the following year's publication. Data marked in the social data table come from an internal survey completed by the senior Shell representative in each country. The accuracy of environmental and social data may be lower than that of data obtained through our financial systems.

Data provided are subject to internal controls. Lloyd's Register Quality Assurance Ltd has provided limited assurance of our direct and indirect greenhouse gas (GHG) emissions data for 2012. Limited assurance means nothing has come to the auditor's attention that would indicate that the data are not correct. For GHG emissions we provide more detailed data on our corporate website.

www.shell.com/ghg

Conversions into US dollars are based on the average exchange rates for 2012.



Statement GRI Application Level Check

GRI hereby states that **Royal Dutch Shell plc** has presented its report "Shell Sustainability Report" to GRI's Report Services which have concluded that the report fulfills the requirement of Application Level **A+**.

GRI Application Levels communicate the extent to which the content of the G3.1 Guidelines has been used in the submitted sustainability reporting. The Check confirms that the required set and number of disclosures for that Application Level have been addressed in the reporting and that the GRI Content Index demonstrates a valid representation of the required disclosures, as described in the GRI G3.1 Guidelines. For methodology, see www.globalreporting.org/SiteCollectionDocuments/ALC-Methodology.pdf

Application Levels do not provide an opinion on the sustainability performance of the reporter nor the quality of the information in the report.

Amsterdam, 22 March 2013


Nelmara Arbex
Deputy Chief Executive
Global Reporting Initiative



The "+" has been added to this Application Level because Royal Dutch Shell plc has submitted (part of) this report for external assurance. GRI accepts the reporter's own criteria for choosing the relevant assurance provider.

The Global Reporting Initiative (GRI) is a network-based organization that has pioneered the development of the world's most widely used sustainability reporting framework and is committed to its continuous improvement and application worldwide. The GRI Guidelines set out the principles and indicators that organizations can use to measure and report their economic, environmental, and social performance. www.globalreporting.org

Disclaimer: Where the relevant sustainability reporting includes external links, including to audio visual material, this statement only concerns material submitted to GRI at the time of the Check on 14 March 2013. GRI explicitly excludes the statement being applied to any later changes to such material.

REPORT SPECIFICATIONS

The paper used for this report is Satimat Green, a Forest Stewardship Council (FSC) certified paper, produced from 60% FSC-certified recycled fibre and 40% FSC-certified virgin fibre. All virgin fibres are Elemental Chlorine Free bleached, without using chlorine gas. The inks used are vegetable oil-based. The laminate used for the cover is eco-friendly and allows the report to be fully recycled.

The printing of this document was carbon neutral: certified carbon-offset projects compensated for the CO₂ emissions.



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ALL OUR REPORTS ARE AVAILABLE AT
[HTTP://REPORTS.SHELL.COM](http://reports.shell.com)



- Comprehensive financial information on our activities throughout 2012
- Detailed operational information including maps
- Report on our progress in contributing to sustainable development

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