



# SUSTAINABILITY REPORT

Royal Dutch Shell plc  
Sustainability Report 2013

# CONTENTS

## 02 OUR APPROACH

- 03 Introduction from the CEO
- 04 Building a sustainable energy future
- 05 Sustainability and our business strategy
- 06 Living by our principles
- 07 Safety
- 08 Communities
- 09 Environment
- 10 Climate change
- 11 Focus on: Carbon capture and storage

## 12 OUR ACTIVITIES

- 13 Sustainable development in Shell
- 14 Natural gas
- 15 Tight gas and oil
- 16 Liquefied natural gas
- 17 Contractors, suppliers and joint ventures
- 18 Deep water
- 19 Iraq
- 20 Alaska
- 22 Nigeria
- 25 Focus on: Partners and collaboration
- 26 Oil sands
- 27 Focus on: Technology and innovation
- 28 Fuels and products
- 29 Biofuels

## 30 OUR PERFORMANCE

- 31 Economic
- 32 Environmental
- 34 Social
- 36 Environmental and social data
- 38 External Review Committee
- 40 About our reporting
- 41 About our data

### Cover photo

Scientists use 3D technology to review seismic data to help locate oil and gas reservoirs. Rijswijk, the Netherlands.

### New Lens Scenarios disclaimer

This publication contains data from Shell's New Lens Scenarios. The New Lens Scenarios are a part of an ongoing process used in Shell for 40 years to challenge executives' perspectives on the future business environment. We base them on plausible assumptions and quantification, and they are designed to stretch management to consider events that may only be remotely possible. Scenarios, therefore, are not intended to be predictions of likely future events or outcomes and investors should not rely on them when making an investment decision with regards to Royal Dutch Shell plc securities.

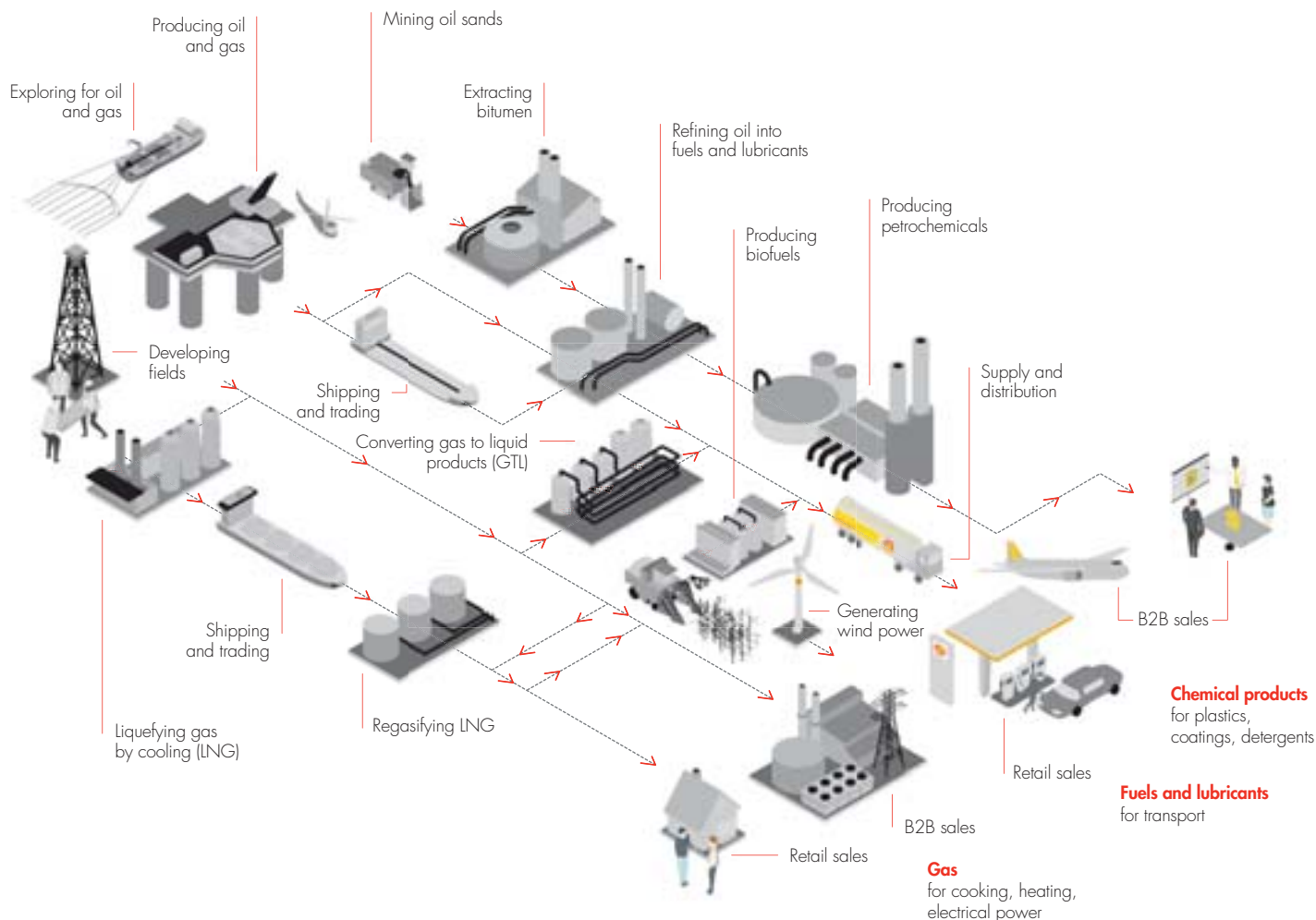
### Cautionary note

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, 2013 (available at [www.shell.com/investor](http://www.shell.com/investor) and [www.sec.gov](http://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 9, 2014. 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](http://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 92,000 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 International

Upstream International manages the Upstream business outside the Americas. It searches for and recovers crude oil, natural gas and natural gas liquids, liquefies and transports gas, and operates the upstream and midstream infrastructure necessary to deliver oil and gas to market. Its activities are managed primarily by lines of business which are logically combined activities underpinned by strategic themes.

#### Upstream Americas

Upstream Americas manages the Upstream business in North and South America. It searches for and recovers crude oil, natural gas and natural gas liquids, transports gas and operates the upstream and midstream infrastructure necessary to deliver oil

and gas to market. Upstream Americas also extracts bitumen from oil sands that is converted into synthetic crude oil. Its activities are managed primarily by lines of business which are logically combined activities underpinned by strategic themes. The wind power activities in the USA are part of Upstream Americas.

#### Downstream

Downstream manages the manufacturing, supply, distribution and marketing activities for oil products, biofuels and chemicals. These activities are organised into globally managed classes of business. Downstream trades Shell's flow of hydrocarbons and other energy-related products. It also oversees Shell's interests in alternative energy, excluding wind.

### Projects and Technology

Projects and Technology is overall accountable for wells engineering and wells completion, for project engineering and project execution. It drives the research and innovation to create technology solutions. It provides technical services and technology capability covering both upstream and downstream activities. It is responsible for providing functional leadership across Shell in the areas of safety, environment and social performance as well as contracting and procurement.

[www.shell.com/about](http://www.shell.com/about)

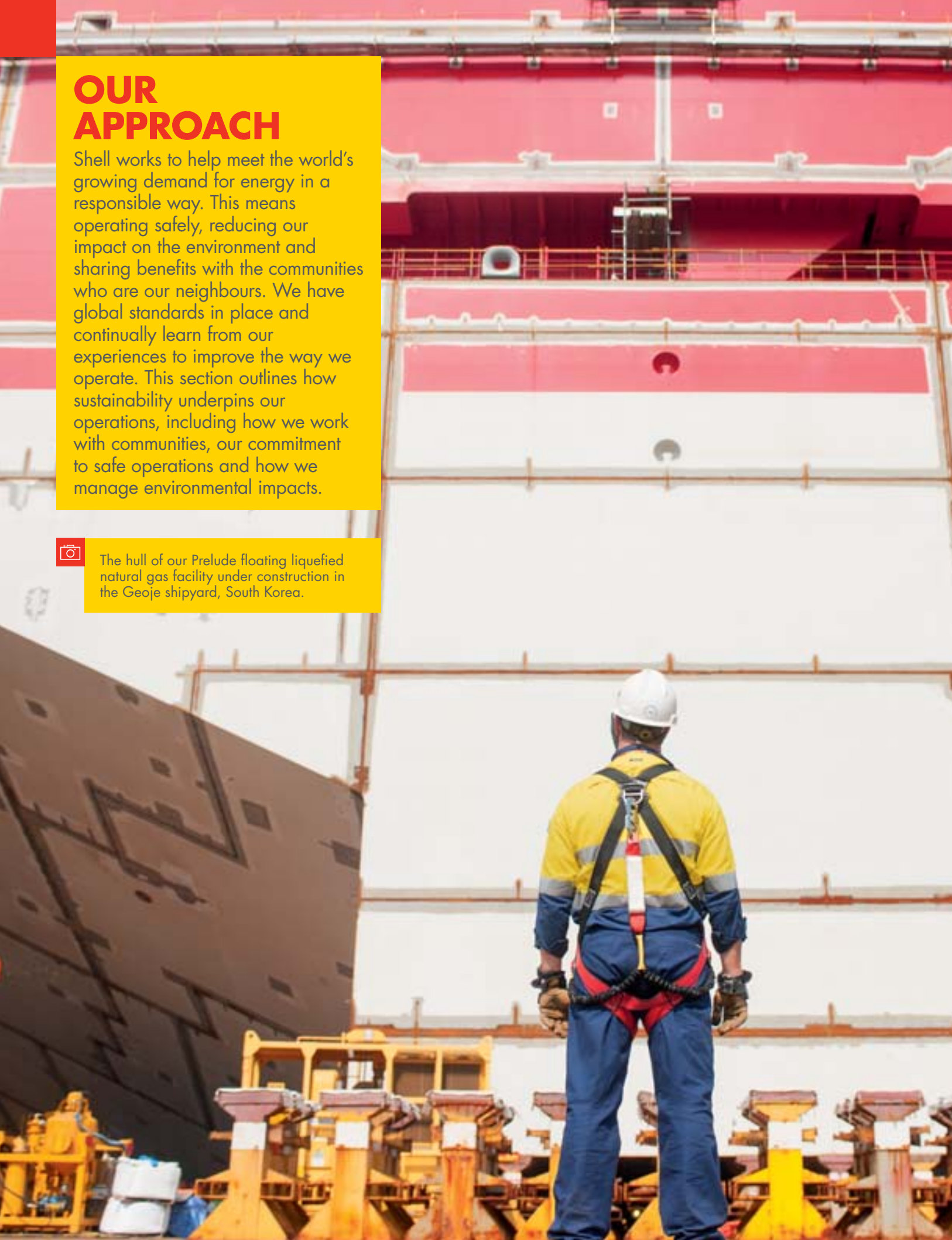


# OUR APPROACH

Shell works to help meet the world's growing demand for energy in a responsible way. This means operating safely, reducing our impact on the environment and sharing benefits with the communities who are our neighbours. We have global standards in place and continually learn from our experiences to improve the way we operate. This section outlines how sustainability underpins our operations, including how we work with communities, our commitment to safe operations and how we manage environmental impacts.



The hull of our Prelude floating liquefied natural gas facility under construction in the Geoje shipyard, South Korea.



## INTRODUCTION FROM THE CEO



**"Boosting local economies by creating jobs, developing skills and working with local suppliers builds trust."**

I am pleased to introduce the Shell Sustainability Report for 2013. We have experienced a challenging year, in a difficult business environment. I will continue to take a long-term view of our business, where the health and safety of our people and neighbours, and our environmental performance, remain the top priorities for Shell.

Sustainability is integral to our business. We operate responsibly, investing to satisfy growing global energy demand and to help build a cleaner energy system for the future. We also actively participate in key discussions between business, civil society and government.

### OPERATING RESPONSIBLY

We will continue to focus on operational performance while embedding sustainability within Shell. This means taking stringent steps to prevent harm to the people working in our operations, our neighbours and the environment. Running a safe and efficient business is at the core of good operational performance.

We need to challenge ourselves to make sure we always do the right thing and seek solutions that share benefits with the communities where we operate. This can boost local economies by creating jobs, developing skills and encouraging enterprise by working with local suppliers, often helping them to build capacity. It increases trust and builds lasting, positive relationships.

Therefore, at Shell, doing the right thing is not only a matter of principle, it also makes good business sense. I will be looking at each part of Shell's business to ensure that we continue to improve our sustainability performance. We have made a lot of progress over the years, but expectations continue to rise – we must never be satisfied or complacent.

### A CLEANER ENERGY FUTURE

We apply our expertise and knowledge from our long history in the oil and gas sector to develop technologies and innovations. This includes cleaner energy solutions that can be deployed now – such as natural gas and low-carbon biofuel – as well as emerging opportunities, such as advanced biofuels and liquefied natural gas for transport. We produce about as much natural gas as oil. Gas is the cleanest fossil fuel, producing half as much carbon dioxide (CO<sub>2</sub>) as coal in power generation and less local pollution.

The development of our Quest carbon capture and storage (CCS) project in Canada is expected to capture 1 million tonnes of CO<sub>2</sub> a year from our oil sands operations. The project will provide valuable knowledge to support broader application of CCS technologies.

We design our new operations to minimise our impact on the environment and continue to work to improve the energy and water efficiency of our existing operations.

### WORKING TOGETHER

The scale of the global challenges that the world faces is too great for one company, or one sector, to resolve. Global demand for energy is rising as populations grow, living standards increase and urbanisation intensifies. There will be greater stress on the essentials of energy, water and food, which is likely to be exacerbated by climate change.

We are helping to shape a better understanding of and response to these challenges. During 2013, Shell continued to bring the private and public sectors together by hosting events that promote the need for building resilience in companies and in society at large.

However, greater levels of collaboration and trust must be fostered among government, industry and civil society to create the urgent shift needed to help address these challenges. Governments must provide the right frameworks to encourage economic investment in cleaner energy, while business can offer technology, know-how, transparency and pragmatic long-term views.

We were a founding member of the UN Global Compact and continue to support its principles in human rights, labour, environment and anti-corruption. Details of our progress in these areas can be found in this report.

I would like to thank the members of the External Review Committee (ERC), consisting of experts in sustainability, for their help in developing this report. Their contributions are highly valued.

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

[sustainabilityreport@shell.com](mailto:sustainabilityreport@shell.com)

**Ben van Beurden**  
Chief Executive Officer

## BUILDING A SUSTAINABLE ENERGY FUTURE

We are at the early stages of a transformation in energy use. A growing population with rising living standards is increasing the demand for energy. By the middle of this century, it is expected that three-quarters of the world's population will be living in cities, up from 50% today. At Shell, we are working to help build a more sustainable energy future.

The world's population is expected to grow by around 2 billion people to 9 billion by 2050. As average living standards rise, more people will gain better access to goods and services, leading to increased energy consumption. Global energy demand could increase by three-quarters over the next 50 years. This increasing energy use from the needs of a growing global population will have a long-term impact on the world's resources.

Shell's New Lens Scenarios (see box) say that demand for fresh water could increase by 40% by 2030; the United Nations says that demand for food could increase by 50% by 2030. Climate change will intensify the stresses affecting these resources. To help meet the growing energy demand fossil fuels are still likely to make up the bulk of the energy mix, with gas showing the biggest growth by mid-century (see diagram). Renewable sources, such as solar and wind, will continue to increase in the energy mix. Shell's scenarios estimate that, with strong government support, energy from solar, wind, biomass and other renewables could rise to around 25% by 2050.

Energy production is linked to both water use and food production. We have been bringing experts together from government, businesses and non-governmental organisations to understand and respond to the resource challenges and to explore new forms of collaboration. We continue to contribute to the public dialogue on energy and climate policy, and to participate in discussions to promote resilient systems.

### URBANISATION

Our scenarios identify the key role of cities in the future. Most of the world's carbon dioxide (CO<sub>2</sub>) emissions already come from cities, even though cities occupy less than 2% of the earth's total land area. It is in cities, as centres of economic progress, where the greatest advances can be made. Yet cities will also suffer most from increasing pressure on resources. As small- and medium-sized cities grow, they face the challenge of becoming liveable while addressing potential resource pressures.

Our work with governments, businesses and civil society is helping us to better understand how cities develop, and their impact on energy supply and demand. This creates an opportunity to build better transport infrastructure that has less impact on the environment. Effective planning of local infrastructure could help create conditions to reduce energy use and emissions.

In the UK, for example, we have created the UK Resilience Challenge. This is a year-long collaborative programme, in partnership with a

think-tank, which aims to understand the challenges of increased urbanisation and population rise in the UK, and foster ideas to address them.

In 2013, we completed a joint study with the Chinese government's Development Research Centre to determine the future energy needs of the country. The expected urban growth in China – an additional 350 million Chinese will inhabit cities by 2030 – will affect resource efficiency globally. The study found that with the right policies, choices, regulations and frameworks in place, China can accommodate its anticipated urban population growth through to 2030 without increasing its land use for urban living.

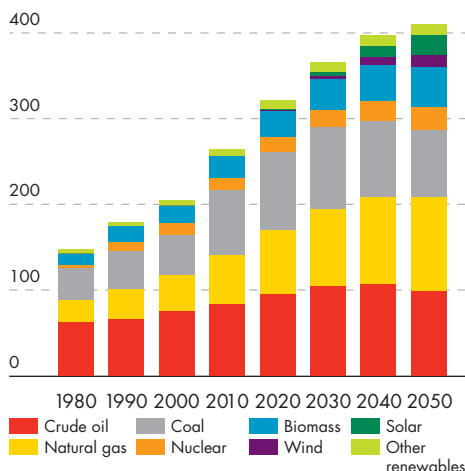
### ACTING NOW

The International Energy Agency 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.

We advocate publicly that a strong and stable price on CO<sub>2</sub> emissions will help drive the right investment in low-carbon technologies. Support from governments is needed to encourage the development of cleaner fuels and ways to reduce industrial carbon emissions. Shell plays an active role in influential think-tanks, and with senior government officials and regulators to ensure our views on effective climate change and CO<sub>2</sub> policies are understood.

### PROJECTED GLOBAL ENERGY DEMAND TO 2050

million barrels of oil equivalent a day



But we are not waiting for government policy to develop; we already consider a potential screening value of CO<sub>2</sub> emissions at \$40 a tonne. This is a guide that is used in all our investment decisions. Shell produces natural gas, the cleanest-burning fossil fuel, as well as low-carbon biofuel. We are also helping to develop carbon capture and storage technologies and working to improve the energy efficiency of our operations.

### NEW LENS SCENARIOS

For more than 40 years, Shell has been using scenarios to analyse current economic trends and project plausible pathways into the future. Our scenario building explores alternative visions of the future to help test, strengthen and influence our present business decisions.

For example, our scenarios highlighted circumstances that made low-carbon biofuels look like an attractive growth business. This included rising energy demand and prices, and an increase in government mandates to reduce greenhouse gases. This influenced our decision to become involved in biofuels production.

The New Lens Scenarios (see disclaimer), published in 2013, show two alternative pathways, called "Mountains" and "Oceans", which detail a plausible energy future. They look beyond 2060, reflecting that the rising energy use of a growing and more affluent global population will have increasingly long-term impacts. Our scenarios help us to become better equipped to tackle future challenges.

"Mountains" shows a world in which policy plays an important role in shaping the world's energy system; whereas "Oceans" envisages market forces, rather than policies, as the basis for shaping the energy system. Both scenarios demonstrate that emissions will not meet the target of limiting CO<sub>2</sub> in the atmosphere to 450 parts per million. This is the widely-modelled level of CO<sub>2</sub> that could lead to a rise in global temperatures of 2 °C.

During 2013, Shell spoke with leaders, academics, non-governmental organisations and businesses across more than 30 countries. We shared insights from the New Lens Scenarios about a future global energy system, discussing areas that include resilience, sustainability and better urban development. We assist some authorities, over extended periods, to develop scenarios for local decision making.



# SUSTAINABILITY AND OUR BUSINESS STRATEGY

Our approach to sustainability seeks to reinforce our position as an industry leader while helping to meet global energy demand in a responsible way. In the decades ahead, more energy will be needed to spur economic development and sustain a growing population as living standards rise for many people.

As competition increases for access to energy resources and new customer markets, sustainability remains crucial to delivering our business strategy. We seek to build a portfolio that balances the short- and long-term interests of our business, taking into account a range of key risks. Major projects in areas such as liquefied natural gas, deep water and tight gas are included in our portfolio. We integrate economic, social and environmental considerations into our business decisions from the earliest stage.

Our commitment to technology and innovation continues to be at the core of our strategy, and our engineering expertise is key to the growth of our businesses. As we move into increasingly challenging environments, we use advanced technologies and find creative ways to access difficult resources. Working in these environments can require more energy-intensive processes, which is likely to increase our greenhouse gas emissions over time.

Implementing high standards in our approach to safety, the environment and community relations is critical to the success of these projects; it helps us to minimise delays and to manage the impact on the environment and our neighbours. It also enables us to share wider benefits with communities where we operate, and support host government objectives for economic and social development.

## INTEGRATING SUSTAINABILITY

We integrate our approach to sustainability across our activities on three levels (see diagram). We work in collaboration with businesses, governments and civil society, including non-governmental organisations (NGOs), at each level.

### Running a safe, efficient, responsible and profitable business

This is the foundation of our approach, which includes having processes and tools in place to manage safety, environment and community involvement. We aim to continuously improve the way we operate to prevent incidents and identify, avoid where possible and minimise adverse environmental and social impacts across our projects and facilities.

### Sharing wider benefits where we operate

Our business is planned for the long term, which means we can be part of a community for decades. We help to develop local economies by creating jobs, sourcing from local suppliers, and paying taxes and royalties. We support community projects that are based on the needs of the local communities.

### Helping to shape a more sustainable energy future

In the coming decades, more and cleaner energy will be needed for economic development in the face of growing environmental pressures. We are investing in low-carbon energy solutions and advanced technologies, such as those that increase energy efficiency and reduce emissions ([page 27](#)).

The scale of the global challenges that the world faces is too great for one company, or one sector, to resolve. Effective collaboration is urgently needed to shape a sustainable energy future.

## 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 shapes, drives and assesses how we manage our performance in these areas.

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, and sets out the processes and procedures that people should follow.

Our business managers are accountable for running our projects and facilities responsibly. They work with communities, NGOs, partners and others to better understand and address the impact of our operations. Our HSSE & SP specialists work with business managers to implement our standards, which help to 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 meet with local employees, contractors and external stakeholders to observe how Shell's standards regarding HSSE & SP are being implemented in practice. During 2013, the Committee visited South Africa and Alaska, USA.

## SHELL'S APPROACH TO SUSTAINABILITY



## LIVING BY OUR PRINCIPLES

Our business principles govern the way we work. They embody our core values of honesty, integrity and respect for people, and apply to relationships with our business partners, neighbours and the environment.

### OUR BUSINESS PRINCIPLES

The Shell General Business Principles detail our responsibilities to shareholders, customers, employees, business partners and society. They set the standards for the way we conduct business with integrity and our respect for the environment and local communities. All Shell employees and contractors, and those at joint ventures we control, are expected to comply with our business principles. Shell provides mandatory training for employees and contractors to embed these business principles in our culture. We encourage joint ventures that we do not control, and suppliers, to apply equivalent principles.

### OUR CODE OF CONDUCT

The Shell Code of Conduct instructs individuals on how to behave in accordance with the Shell General Business Principles. All Shell employees and contractors must follow the Code of Conduct. It outlines specific areas such as anti-corruption, fair competition and contributing to safe working practices. Confidential channels, including a telephone helpline and website, are available for anyone to report potential breaches, anonymously if they wish. We encourage reporting of concerns and do not tolerate retaliation in any form. If violations occur, we take appropriate action.

We have a culture that embraces diversity and fosters an inclusive work environment with equal opportunities. For further information about our diversity and inclusion programme see [page 35](#).

### ANTITRUST

The purpose of antitrust laws is to promote and safeguard competition among businesses. We have an antitrust programme designed to prevent and detect activities that may not comply with antitrust laws. This includes mandatory training to help people working for Shell to understand their role and responsibilities, and measures to help prevent antitrust incidents. Anyone working for Shell who does not comply faces disciplinary action, up to and including dismissal or termination of their contract.

### ANTI-BRIBERY AND CORRUPTION

Our anti-bribery and corruption programme supports our prohibition against offering, soliciting or accepting bribes of any kind, either directly or indirectly. The programme includes mandatory procedures designed to ensure compliance with applicable laws, and training on topics such as political payments, gifts and hospitality, and conflicts of interest. Anyone working for Shell who does not comply faces disciplinary action, up to and including dismissal or termination of their contract.

### HUMAN RIGHTS

All our employees and contractors are required to respect the human rights of fellow workers and communities where we operate, as stated in our business principles. We focus on four areas across Shell's activities where respect for human rights is particularly critical to the way we operate: labour conditions, communities, supply chains and security. In 2013, we launched a new e-learning tool on human rights, which is available to all employees and contractors.

While it is the duty of governments to protect human rights, we recognise our responsibility to respect them. We work with international organisations, businesses, civil society and other bodies to understand and respond to current and emerging issues on the implementation of the UN Guiding Principles on Business and Human Rights.

We have community feedback mechanisms that enable people neighbouring our operations to share any concerns about the impacts of our activities. During 2013, we worked to improve our programmes. This was based on outcomes from pilots at some of our major projects and facilities, as well as experiences shared with companies in IPIECA, the oil and gas industry association for social and environmental issues. This informed our efforts to align with good industry practice.

Our collaboration with the Danish Institute for Human Rights assesses and provides guidance on our human rights practices. Shell played a key role in the development of an industry guide on human rights and impact assessment, launched by the Danish Institute for Human Rights and IPIECA. The guide was launched at the end of 2012.

### INDIGENOUS PEOPLES

Our activities can affect indigenous peoples who hold specific rights to protect their distinct cultures and ways of life under many national or international laws. We ensure that the views and traditional ways of life of indigenous communities that may be affected by our projects are factored into our project planning. For example, we have been working closely with the Iñupiaq people in Alaska to ensure that their subsistence activities are not interrupted by our operations.

A particular concern for indigenous peoples' rights is resettlement – the loss of access to shelter, assets or livelihoods from land acquired for our projects. It is considered involuntary resettlement when affected individuals or communities do not have the right to refuse the acquisition. As part of our respect for human rights, we have guidelines that seek to avoid this in our projects and operations. If physical or economic resettlement is unavoidable, we develop and implement action plans or livelihood restoration plans in consultation with local parties.

### SECURITY AND HUMAN RIGHTS

We have requirements to keep employees, contractors and facilities safe, while respecting the human rights and security of local communities. We have been implementing the Voluntary Principles on Security and Human Rights (VPSHR) since their development in 2000. These principles offer guidance on assessing risks when working with private and public security. We include them in our private security contracts.

Annual risk assessments take place in our operations. This includes verification that employees and contractors who are responsible for the security of our facilities are trained to apply the VPSHR. We provide additional training where needed.

**We embrace a culture of diversity across our operations in more than 70 countries.**





# SAFETY

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

Operating safely is central to the way we deliver energy and products to our customers. Our goal is for all of our facilities to operate with no leaks or incidents that may cause serious injury to our employees, contractors or neighbours. We have a global set of standards that detail the safety risks that need to be managed and who is accountable. This is called our Health, Safety, Security, Environment and Social Performance (HSSE & SP) Control Framework and it defines the controls for managing our operations safely and responsibly (see box, [page 5](#)).

All Shell employees and contractors, and those at joint ventures we operate, must follow our safety rules, intervene in unsafe situations, and respect our neighbours and the environment. These expectations and controls are the foundations of the proactive safety culture that we nurture in our workforce. Our Life-Saving Rules and annual global Safety Day promote a culture where everyone takes responsibility for safety. The mandatory 12 Life-Saving Rules cover expectations on managing the most critical safety risks. Lives can be lost when these are not followed. Since their implementation in 2009, there has been a notable reduction in the number of fatalities in our operations. Our annual global Safety Day is an opportunity for all employees and contractors to

Shell employees make plans to operate safely at the Pulau Bukom manufacturing site in Singapore.



spend the day sharing ideas and good practice, and planning ways to improve our performance in safety.

## PROCESS SAFETY

We seek to ensure that all our facilities are well designed, well operated and well maintained to run safely. This means not releasing any hazardous material that could harm people or the environment. The global technical safety standards for all projects and facilities we operate meet local regulatory requirements and, in many cases, exceed them.

A three-year review programme of our engineering design standards to better manage safety risks was completed in 2013. The review sought to ensure that our standards are up to date and effective. It was followed by the implementation of a specific training programme for engineers to integrate the standards into the design of our new facilities. In 2013, we also completed a \$6 billion programme, which started in 2006, to improve the safety of our oil and gas production facilities. Around \$750 million was invested in the safety and reliability of our refineries, chemical plants and distribution facilities during 2013.

We routinely prepare and practise our emergency response to potential incidents such as an oil spill or a fire. This involves working closely with local emergency response crews and government agencies to jointly test our plans and procedures. The tests continually improve our readiness to respond. If an incident does occur, we have procedures in place designed to reduce the impact on people and the environment.

Shell learns from investigations into major industry incidents and embeds this knowledge into its technical safety standards. Our training programme for managers creates a working culture that increases risk awareness and prevents safety incidents. The training, along with on-the-job experience, helps people to recognise and respond to small signs of a potential problem. It encourages people to raise any safety concerns with managers and intervene to keep our people and facilities safe.

## JOINT VENTURES

We often work in joint ventures with national and international energy companies. When we operate the venture we apply Shell standards that cover HSSE & SP. The standards for these joint ventures also include the Shell General Business Principles and the Code of Conduct. Where we are not the operator we encourage our partners to apply materially equivalent standards. For further information about our joint ventures, contractors and suppliers see [page 17](#).

## ROAD SAFETY

Our employees and contractors drove almost 1 billion km in 2013 – a distance equivalent to 70 times around the world every day. We transport fuel to customers, deliver equipment to construction projects and transport people to their work sites. Many of these journeys take place in countries with existing infrastructure and road safety standards that struggle to support the increasing demand for road transport.

We have programmes that train our drivers to recognise hazards and to anticipate errors from other road users to reduce road transport incidents. We enforce our global road safety standards and minimise our use of road transport when possible. We use technology, such as monitoring systems inside vehicles, to further improve driver behaviour and we recognise drivers for good practices.

We reached a new milestone in 2013 by achieving a full year without an employee or contractor road fatality. The number of road transport incidents with a potentially severe outcome was also reduced by over one-fifth compared with 2012. We believe that this success has been due to the enforcement of our road safety-related Life-Saving Rules: drivers must follow a prescribed plan for their journey; vehicle occupants must wear a seat belt; drivers must not use mobile phones while driving and must not exceed speed limits. We have been recognised for our road safety performance and, in 2013, received the Prince Michael International Road Safety award.

To help reduce the number of road transport incidents globally, we work with local authorities, non-governmental organisations and communities to implement road safety initiatives. We are a lead partner and funder of the Global Road Safety Partnership to improve road safety in low- and middle-income countries. We also support the UN Decade of Action for Road Safety by participating in projects at national and local level, focusing on high-risk environments.

## COMMUNITIES

Many of our operations have neighbouring communities. We aim to share benefits with these communities by helping to develop local economies, creating local jobs and developing skills as well as supporting communities with investment programmes.

Community engagement is fundamental to our approach to sustainability within Shell. It helps to build people's trust and is the basis for operating responsibly. Our projects and operations also create business opportunities for people locally, which can help people build livelihoods.

Our major projects and facilities are required to have a social performance plan. This informs people about the social context for future operations and identifies any potential negative impacts on the community. The plans include community engagement activities, such as hosting local meetings, that help us to monitor the impacts of our operations (see opinion, [page 13](#)). It also identifies where we can support community development programmes. The social performance process can lead to changes in our plans and operations, if needed (see diagram).

We work together with our neighbours to minimise impacts and address concerns (see box). Our social performance teams include experts in specialist areas, such as indigenous peoples' rights, cultural heritage and land acquisition, resettlement and livelihood restoration. We also train people as community liaison officers, who are often local residents, to monitor and respond to community feedback.

For example, in the Netherlands during 2013, the Nederlandse Aardolie Maatschappij (NAM, Shell interest 50%) intensified community engagement following increased concerns about seismic activity.

Community engagement included consultations with the local administrators, listening to the needs of the local residents and providing more information about operations. NAM produces gas from the onshore Groningen gas field in the Netherlands. The Dutch government has a 40% interest in the gas field and NAM a 60% interest. The government, advised by the regulator, reviews and approves the production plans for the field. NAM supports the recent plan proposed by the Minister of Economic Affairs to reduce production in response to increased seismic activity.

We also strengthened our approach to social performance in 2013, so that operations within Shell consistently apply common global social performance standards. These are informed by recognised international good practice, such as the International Finance Corporation (IFC) performance standards.

### INVESTING IN COMMUNITIES

Our community investment projects are an essential part of our work with our neighbours. We focus on three global strategic investment themes where we have business expertise and form partnerships. The themes are enterprise development, road safety and access to energy. In 2013, we spent almost \$159 million on community investment projects around the world.

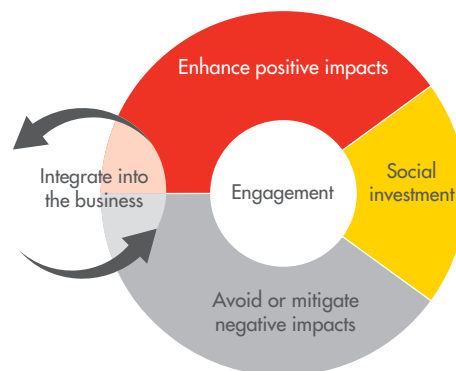
Our liveWIRE programme supports our enterprise development theme, encouraging thousands of young people to build a business of their own that

has a strong community or environmental benefit. Hosted around the world, the programme awards promising new entrepreneurs with expert advice or funding from Shell to launch and grow their business.

As part of our second strategic theme, we are a lead partner in the Global Road Safety Partnership ([page 7](#)), a global alliance that educates young people on road safety. In support of our third strategic theme, we are the single-largest private sector contributor to the Global Alliance for Clean Cookstoves ([page 24](#)), helping homes to change to using clean and efficient stoves and fuels.

We often work in local partnerships with other parties, including non-governmental organisations and development agencies, to implement our programmes ([page 25](#)). Alongside our global strategic investment themes, we have locally tailored programmes in areas such as community development, education, and biodiversity and conservation. In 2013, we introduced a new measurement framework across all of our regions, which will help us in the longer term to measure and evaluate the impact of our community investment activities around the world.

### SOCIAL PERFORMANCE PROCESS



This diagram shows the scope of our activities. We aim to create a positive presence in the communities where we operate.

### COMMUNITY FEEDBACK MECHANISMS

We have tight gas and oil operations in the Appalachia region in the USA. Over 18 months, we developed a community feedback pilot programme for people from nearby communities. This followed an unexpected volume of calls and complaints from residents in the area due to problems such as noise from our operations.

Neighbourhood call centres were set up for the community to contact Shell. Our community liaison officers reviewed and followed up on every query. Shell also put systems in place to contact the community about upcoming site activity to reduce any potential interference that could affect people living in the area.

"Shell Appalachia has met regularly with the Board of Commissioners and held community meetings," says Erick Coolidge, County Commissioner, Tioga County, Pennsylvania. "This has helped to dispel misinformation about the drilling process. It also shows interest from Shell in our community's needs."

Since 2011, Shell has contacted over 2,000 people about site activities and processed over 2,250 feedback requests from people in the community. Within two years, calls reduced to around 50 cases a month, after a high of 210 cases a month in early 2012.

Appalachia's community feedback programme was part of our work with IPIECA, the oil and gas industry association for social and environmental issues, to collaborate on the development of grievance mechanisms for the industry.

## ENVIRONMENT

We are working to reduce the environmental impact of our operations as we help to meet the world's growing energy demand. We have strict environmental standards to manage greenhouse gas emissions, reduce our use of energy, minimise our consumption of fresh water and protect biodiversity.

The potential environmental impact of our activities – and how local communities are affected – is carefully considered both before projects start and during ongoing operations. We focus on key areas including consuming less fresh water; conserving biodiversity; using less energy; minimising waste; preventing spills and leaks; flaring less gas produced with oil, and managing greenhouse gas emissions. (For details of our environmental performance, see [page 32](#).)

Carbon dioxide (CO<sub>2</sub>) emissions are managed with the use of energy-efficiency technologies and processes, and by reducing flaring in our operations. We are also working to manage CO<sub>2</sub> emissions by advancing carbon capture and storage (CCS) technologies. For example, we are implementing the Quest CCS facility in Canada to reduce CO<sub>2</sub> emissions from our oil sands operations ([page 11](#)).

Our HSSE & SP Control Framework (see box, [page 5](#)) includes environmental standards that must be applied across Shell. All our major installations including refineries, chemical plants, gas plants and permanently staffed oil and gas production facilities are also certified to ISO 14001.

### WATER

The availability of fresh water is a growing challenge for some communities and industries. Operating in water-scarce areas may bring operational and commercial challenges as regulations on water become more stringent and the cost of using water increases. We are taking steps to better manage our use of water. To support this, we have established a global centre of expertise for water at the Shell Technology Centre in Bangalore, India, which combines our water technology skills and knowledge.

The design and operation of our facilities uses innovative approaches and advanced technologies to manage water, such as customised water recycling systems to reduce the amount of water we use from local sources. We have water recycling projects at several of our operations around the world, including in Canada, the Netherlands and South Africa, where we have worked closely with local water authorities to develop solutions that benefit both Shell and local communities.

### MINIMISING WASTE

Across Shell, we follow a standardised waste management process. This includes finding ways to reduce the volume of waste that is produced and identifying substitute materials that create less waste where possible. We make efforts to reuse or recycle waste. For example, materials from

decommissioned oil platforms at our Indefatigable Field in the UK North Sea were recycled or reused (see opinion). Some waste materials are used as fuel for power generation.

### SENSITIVE ENVIRONMENTS

Our work with leading scientific and conservation organisations around the world helps us to find new ways to manage environmental challenges and improve the way we develop our projects and operate our facilities. We collaborate with Earthwatch, the International Union for Conservation of Nature, The Nature Conservancy and Wetlands International to help us address environmental aspects of our activities ([page 25](#)).

Shell aims to operate responsibly and transparently in protected areas that are rich in biodiversity, often working in collaboration with environmental experts. We were one of the first energy companies to introduce a biodiversity standard. An environmental impact assessment takes place when we plan a major project or an expansion to an existing facility. We also consider the potential impacts on local biodiversity, taking steps to address them, and review how local people may depend on biodiversity and ecosystems for essentials such as fresh water and food for their subsistence.

For example, we are part of a joint venture operating in southern Iraq's Majnoon oil field, which overlaps with an ancient wetland of international importance ([page 19](#)). Our environmental plan helped the project team gain a better understanding of the sensitivities in the area and how local communities use the marshes for their livelihoods, such as for fishing and feeding livestock. This influences the design of the oilfield infrastructure.

### ENGINEERING WITH NATURE

Natural systems can be used to complement man-made infrastructure, making the overall system more resilient. For example, oyster beds can be used to stabilise pipeline systems and reduce coastal erosion. We have been part of a joint industry programme, which released a report on natural systems in 2013 and recommended that green infrastructure be included in the training for engineers. Our scientists contributed to this work alongside academics, The Nature Conservancy, Dow Chemical Company, Swiss Re and Unilever.

Petroleum Development Oman (Shell interest 34%) has commissioned the world's largest commercial wetland water-treatment plant, which covers 360 hectares. The facility is located south of Muscat, Oman, and treats water produced from the Nimr oilfield by using reeds from the wetland as water filters.



**Mark Andrew**  
Project Manager,  
Veolia Environmental  
Services, Hull, UK

### External opinion



"We have been working with Shell for over 12 months on the dismantling and disposal of several offshore structures from the Shell Indefatigable gas field in the southern North Sea. The contract was based on stringent technical, health and safety and regulatory requirements. The aim was to dismantle and recycle the structures, applying the safest and most environmentally friendly methods.

Shell takes its environmental responsibility seriously. Shell worked with us to achieve an impressive 98.9% recycling and reuse rate of the materials, which helped to reduce environmental impact from waste handling and treatment. Veolia developed an environmental accounting report which allowed the full tracking of all waste streams. Materials from the platforms were processed and graded for recycling: wood was pulped and made into paper, and crushed concrete was used as an aggregate for construction."



## CLIMATE CHANGE

All forms of energy will be needed to meet growing global demand. Governments, industry and civil society need to collaborate to build a cleaner energy future. Shell is taking action across four areas: producing more natural gas; helping to advance carbon capture and storage technologies; producing low-carbon biofuel, and working to improve the energy efficiency of our operations.

The world continues to face the critical challenge of how to meet the increasing demand for energy while reducing carbon dioxide (CO<sub>2</sub>) emissions – the greenhouse gas (GHG) that is the main cause of climate change. International efforts agreed under the United Nations Framework Convention on Climate Change (UNFCCC) aim to limit the average rise in global temperature to below 2 °C compared to pre-industrial levels.

The current pace of change is too slow if we are to achieve this reduction, according to the International Energy Agency (IEA) and the United Nations Environmental Programme (UNEP). Shell's scenarios indicate that fossil fuels could provide more than two-thirds of the energy mix in 2050 (see diagram, page 4). There is an urgent need for large-scale, affordable technologies, backed by governments, to support CO<sub>2</sub> reduction strategies.

At Shell, we believe that governments should allow market forces to encourage the use of all technologies to reduce CO<sub>2</sub> emissions. A strong, stable price on CO<sub>2</sub> within a comprehensive policy framework is needed to achieve significant reductions in the long term. In a positive step in 2013, new carbon markets began operating in California, USA and in several regions of China.

### NATURAL GAS

More than one-third of the world's CO<sub>2</sub> emissions come from electricity generation. Natural gas produces around half of the GHG emissions compared to coal across its life cycle, from production through to use in generating electricity (see diagram). This makes switching from coal to gas for generating power the quickest and most affordable route for many countries to achieve their CO<sub>2</sub> reduction targets.

Natural gas can be used as a single source for power generation, as well as a flexible back-up for renewable energy. It produces less of the smog-causing pollutants sometimes associated with coal plants, which benefits local air quality. We are one of the world's largest distributors of liquefied natural gas and we continue to invest in projects to produce more gas in the future.

### CARBON CAPTURE AND STORAGE

In 2013, the International Energy Agency (IEA) made clear that without the widespread deployment of carbon capture and storage (CCS), and in the absence of stronger climate policies, the chances of limiting global temperature rise to a

relatively safe 2 °C are slipping away and urgent steps are needed to reduce CO<sub>2</sub> emissions. CCS safely stores CO<sub>2</sub> underground, instead of releasing it into the atmosphere. The IEA estimates that CCS could reduce global CO<sub>2</sub> emissions by around 15% by 2050 provided it is rapidly deployed in the coming years. Government support is needed to bring CCS, and other low-carbon technologies, to an industrial scale which would reduce emissions across the energy sector.

### BIOFUELS

Almost one-fifth of global CO<sub>2</sub> emissions are from road transport. We are among the world's largest producers of sugar-cane ethanol through our Raízen joint venture in Brazil. This biofuel can reduce CO<sub>2</sub> emissions by around 70%, compared to petrol, from cultivation of the sugar cane to using the ethanol as fuel, making it one of the lowest CO<sub>2</sub> emission biofuels available today.

We are one of the first major energy companies to make significant investments in advanced biofuels. These biofuels use biomass from parts of crops not used for food (page 29).

### ENERGY EFFICIENCY

We continue to work on improving energy efficiency at our oil and gas production projects, oil refineries and chemical plants. We have a CO<sub>2</sub> and energy management programme that includes monitoring the energy efficiency of equipment at any given time. These systems give us instant information that can be used to make energy-saving changes.

We also encourage customers who buy our fuel to be more energy efficient by offering information about how to use less fuel when driving. We continue to develop fuels and lubricants to make vehicles more energy efficient (page 28).

### ADAPTATION

In addition to these four areas, we are working to identify and then address the potential physical impact of climate change on our facilities and new projects.



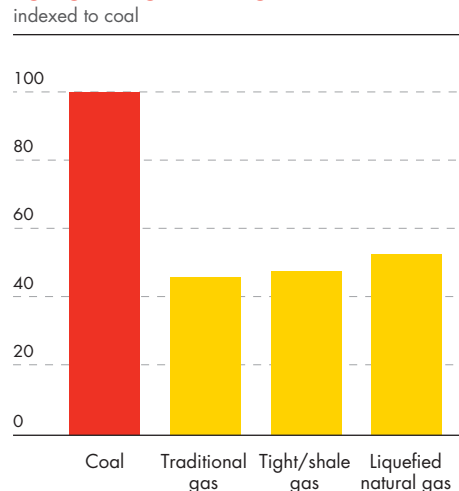
**Myles Allen**  
Professor of Geosystem  
Science, University of  
Oxford, Oxford, UK

#### External opinion

"One of the most important findings of the 2013 Intergovernmental Panel on Climate Change (IPCCC) report was that total CO<sub>2</sub> emissions will need to be limited to less than 1 trillion tonnes of carbon – more than half of which has already been emitted – if we are to keep global warming below 2 °C.

This will inevitably call for a substantial deployment of carbon capture and storage (CCS) over the coming decades. Shell's activities with its Quest, Gorgon and Peterhead CCS projects represent a valuable starting point. Nevertheless, we will need a much greater commitment to the deployment of this vital technology if we are to retain the option of avoiding more than 2 °C of warming. This commitment needs to come from government and other companies in the oil and gas sector."

#### GHG EMISSIONS FROM SOURCE TO POWER GENERATION indexed to coal



Source: US Department of Energy's National Energy Technology Laboratory, October 2011



Our Quest CCS facility being built at the Scotford Upgrader in Alberta, Canada.

## FOCUS ON CARBON CAPTURE AND STORAGE

Carbon capture and storage involves capturing carbon dioxide from large industrial sources and storing it deep underground. The International Energy Agency says that carbon capture and storage is one of the most promising technologies available today to significantly reduce global carbon dioxide emissions.

We are developing the Quest carbon capture and storage (CCS) project to capture carbon dioxide (CO<sub>2</sub>) from our oil sands operations in Alberta, Canada. Quest will potentially capture more than 1 million tonnes of CO<sub>2</sub> a year and store it 2 km below the surface, safely and permanently, when it starts operations from around 2015. This is equivalent to removing around 175,000 cars from the road. The provincial government of Alberta and the federal government of Canada are supporting its development with funding of C\$865 million as part of their CO<sub>2</sub> reduction plans.

Pioneering CCS projects like Quest are needed to show how existing technologies can work together effectively. Our Quest project will demonstrate and develop the combined technologies. Many have long been used by the energy industry. For example, the technology to pipe and inject liquefied CO<sub>2</sub> underground has been used to increase the flow of liquids from oil fields in North America for more than three decades. If CCS is to have a significant impact on global CO<sub>2</sub> emissions it needs to be supported by governments and taken up widely by industry, including power generation companies that produce electricity from coal, gas and oil.

### INSTALLING CCS

Quest is being constructed on behalf of the Athabasca Oil Sands Project (Shell interest 60%). It will capture up to 35% of the current CO<sub>2</sub> emissions from the Scotford Upgrader, a facility around 40 km from the city of Edmonton, Alberta. The Scotford Upgrader is where bitumen, a heavy oil, is turned into synthetic crude oil using hydrogen.

The captured CO<sub>2</sub> will be compressed to a liquid state. It will be transported 60 km through an underground pipeline to three wells north of the

Upgrader in Thorhild County. The CO<sub>2</sub> will then be injected into an underground porous rock formation, below multiple layers of impermeable rock. To protect shallow ground water during injection, the wells will have three barriers of steel casing, each cemented in place.

There is a rigorous monitoring programme in place to confirm that the CO<sub>2</sub> remains safely and securely underground. This will involve drilling and monitoring additional wells near the injection wells and testing existing ground-water wells to establish a baseline allowing us to verify that there are no impacts from the project.

### WORKING WITH THE COMMUNITY

Before the project began we were aware that public acceptance and local community support would be critical to the success of the project. We have engaged extensively with communities, including holding meetings with local residents to offer information about the project and to address any concerns. Consultation with landowners has led to a number of changes to the originally intended route of the pipeline. We are also avoiding farmland during harvest season while constructing the pipeline.

We have established a community advisory panel, with 10 members from the community, as a way of sharing information about the monitoring programme. The panel will review the results of the monitoring programme and serve as advisers to Quest's monitoring team. The panel members include local land owners, a county councillor, an emergency services worker, a university professor, a school principal and a government medical representative.

### CCS FOR THE FUTURE

Shell is also involved in other CCS projects. In Australia we are a partner in the Gorgon offshore natural gas project (Shell interest 25%). This will take naturally occurring CO<sub>2</sub> produced with natural gas – which would otherwise be released into the atmosphere – and store it over 2 km underground. We are also a partner in the CO<sub>2</sub> Technology Centre in Mongstad, Norway, which is developing and testing CCS technology.

We have also submitted a proposal to the UK government for a project to store CO<sub>2</sub> in a depleted gas reservoir in the North Sea. During 2013, this project, which will potentially capture and store around 10 million tonnes of CO<sub>2</sub> from a gas-fired power station in Peterhead, Aberdeenshire, was chosen by the UK government as one of two preferred candidates to progress to the next phase of engineering design. In early 2014, Shell signed an agreement with the UK government to progress detailed design of the Peterhead CCS project.

## OUR ACTIVITIES

We are helping to provide cleaner energy. We produce around as much cleaner-burning natural gas as oil and are working on developing advanced biofuels for the future. We operate in challenging conditions, such as deep water, and continue to work on advancing new technologies to become more energy efficient. This section describes our operations around the world and what we did during 2013 to balance economic, environmental and social considerations in a responsible way, with safety as our first priority.



A Shell employee conducts tests at a laboratory in Doha, Qatar.





## SUSTAINABLE DEVELOPMENT IN SHELL

Shell works with governments, partners and communities to help meet the world's growing energy demand in a more sustainable way. This makes good business sense and helps to build trust with the communities around us.

We embed sustainability across our project development process, using specialists who work as part of the project teams. This work involves engaging with communities where we operate to reduce our environmental impact (see opinion) and share benefits from our activities. Early work to incorporate the views of our neighbours into our decision making can also help us avoid project delays.

### OUR PROCESS

When we plan or develop new facilities, or make changes to existing ones, we apply a staged project development process (see diagram) that is consistent around the world. This process includes assessing potential health, safety and security risks, and the potential impact on communities close to our operations and the environment. At each review stage, we decide if or how we move forward with the project, taking into account regulatory requirements, technical and economic considerations.

This work is captured in a project management plan, which is monitored throughout the life cycle of the project. The needs of the local community are factored into our plans using a standardised approach from our HSSE & SP Control Framework (see box, [page 5](#)). Across our projects, we work closely with local communities to explain the potential impact of our activities and to address any concerns ([page 8](#)). For example, we have been consulting with the Maori tribes in New Zealand about tight gas operations at Kapuni by Shell Todd Oil Services (Shell interest 50%). This has included community sessions at Maori meeting houses, along with site tours and publications to explain our operations.

### OUR SPECIALISTS

We continually develop the skills and expertise of employees who have specific HSSE & SP responsibilities. Our specialists in HSSE & SP are assigned from the start of the project to ensure that an impact assessment is completed and to take steps to remove or reduce any potential risks. They may also be supported by experts with specialist or local knowledge, for example, to conduct baseline studies on water conditions. The impact assessments are often made publicly available.

We have dedicated employees involved at each stage of the project development process, who work alongside our technical specialists on our more complex projects. Their role is to understand the scope of a project and how it relates to the societal and economic context as well as governmental, regulatory and environmental aspects. Working with the project team, they ensure that potential impacts on local communities and the environment are considered in project design, cost, schedule and execution. Training is provided so that they understand and measure the risk and opportunities associated with our projects. Their role differs from the specialists who are responsible for addressing the day-to-day social and environmental responsibilities in existing operations.

We continue to build a culture where sustainable development matters to our employees across the company. This includes offering training to employees, such as those with technical responsibilities, to increase their knowledge of social and environmental impacts.

Our annual CEO awards for health, safety, security, environment and social performance recognise the best examples across Shell of embedding a sustainable approach in our activities. For example, a team at Shell Petroleum Development Company of Nigeria (SPDC) was recognised for its work to reduce the risk of flooding. The team produced satellite radar images that analysed flood impacted areas and predicted at-risk areas during floods in 2012. They were able to support emergency response efforts in affected communities. In 2013, SPDC improved its ability to prevent or mitigate flooding in the future and shared its knowledge with the Nigerian government and non-governmental organisations.



**Dave Brown**  
Chairman of Sundre  
Petroleum Operators Group,  
Sundre, Alberta, Canada

### External opinion



"In the late 1980s in Alberta, Canada, Shell announced the discovery of a sour gas field in the area with very high concentrations of hydrogen sulphide – a highly toxic and explosive gas even in low concentrations. The key concern was the potential threat of the release of sour gas from planned wells, pipelines and a treatment facility. This panicked the community and opposition was strong.

A community group called the Sundre Petroleum Operators Group (SPOG) was established after licences were granted, to discuss concerns. SPOG involved Shell, the regulator, community representatives and other oil and gas companies. Shell took a leading role in working responsibly with the Group's members.

In my experience, Shell has operated responsibly and safely during the last 20 years. It has consistently responded to community concerns and has maintained a relationship within SPOG and the neighbouring communities. Shell helped to set standards within the community which are now expected of all oil and gas companies in our area."

### PROJECT DEVELOPMENT PROCESS – REVIEW STAGES BETWEEN EACH PHASE



# NATURAL GAS

All forms of energy will be needed to power economic progress. The use of cleaner-burning natural gas, especially in power generation, can help to build a sustainable energy system.

As technology advances, so does our ability to unlock the world's natural gas resources. Natural gas is affordable and abundant. The International Energy Agency says that there are enough recoverable natural gas resources to last around 230 years at current consumption levels. Shell produces around as much natural gas as oil and, by 2030, we expect global demand for natural gas to increase by 60% from its 2010 level.

Countries with large domestic natural gas resources have the potential to continue to boost economic growth, while minimising the environmental impact, by using gas rather than coal in power generation. A natural gas-fired power plant produces around half the carbon dioxide (CO<sub>2</sub>) emissions of a coal-fired plant. It significantly reduces smog-causing pollutants and costs less than half as much to build. Displacing coal with natural gas in power plants is the fastest and most affordable route for many countries to achieve their CO<sub>2</sub> reduction targets. Natural gas is also an ideal flexible back-up partner for renewable energy to maintain a steady flow of electricity.

## CORRIB

The development of the Corrib gas field (Shell interest 45%), off Ireland's Atlantic coast, is important for the country's energy security. Two-thirds of its electricity is generated using natural gas and 95% of the natural gas is imported. Once the Corrib field starts production around 2015, it has the potential to provide up to 60% of Ireland's gas needs.

The project provided jobs for 1,400 construction employees in 2013, and the final section of the onshore gas pipeline has been installed. Construction of a 4.9 km tunnel under Sruwaddacon Bay, a special conservation area, is progressing. The Erris peninsula, where the project is located, is a region

where little significant industrial or commercial employment previously existed. The Corrib gas terminal will sustain around 175 full-time jobs during the 20-year lifespan of the gas field.

## ORMEN LANGE

The Shell-operated Ormen Lange field (Shell interest 17%) is 120 km from the west coast of Norway. The gas is transported to an onshore processing plant in Norway and is exported through a 1,200 km pipeline to Easington on the north-east coast of England. Ormen Lange supplies around 20% of the UK's gas needs.

As well as providing substantial income through state ownership and taxes, Ormen Lange has contributed to the Norwegian economy with jobs, knowledge transfer and skills building. In its first five years of operation, around 30% of the operating costs were spent in the local area, close to the Ormen Lange onshore facility at Nyhamna, according to analysis by the Møreforskning research institute. Large oil and gas companies recruit from the region, while local industry has grown to deliver services to Ormen Lange.

## DE WIJK GAS RECOVERY

In 2013, Nederlandse Aardolie Maatschappij (NAM, Shell interest 50%) started to use nitrogen injection for enhanced gas recovery at De Wijk, one of the oldest onshore natural gas fields in the Netherlands. The field has been in production for more than 60 years and is classified as a "small field" by the Dutch government. This is the first time that the technology has been used to significantly increase the production life of an ageing onshore gas field. Nitrogen injection is expected to extend the project's life by around 15 years, and ultimate gas recovery could rise from 73% to as much as 83%.

When injected, the nitrogen keeps pressure in the field high enough for wells to continue to produce gas, by pushing the remaining natural gas to production wells underground. The nitrogen gas is supplied from a purpose-built air separation unit. This required careful integration with the existing field infrastructure to reduce the impact of our operations on neighbours and the environment.

## 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 around 500 megawatts. Most of this energy comes from around 720 turbines at eight wind projects in the USA.

## TIGHT GAS IN CHINA

Shell's community liaison officers have played a key role in communicating with residents near Zitong in Sichuan province, China, the site of a tight gas project. Zitong is a densely populated rural area.

When the first construction activities started in January 2013, local residents protested. Their concerns were that the government standards of land compensation were too low and that they were not well informed about the proposed building work.

Our liaison officers worked with the local government offices and village councils to address these concerns. This was done by increasing the level of communication with residents and conducting detailed impact assessments for the area. They organised meetings in the town hall and visited residents at home to explain the government regulations on land use, compensation processes and payment, as well as our construction plan.

Shell improved a road which is used by employees and people in the community. We also upgraded the irrigation system, 170 metres long, for Panlong village in Zitong, to avoid any flooding to the surrounding land. The Panlong community organised a "lion dance" – an event usually reserved for Chinese New Year celebrations – to show its appreciation.

Shell employees working at the Ormen Lange gas processing plant, Norway.



## TIGHT GAS AND OIL

Shell has a number of projects producing tight gas and oil, with exploration taking place in countries that include Argentina, Turkey and Ukraine. In 2013, we produced around 300,000 barrels of oil equivalent a day in North American tight gas and oil and almost 30,000 barrels of oil equivalent a day in China.

The development of tight gas and oil has changed the energy picture in the USA and Canada in recent years. Abundant North American tight gas production has resulted in lower gas and electricity prices than in the past, helping to make its industry more competitive. The increased gas supply provides a less costly fuel and raw material for the chemicals industry, while the gas surplus also creates potential for liquefied natural gas export. Wider availability of gas in the USA increased demand for electricity generation from gas, instead of coal, which helped lead to a reduction in carbon dioxide (CO<sub>2</sub>) emissions.

Hydrocarbons trapped in very dense rock are called tight gas and oil. They are found in either shale or sandstone, in pores 100 times thinner than a human hair. Production requires a process called hydraulic fracturing. Large amounts of water – mixed with sand and small quantities of chemicals – are injected under high pressure to fracture rock deep underground and release the gas and oil into the well. Hydraulic fracturing has been used safely for more than 60 years. However, its increased use in recent years, along with the increase in shale drilling, has caused concern in some communities about possible impacts on emissions and local water resources.

### ONSHORE OPERATING PRINCIPLES

We are a leader in promoting safe and responsible tight gas and oil operations and have developed and adopted a set of five operating principles for all our onshore tight gas and oil activities. These principles focus on safety, air quality, water protection and usage, land use and engagement with nearby communities. Each project is considered separately, from the geology to the surrounding communities, and our activities are designed to best suit the local conditions.

Our operating principles are reflected in oil and gas industry performance standards advocated by the Center for Sustainable Shale Development (CSSD), in Pennsylvania, USA. CSSD is a collaboration of environmental organisations, philanthropic foundations and industry that includes Shell (see opinion). In 2014, we will be taking part in CSSD's certification process, which includes an audit against CSSD's performance standards. The US Environmental Protection Agency (EPA) has also published rules and guidelines that closely follow our principles. We continue to advocate for state or provincial regulation on tight gas and oil operations in line with the EPA principles to provide a common set of standards.

### ENVIRONMENTAL CONCERNS

In 2012, we took part in a University of Texas study about fugitive methane emissions at nearly 500 wells at 150 gas production sites. It was the first detailed study of its kind and investigated existing concerns that tight gas production created higher methane emissions, a greenhouse gas around 20 times more potent than CO<sub>2</sub>. Its aim was to produce objective scientific data that details methane emissions from onshore gas production. The USA-based Environmental Defense Fund (EDF), a non-governmental organisation and nine energy companies, including Shell, took part.

Released in 2013, the study concluded that the total methane emissions are in line with the most recent USA EPA Emission Inventory (April 2013). However, the measured emissions from well completions were much lower than previously assumed by the EPA. Improvements were identified, as methane gas releases were higher from some equipment, such as chemical pumps and pneumatic controllers. Shell is reviewing its operations to explore opportunities for further reduction of emissions. We already apply technologies to monitor and reduce gas emissions, such as using infrared cameras at some sites to detect any small methane leaks so we can quickly address them.

The University of Texas study is an important part of a series of studies that look at methane emissions from natural gas production. Shell is currently participating in phase 2 of the study, working with the EDF and the oil and gas industry. We already use advanced, proven technologies and practices designed to make hydraulic fracturing safe, including EPA-approved "green completions" equipment that is used to minimise gas emissions and flaring.

In all onshore gas production, Shell works to reduce its operational and environmental footprint. We design our facilities and use technologies to limit disturbances. For example, we drill multiple wells from a single site. This minimises the number of drilling locations on the surface along with roads, noise and traffic.

### WATER

We work with local authorities to secure water for our operations and reduce potential impacts on local communities and the environment. For example, we isolate our wells from fresh-water aquifers by installing multiple barriers. At our Groundbirch operations in Canada, we invested in the construction of a reclaimed water plant for the nearby city of Dawson Creek. The plant treats



**Jared Cohon**  
Chairman of the CSSD Board of Directors,  
Pittsburgh, Pennsylvania, USA

### External opinion

"The production of gas from shale formations has proved to be contentious in many regions with too few instances of people working together. One of the most promising recent developments in the USA, has been the creation of the Center for Sustainable Shale Development (CSSD). It is a collaboration between industry and environmental organisations to establish and implement rigorous standards for shale gas operations in the Appalachia region of the USA.

Shell was one of the founding partners of the Center and Shell executives and engineers have been key contributors to the standard-setting process. Shell will be one of the first companies to be audited to demonstrate compliance with CSSD standards. This could offer leadership for the shale gas industry both in the USA and around the world."

sewage and other waste water to be reused in our operations. It is also used by the local government to reduce dust from roads and irrigate sports fields.

We have installed water systems to capture, transfer and reuse water at our Pinedale operations in Wyoming, USA, and at our Deep Basin operations in Alberta, Canada. We also disclose details of the chemicals used in the hydraulic fracturing process in our USA and Canada operations to the extent our suppliers allow. Shell supports government initiatives that require suppliers to fully release this information.



## LIQUEFIED NATURAL GAS

Greater supplies of natural gas, the cleanest-burning fossil fuel, can help to meet growing energy demand. Liquefied natural gas enables natural gas to be easily transported from remote areas to distant markets.

We were a pioneer of the liquefied natural gas (LNG) industry five decades ago and, today, we are one of the largest LNG suppliers. The LNG process cools natural gas to -162 °C to turn it into liquid and shrink it in volume by 600 times, allowing us to transport it around the world. At its destination, the LNG is turned back into gas for our customers. We have a share in 10 operating LNG plants worldwide, and are currently working on a number of LNG projects to grow this portfolio.

In late 2013, the 700th LNG cargo left the Sakhalin-2 LNG plant (Shell interest 27.5%) in Russia. The plant provides nearly 9% of Japan's LNG supplies and 4% of South Korea's supplies. Shell developed a technology designed to help cool natural gas for liquefaction in the subarctic conditions of Sakhalin. The process reduces the amount of natural gas used to run gas turbines by using low ambient temperatures for cooling. The waste heat generated in the liquefaction process is used as a heat source for the treatment process, improving energy efficiency. Sakhalin-2 is around one-third more energy efficient than an average LNG plant.

Shell, Korea Gas Corporation, Mitsubishi Corporation and PetroChina Company Limited have agreed to examine the development of a LNG export facility (Shell interest 40%) on the west coast of British Columbia, Canada. The project includes the design, construction and operation of a gas liquefaction plant, and facilities for the storage and export of LNG. If it proceeds, it will connect the

abundant supply of Canadian natural gas to growing markets around the world.

In Australia, around 50 km off the north-west coast, the Gorgon LNG project (Shell interest 25%) is under construction on Barrow Island. The Greater Gorgon fields are the largest gas discoveries in Australia to date. The project will include capturing carbon dioxide (CO<sub>2</sub>) produced with natural gas, that would otherwise be released into the atmosphere, and storing it safely underground. It is expected to capture and store 3 to 4 million tonnes of CO<sub>2</sub> a year, more than 2 km beneath Barrow Island.

### FLOATING LNG

Shell is developing a facility that enables us to produce, liquefy, store and transport LNG at sea. Floating LNG (FLNG) offers access to offshore gas fields that would otherwise be too costly or difficult to develop. FLNG eliminates the need for pipelines, onshore plants and infrastructure.

Our first project, Prelude FLNG, is currently under construction in South Korea. It will be used to develop the remote Prelude gas field off the coast of Western Australia. We are investing millions of dollars in Australian universities and other educational institutions to build local expertise to support the Prelude FLNG project. This includes working with the University of Western Australia's Energy and Minerals Institute to strengthen research in the impact of weather and ocean conditions on offshore gas installations and operations.

### LNG FOR TRANSPORT

LNG is emerging as a cleaner fuel for road transport and ships. Shell is developing an LNG for shipping business: we bought Gasnor in 2012, a Norwegian firm that supplies LNG as a fuel to shipping companies and industrial customers. In 2013, Shell started chartering Greenstream, the world's first 100% LNG-powered barge, to carry goods along Europe's River Rhine. It carries diesel, heating oil and unleaded petrol to customers in the Netherlands, Belgium, Germany and Switzerland. Greenstream produces fewer emissions and makes less noise than conventional vessels – an important factor when travelling through populated areas. A second LNG barge, Greenrhine, was chartered in the Netherlands in late 2013.

In 2013, we announced an agreement with construction equipment company Caterpillar to test a new type of truck engine at our oil sands operations in Alberta, Canada that will run mainly on LNG rather than diesel. If successful, this will help to reduce emissions at our oil sands operations.

Shell is working with transport companies to create an infrastructure for LNG-fuelled trucks to travel across the USA and parts of Canada. We are planning to introduce LNG fuelling stations for trucks in the Netherlands in 2014.

### GAS TO LIQUIDS

Our gas-to-liquids (GTL) technology makes it possible to use natural gas, rather than crude oil, to make a range of liquid products. These include cleaner transport fuels and materials that are used to make chemicals and lubricants. They can be blended with existing fuels or used in pure form. GTL fuels produce fewer polluting emissions when burned compared with traditional fuels.

Trials of Shell GTL Fuel have taken place in heavily congested cities. The trials demonstrated that buses, taxis and trucks running on Shell GTL Fuel can help improve local air quality, as it produces less polluting emissions than conventional diesel. Shell GTL Fuel is available to business customers in Germany and the Netherlands.

Pearl GTL, in Qatar, is the world's largest gas-to-liquids plant. The plant uses heat generated by its processes to convert water into steam, which drives its compressors and generates electricity. Its water-recycling system is the largest of its kind and recovers, treats and reuses all of its industrial process water. It can process 45,000 cubic metres of water a day – comparable to the water use for a city of 140,000 people – without discharging liquids from the plant.

Our Prelude FLNG facility is being built at the Geoje shipyard, South Korea.



## CONTRACTORS, SUPPLIERS AND JOINT VENTURES

Contractors, suppliers and joint ventures play an important role in our activities around the world. The construction of major projects employs a large number of workers. In 2013, around 200,000 contractors worked for Shell.

Large projects provide opportunities to build local economies through employment, skills development and training. The increased demand for goods and services can also help to create and grow local businesses. This can have a positive impact on communities. However, increased activity can put pressure on local infrastructure. This may include more traffic, more use of local services and higher living costs. We identify the potential impacts and put measures in place to reduce them.

### WORKING WITH SUPPLIERS

Shell purchases large volumes of goods and services from suppliers. In 2013, we spent around \$65 billion on goods and services around the world. Our Supplier Principles set out 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 including labour rights, safety and the environment. In 2013, we conducted 577 assessments of our suppliers and contractors on their level of compliance with our principles (page 34).

We purchase products and services that support our approach to sustainability. For example, we work with suppliers that can build pipelines using non-metallic materials, where appropriate, instead of carbon steel. Non-metallic pipes have a smaller carbon footprint than carbon steel pipes. Transportation and installation are also easier as

non-metallic pipes weigh around a quarter less than the equivalent size steel pipe. Shell Shipping also uses a supplier that provides low-friction paint for ship hulls, which makes the ship more fuel efficient.

### BUILDING LOCAL OPPORTUNITIES

Shell works to share the benefits of its projects and operations by creating jobs and helping local businesses and economies to develop. At the outset of a project we consider how we can make the best use of local suppliers and locally-produced materials, where possible. For example, in Malaysia we spent a total of around \$3 billion in contracts in 2013 across 150 local suppliers. In Nigeria, Shell introduced a new scheme supported by five local banks to assist Nigerian contractors in accessing finance, which is often a challenge in Nigeria. Contractors who win tenders with Shell are offered favorable funding terms from the participating Nigerian banks. In 2013, the funding scheme enabled 39 contractors to access loans worth over \$700 million.

We work with suppliers who may need support to meet our standards. In these cases, we may provide training and then monitor the supplier's performance throughout the life of the contract. The training includes making sure that businesses have skilled employees, technical know-how and sustainability awareness. In Qatar we signed a partnership agreement with Qatar Development Bank to provide training for suppliers to meet Shell's

Shell staff and contractor working together at the Jinqui tight gas project in Sichuan province, China.



### External opinion

"Shell's construction activities in Iraq during 2013 offered employment opportunities to a large number of local residents. Many were in need of employment as other sectors, such as the government, have a very limited number of vacancies. Shell made jobs available for graduates, skilled and unskilled workers.

The employment opportunities were managed by the Local Development Committee (LDC), which was set up by Shell, South Oil Company, Basrah Provincial Council and community representatives. The LDC ensures that all parties work together during the selection process, to distribute the jobs fairly and transparently."

standards for goods and services. We also worked with the governments of Kazakhstan and Oman to develop plans to increase local opportunities in the oil and gas sector.

### JOINT VENTURES

When we operate a joint venture we apply Shell standards that cover health, safety, security, environment and social performance. The Shell General Business Principles and the Code of Conduct also apply to these joint ventures.

We work with partners to share safety standards and knowledge across the industry. For example, the Netherlands has a national oil and gas industry programme, called HSELife UNIO. This programme aims to embed common safety practices across Dutch oil and gas companies, where different standards exist among various operating companies. The development of the standards is based on the work of Nederlandse Aardolie Maatschappij (NAM, Shell interest 50%), Centrica Energy and the WAT Group. In 2013, nearly all Dutch oil and gas production companies joined this initiative, which is also supported by the Dutch government.

## DEEP WATER

For more than 35 years, Shell has led deep-water exploration and production. We developed many of the advanced technologies, processes and safety procedures that enable the safe production of oil and gas from water depths of up to 2.5 km.

We produce oil and gas from the deep waters of Brazil, Malaysia, Nigeria, Norway and the USA Gulf of Mexico (GoM). We work to develop these resources responsibly and to be a good neighbour to the coastal communities closest to our operations.

### BRAZIL

Around 100 km off the coast of Brazil, the Parque das Conchas project (Shell interest 50%) has a floating production, storage and offloading vessel which delivers oil to shore with tankers. By the end of 2013, all four fields were in production.

Our major deep-water projects help to develop local economies through supply contracts. At Parque das Conchas, we spent more than a third of the project cost with Brazilian suppliers.

### MALAYSIA

The Gumusut-Kakap (Shell interest 33%) development in the South China Sea is expected to start production in 2014. With an estimated peak annual production of 135,000 barrels of oil equivalent (boe) a day, Gumusut can provide more than 20% of Malaysia's oil supplies in the coming decade.

The project features a semi-submersible production system in a region expected to need more of these structures in the future. We set up a training programme for Malaysian engineers and other skilled workers to provide technical support at Gumusut and future deep-water developments.

### NIGERIA

In Nigeria, our Bonga deep-water project (Shell interest 55%) has the potential to produce more than 200,000 boe a day. It created the country's first generation of deep-water engineers and technicians. Around 90% of Bonga's employees are

Nigerian. The project has stimulated the growth of Nigerian construction industries, which are vital to the country's future offshore production.

### USA

Shell has designed and installed seven deep-water platforms in the GoM since 1994. We produced 178,000 boe a day in 2013 from our facilities in GoM. The latest project, Mars B (Shell interest 72.5%), is our largest GoM platform, capable of producing 100,000 boe a day. Its four-column hull is anchored to the seabed and started up in 2014. A further 100,000 boe a day is expected from projects under construction.

Our Perdido platform (Shell interest 35%), off the south Texas coast, is the world's deepest offshore drilling and production facility operating in a depth of water of nearly 2,500 metres. Its moored structure eliminates the need to build new platforms, helping to minimise our environmental footprint.

### SAFETY IN DEEP WATER

Shell's rigorous safety standards for our deep-water operations worldwide continue to be designed to meet or exceed local regulatory requirements. The BP Deepwater Horizon tragedy in the GoM in 2010 reinforced the need to improve the industry's response to a deep-water incident. Shell was a leader in the development of two new deep-water spill-response consortiums.

Shell has joined with other oil and gas companies that operate in the GoM to form the Marine Well Containment Company (MWCC). With more than \$1 billion of funding, the 10 member companies have set up a rapid deep-water spill-response system. MWCC equipment is on continuous standby to capture and contain oil if there is a



**Chett Chiasson**  
Executive Director of  
Greater Lafourche Port  
Commission, Galliano,  
Louisiana, USA

### External opinion

"Shell and Port Fourchon in the USA have had a long-lasting working relationship. More recently, Shell played an instrumental role in four different project areas of safety, environment, security and sustainability to greatly enhance our region."

One specific area vital to our community is the safety and environmental protection of the Gulf of Mexico region. I worked with Shell on the Coastal And Marine Operators (CAMO) project, which was started by Shell to focus on prevention of Gulf of Mexico oil spills and gas releases. With Shell's guidance, the Port Commission also received two \$50,000 government grant awards to enhance this maritime safety initiative, including creating free training material for mariners.

Safety and long-term sustainability are a way of life for communities in the Gulf of Mexico region. Shell is a valued partner in helping us to ensure that these goals can be met. We appreciate Shell's ongoing commitment to our community and look forward to continuing the relationship."

### Construction of the Olympus platform for the Mars B development in the Gulf of Mexico, USA.



blowout on a deep-water well in the GoM. In 2013, the MWCC, in collaboration with Shell, tested and deployed a compact cap for deep-water response in confined spaces, such as spaces directly under drilling or production platforms. MWCC is developing an expanded system to be able to handle greater capacity and depths to 3,000 metres.

The Subsea Well Response Project (SWRP) was founded by nine leading companies and operated by Shell. It has designed and built a series of well-capping systems that can be adapted to various deep-water well emergencies around the world. The systems have been deployed to four locations: Brazil, Norway, Singapore and South Africa.



## IRAQ

Iraq continues to reinvigorate its economy by rebuilding its energy industry. Further work is needed, however, to improve the infrastructure for producing and transporting oil and gas.

Oil export revenues account for more than 70% of Iraq's gross domestic product, according to the International Energy Agency. A lack of reliable power supplies for households and local businesses continues to hinder the social and economic progress of the country. Shell is a major investor in the Iraqi energy industry.

### OPERATIONS

In May 2013, the Basrah Gas Company (BGC) began operations. BGC is a joint venture between South Gas Company (51%), Shell (44%) and Mitsubishi (5%). It is the largest gas project in Iraq's history and the world's biggest flaring reduction project. BGC aims to capture associated gas that is currently being flared from three oil fields in southern Iraq – Rumaila, West Qurna 1 and Zubair – for use in the domestic market.

The Shell-operated Majnoon project produces oil from one of the largest oil fields in the world, estimated by the Iraqi government to hold around 38 billion barrels of oil equivalent (boe). By the end of 2013, Majnoon was producing more than its initial production target of 175,000 boe a day. We have a 45% interest in Majnoon, partnering with Petronas and the Iraqi state, through Missan Oil.

Our work involves the clearing of unexploded munitions, which remain from the Iran-Iraq war in the 1980s. Our bomb disposal experts comb sections of the oil field, following safety procedures, by sifting through the sand inch by inch to locate and clear unexploded munitions. To date, we have collected or destroyed over 14,000 unexploded materials from across 54 km<sup>2</sup> at the Majnoon oil field.

### LOCAL EMPLOYMENT

Unemployment is a major challenge for Iraq, particularly among young adults. Where possible, we seek to hire Iraqi people and to use local suppliers: BGC has awarded 23% of its total contracts value to Iraqi companies and around 5,000 Iraqi employees have been seconded from the South Gas Company into BGC.

In 2013, we continued to create jobs and build skills among communities near our operations. Around 2,500 local residents worked on the Majnoon project in southern Iraq in jobs that include well engineers, safety advisers and driver trainers. During the year, Shell also set up an internationally accredited course to train local people as well engineers, with more than 20 successfully qualifying by the end of 2013.

We opened dedicated training centres in Majnoon and Basrah in 2013, which offer a combination of classroom learning and on-the-job experience for Iraqi nationals. More than 8,500 training programmes took place in Basrah covering topics such as Shell's Life-Saving rules and English language training.

Road safety remains a key issue in Iraq and road traffic accidents are a leading cause of fatalities. We have a local programme to train drivers who work at Majnoon in techniques to stay safe. These include checking whether cars are roadworthy, planning journeys properly and driving defensively to avoid danger. More than 2,300 local drivers had taken this driving training by the end of 2013.

We also continued to work with local contractors to increase performance on worker safety and align labour practices with Shell's Supplier Principles. In 2013, we received support and recommendations

on our contractor approach in Iraq from the Danish Institute for Human Rights.

### HEALTH AND EDUCATION

Near our Majnoon project, the improvement of access to basic services such as health and education is a constant challenge. People are often unable to travel to hospitals for medical care. We continued to support a mobile health-care programme, throughout 2013, working with the AMAR International Charitable Foundation and the Basrah Health Directorate. The programme provides health, education and training services to more than 9,000 people every month, including training for Iraqi doctors and health volunteers.

A lack of adequately equipped schools hinders education opportunities for future generations. In 2013, we funded the refurbishment of three schools in the Al-Nashwa community near our Majnoon project: Shell upgraded one secondary school as well as two primary schools in partnership with the United Nations Development Programme (UNDP) Iraq. Our community development programme also supports vulnerable groups in the Majnoon area. For example, in early 2013, we launched a campaign to develop business skills and literacy among women in the community.

Sport is a way to show young people how to work in teams and take on more responsibility. We support a youth sports programme, launched with the Football Club Barcelona Foundation and the Iraqi Ministry of Youth and Sports, for young people who live in the most deprived and conflict-prone areas in Basrah. Its aim is to instil social values through sport in children between the ages of eight and 17.

We have a partnership with the UNDP to help implement and evaluate our community projects.

### ENVIRONMENT

In line with increased oil production, the amount of flaring of natural gas produced with oil at Majnoon increased during 2013. We expect gas flaring from these operations to rise in coming years as oil production increases. We are working with our joint-venture partners to evaluate options to capture the gas that is currently flared during operations for use in power generation.

A memorandum of understanding has been agreed with the International Union for Conservation of Nature (IUCN) to help conserve biodiversity and manage the ecosystem at the Majnoon oil field. Working jointly with the Iraqi authorities, we will help conserve, restore and manage the Hawizeh Marsh, Iraq's only wetland of international importance (page 25). Under the agreement, we intend to work together to build awareness and knowledge of the importance of the marshes and jointly find ways to reduce the impact of future development in this sensitive area.

Students attend a women's literacy class in Majnoon, Iraq.



## INTERVIEW

## ALASKA: Q&amp;A WITH ANN PICKARD



**Ann Pickard**  
Executive Vice  
President, Arctic

In 2013, we paused our Alaska exploration programme and due to uncertainty of permits we stopped our preparations for 2014. We have continued our engagement with communities and continue to improve our capabilities for future exploration off the coast of Alaska. Our Executive Vice President Arctic, Ann Pickard, answers questions about Shell's exploration programme in Alaska.

**Alaska is an expensive and high-risk place to operate. Why does Shell continue to prepare to explore for oil and gas in Alaska?**

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. The US Federal Government estimates that Alaska has potential offshore oil and gas resources of 60 billion barrels of oil equivalent in roughly equal proportions. We believe that Alaska's Chukchi and Beaufort seas are the most promising undeveloped hydrocarbon basins in the United States.

Alaska oil and gas represents a potentially enormous and vital energy resource for the world. As traditional oil and gas resources decline, we have to develop resources in new, more challenging locations to help meet rising global demand.

**Is it possible to reassure people that Shell can manage the risks of operating in the Arctic offshore Alaska?**

Yes, we can. Safety is a top priority across all of our operations. We undertake significant planning and preparation to ensure there is no harm to people or the environment, and this will remain a priority for future operations in Alaska. It is also important that we work to stringent environmental standards and consult with local communities, including Alaska's indigenous population, at every stage of our operations.

We improve safety by analysing the risks, minimising the possibility of incidents occurring and reducing the potential consequences. Safe well operations demand highly competent people and strict safety procedures as well as rigorous design, construction and maintenance standards for all equipment.

It is also the responsibility of industry, the governments and people of the Arctic region, and other key stakeholders to make sure development is carried out in a sustainable and transparent way. Operators should meet the rigorous safety and environmental operating standards needed for responsible development.

**What lessons have been learnt during 2013 after the grounding of the drilling unit Kulluk?**

We conducted a review within Shell of the events of 2012 to learn from our experiences and improve our plans. The US Department of the Interior (DOI) also recommended that we submit a full operations plan prior to any future exploration programmes. This has led to a strengthening of our organisation around logistics and maritime integrated operations to achieve safe and responsible exploration.

This was reflected in our Integrated Operations Plan (IOP), which formed part of our submission to the DOI in November 2013. Importantly, it included the procedures and competency assurance programmes we are putting in place. Other improvements include enhanced logistics management; improvements to the Arctic containment system; detailed contractor management procedures; focused audit and review plans, and improvements to the overall integration of programmes.

**How are Shell's activities managed to limit negative impacts on the existing communities, culture and infrastructure?**

We are very aware of the potential impacts of our operations and have already taken steps to reduce impacts in the communities closest to our leases. This includes providing a camp for our employees in Barrow on Alaska's North Slope to reduce strain

on the limited local housing market or using hotel space during the summer season, when our operations take place. We have our own chartered aircraft to transfer crews from Anchorage to Barrow to reduce pressure on the airlines.

We are committed to working closely with the local communities to understand their needs and preferences. We have community liaison officers (page 8) in each village on the North Slope who engage with local communities to help inform our decisions and notify us of any impacts of our operations. For example, during the operating season, we set up communications centres for the subsistence hunting community. This helps to reduce or eliminate any interference between our operations and their subsistence activities, such as hunting or fishing. We also have a community phone line year-round so that people can inform us of any issues.

**What benefits will be provided to local residents in the areas of jobs and training?**

We share the benefits of our operations by creating jobs. There are around 140 Alaskan companies that we work with and many of them are local native corporations. These contracts can benefit local residents from shareholder dividends from local co-operatives. We have been working with businesses such as the Arctic Slope Regional Corporation (ASRC) to offer contracts for jobs and skills transfer that can support the local economy.

We also support several education programmes in Alaska, which will help us develop a trained workforce among the local communities. This includes support for the Alaska Native Science and Engineering Program, the Ilisagvik tribal college in Barrow and the Alaska Technical Center in Kotzebue.



### What research has Shell conducted on the Alaskan environment to ensure that you operate responsibly?

Since 2005, Shell has invested around \$95 million on Alaskan science, including work with other companies in the oil and gas sector. The Alaska Arctic Science programme builds upon traditional knowledge and observations of indigenous peoples, along with input from other stakeholders, to identify research priorities and strategies. A significant portion of the programme involves local people working with experienced scientists.

Our science programmes are some of the most significant contributors to emerging science in the Arctic area of the USA. In an agreement with the National Oceanographic and Atmospheric Administration (NOAA), the data and results of our studies will be available to the NOAA and the broader scientific community.

We have developed innovative technologies and conducted many scientific studies that enable us to work responsibly in this challenging offshore environment. This approach includes the use of unmanned aerial drones and marine acoustic recorders, as well as ecosystem studies that combine traditional and scientific knowledge.

### Shell claims to have a strong safety culture. How do you prepare for a worst-case scenario in an area like Alaska, such as an oil spill?

We are committed to lowering the risk of incidents by investing in prevention and operating safely, but we must also prepare for a worst-case scenario. Our oil-spill response plans are very robust and have been approved by US Federal Government Agencies, with input from Alaska state agencies, and are publicly available on our website.

First, Shell has a significant focus on prevention of any well control incident. We have developed an oil-spill prevention toolkit, a strong safety culture and ice management strategies. Second, in the unlikely event of a well control incident, we have a three-tier programme with a dedicated on-site fleet; near-shore barges and response vessels, and onshore response teams staged across the North Slope of Alaska. We are better prepared for any spill than any other company in the world – no other company has ever deployed immediate, onsite response resources similar to ours. We have also prepared subsea capping and containment systems to capture and recover hydrocarbons at the wellhead.

### A trained team of people from the community assist in an oil spill response drill in Alaska, USA.



**Rex Rock**  
President and  
CEO of ASRC,  
Barrow,  
Alaska, USA

### External opinion



"Arctic Slope Regional Corporation (ASRC) is a family of companies that sets ambitious goals to benefit our region, our shareholders and our businesses, using our *Triipiaq* values as a guide. We aim to balance the subsistence and economic needs of our people and value taking part in discussions where critical decisions are being made about potential impacts to our lands and future.

ASRC values its relationship with Shell because the company shows commitment and follow through in supporting our goals. Shell has been working with our communities to understand the importance of our subsistence lifestyle, while working with our companies as world-class contractors. These types of relationships have helped both organisations to grow. We look forward to pursuing partnership opportunities with Shell in the future."

We believe the industry can work together on prevention and response. In 2012, we joined several international oil and gas companies, co-ordinated by the American Petroleum Institute, in a cross-industry project. It aims to create international research programmes to enhance industry knowledge and capabilities for oil-spill response in the Arctic.

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

A US Ninth Circuit Court decision against the DOI in January 2014 raised obstacles to our plans for drilling offshore Alaska. As a result, we have decided to suspend our exploration programme for Alaska in 2014. We look to relevant agencies and the court to resolve their open legal issues as quickly as possible and will continue to review the situation as we develop our plans.



## INTERVIEW

## NIGERIA: Q&amp;A WITH MUTIU SUNMONU



**Mutiu Sunmonu**  
Chairman of Shell  
companies in Nigeria

The Chairman of Shell companies in Nigeria, Mutiu Sunmonu, answers questions about Shell's operations in Nigeria during 2013.

**Shell has described Nigeria as a "challenging operating environment". In 2013, you announced that the company will sell some of its oil and gas production projects and leases in the Niger Delta. Does Shell remain committed to Nigeria?**

Shell experienced another very challenging year in 2013. However, Shell is committed to a long-term future in Nigeria, as we have said on many occasions. We have a history of more than 70 years in Nigeria where we have been the pioneer in onshore oil, gas and LNG, and offshore in shallow and deep water.

As announced in June 2013, we have decided to reduce our presence in the Niger Delta while reiterating our commitment to other areas of Nigeria, such as deep water and onshore gas operations. This is part of a consolidation that is intended to strengthen our position in the country. It will enable local companies to increase their presence in the upstream oil and gas sector, and it supports the Nigerian government's policy of encouraging investment by indigenous companies in its oil and gas industry.

**You have been calling for government action to work in collaboration with civil society to tackle oil theft and sabotage of SPDC's pipelines and other facilities. What steps have been taken?**

In 2013, production loss due to crude oil theft, sabotage and the related temporary shut-downs increased by around 75% compared with 2012. On average, around 32,000 barrels of oil per day (bopd) were stolen from SPDC's pipelines and other facilities. On top of this, SPDC lost production of around 174,000 bopd due to the related shutdowns. This equates to several billion in revenue losses for the Nigerian government and SPDC. This particularly affects the Nigerian government as around 95% of revenue after costs goes to the government.

SPDC has a number of initiatives to tackle the problem of crude oil theft, which remains the main cause of oil pollution in the Niger Delta today. These include operational measures such as increased pipeline surveillance, doubling the number of repair crews to tackle pipeline sabotage and more collaboration with local communities. We have improved levels of transparency so that people can follow our progress.

Throughout 2013, the international level of awareness of the oil theft problem has risen due to high-profile reports including a publication by the UK think-tank, Chatham House. This report explored the role of the international community in stopping the theft and trade of Nigerian crude oil. I believe that a broader, co-ordinated approach is needed to end this criminality. Governments need to take a leading role and we, at SPDC, are committed to playing our part.

Better security, collection of evidence and law enforcement are required on the ground, while international action is needed to trace, track and apprehend the international networks trading in stolen crude.

**What clean-up operations take place after oil spills?**

SPDC responds to all oil spills, regardless of the cause, originating in the area immediately surrounding its pipelines and other facilities. We start by shutting down production and containing the spill. For every spill, a joint investigation is carried out with regulators, oil company representatives, community members, and local and state officials. Secure access to the area is important to keep everyone safe.

In 2013, we started to invite non-governmental organisations to accompany us as observers on joint investigation visits to oil-spill sites. The team assesses

the cause of the spill, measures the damage and calculates the volume of the spill. On average over the year, approximately 70% of the spilled volume was recovered from the environment.

We clean up and remediate the affected area, which includes cleaning or removing vegetation and assessing the impact on the soil. This assessment determines the area and depth of soil that needs to be remediated, in accordance with regulatory requirements. We typically use bio-remediation processes, which can take a long time to complete. SPDC conducts a quality check and the regulators are invited to certify the sites.

Our oil spills website has weekly progress reports on clean-up activities, investigation reports and photographs of spill sites. SPDC is the only international oil company to maintain this type of website. The industry regulator is working on a country-wide website, based on this website, which will cover spills from all operators.

**What contribution have you made to residents in the communities of the Niger Delta during 2013?**

During 2013, the focus of SPDC was to build entrepreneurial skills among the most vulnerable people within the Niger Delta's communities. For example, we set up four centres for women to teach skills in areas such as catering, fashion, design and printing. We also supported the Nembe City Development Foundation with 35 vehicles to help young people develop skills to work in the transport business.

SPDC and its joint venture partners provide funds to support projects that are nominated by community groups. A GMoU enables communities to access these funds and over \$130 million has been spent on these projects in the past seven years. For example, a community group implemented solar-powered water systems that ensure a steady supply of potable water to the local communities.



## NIGERIA

Crude oil theft and sabotage continued to affect our operations in the Niger Delta during 2013. This had severe social, economic and environmental implications. We are working with our sector, governments, non-governmental organisations and the international community towards ending the theft and sabotage.

During 2013, production was shut down many times to remove illegal connections to pipelines and make repairs. These shutdowns limit the environmental impact of theft and sabotage along SPDC's pipeline network. However, it also reduces SPDC's production leading to lost revenues for SPDC and the Nigerian government.

### SPILLS AND RESPONSE

SPDC continues to improve its infrastructure within this deteriorating security situation. This has led to a reduction in the number of operational spills from SPDC operations, which fell from 37 in 2012 to 30 in 2013. The volume of operational spills from SPDC operations increased to 0.4 thousand tonnes. Around 0.3 thousand tonnes of this volume was from a single spill.

In 2013, the number of spills caused by sabotage and theft increased to 157, compared to 137 in 2012. However, the volume of oil spilled due to sabotage and theft decreased to 2.2 thousand tonnes. This decrease was due to intensified inspection of our facilities, including overflights.

Operational spills accounted for around 15% of the total volume spilled from SPDC facilities in 2013. A key priority for SPDC is to achieve its goal of no operational spills. In 2013, it continued work to maintain and replace pipelines and other infrastructure and, in the past three years, SPDC has replaced around 770 km of pipeline.

SPDC continues to take further steps to improve oil-spill response and clean-up. Of 167 sites in need of remediation identified at the start of 2013, SPDC had cleaned more than 85% by the end of the year. In 2012, the International Union for Conservation of Nature (IUCN) set up an independent scientific panel, at the request of SPDC. Its goals were to identify improvements in SPDC's oil spill clean-up and remediation practices, as well as the rehabilitation of biodiversity at oil spill sites in the Niger Delta. Its first report, published in September 2013, made specific recommendations for SPDC, the industry, government and communities to support rehabilitation activities. SPDC is working together with all parties involved to follow up on the Panel's recommendations.

In 2011, the UN Environment Programme (UNEP) published an Environmental Assessment of Ogoniland, a study of oil pollution in the Ogoniland region of Rivers State in the Niger Delta. The report was commissioned by the Nigerian government. SPDC has shown leadership by undertaking a range of activities related to the report in advance of the government, where it was able to do so. This included increasing community access to potable water in Ogoniland.

SPDC has also investigated the 15 sites identified in the report and they have been remediated, where required, despite cases of recontamination from oil theft and illegal refining. The remediated sites have

been certified by the local regulatory body as being compliant with both soil and groundwater remediation requirements. Another recommendation of the report was to verify the condition of non-operational equipment and facilities in Ogoniland. Due to more recent increased access to perform this verification process, SPDC has identified 125 additional sites in need of remediation.

The Nigerian government will need to take the lead on co-ordinating other restoration activities in Ogoniland that were recommended in the report. However, a full clean-up is only possible when theft and illegal refining are contained.

### FLARING

In 2013, SPDC's total flared gas volume was reduced by 23% compared with 2012, in line with lower production. SPDC has delivered around 60% reduction in gas flaring intensity over the last decade and is reducing this further. Reductions in flaring are part of a long-term strategy and include a number of key projects. Once these projects are complete, SPDC flaring will be below current industry average. In 2012, SPDC announced additional investments of around \$4 billion on projects to develop new oil and gas fields that will include gas-gathering facilities for fields that currently flare.

Illegal makeshift oil refineries contribute to economic loss and environmental damage in the Niger Delta, Nigeria.



### 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) hold interests in a number of offshore licences including the Shell-operated Bonga field (Shell interest 55%), Nigeria's first deep-water project. Shell also has a 25.6% interest in Nigeria Liquefied Natural Gas (NLNG), which exports LNG around the world.

**\$44 billion:** revenues from SPDC to the Nigerian government from 2009 to 2013.

**\$4.0 billion:** Shell share of royalties and taxes paid to the Nigerian government in 2013 (SPDC \$2.6 billion, SNEPCo \$1.4 billion).

**95%:** share of revenue after costs that goes to the Nigerian government from each barrel of oil SPDC produces.

**\$1.5 billion:** value of SPDC and SNEPCo contracts awarded to Nigerian companies in 2013.

**Around 4,000:** number of direct employees working at SPDC and SNEPCo, and tens of thousands indirect jobs created.

**About 95%:** proportion of employees at SPDC and SNEPCo who are Nigerian.

**\$180.6 million:** SPDC and SNEPCo funds to the Niger Delta Development Commission in 2013 (Shell share \$69.8 million).

**\$104.1 million:** 2013 contribution from SPDC and SNEPCo to community development projects (Shell share \$32.3 million).

## NIGERIA CONTINUED

These projects are heavily impacted by two factors that are not within SPDC's full control: the external security situation and joint venture partner funding constraints. If left unresolved, it will result in delays to some of the projects that would help to deliver reductions in flaring over the coming years. However, SPDC remains committed to flaring reduction from its operations.

### WORKING WITH COMMUNITIES

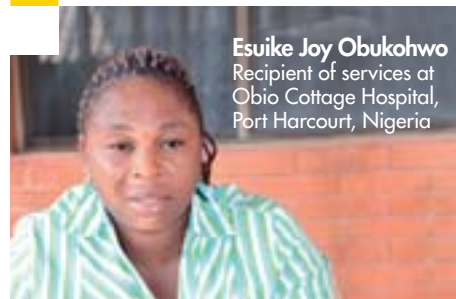
In 2013, SPDC maintained its strong commitment to community investment in the areas of community development, access to energy, environment and education. The Obio Cottage Hospital in Port Harcourt, set up by SPDC, has become one of the most visited health facilities in the region (see opinion). This is due to a community health insurance scheme which was the first of its kind for the Niger Delta. SPDC supports 27 health facilities in the Niger Delta.

For more than 50 years, Shell scholarship programmes have supported the education of thousands of Nigerians. In 2013, almost 1,800 secondary school places and 850 university scholarships were offered, with more than \$7 million invested in the programme. Shell launched its Shell Scholars Forum in the same year,

a network to bring current scholars together with past beneficiaries who now occupy influential positions in business, government and other institutions. This helps to develop mentoring relationships and encourages the sharing of experiences across generations.

SPDC sponsors projects that increase the community's access to energy. The Bonny Utility Company, for example, is a collaboration between oil and gas companies, the Nigerian government and local communities. It delivers a safe and reliable electricity supply to more than 11,000 households and provides employment to more than 50 local residents. SPDC also supports the Nigerian Alliance for Clean Cookstoves to introduce clean and efficient stoves to households for cooking and heating (see box, below).

Despite challenges such as funding constraints and security, SPDC is making progress on major projects to boost Nigeria's future supply of gas and power. For example, the Okoloma gas plant and Afam power plant were constructed and delivered in less than two and a half years despite security challenges. This integrated power plant has contributed 14% to 20% of Nigeria's current power supply, together serving industrial and domestic use.



**Esuikie Joy Obukohwo**  
Recipient of services at  
Obio Cottage Hospital,  
Port Harcourt, Nigeria

### External opinion

"My husband and I came to Obio Cottage Hospital after recommendation from a friend. The services were free, once we registered with a fee for one year, because of the community health insurance programme supported by SPDC. My second child was delivered at Obio Hospital."

It has all the services we need: in addition to ante-natal care services, I have received laboratory testing and treatments whenever I am ill. It also offers immunisation and family planning services. The hospital is hygienic and is powered by solar and wind energy, so there are no power cuts. It is very different from other health facilities in the area."

### CLEAN COOKSTOVES

Globally more than 1 billion people are without access to electricity and around 3 billion people rely on wood or other biomass to cook and heat their homes, according to the World Bank. In Indonesia, for example, around 75% of the population use biomass and rudimentary stoves, with many people using wood as fuel.

The smoke emitted from traditional or inefficient cookstoves also poses severe health risks. The World Health Organisation's Global Burden of Disease project estimates the total annual deaths from all household smoke exposure from cookstoves at 4 million. The emissions from inefficient cookstoves, such as carbon dioxide and soot, also contribute to climate change.

In 2013, Shell renewed its support for the Global Alliance for Clean Cookstoves, in its efforts to introduce 100 million homes to clean and efficient stoves and fuels by 2020. Shell is the single largest private-sector contributor to the Alliance, pledging \$12 million since 2010 to the public-private partnership.

Our contribution has led to the development of regional testing centres and country-based assessments for the cookstoves sector. The assessments are used by organisations to help drive the adoption and long-term use of clean cookstoves. Shell has funded assessments for Brazil, China, Indonesia, Nigeria, South Africa and Timor Leste. Shell companies in Nigeria also support the local Nigerian Alliance for Clean Cookstoves to grow the market for efficient stoves in Nigeria. This includes increasing access to finance for clean cooking enterprises and raising awareness by producing a local documentary. Shell also supports the Spark Fund, which provides grants to grow businesses that have the potential to transform the cookstoves sector.

Shell's support builds on the efforts of Shell Foundation, a UK-registered charity, which has been working to build an international market for affordable clean cookstoves for more than 10 years. Their work has benefited more than 4 million people, serving low-income consumers in Asia, Africa and Latin America.

### SHELL FOUNDATION

Shell Foundation is a UK-registered charity that applies business thinking to global development challenges such as job creation, access to energy and urban mobility. Shell Foundation works with partners to create social enterprises that deliver societal and environmental benefits on a global scale – providing business support, grant funding and market links to help them grow and achieve financial independence.

For example, Shell Foundation co-founded GroFin to provide a range of business skills, flexible funding and commercial links to help entrepreneurs in Africa expand their businesses. More than 16,000 jobs have been created and sustained in Africa since 2004. In 2013, Shell Foundation assisted GroFin's expansion into the Middle East with the launch of Nomou, a regional initiative that offers core support to small and medium enterprises in Egypt, Iraq, Jordan and Oman.

Shell Foundation was set up in 2000 with Shell providing a \$250 million endowment and further donations of \$190 million to the end of 2013.





A family transports dry reeds across the flooded Hawizeh marshland, near our Majnoon project in Iraq, to be used as feed for their buffaloes.

## FOCUS ON PARTNERS AND COLLABORATION

Collaboration among business, government and civil society is necessary to address the scale of the challenges that the world faces. We work at the international and local level to enhance our understanding of these challenges.

Our partnerships and broader collaborations are of vital importance to our new projects and ongoing operations. They can also play a beneficial role in helping to build trust among our stakeholders. We work with government, business and civil society, including non-governmental organisations, to contribute to broader public dialogue, academic debate and advocacy in areas such as energy and climate policy. We also partner with organisations that can advise us in specific areas such as biodiversity or human rights.

This work can lead to improved practices or new guidelines, such as the IPIECA guide for the oil and gas industry on human rights. IPIECA is the global oil and gas industry association for environmental and social issues. We also work with organisations such as the European Commission and the World Business Council for Sustainable Development to apply effective advocacy on environmental and community topics. This includes advocacy on issues such as carbon pricing.

### ENVIRONMENTAL PARTNERS

We work with several environmental organisations, including Earthwatch, the International Union for Conservation of Nature (IUCN), The Nature Conservancy and Wetlands International, to find effective ways to address environmental challenges, including protecting and enhancing the environment around our operations. These collaborations can be mutually beneficial by reducing our environmental impact and sharing knowledge.

Working with our partners leads to improvements in our projects and operations. For example, our work with Wetlands International has helped us to gain a better understanding of wetland conservation techniques around pipelines in Brunei. Our collaborations can also help to advance science and conservation information. We are a founding member of the Proteus Partnership, where we support the work of IUCN and the United Nations Environment Programme's World Conservation Monitoring Centre to maintain the free and publicly available World Database on Protected Areas.

We have been involved in numerous initiatives with IUCN, the world's largest conservation network, over the last 15 years. Our joint work has focused on enhancing biodiversity conservation performance, strengthening the management of protected areas, advancing science, developing public policy and improving general awareness through the support of IUCN knowledge products such as the IUCN Red List of Threatened Species™.

Wetlands International has been a partner since 2008. We are working with them to support the conservation of biodiversity of the sensitive marshlands near our Majnoon project in Iraq. These wetlands were severely damaged by past drainage and war, which constrained water availability. Restoration of these marshlands will help the environment and the communities who depend on this resource for their livelihoods.

Our work with The Nature Conservancy has continued for more than five years. We are currently assessing the potential to deploy natural systems such as oyster reefs and floating islands to help protect one of our pipeline systems in the Gulf of Mexico. These natural systems can serve as a breakwater and help reduce coastal erosion. In 2013, we advanced this project and identified a specialised environmental engineering company that aims to design these natural infrastructure solutions.

We are now in the 16th year of our employee volunteering programme, Project Better World, in partnership with Earthwatch. Our employees have the opportunity to take part in scientific expeditions for two weeks at multiple locations around the world. In 2013, we introduced a new Enhanced Learning Programme for employees. Those who take part in the programme must implement an action plan related to sustainability that is relevant to Shell. Three Enhanced Learning Programme expeditions will take place in 2014.

We also continue to run a business mentoring programme with Earthwatch, to work with managers of World Heritage sites to develop business plans and improve the management of these areas. The Shell employees taking part provide mentoring for a year.

### PARTNERING FOR COMMUNITIES

We work with organisations that focus on social challenges or community development. These collaborations can help to raise operational practices in our business and for the energy sector. For example, we continue to work with the Danish Institute for Human Rights to help us integrate human rights into the areas of labour practices, procurement, security and community impact.

We are also a core member of the Global Road Safety Partnership, along with four other international companies, which works to reduce road accident injuries in low- and middle-income countries. Many Shell locations also implement local road safety programmes. In Turkey, for example, Shell worked in co-operation with the World Health Organization (WHO) and relevant government departments to raise public awareness of road safety across the country. The campaign particularly encouraged people to wear seatbelts and reached 96,000 people over two years.

Across the world, we work with organisations like the United Nations Development Programme (UNDP) to implement our community programmes. These organisations can offer local knowledge and help us to identify community needs, such as jobs or better health care. For example, in Iraq the UNDP helps us to improve our programmes which help women to build businesses and support youth development skills. In Somalia, we are part of a shipping industry initiative with the UNDP and its partners to support long-term employment opportunities for young adults by providing viable employment alternatives to illegal activity such as piracy. The initiative supports projects for young adults in agricultural and fishing industries.

## OIL SANDS

Oil sands are one of the world's most significant energy resources and provide an important source of energy for North America. They are energy- and water-intensive and must be developed responsibly. Oil sands are found in three deposits in Alberta and parts of Saskatchewan in Canada.

Oil sands are a mixture of bitumen – a heavy oil – sand, water and clay. Some of the oil sands are found within 70 metres of the surface, where they can be mined, but most are deeper underground. Conventional wells are used to produce deeper-lying resources, often with steam injected into the reservoir to heat and thin the bitumen to ease its flow.

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, and converted into synthetic crude oil for refining into products. In 2013, Shell's share of AOSP production was around 126,000 barrels of oil equivalent (boe) a day and production from deeper-lying, or in situ, oil sands operations was around 19,000 boe a day. This makes up around 4.5% of Shell's global oil and gas production for the year.

In 2013, we announced our decision to go ahead with the Carmon Creek project in Alberta. This is an in situ oil project that is expected to produce up to 80,000 barrels of oil a day. The project has been designed to make efficient use of the gas and water that is produced with the bitumen. We also received regulatory approval, with environmental and community conditions attached, for the Jackpine Mine Expansion, and began a review of its operations with our partners. The potential expansion could add 100,000 boe a day of production.

**An operator prepares to start work at the Muskeg River Mine in Alberta, Canada.**



Some opposition exists to the development of oil sands. We work with aboriginal peoples in local communities so that any development has limited impact on traditional land use and culture. We are helping to develop local skills and businesses among the aboriginal communities: AOSP has invested over C\$1.5 billion since 2005 in contracts with around 70 aboriginal businesses and contractors that provide a broad range of products and services to our operations.

### MANAGING CO<sub>2</sub> EMISSIONS

We continue to operate responsibly to reduce our environmental impact by working on ways to improve the management of carbon dioxide (CO<sub>2</sub>) emissions, water and land in our oil sands operations. Oil sands typically emit 4% to 23% more greenhouse gas emissions than the average crude consumed in the USA from production through to use as a transport fuel, according to Cambridge Energy Research Associates (CERA). We are working to manage our CO<sub>2</sub> emissions by improving energy efficiency and using lower-carbon energy supplies. With the support of the Canadian government we are also building a carbon capture and storage facility, Quest, that is linked to the Scotford Upgrader (page 11).

Collaboration with other companies can help us to develop technologies that reduce our environmental impact. For example, we are founding members of Canada's Oil Sands Innovation Alliance (COSIA), which brings oil sands producers together to share environmental technologies (see opinion).

### WATER USE AND RECYCLING

We use around 1.2 barrels of river water from the Athabasca River for every barrel of bitumen extracted from our mining operations. No water used in our mining and extraction processes is returned to the river, and our recycle rate is more than 75%. While Shell has permits to withdraw 0.6% of the Athabasca River's average annual flow, we used less than 0.08% in 2013.

In 2013, Scotford Upgrader operations used around 0.4 barrels of river water from the North Saskatchewan River for every barrel of bitumen that was upgraded. Around 90% of the waste water from the upgrading is reused in operations.

### TAILINGS AND RECLAMATION

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



**Dr. Dan Wicklum**  
Chief Executive,  
Canada's Oil Sands  
Innovation Alliance  
(COSIA), Calgary,  
Alberta, Canada

### External opinion

"COSIA is an alliance of oil sands producers, established in 2012 and representing 90% of production from the Canadian oil sands. The COSIA members aim to improve environmental performance in Canada's oil sands through collaborative action and innovation. Member companies are currently working on 185 joint industry projects across four key environmental areas of land, water, tailings and greenhouse gases.

Some of the environmental technologies and innovations shared through COSIA are already being put to use to accelerate the pace of environmental performance improvement. As Shell pursues its Carmon Creek oil sands project in north-west Alberta, it will draw on expertise shared through COSIA in building pipelines that reduce the impact on land."

settled the water is recycled at our mines, reducing the need for river water in our operations.

Tailings ponds at the Muskeg River and Jackpine mines covered 24 km<sup>2</sup> at the end of 2013. Shell has invested over C\$250 million since 2005 in developing technologies to speed up the tailings drying process. We actively share this research and work with other companies to find solutions. The Alberta government has regulations in place to reduce the amount of liquid tailings and we continue to work with it to meet these requirements.

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



We invested in GlassPoint technology and use it to generate steam for enhanced oil recovery in Amal, Oman.

## FOCUS ON TECHNOLOGY AND INNOVATION

Innovation and the development of advanced technologies are central to our strategy. Our research and development programme includes technologies to manage carbon dioxide emissions and to make alternative sources of energy commercially available.

Advances in research and development (R&D) can help meet the world's growing energy demand and reduce the impact of our operations. We also use R&D to help develop new businesses where we can apply our existing knowledge and skills. For example, the handling and sale of biofuels is similar to our existing business, and we are able to expand into new areas, such as the production of biofuels, supported by R&D.

### SOURCING NEW IDEAS

We have leading scientists working in our technology centres around the world, including major centres in the Netherlands, India and the USA, whose work includes developing cleaner energy technologies. Research in the Netherlands has included turning natural gas into transport fuel and other liquid products (gas-to-liquids or GTL) as well as developing more efficient chemical processes. In both the Netherlands and the USA, scientists are researching opportunities to provide liquefied natural gas (LNG) as a transport fuel. In India, our research includes more effective ways of boosting oil production from existing fields, improving water management and energy use in our operations.

People outside of Shell are encouraged to come to us with their innovative ideas. Our GameChanger programme identifies and helps develop ideas that could have an impact on the future of energy. This includes finding ways to produce energy from cleaner sources. GameChanger offers financial support and expertise to take ideas through to testing. GameChanger funded early research that led to the development of the Prelude floating liquefied natural gas (FLNG) facility, a project to turn natural gas to liquid at sea. It is designed to produce and liquefy gas and then transfer it to LNG tankers. This eliminates the need for complex infrastructure such as pipelines to shore and loading jetties, and reduces the environmental footprint. When built, it will be the world's largest offshore facility, with a hull measuring nearly half a kilometre in length.

Shell Technology Ventures (STV) is our corporate-venturing arm, which invests in companies across the energy sector to speed up the development and deployment of new technologies which complement our business. It offered funding and expertise to California-based company, GlassPoint. This followed a decision by Petroleum Development Oman (Shell interest 34%) to select GlassPoint for a demonstration project. GlassPoint's technology uses moving mirrors that focus sunlight on water-carrying pipes to capture solar energy and generate steam – using sunlight instead of natural gas to boil water can reduce carbon dioxide (CO<sub>2</sub>) emissions by up to 80%. Glasshouses protect the mirrors from sand or dust and wind. We saw the potential to use the GlassPoint technology to produce the steam sometimes injected into oil reservoirs to boost recovery.

### CAPTURING EMISSIONS

Shell is working on ways to capture CO<sub>2</sub> from power plants and industrial facilities and store it safely underground. We support a number of carbon capture and storage (CCS) demonstration projects around the world. For example, Quest is the first project to reduce CO<sub>2</sub> from oil sands operations in Canada (page 11).

We are also developing new ways to capture emissions. Shell Cansolv offers gas-processing units to industrial customers to capture sulphur dioxide (SO<sub>2</sub>), which contributes to local air pollution, and CO<sub>2</sub>. The technology can be added to an existing plant or incorporated into a new installation. The CO<sub>2</sub> can be sold to oil companies to inject into reservoirs to boost oil production, or be stored safely deep underground. In 2013, Shell Cansolv and RWPE nPower started operations in the UK to capture both SO<sub>2</sub> and CO<sub>2</sub> at the world's first demonstration plant.

### ENERGY EFFICIENCY

We continue to work on improving the energy efficiency of our existing operations. By reducing heat loss or power use, we can also reduce CO<sub>2</sub> emissions. In 2013, we improved a cooling system within a gas-gathering network at our Magnolia tight gas operations in Louisiana, USA. Through improved monitoring we were able to shut down around half of our air coolers and the associated small gas engines that were providing power. This led to a reduction of 28,000 tonnes in CO<sub>2</sub> emissions.

A 1% improvement in energy efficiency across our manufacturing sites is equal to \$5 million to \$7 million savings per site. A new energy monitoring system has improved efficiency in energy, mainly due to CO<sub>2</sub> and energy management. Used across 20 of our manufacturing sites, this has led to savings of more than \$20 million in 2013.

### FUTURE ENERGY STORAGE

Renewable sources will help meet the growing demand for energy, but energy from wind and the sun is intermittent. One way to overcome this is to store the wind and solar energy until it is needed, such as during peak hours. This can be done by taking electricity generated from renewable energy and using it to create different energy sources that can be stored.

Our Future Energy Technologies team, set up in 2010, is researching ideas for energy storage technologies such as batteries, compressed air, heat, water pumped to a high elevation, or hydrogen. For example, liquid hydrogen could be stored underground in salt caverns and then turned back into a gas to release its energy in fuel cells or through combustion.

We are exploring ways in which hydrogen can be used for road transport. We have hydrogen filling stations in Germany, Japan and the USA that allow us to evaluate a range of different technologies.



## FUELS AND PRODUCTS

At Shell, we develop transport fuels and lubricants that can help motorists to reduce their fuel consumption and improve engine efficiency for vehicles. This can help to reduce the environmental impact of transportation as the number of vehicles is expected to grow significantly in the coming decades.

Shell supplies fuel to millions of drivers every day. More than 340 scientists and engineers work full-time on researching and developing more efficient lubricants and fuels. Shell designs systems and programmes to inform its customers about how to use fuel more efficiently.

We have a range of more efficient regular priced fuels called Shell FuelSave Diesel and Shell FuelSave Unleaded petrol. They are designed to help motorists save fuel by improving combustion in the engine and reducing energy loss. These fuels are now available in 20 markets across Asia, Africa and Europe. We are also continuing our development in gas for transport (page 16) and biofuels.

Our approach to energy efficiency includes helping customers to change driving behaviour. The Shell FuelSave global campaign aims to help 1 million motorists drive more efficiently, save fuel and reduce the cost of motoring. Launched in 2012, the Shell FuelSave Target One Million programme equips motorists with new skills and car-care tips through a series of interactive, online games. Over 400,000 motorists across 18 countries had taken part by the end of 2013.

We also help the commercial road transport sector to reduce fuel consumption. Shell FuelSave Partner is a system developed for fleet operators which uses

onboard electronic technology to monitor their drivers' fuel use and driving habits. The system transmits data to transport companies which can improve their overall fleet performance as well as provide specific tips for drivers on techniques to reduce fuel consumption. Around 10,000 commercial vehicles are signed up to the programme and several new features were introduced in 2013 that improve communication between drivers and fleet managers.

### PROGRESSING SCIENCE

We work with vehicle manufacturers to develop and test new fuel and product technologies. This includes working with top motorsport teams, like Ferrari, to develop more efficient lubricants and fuels. Our technical partnership with Ferrari allows us to transfer proven innovations from the racetrack to our commercial products. The partnership led to the development of Shell Helix Ultra, a synthetic motor oil formulated to clean and protect car engines, and Shell V-Power performance fuel.

Our Shell Rimula range of heavy-duty engine oils was developed with leading engine makers, including a product developed with Daimler. The oils help truck, bus and coach companies improve the fuel economy of their fleets and protects the vehicles' engines. This also extends the intervals between the need to service the vehicles.

The winning vehicle of the Urban Concept category at the Shell Eco-marathon in the Netherlands.



### SHELL ECO-MARATHON

Shell Eco-marathon challenges teams of students to design and build ultra energy-efficient vehicles to travel the furthest on the least energy. It is an annual event that takes place in the Americas, Europe and Asia. The competition is split into two classes: the Prototype class focuses on maximum efficiency, while the UrbanConcept class encourages more practical designs. Cars can be powered by conventional petrol, diesel, fuel made from natural gas (GTL), biofuels, hydrogen, solar or electricity.

In May 2013, students from Lycée La Joliverie, France, achieved the equivalent of 2,980.3 km on a single litre of fuel with their self-built car – enough to drive from Rotterdam to Athens. They were competing in Shell Eco-marathon Europe, held in Rotterdam, the Netherlands, and attracted an audience of more than 50,000 in a week. Student teams set five all-time records during the Shell Eco-marathon Europe – four in the UrbanConcept class and one in the Prototype battery-electric category.

The Eco-marathon events around the world are designed to encourage debate about the future of mobility as well as including educational attractions for children and students, like the Shell Energy Lab. Other activities included public debates on the future of energy challenges, including the growing pressure on energy, water and food. In 2013, Houston, USA, received more than 1,000 student entrants from across the Americas and vehicles competed on city streets.

Interactive online games are part of the Target One Million campaign to change driving behaviours.



### MARINE PRODUCTS

Many ship operators seek to reduce the fuel consumption of their ships through slow sailing. However, this can add to the stress on engines. We have developed a cylinder oil for ships, called Shell Alexia S4, which protects engines moving at all speeds and in various shipping conditions. Since its introduction in 2012, Shell Alexia S4 has been used for more than 18 million hours of safe and efficient operations in more than 3,400 vessels.

## BIOFUELS

The use of low-carbon biofuels is one way to reduce carbon dioxide from transport fuels in the coming years. Our joint venture Raízen, in Brazil, is one of the world's largest producers of sugar-cane ethanol, a low-carbon biofuel. We are also making significant investments in advanced biofuels.

The production of biofuels needs to be managed in a responsible way that safeguards land use, the environment and communities. Overall carbon dioxide (CO<sub>2</sub>) emissions can differ widely, depending on the raw materials used as well as the production and distribution methods. Shell has been working to improve sustainability standards in its supply chain for many years. In 2013, we used around 9 billion litres of biofuel in our petrol and diesel blends worldwide.

We have clauses in our new and renewed contracts for biofuels that we purchase for blending which detail environmental and social criteria. These clauses are designed to make sure that these biofuels are not knowingly linked to human rights violations nor produced from raw materials cultivated in areas of high biodiversity value.

More than 99% of biofuels volumes that Shell bought and blended into fuels were covered by our sustainability clauses, with around 30% of this volume certified as sustainable by an independent auditor. We aim to increase the proportion of independently certified volumes (see opinion). We conduct a risk assessment of any new supplier and regularly monitor our supply chain to maintain sustainability standards.

### RAÍZEN

In 2013, Raízen produced more than 2 billion litres of low-carbon biofuel from Brazilian sugar cane. This biofuel can reduce CO<sub>2</sub> emissions by around 70%, compared with petrol, from cultivation of the sugar cane to using the ethanol as fuel. The Raízen production process is efficient as it uses the waste material (bagasse) to power the production unit, with surplus electricity being sold to the grid. It also

**Our Raízen joint venture in Brazil uses sugar cane to produce low-carbon biofuel.**



uses ash that is produced in the process from burned bagasse for organic fertiliser.

Raízen was the first sugar-cane producer to certify a mill using the Bonsucro sustainability standard in 2011. Raízen continues to work towards the certification of all 24 sugar-cane mills to the Bonsucro standard. By the end of 2013, 10 of Raízen's mills were certified. As a result, 32% of Raízen's ethanol was certified.

Raízen also supports government efforts to protect the land rights of indigenous peoples in Brazil and signed an agreement in 2012 with FUNAI, the National Indian Foundation, confirming that it would not buy sugar cane grown on land that belongs to the indigenous Guarani people.

### IMPROVING STANDARDS

We work with other companies and organisations to develop recognised standards for the biofuels industry, covering social and environmental aspects. The organisations we work with include the Roundtable on Sustainable Biomaterials, the Roundtable on Sustainable Palm Oil (RSPO), the Round Table on Responsible Soy, and Bonsucro for sugar cane. All the standards have been approved under Europe's Renewable Energy Directive after working with governments, non-governmental organisations, farmers and other industry players.

In 2013, Raízen also worked with the International Union for Conservation of Nature (IUCN) to assess how effective Bonsucro certification is in helping to protect local biodiversity. A team of experts from organisations such as WWF, The Nature Conservancy, Ecoagriculture and Rainforest Alliance conducted a review of Bonsucro certification impacts on biodiversity and water at the Maracai mill, São Paulo. The final report is publicly available and identifies some areas for improvement, such as introducing environmental management plans at sites and improving conservation.

In 2012, Shell started a jointly funded project with Patum Vegetable Oil Company, a Thai producer of edible palm oil and biodiesel, to produce sustainable palm oil in Thailand. The project involves preparing selected palm oil crushing mills and training their associated smallholder farmers for certification against RSPO standards. To date, nine mills and around 1,800 farmers are taking part in the project. The project will take at least two years, with the expectation that up to 40,000 tonnes of palm oil will be certified as a result.

**Sven Sielhorst**  
Solidaridad's  
International Sugarcane  
Programme Coordinator,  
Utrecht, the Netherlands

### External opinion

"Shell took meaningful steps through its joint venture with Cosan in establishing Bonsucro as the global standard for better sugar cane. The experience and leadership of Raízen have been invaluable in this respect."

"I would expect the same leadership from Shell in the market place going forward, by purchasing larger quantities of Bonsucro-certified material. This will encourage producers like Raízen to continue with Bonsucro certification. I hope Shell can be that change agent again in 2014 and lead other companies into creating a real market for certified ethanol."

### ADVANCED BIOFUELS

A key challenge with the current generation of biofuels is that they use crops that can compete directly with food crops for land. Advanced biofuels can reduce some of these challenges because they do not depend on food crops for raw materials.

In 2013, Raízen started construction of a facility at one of its mills that can produce advanced low-carbon biofuels from bagasse, leaves, bark and other sugar-cane waste, with technology provided by Iogen Energy. We are also developing low-carbon biofuels that have comparable energy content to petrol and diesel. They can be used in today's vehicles and distribution networks without the need for blending with ordinary fuels. A pilot facility at our Shell Technology Center Houston, USA, continues to advance these technologies. We have dedicated biofuels research teams and research agreements with leading academic institutions across the world, including the University of São Paulo, Brazil, and the University of Utrecht, the Netherlands.



# OUR PERFORMANCE

In 2013, we continued to work to reduce our impact on the environment, to work closely with our neighbours in the communities where we operate, and to generate jobs and business opportunities for local economies. Throughout the year, we maintained our strong investment in projects that will deliver energy resources for decades to come. This section provides data on our economic, environmental and social performance in 2013.



An employee takes measurements from a storage tank at the Bintulu gas-to-liquids plant, Malaysia.





## ECONOMIC

Our income in 2013 was around \$16.5 billion, and we announced dividends of some \$11.3 billion for our shareholders. Our net capital investment of around \$44.3 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 \$40.4 billion of cash flow from its operating activities in 2013. Our average organic reserves replacement ratio, which represents our ability to grow and maintain production, was around 112% over the last three years.

In 2013, Shell was part of a consortium that won the bidding process for the giant Libra field offshore Brazil. We have a 20% interest in this oil field, which is potentially one of the largest discoveries in the last decade.

We took the final investment decision on the Carmon Creek in-situ oil project in Canada during the year. Shell has a 100% working interest in this project that can potentially produce 80,000 barrels of oil a day. Co-generation and water recycling facilities have been integrated into the design to reduce its environmental impact. In 2013, we also took the final investment decision on the Gbaran Ubie Phase 2 (Shell interest 30%) and the Trans-Niger pipeline loop-line projects (Shell interest 30%), both in Nigeria, with a combined expected peak production of around 250,000 barrels of oil equivalent (boe) a day.

During the year we started up Phase 2 of the Parque das Conchas (BC-10) project (Shell interest 50%) off the coast of Brazil, the Amal steam (Shell

interest 34%) enhanced oil recovery project in Oman as well as the Majnoon project in Iraq (Shell interest 45%). The Basrah Gas Company (Shell interest 44%) officially started operations in Iraq. It aims to use gas, that is currently being flared, for power generation or for export in the future. This is expected to increase production capacity from an initial 0.5 billion standard cubic feet a day (scf/d) to potentially 2.0 billion scf/d.

Shell's oil and gas production in 2013 was 3.2 million boe a day, down slightly from 2012. Our sales of liquefied natural gas decreased to around 20 million tonnes. Exploration and commercial activities continued to add potential resources. This underpins our long-term growth plan.

### SHELL SCORECARD

In 2013, 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). In 2013, the EC's sustainable development measures were split evenly between Shell's safety and environmental performance, including targeted measures covering operational spills, energy efficiency and use of fresh water. Targets are set each year by the Board's Remuneration Committee taking into account the performance achieved in the last three years.

### 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 2003, Shell was the first company to publish the royalties, taxes and other payments made to the Nigerian government, with the government's permission and support. Shell started to voluntarily publish an annual revenue transparency report in 2012. It provides an overview of the revenues we pay to host governments in certain key countries in respect of our activities, where such disclosure is not prohibited by the host government. 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. We are monitoring implementation of US and EU regulations and are actively engaging with others to find a workable and common global standard.

In 2013, Shell paid globally \$20.3 billion in corporate taxes, and \$4.1 billion in royalties. We collected \$80.9 billion in excise duties and sales taxes on our fuel and other products on behalf of governments.

For further details and a breakdown of payments made to governments by country, see [www.shell.com/payments](http://www.shell.com/payments)

## 2013 KEY FACTS

# 2%

OUR SHARE OF THE WORLD'S OIL PRODUCTION

# 3%

OUR SHARE OF THE WORLD'S GAS PRODUCTION

# 3.2

 MILLION

OUR EQUITY PRODUCTION IN BARRELS OF OIL EQUIVALENT A DAY

# 52%

SHARE OF OUR PRODUCTION THAT WAS NATURAL GAS

# 19.6

 MILLION

TONNES EQUITY SHARE OF LNG SOLD

# \$16.5

 BILLION

INCOME

# \$44.3

 BILLION

NET CAPITAL INVESTMENT

# \$40.4

 BILLION

CASH FLOW FROM OPERATING ACTIVITIES

# \$20.3

 BILLION

CORPORATE TAXES PAID

# \$4.1

 BILLION

ROYALTIES PAID TO GOVERNMENTS

# \$80.9

 BILLION

COLLECTED IN EXCISE DUTIES AND SALES TAXES

# ENVIRONMENTAL

## SPILLS

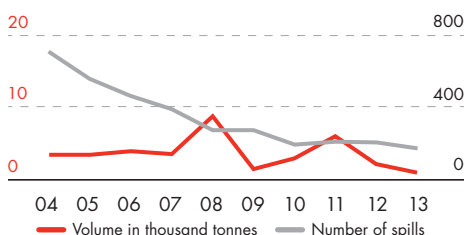
Shell has clear requirements and procedures to prevent operational spills, and multibillion-dollar programmes in place to maintain and improve our facilities and pipelines. However, spills still occur for reasons such as operational failure, accidents or unusual corrosion. Our requirements include establishing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

In 2013, the volume of operational spills of oil and oil products amounted to 0.9 thousand tonnes, down from 2.1 thousand tonnes in 2012. The number of operational oil spills also decreased in 2013 to 174, down from 207 in 2012. These are the lowest levels recorded and continue the long-term improvement trend.

We continue to investigate and learn from all spills to help improve our performance. We are working to extend the significant improvements made in previous years to decrease the number of operational spills through our ongoing investment in improving the maintenance and reliability of our facilities.

In 2013, sabotage and theft remained a significant cause of spills. The scale of oil theft in Nigeria escalated, leading to multiple shutdowns of production. This was reflected in the number of spills due to sabotage and theft increasing to 157 spills, from 137 in 2012. The volume of these spills decreased to 2.2 thousand tonnes, down from 3.3 thousand tonnes in 2012. See [pages 22 and 23](#) for more information on spills in Nigeria.

### SPILLS – OPERATIONAL [A]



[A] Over 100 kilograms

## ENERGY EFFICIENCY

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

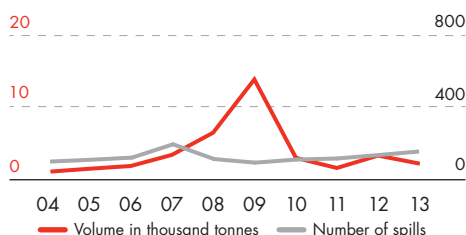
In 2013, the overall energy intensity for the production of oil and gas in our Upstream business (excluding oil sands and GTL) worsened compared with 2012, with rising production of hydrocarbons that need more energy to access. All our major facilities have energy management plans in place to make the 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 new production comes from more energy-intensive sources. This is expected to increase our GHG emissions over time.

In our oil sands operations, energy intensity in 2013 improved slightly compared with 2012.

In 2013, the overall energy intensity for the manufacturing of oil products at our refineries improved compared with 2012, due to improved efficiency of operations.

The overall energy intensity of our chemical plants improved in 2013 compared with 2012, due to lower unplanned downtime and improved energy efficiency of our operations.

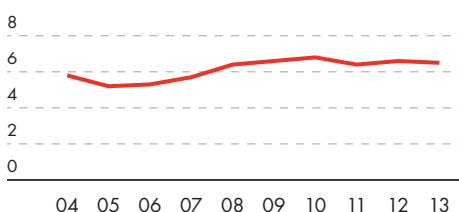
### SPILLS – SABOTAGE [B]



[B] Sabotage- and theft-related spills over 100 kilograms

### ENERGY INTENSITY – OIL SANDS

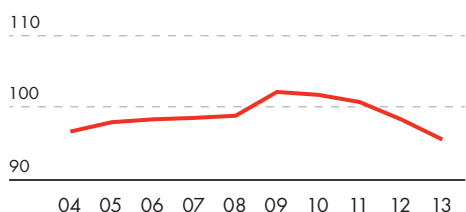
gigajoules/tonne production [C]



[C] Includes mining and upgrading operations

### ENERGY INTENSITY – REFINERIES

Refinery Energy Index [D]



[D] Indexed to 2002; based on 2006 Solomon EIP™ methodology

Our refineries and chemical plants continue to implement their carbon dioxide (CO<sub>2</sub>) and energy management programmes ([pages 10 and 27](#)) to improve their energy efficiency.

## GREENHOUSE GAS EMISSIONS

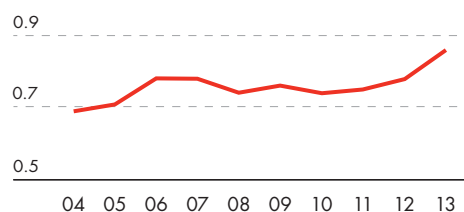
The direct greenhouse gas (GHG) emissions from facilities we operate were 73 million tonnes on a CO<sub>2</sub>-equivalent basis in 2013, which is slightly higher than 72 million tonnes of CO<sub>2</sub> equivalent in 2012. The main reasons for this increase were the ramp-up of production at the Pearl GTL plant in Qatar and the restart of production at Majnoon in Iraq following completion of refurbishment activities and start-up of the new central processing facility. These increases were partially offset by reduced flaring in Nigeria in line with lower production, and the conversion of the Clyde refinery in Australia and our Harburg refinery in Germany to terminals.

Around 50% of our direct GHG emissions came from the refineries and chemical plants in our Downstream business. The production of oil and gas in our Upstream business, including GTL, accounted for more than 45% of our direct 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, steam and cooling) were 10 million tonnes on a CO<sub>2</sub>-equivalent basis in 2013, which is slightly higher compared to

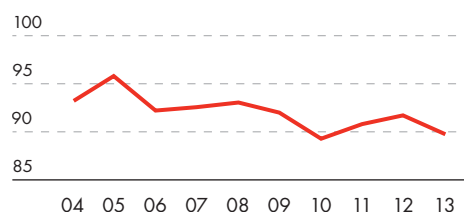
### ENERGY INTENSITY – UPSTREAM

(EXCLUDING OIL SANDS AND GTL)  
gigajoules/tonne production



### ENERGY INTENSITY – CHEMICAL PLANTS

Chemicals Energy Index





9 million tonnes of CO<sub>2</sub> equivalent in 2012. We estimate that the CO<sub>2</sub> emissions from the use of our refinery and natural gas products were around 600 million tonnes in 2013. Further information on GHG emissions is available on our corporate website.

## FLARING

The flaring of natural gas in our Upstream business decreased in 2013 to 7.4 million tonnes of CO<sub>2</sub> equivalent, from 7.7 million tonnes of CO<sub>2</sub> equivalent in 2012. The decrease was mainly due to lower flaring in Nigeria in line with lower production as well as completion of start-up activities at the Pearl GTL plant in Qatar, partially offset by the restart of production at Majnoon in Iraq.

Our HSSE & SP Control Framework requires our new facilities to be designed so as not to flare or vent (releasing gas to the atmosphere) continuously. When we acquire or become the operator of an existing facility that is already flaring or venting, it takes time before these activities can be stopped.

Overall, flaring made up around 10% of the total direct GHG emissions in 2013. Nigeria and Iraq accounted for around 50% and 10% of this flaring in 2013, respectively, with the remainder mainly from the Pearl GTL plant in Qatar and operations in the UK and Malaysia. In 2013, 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 2013 took place in Nigeria and Iraq. Flaring from the Majnoon field in Iraq will continue to rise in future years as production increases. We are currently working with partners on plans to capture the associated gas.

Outside Nigeria and Iraq, the few facilities that continuously flare accounted for less than 1% of our total direct GHG emissions in 2013. 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 2013, the venting of hydrocarbons amounted to around 1% of our total direct GHG emissions.

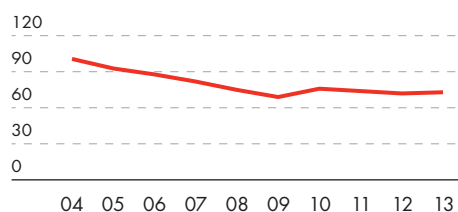
## WATER

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 2013, the amount of fresh water we used decreased to 198 million cubic metres, down from 203 million cubic metres in 2012. 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.

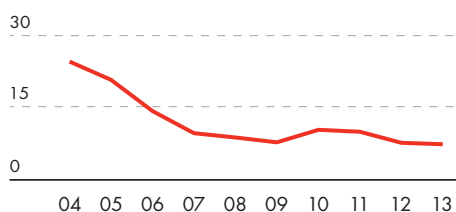
### DIRECT GREENHOUSE GAS EMISSIONS

million tonnes CO<sub>2</sub> equivalent



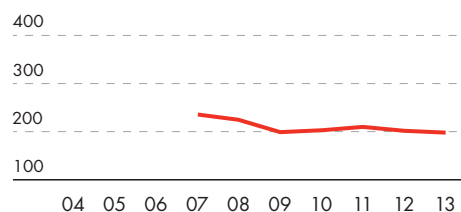
### FLARING – UPSTREAM

million tonnes CO<sub>2</sub> equivalent



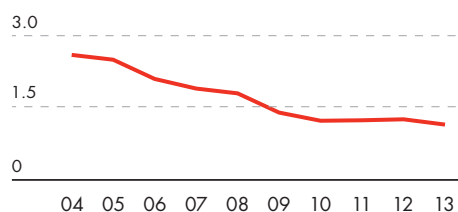
### FRESH WATER WITHDRAWN

million cubic metres



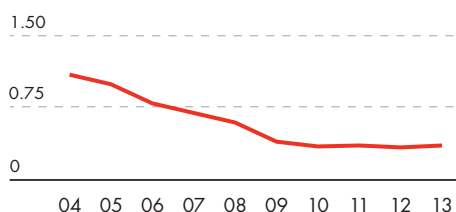
### TOTAL RECORDABLE CASE FREQUENCY (TRCF)

injuries per million working hours



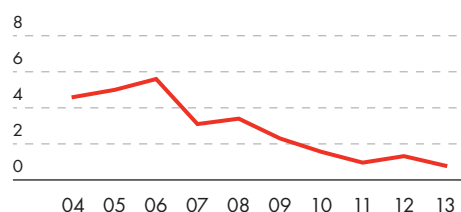
### LOST TIME INJURY FREQUENCY (LTIF)

injuries per million working hours



### FATAL ACCIDENT RATE (FAR)

fatalities per 100 million working hours





## SOCIAL

### PERSONAL SAFETY

Following steady and significant improvements in our safety performance in recent years, in 2013 we achieved our lowest-ever number of injuries per million working hours, the total recordable case frequency (TRCF). We maintained our lowest-ever level of injuries that led to time off work in 2013, the lost-time injury frequency (LTIF).

Sadly, however, five people lost their lives while working for Shell in 2013. This was three fewer than in 2012. All five fatalities were industrial accidents during construction and operations. Our fatal accident rate (FAR) – the number of fatalities per 100 million hours worked – improved in 2013 compared to 2012, and 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 2013, we recorded 65 Tier 1 process safety incidents (as defined in line with oil and gas industry guidelines) related to our operations, an improvement compared to 91 Tier 1 incidents recorded in 2012. We also experienced improvements in the number of Tier 2 process safety incidents, with 246 recorded in 2013 compared to 308 in 2012. We investigate and learn from these incidents in order to improve our performance.

### SOCIAL PERFORMANCE

Social performance involves working with communities to reduce the impact of our operations and share the benefits of our activities. We respectfully engage with relevant parties, evaluate impacts, plan mitigation strategies and find opportunities to help communities, such as helping to build local economies through the creation of jobs and business opportunities. Our community feedback mechanisms enable members of the community to share their concerns with us and help us learn how to better address them. We aim to provide opportunities for local companies in countries where we operate.

We have management systems in place that set out our social performance requirements. These define requirements for activities such as engagement and impact assessment, and align with international standards. We have specialist employees who support our managers to ensure we meet these standards. 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, such as the use of child or forced labour. We continue to build a systematic approach of early identification and mitigation of

social impacts. In 2013, we trained 441 more employees in our social performance requirements.

### SOCIAL INVESTMENT

Across our operations we invest in projects that benefit communities. We aim to make our social investment projects beneficial to society in measurable ways and to be sustainable beyond Shell's involvement. In 2013, we launched a tool across Shell to help us to better evaluate the impact of our social investment projects. Also in 2013, we spent around \$159 million on voluntary social investments worldwide, compared to \$149 million in 2012. This rise was mainly due to increased spending in the Philippines, Qatar and Oman.

We spent around \$41 million on our three global strategic themes of enterprise development, road safety and energy access, and around \$118 million on our locally tailored programmes covering community development, disaster relief, education, health and biodiversity. We estimate that almost \$74 million of our spend in 2013, compared to \$67 million in 2012, was in countries that according to the UNDP Human Development Index 2013 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

Where possible, and when it makes economic sense, we buy goods and services from local suppliers and provide support to develop local businesses and skills. For example, in 2013, we signed contracts with local suppliers to provide equipment in countries such as Nigeria and Qatar. In 2013, we spent around

\$65 billion on goods and services worldwide. Around two-thirds of this was spent in the USA, Canada, the UK, the Netherlands and Nigeria. We estimate around \$12 billion was spent in countries that have a gross domestic product of less than \$15,000 a year per person, according to the UNDP Human Development Index 2013. In these countries, Shell companies spent over 80% of this \$12 billion with local companies. We check that our suppliers are complying with key sustainability criteria, including good working conditions. In 2013, we conducted 72 rigorous assessments of suppliers in Africa and the Middle East; 150 in the Americas; 182 in the Asia-Pacific region, and 173 in Europe to check their compliance against our Supplier Principles in areas such as human rights, labour practices and business integrity.

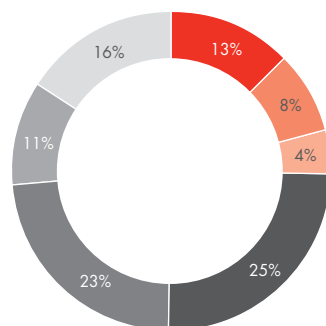
### OUR PEOPLE

Our people are vital to the implementation of our business strategy. Shell recruits, trains and rewards employees to build business capabilities. This ensures our businesses are well resourced and enhances employee performance and engagement levels.

We have 92,000 employees in more than 70 countries, with just under 40% in countries outside of Europe or North America. To execute our strategy and growth plans for the future, we recruited around 1,200 graduates and around 3,200 experienced professionals in 2013. The majority of each came from technical disciplines. More than 30% of our graduate recruits came from universities outside Europe and the Americas. We employ skill-pool managers to ensure robust resourcing and succession planning for our critical positions and to create development opportunities for our employees. Our salaries reflect market conditions in the country where employees are based and the high level of

### VOLUNTARY SOCIAL INVESTMENT IN 2013

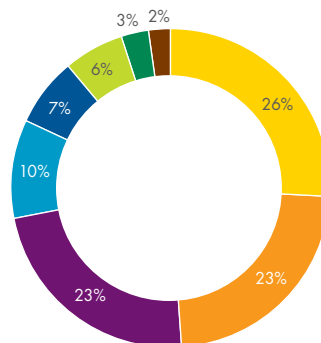
proportion of spend



Enterprise development  
Energy access  
Road safety  
Community development  
Education  
Biodiversity  
Other

### VOLUNTARY SOCIAL INVESTMENT IN 2013

split by region



MENA  
Africa  
Americas  
Asia  
Global social investment (spent in various regions)  
Europe  
Asia Pacific  
Russia and CIS

skill and experience needed. We regularly review comparative remuneration for men and women in selected countries. Shell manages the effects on people of business changes as consistently as possible. Affected employees are treated respectfully and transparently and will be supported in searching for alternative employment as appropriate by country law and policy. We provide flexible working practices wherever necessary and reasonably possible. Our employees are encouraged to take part in social responsibility projects and employee interest networks.

## EMPLOYEE COMMUNICATION AND INVOLVEMENT

Two-way dialogue between management and employees is embedded in our work practices, and we strive to maintain healthy employee relations. Dialogue can take place directly and, where appropriate, through employee councils or trade unions. On a quarterly basis, senior management briefs employees on Shell's operational and financial results through various channels. The Shell People Survey is one of the principal tools used to measure employee views on a range of topics including employee engagement and the degree of affiliation and commitment to Shell. The average employee engagement score increased by 3% in 2013 to 80% favourable; the unfavourable score was 4%. Since 2010, there has been a 9% increase in employees scoring employee engagement favourably.

We have multiple channels in place for employees 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 in addition to local channels.

## DIVERSITY AND INCLUSION

We have a culture that embraces diversity and fosters inclusion. By embedding these principles in our operations, we have a better understanding of the needs of our varied customers, partners and stakeholders throughout the world and can benefit from a wider talent pool. We provide equal opportunity in recruitment, career development, promotion, training and reward for all employees regardless of colour, ethnicity or physical ability. Where possible, we make reasonable adjustments in job design and provide appropriate training for employees who declare a disability.

We actively monitor representation of women and local nationals in senior leadership positions, and have talent-development processes to support us in delivering more diverse representation. The proportion of women in senior leadership positions was 17.2%, compared with 16.2% in 2012.

In 32% of the countries where Shell subsidiaries, joint ventures and associates are based, local nationals filled more than half of the senior leadership positions, compared with 42% of countries in 2012. From 2014, we will no longer apply this metric, as it does not reflect expatriation of local nationals for talent development purposes. Instead, we will start using a revised metric that better represents our activities in this respect.

Senior leaders actively engage in diversity and inclusion networks, internally and externally, and we have numerous active employee interest networks representing different communities within the organisation. Our annual Shell People Survey also measures employees' views on the inclusiveness of their workplace. In 2013, 70% felt positive about this, up 1% from 2012; 11% felt negatively about inclusion in the workplace, down 1% from 2012.

## TRAINING AND DEVELOPMENT

We continue to invest in developing the skills of our employees and joint venture partners. In 2013, we invested over \$304 million in training and development. Our focus is on building technical capability and safety-critical competencies and skills. In 2013, we provided more than 795,000 training days for employees and some of our joint-venture partners. This included training more than 4,000 people in leadership skills.

## EXTERNAL VOLUNTARY CODES

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

## CODE OF CONDUCT VIOLATIONS

Shell employees and contractors working for Shell must abide by our Code of Conduct. In 2013, 181 violations of the Code of Conduct were reported (209 in 2012; 226 in 2011). As a result, we dismissed or terminated the contracts of 63 employees and contractors (93 in 2012; 78 in 2011).



# 2013 KEY FACTS

# 53

NUMBER OF VESSELS IN WHICH WE DELIVERED LNG  
- THE LARGEST LNG SHIP OPERATOR

# 8%

OUR SHARE OF THE WORLD'S LNG SOLD

# \$12

 BILLION

SPENT IN LOWER INCOME COUNTRIES

# \$1.3

 BILLION

SPENT ON R&D

# 9

 BILLION

LITRES OF BIOFUELS DISTRIBUTED

# \$750

 MILLION

INVESTED IN SAFETY AND RELIABILITY OF OUR  
REFINERIES, CHEMICAL PLANTS AND DISTRIBUTION  
FACILITIES

# \$159

 MILLION

SPENT ON VOLUNTARY SOCIAL INVESTMENT  
WORLDWIDE

# \$304

 MILLION

SPENT ON TRAINING AND DEVELOPMENT  
OF EMPLOYEES

# 70+

NUMBER OF COUNTRIES IN WHICH WE OPERATED

# 92,000

AVERAGE NUMBER OF PEOPLE EMPLOYED

# ENVIRONMENTAL AND SOCIAL DATA

## ENVIRONMENTAL DATA

	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004
<b>Greenhouse gas emissions (GHGs)</b>										
Direct total GHGs (million tonnes CO <sub>2</sub> equivalent) [A]	73	72	74	76	69	75	82	88	93	101
Carbon dioxide (CO <sub>2</sub> ) (million tonnes)	71	69	71	72	66	72	79	85	89	96
Methane (CH <sub>4</sub> ) (thousand tonnes)	120	93	133	128	127	126	119	124	173	192
Nitrous oxide (N <sub>2</sub> O) (thousand tonnes)	1	1	1	2	2	2	2	2	2	2
Hydrofluorocarbons (HFCs) (tonnes)	17	23	22	23	25	23	28	24	20	13
Energy indirect total GHGs (million tonnes CO <sub>2</sub> equivalent)	10	9	10	9	9	n/c	n/c	n/c	n/c	n/c
<b>Flaring</b>										
Flaring (Upstream) (million tonnes CO <sub>2</sub> equivalent)	7.4	7.7	10.0	10.4	7.8	8.8	9.7	14.3	20.8	24.6
Flaring (Upstream) (million tonnes hydrocarbon flared)	2.1	2.3	3.4	3.6	2.6	2.8	3.4	4.8	7.0	8.1
Nigeria [B]	1.1	1.5	2.0	2.4	1.9	2.3	2.5	3.7	5.8	6.6
Rest of world [C]	1.0	0.8	1.4	1.2	0.7	0.5	0.9	1.1	1.2	1.5
<b>Energy intensity</b>										
Upstream excl. oil sands and GTL (gigajoules per tonne production) [D]	0.86	0.78	0.75	0.74	0.76	0.74	0.78	0.78	0.71	0.69
Oil sands (gigajoules per tonne production) [E]	6.5	6.6	6.4	6.8	6.6	6.4	5.7	5.3	5.2	5.8
Refineries: Refinery Energy Index [F]	95.6	98.4	100.8	101.8	102.2	98.9	98.6	98.4	98.0	96.7
Chemical plants: Chemicals Energy Index	89.8	91.7	90.8	89.3	92.0	93.0	92.6	92.5	95.8	93.3
<b>Acid gases and VOCs</b>										
Sulphur oxides (SO <sub>x</sub> ) (thousand tonnes SO <sub>2</sub> )	99	113	136	139	141	175	212	233	226	247
Nitrogen oxides (NO <sub>x</sub> ) (thousand tonnes NO <sub>2</sub> )	156	147	146	159	142	150	145	154	157	172
Volatile organic compounds (VOCs) (thousand tonnes)	89	89	129	147	126	130	148	185	199	213
<b>Ozone-depleting emissions</b>										
CFCs/halons/trichloroethane (tonnes)	0.0	0.0	0.0	0.0	0.4	1.4	0.6	0.3	0.8	2.3
Hydrochlorofluorocarbons (HCFCs) (tonnes) [G]	8	8	12	21	24	26	27	35	35	42
<b>Spills and discharges [H], [I]</b>										
Sabotage spills – volume (thousand tonnes) [J]	2.2	3.3	1.6	3.0	14.0	6.5	3.4	1.9	1.5	1.1
Sabotage spills – number [J]	157	137	118	112	95	115	197	123	111	101
Operational spills – volume (thousand tonnes) [K]	0.9	2.1	6.0	2.9	1.4	8.8	3.5	3.9	3.4	3.4
Nigeria	0.4	0.2	5.3	0.7	0.3	7.1	1.6	1.4	0.1	0.0
Rest of world	0.5	1.9	0.7	2.2	1.1	1.7	1.9	2.5	3.3	3.4
Operational spills – number [L]	174	207	211	195	275	275	392	465	560	711
Nigeria [M]	31	37	64	32	37	42	52	41	63	48
Rest of world	143	170	147	163	238	233	340	424	497	663
Hurricane spills – volume (thousand tonnes)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	1.0
Oil in effluents to surface environment (thousand tonnes)	1.0	1.0	1.3	1.6	1.5	1.7	1.6	1.8	2.3	2.1
<b>Water</b>										
Fresh water withdrawn (million cubic metres)	198	203	209	202	198	224	235	n/c	n/c	n/c
<b>Waste disposal</b>										
Hazardous (thousand tonnes)	770	820	740	1,048	962	688	907	716	631	714
Non-hazardous (thousand tonnes)	2,065	2,295	1,850	1,079	1,139	996	1,899	1,154	632	421
Total waste (thousand tonnes) [N]	2,835	3,115	2,590	2,127	2,101	1,684	2,806	1,870	1,263	1,135

[A] Greenhouse gas emissions comprise carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. The data are calculated using locally regulated methods where they exist. Where there is no locally regulated method, the data are calculated using the 2009 API Compendium, which is the recognised industry standard under the GHG Protocol Corporate Accounting and Reporting Standard. There are inherent limitations to the accuracy of such data. 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.

[B] Nigeria includes SPDC onshore operations (1.0 million tonnes flared in 2013) and SNEPCo offshore operations (0.1 million tonnes flared in 2013).

[C] Flaring from the Pearl GTL plant in Qatar and the Majnoon field in Iraq amounted to 0.1 and 0.3 million tonnes of hydrocarbons respectively in 2013.

[D] 2013 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.

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

[G] We have updated our 2011 figure following review of the data.

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

[I] As of the end of March 2014, there were four spills under investigation in Nigeria that may result in adjustments (all were before 2013).

[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 2012 figure following review of the data. The numbers of operational spills reported for 2004 and 2005 contain a small number of hurricane spills.

[M] We have updated our 2012 figure following review of the data. Nigeria includes SPDC onshore operations (30 operational spills in 2013) and SNEPCo offshore operations (1 operational spill in 2013).

[N] In 2013, we sent waste offsite for recycling or reuse, or sold over 450 thousand tonnes of material that would otherwise have been disposed of as waste.

n/c = not calculated.



[www.shell.com/performance](http://www.shell.com/performance)

See page 41 for more information about our data.

## SOCIAL DATA

	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004
<b>Fatalities</b>										
Total number	5	8	6	12	20	26	21	37	34	31
Employees	0	3	1	0	1	2	1	2	3	2
Contractors	5	5	5	12	19	24	20	35	31	29
Fatal accident rate (FAR)	0.79	1.32	0.96	1.56	2.3	3.4	3.1	5.6	5.0	4.6
Fatalities per 100 million working hours (employees and contractors)										
<b>Injuries</b>										
Total recordable case frequency (TRCF)	1.15	1.26	1.24	1.23	1.4	1.8	1.9	2.1	2.5	2.6
Injuries per million working hours (employees and contractors)										
Lost time injury frequency (LTIF)	0.36	0.34	0.36	0.35	0.4	0.6	0.7	0.8	1.0	1.1
Lost time injuries per million working hours (employees and contractors)										
<b>Illnesses</b>										
Total recordable occupational illness frequency (TROIF)	0.77	0.51	0.66	0.76	0.6	1.2	1.5	1.8	2.0	2.1
Illnesses per million working hours (employees only)										
<b>Security</b>										
Using armed security (% of countries)	19	17	14	9	17	17	16	15	19	18
Using armed company security (% of countries)	3	0	1	1	1	1	2	2	2	2
Using armed contractor security (% of countries)	8	10	9	6	10	9	12	9	11	11
<b>Gender diversity [O]</b>										
In supervisory/professional positions (% women)	28.8	28.1	27.3	26.3	26.4	24.7	24.6	23.2	21.8	20.7
In management positions (% women)	18.8	18.2	17.6	17.0	16.1	15.3	17.7	16.2	12.9	12.2
In senior leadership positions (% women)	17.2	16.2	16.6	15.3	14.0	13.6	12.9	11.6	9.9	9.6
<b>Regional diversity [P]</b>										
% countries with majority of local nationals in senior leadership positions	32	42	34	36	37	32	33	25	36	n/c
<b>Staff forums and grievance procedures</b>										
% countries with staff access to staff forum, grievance procedure or other support system	100	100	99	100	99	100	100	99	100	100
<b>Child labour (% countries with specific procedures in place)</b>										
Own operations	100	100	100	99	98	100	99	95	88	83
Contractors	100	100	97	96	97	99	98	89	69	61
Suppliers	100	100	97	96	97	99	96	82	62	63
<b>Forced labour (% countries with specific procedures in place)</b>										
Own operations	100	100	100	99	98	n/c	n/c	n/c	n/c	n/c
Contractors and suppliers	100	100	97	95	89	n/c	n/c	n/c	n/c	n/c
<b>Integrity</b>										
Code of Conduct violations [Q]	181	209	226	205	165	204	361	n/c	n/c	n/c
Contracts cancelled due to incompatibility with Business Principles	22	14	11	40	24	49	35	41	63	64
Joint ventures divested due to incompatibility with Business Principles	0	0	0	0	0	0	0	0	0	0
<b>Contracting and procurement</b>										
Estimated expenditure on goods and services from locally owned companies in lower-income countries (\$ billion) [R], [S]	12	14	12	13	12	12	13	10	9	6
<b>Social investment [T]</b>										
Estimated voluntary social investment (equity share) (\$ million)	159	149	125	121	132	148	170	140	127	106
Estimated social investment spend (equity share) in lower-income countries (\$ million) [U]	74	67	45	61	54	61	65	n/c	n/c	n/c

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

[P] Diversity data obtained from our human resources system. From 2014, we will no longer apply this metric, as it does not reflect expatriation of local nationals for talent development purposes.

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

[R] Estimated expenditure in countries where gross domestic product amounts to less than \$15,000 a year per person (source: UNDP Human Development Index 2013).

[S] The 2013 figure is the spend on goods and services by Shell Group Companies. This does not include spend on goods and services in non-operated joint ventures.

[T] 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.

[U] 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 2013).

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

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

n/c = not calculated.

## EXTERNAL REVIEW COMMITTEE

Shell, for the ninth successive year, has invited an External Review Committee to assess its sustainability reporting. This letter provides our assessment of Shell's 2013 Sustainability Report. We express our views as individuals, not on behalf of our organisations.



**Clarissa Lins (Chair)**  
Founder  
Catavento, Brazil



**Tom Burke CBE**  
Environmental Policy Advisor  
Rio Tinto Plc, UK



**James Hoggan**  
President  
James Hoggan & Associates, Canada



**Reidar Kvam**  
Senior Manager for Policy, Quality Assurance  
and Knowledge Management  
International Finance Corporation, Norway



**Ndidia Nwuneli**  
Founder, LEAP Africa  
Co-Founder, AACE Foods, Nigeria



**Chris Perceval**  
Director Corporate Relations  
World Resources Institute, UK



**Charles Secrett**  
Founder Member  
The Robertsbridge Group, UK

The External Review Committee (ERC, or the Committee) is pleased to share in this letter its independent opinion on Shell's Sustainability Report 2013 (the report). Our engagement started in October 2013, when the ERC met with senior Shell leaders including then-CEO Peter Voser and Board members Chad Holliday and Sir Nigel Sheinwald. In January 2014, the ERC met newly appointed CEO Ben van Beurden and discussed his perceptions of the challenges facing Shell and his beliefs about sustainable development.

The Committee thanks Shell for the way it organises the ERC process. The meetings are well structured and allow for a thorough understanding of the nuances, challenges and opportunities faced by an oil and gas company in the context of sustainable development.

We look forward to the June 2014 in-person meeting with the Shell Executive Committee that will complete the 2013-14 ERC process at which time we will discuss Shell's sustainability strategy and performance at length.

### OVERALL REPORT QUALITY

The report provides comprehensive coverage of the main issues facing Shell and clear insights into how the company aims to address the main sustainability challenges it faces as it seeks to meet growing energy demand in a responsible way. While this approach has served the company well in the past, societal expectations are moving faster than corporate reporting is evolving. The comments presented in this letter reflect what the ERC believes Shell needs to do more to lead again in the sustainability reporting space.

The Committee has consistently encouraged Shell to explain in a more strategic and forward-looking manner how it addresses sustainable development challenges and dilemmas. This may require directly addressing questions such as: how might Shell's portfolio evolve given the urgent need to curb greenhouse gas (GHG) emissions? How does Shell aspire to further use its influence and convening power to engage with other stakeholders to identify and accelerate more sustainable solutions? What sustainability performance targets will Shell commit to deliver, and how will the targets and progress against them be communicated to stakeholders?

While the ERC welcomes Shell's advocacy for meaningful carbon pricing and stronger fiscal incentives for Carbon Capture and Storage (CCS), it also recognises that the company's participation in trade associations and other organisations that sometimes take less progressive positions, or even ones counter to Shell's views, may undermine stakeholders' trust. The ERC thinks Shell's reporting should explain more clearly how participation in such bodies provides net benefit to society.



As in previous years, the Committee notes the challenge of developing a sustainability culture and urges ongoing explanation of the ways Shell transfers lessons from the establishment of its strong safety culture. The ERC welcomes the report's description of the non-technical specialists who work in the project development process to ensure that Shell understands the societal and economic context as well as the governmental, regulatory and environmental aspects of projects and the ways these contribute to above-ground risk. The Committee looks forward to further exploration of the unique capacity of these employees.

## SUSTAINABILITY CONTEXT

The ERC believes that the urgency of climate change and the overall pace of change require reporting that goes beyond the company's own operations.

The International Energy Agency says the current path of global GHG emissions is likely to result in a temperature increase of 3.6 °C to 5.3 °C. Also, Shell's New Lens Scenarios are described in the report and depict pathways on which emissions overshoot the point at which temperature rise can be limited to 2 °C.

As Shell operates in a rapidly changing sustainability context, the ERC encourages Shell's reporting to further explore the potential consequences of this dynamic and evolving environment on its business model. In particular, future reports should better articulate the capacity of Shell's current investment strategy to deliver value if climate change undermines investor confidence in the future value of fossil fuel assets. In addition, the Committee also believes that the report should outline Shell's assessment of climate and related stresses on its operations and investment cycle.

In this context, Shell's portfolio investments in gas, biofuels, energy efficiency and CCS efforts are positive and help prepare for the transition to a more carbon constrained world. At the same time, the predicted path of global GHG emissions begs clearer explanation of how the company will deal with climate change challenges. This might be accomplished by expanding report coverage on Shell's approach to the way it collaborates with others and outlining the kinds of step change that Shell anticipates will be required in terms of technology, public policy and market responses.

## ENVIRONMENTAL PERFORMANCE

The Report explains how technology is unlocking affordable and abundant natural gas resources worldwide. Shell describes gas as the best way for society to meet energy needs while quickly reducing emissions, especially by using gas to displace coal for power generation.

There is also clear description of Shell's approach to tight gas and how it applies its operating principles to address the concerns of stakeholders

and improve its performance, including of methane emissions. However, the report should provide more information on why it is so important for methane emissions from tight gas production to be fully understood and adequately controlled, which is still a matter of controversy.

Tight oil and gas production also require hydraulic fracturing. While the report mentions possible impacts on emissions and local water resources related to increased hydraulic fracturing and that the baseline assessments are often made publicly available, it is not completely clear on how and when these are shared with stakeholders.

The ERC notes the report's explanation of how investments in biofuels, coupled with R&D in advanced biofuels, might deliver lower carbon transport solutions. The Committee welcomes the description of Shell's efforts to improve operating standards in the biofuel industry, especially through the Bonsucro certification process.

The report is transparent in its treatment of Shell's approach towards gas flaring, outlining the company's policy against flaring on new projects and progress on reducing flaring. The Report also explains why significant flaring is ongoing in some operations, especially Iraq and Nigeria. The ERC looks forward to more detail on the types of solutions the company is exploring – even when the flaring is not under Shell's full operational control – to significantly and rapidly decrease flaring in these countries.

## SOCIAL INVESTMENT STRATEGY AND PERFORMANCE

The ERC acknowledges the effort made in this report to clarify the global and local social performance strategy as previously requested by the ERC and welcomes the introduction of the new social impact measurement framework designed to help Shell measure and evaluate the long-term impact of its community investment activities around the world.

In spite of these developments, the ERC still finds the explanation of Shell's social performance priorities and social investment strategy unclear in how it is applied in a consistent and equitable manner at a country level. The ERC urges future reporting to explore how Shell's global social operating policies and principles are applied in different country contexts. The report should clarify how references to international good practice standards, like the UN Guiding Principles on Business and Human Rights, illustrate a coherent and consistent approach to managing risk and performance at the project level.

The report presents community engagement in detail, but it is unclear how Shell ensures that this process works consistently to address stakeholder concerns. The ERC suggests the report articulates Shell's approach to stakeholder engagement more clearly. Such disclosure would include how information is shared with stakeholders, how

stakeholders are identified, and how stakeholder inputs might influence Shell's decision-making processes both at the local and global levels.

## CONCLUSION

The ERC recognises Shell's commitment to transparency and reporting best practice. The Committee also calls on Shell to change its future reporting to better serve the company and the stakeholders trying to understand its sustainability challenges and dilemmas by reading this report, which could reposition the company as an innovative leader in this field.

This might be accomplished by clearer articulation of the implications of shifting sustainability context for the evolution of Shell's business model and strategy. The report would also be improved by a narrative that cascades from an integrated sustainability vision and ambition to specific, measurable, achievable, real and time-bound goals and targets, which in combination would enhance readers' ability to judge progress.

The ERC looks forward to further engagement with the Executive Committee to continue the dialogue with the same level of openness and transparency.

## ERC OVERVIEW

The Committee met in person twice 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 the 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 reporting, we separately provided Shell with 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.



## ABOUT OUR REPORTING

We began reporting voluntarily on our environmental and social performance with the first Shell Report, which covered 1997. We follow a content selection process to identify the most material topics for our reporting (see box).

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 2013.

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 2013, 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 performance in 2013 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](http://www.shell.com/sustainability)

### 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.

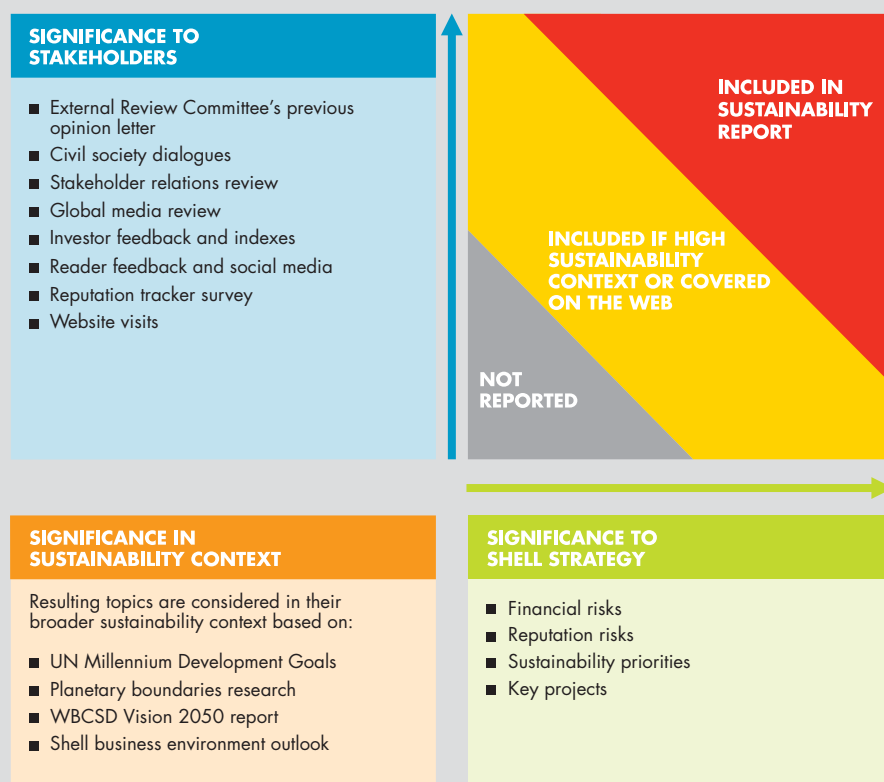
**STEP 2:** Identify topics of significance to Shell's business strategy through our established internal processes.

**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. 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.

### CONTENT SELECTION DIAGRAM



## 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 such 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 2014. 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. Certain data, as 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 2013. 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](http://www.shell.com/ghg)

Financial performance data is prepared on the same basis as for the Shell Annual Report and Form 20-F 2013.

All dollar currencies written in the report refer to US dollars unless otherwise specified.

### 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](mailto:sustainabilityreport@shell.com)

### ORDER YOUR REPORT

[order@shell.com](mailto:order@shell.com)



## Statement GRI Application Level Check

GRI hereby states that **Royal Dutch Shell plc** has presented its report "Shell Sustainability Report 2013" to GRI's Report Services which have concluded that the report fulfils 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](http://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, 24 March 2014



Ásthildur Hjaltadóttir  
Director Services  
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](http://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 6 March 2014. 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 CO<sub>2</sub> emissions.



Designed by Conran Design Group  
Printed by Tuijtel under ISO 14001

**All our reports are available  
at <http://reports.shell.com>**



- Comprehensive financial information on our activities throughout 2013
- Detailed operational information including maps
- Report on our progress in contributing to sustainable development

**Download our apps at  
[www.shell.com/mobile\\_and\\_apps](http://www.shell.com/mobile_and_apps)**



- Company news
- Interactive stories about innovation
- Service-station locations

**Check our latest news**



- Follow @Shell on Twitter
- [www.facebook.com/shell](http://www.facebook.com/shell)