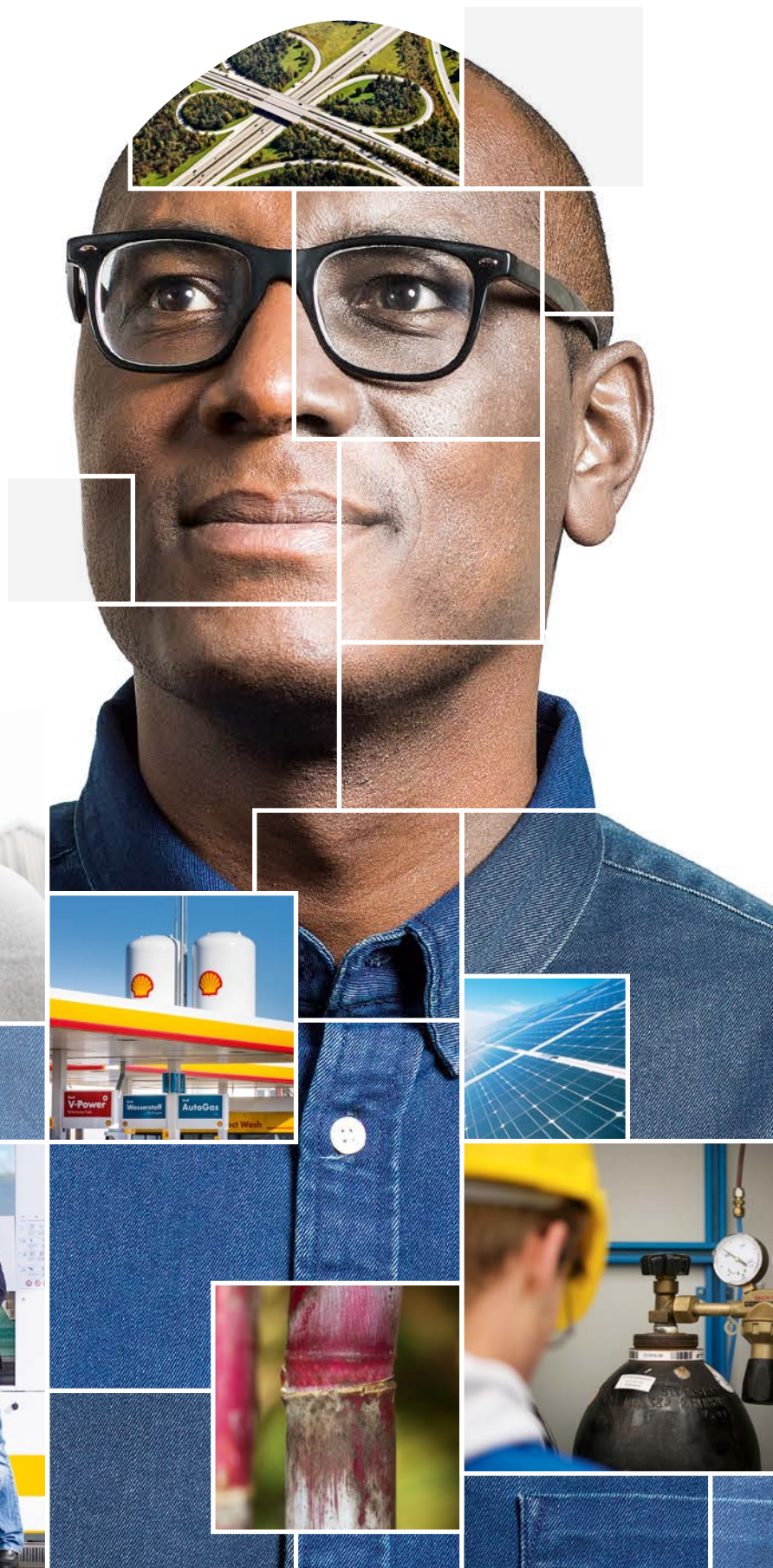




SUSTAINABILITY REPORT

Royal Dutch Shell plc
Sustainability Report 2015



CONTENTS



Cover image

Shell is supporting a global energy transition to a low-carbon future. We invest in areas such as carbon capture and storage, biofuels and hydrogen as a transport fuel.

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New Lens Scenarios

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 quantifications, and they are designed to stretch management to consider even 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 regard to Royal Dutch Shell plc securities.

Cautionary note

The companies in which Royal Dutch Shell plc directly and indirectly owns investments are separate legal entities. In this report, "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. Entities and unincorporated arrangements over which Shell has joint control are generally referred to as "joint ventures" and "joint operations" respectively. Entities over which Shell has significant influence but neither control nor joint control are referred to as "associates". 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 report 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 report, 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 report 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, 2015 (available at www.shell.com/investor and www.sec.gov). These risk factors also expressly qualify all forward-looking statements contained in this report and should be considered by the reader. Each forward-looking statement speaks only as of the date of this report, 18 April 2016. 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 report.

We may have used certain terms, such as resources, in this report that the United States Securities and Exchange Commission (SEC) strictly prohibits us from including in our filings with the SEC. US 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.

INTRODUCTION FROM THE CEO



"I believe that greater co-operation across society is needed for a successful energy transition."

It was a significant year for the global community in 2015 with the adoption of the historic Paris Agreement by 195 countries demonstrating a commitment to bring about a lower-carbon energy system.

The year also presented Shell with a difficult business environment. A low oil price meant making some tough choices about our long-term investments.

As we continue on this path, I am determined that operating our business responsibly – with respect for people, their safety, communities and the environment – remains a priority. Sustainability, for me, is essential to our responsible operation and to being a valued and respected member of society.

IMPROVING OUR OPERATIONS

At Shell, we have long had a strong focus on safety and, in 2015, our safety performance improved in many areas. However, seven people lost their lives at our operations in Nigeria. This deeply saddens me and my thoughts are with the families of those involved. Incidents like these are simply unacceptable.

We made progress in our environmental performance: spills were reduced by around 30% while our total greenhouse gas emissions decreased. We are also making headway to end continuous flaring by 2030, which helps to reduce our methane and carbon dioxide (CO₂) emissions. Another achievement was the start of Quest – our carbon capture and storage (CCS) project in Alberta, Canada – that is designed to capture up to 1 million tonnes of CO₂ a year from our oil sands operations.

THE ENERGY LANDSCAPE

The shift to a low-carbon energy system is critical but will take time. The meeting of states at COP 21 in Paris at the end of 2015 has set the ambition to limit the increase in global temperature to under 2 °C, even if countries move at different paces to achieve their targets. Long-term solutions probably include a hybrid of energy sources where countries will rely on a combination of renewable energy, hydrocarbons and CCS.

We all need to take steps to achieve a sustainable world economy. To achieve a low-carbon society, three main areas must be addressed. Firstly, the world needs to become more energy efficient. This means adopting fundamentally different approaches in areas such as city planning, infrastructure and transport, and better energy efficiency standards. Secondly, there is a need for more renewable energy in the system, working in combination with gas to provide reliable electricity. This involves significantly increasing the use of electricity, including providing electricity to the 1.1 billion people who currently do not have access. Thirdly, the world needs to reduce the carbon intensity of the fossil-fuel share of the energy system.

Today, fossil fuels meet more than 80% of global energy needs. This share will be reduced over time but hydrocarbons will remain a substantial part of the world energy system in the coming decades. Renewable energy sources have a key role to play and should, in future, provide a large part of the world's electricity demand. But electricity is only a part of our energy system: today it accounts for almost 20% of total energy use. There are still many areas that cannot be met by renewables alone – such as the chemicals used to make so many everyday products.

SUPPORTING THE ENERGY TRANSITION

Shell can presently best support the transition to a lower-carbon world by working to reduce carbon in the energy system. We urge countries and industries to make the switch from coal to lower-carbon natural gas and we share our knowledge of CCS technologies to keep CO₂ out of the atmosphere. We also invest in hydrogen and advanced biofuels as transport fuels.

We continue to work to reduce our own greenhouse gas (GHG) emissions over the long term. A screening value for GHG is included in our planned projects to inform our investment choices. Natural gas already makes up about half of the energy we supply. The acquisition of BG Group in 2016 brings more gas to our production. It is likely that over the next few decades, through the global energy transition, Shell will emerge as a different company.

WORKING TOGETHER

Governments can also make choices that enable the transition: we support energy policies that incentivise businesses and consumers to choose low-carbon options. I believe that greater co-operation across society is needed for a successful energy transition. More cross-sector coalitions – where business, government and civil society work effectively together – will accelerate the pace. The Energy Transitions Commission, of which Shell is a founding partner, brings together leading individuals from the public, private and social sectors to make recommendations that will contribute to the energy transition.

Our Sustainability Report details our activities during 2015. I would like to thank the members of the External Review Committee, consisting of leading sustainability experts, for their input to the report this year. They play an important role in developing our reporting and our thinking on sustainability. We were a founding member of the UN Global Compact and continue to support its 10 principles.

Ben van Beurden
Chief Executive Officer

TOPIC SELECTION FOR 2015

The Shell Sustainability Report 2015 focuses on the key sustainability challenges the company faces and explores the many ways that we are responding. The topic selection identifies the sustainability subjects that were relevant or prominent in 2015.

Each year, we use a structured process to select the report's content and confirm its validity. We engage with various groups and individuals to understand specific concerns about our business and its impacts around the world, particularly in relation to the environment and society.

This includes speaking with community representatives, business partners, customers, non-governmental organisations, investors, shareholders, the media, academics, contractors and suppliers, rating agencies and members of the public. We also talk to teams within Shell. All opinions and advice are gathered in various ways including formal and informal meetings, workshops and online surveys.

The main steps involved in selecting the topics are (see diagram):

Step 1: identifying and understanding topics that are important to our stakeholders;

Step 2: identifying topics that are important to Shell's business strategy;

Step 3: collating all the topics identified as of high importance by our stakeholders – these topics determine the report's content;

Step 4: identifying the topics for 2015 that will be covered on www.shell.com rather than in the report;

Step 5: submitting details of the topic selection process for review and approval by the External Review Committee to ensure that coverage is balanced, relevant and complete (see [page 54](#)); and

Step 6: informing Shell's Executive Committee of the chosen topics.

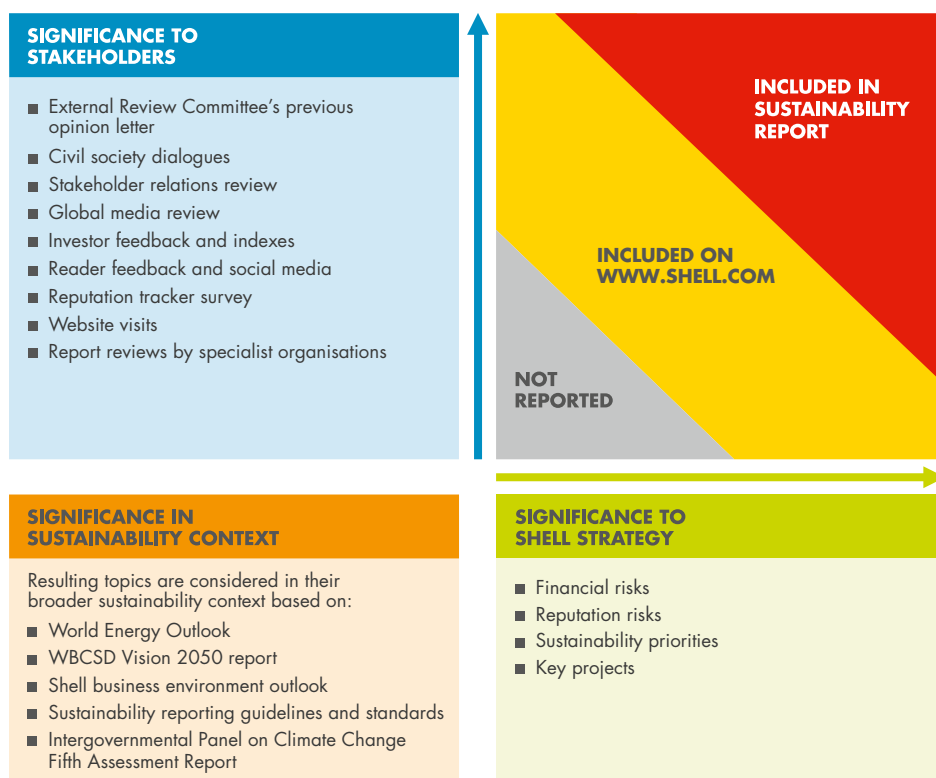
We have listed the selected topics in alphabetical order rather than prioritising them. The topics consistently ranked as of high importance in 2015 are energy transition and climate change; we have a section dedicated to these topics.

We report in accordance with the Global Reporting Initiative (GRI) version G4 and in line with the oil and gas industry guidelines developed by IPIECA – the global oil and gas industry association for environmental and social issues. We also use the guidance on voluntary reporting from the American Petroleum Institute and the International Association of Oil and Gas Producers.

The GRI content index is available on our company website, www.shell.com. Shell supports the United Nations Global Compact and its 10 principles covering human rights, labour, the environment and anti-corruption. Sections of this sustainability report cover Shell's performance in 2015 across these areas. We also follow the progress of the United Nations' Sustainable Development Goals through our membership of IPIECA.

More detailed information about Shell's approach to sustainability, our processes and work around the world, is available on www.shell.com. Links to specific information on topics discussed in the report are published on [page 56](#).

TOPIC SELECTION DIAGRAM



ARCTIC

- Alaska
 - Community relations
 - Environmental initiatives
 - Science
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BUSINESS ETHICS, TRANSPARENCY AND CORPORATE GOVERNANCE

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- Carbon pricing Page 14
- Carbon capture and storage Page 19
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- Lower-carbon alternatives Pages 20 and 21
- Natural gas Pages 16 and 17
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ENVIRONMENTAL IMPACTS

- Biodiversity and green infrastructure Page 34
- Decommissioning Page 35
- Environmental policy Page 34
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LOCAL COMMUNITIES AND SOCIOECONOMIC IMPACT

- Community engagement Page 38
- Human rights Page 43
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NIGERIA

- Education Page 25
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- Oil spills & remediation Pages 24 and 36
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OIL SANDS

- First Nations
 - Greenhouse gas emissions
 - Tailings
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PARTNERS AND COLLABORATIONS

- Collaborations Page 45
- Joint ventures Page 47
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SAFETY

- Deep water Page 32
- Groningen Page 33
- Our performance Page 33
- Personal safety Page 31
- Process safety & emergency response Page 31
- Road safety Pages 32 and 39
- Security Page 33

SUPPLY CHAIN

- Contractor management
 - Human rights
 - Local content and procurement
- Page 46

TECHNOLOGY AND INNOVATION

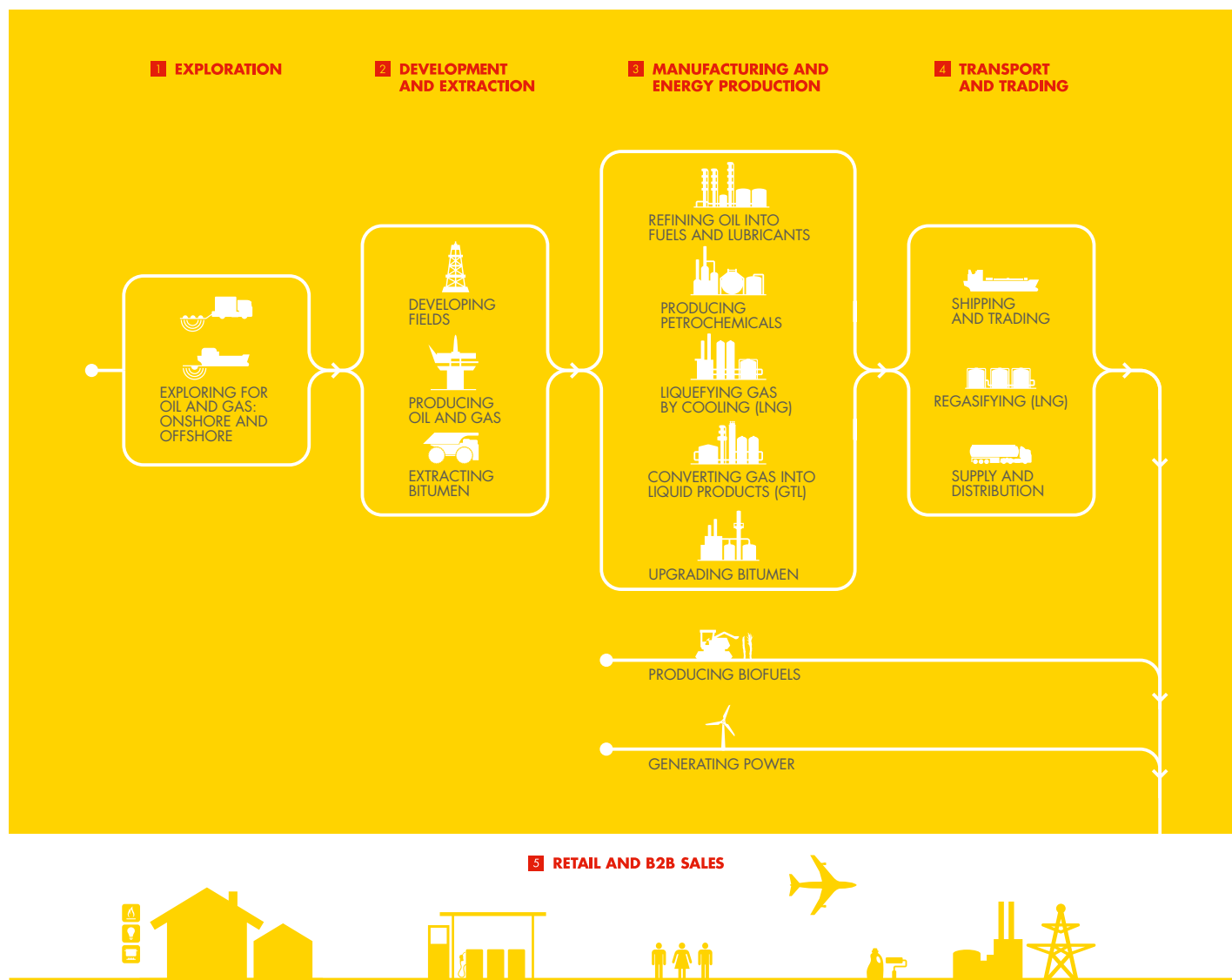
- Advanced biofuels Page 20
- Lower-carbon alternatives Pages 20 and 21
- Research & development Page 18

PEOPLE

- Human rights Page 43
- Labour practices Pages 43 and 46
- Our people Page 47
- Worker welfare Pages 43 and 46

ABOUT SHELL

Royal Dutch Shell plc is an integrated international energy company with expertise in the production, refining and marketing of oil and natural gas.



You will see some of the icons from the diagram throughout the report, to identify in which part of the business the described activities take place.

Shell is one of the world's largest independent oil and gas companies in terms of market capitalisation, operating cash flow and production. Our business explores for gas and oil worldwide, both from conventional fields and from sources such as tight rock and shale.

We work to develop new oil and gas supplies, and have a global network of refineries and chemical plants. We also transport and trade oil, gas and other energy-related products and serve around 25 million customers a day through our global network of 43,000 branded retail sites. Shell invests in alternative energy as well as biofuels production and retail.

In early 2016, we reorganised our upstream activities into Upstream and Integrated Gas.

UPSTREAM

Upstream explores for and recovers crude oil, natural gas and natural gas liquids, transports oil and gas, and operates the upstream and midstream infrastructure necessary to deliver oil and gas to market. The Upstream organisation co-ordinates all of Shell's conventional oil and gas businesses, including our deep-water operations. Upstream also includes our heavy oil and shale activities.

INTEGRATED GAS

Integrated Gas (IG) manages most of Shell's conventional natural gas operations, including the manufacture and distribution of liquefied natural gas (LNG) and gas-to-liquids products. The division includes IG's marketing, development and trading activities to bring natural gas to our customers around the world; it also includes our wind activities. Establishing IG as a stand-alone business reflects its further potential for growth.

DOWNSTREAM

Shell's Downstream business manages Shell's refining and marketing activities for oil products and chemicals. It is divided into five core businesses: refining, retail, chemicals, lubricants, and trading and supply. In Downstream, we convert oil and gas resources into valuable products, and market and sell them around the world. Downstream also oversees Shell's interests in trading, shipping and low-carbon fuels, including biofuels.

PROJECTS & TECHNOLOGY

Shell Projects & Technology (P&T) provides technical services, technology capability and major project delivery across both Upstream and Downstream activities. P&T drives research and innovation to create technologies for finding and developing oil and gas. P&T also provides leadership in contracting and procurement, as well as in safety, environmental and carbon dioxide management.

BG GROUP

In April 2015, Shell announced an offer for BG Group plc and the transaction was completed on February 15, 2016. It should add significantly to our business, particularly in LNG worldwide and deep-water oil and gas in Brazil. BG Group's activities will be included in our next sustainability report.

93,000

Average number of people employed by Shell



70+

Countries in which Shell operates



3 MILLION

Shell's oil and gas production in barrels of oil equivalent a day



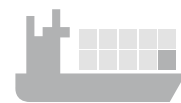
2%

Our approximate share of world oil production



9%

Shell's approximate share of LNG sold across the world in 2015



1%

Our share of the global supply of energy



HOW SUSTAINABILITY WORKS AT SHELL

Sustainability at Shell means providing energy in a responsible way, in a manner that respects people and communities, their safety and the environment.

Our approach to sustainability stems from our goal to manage and grow a safe, efficient and profitable business. Shell's core values of honesty, integrity and respect for people – first laid out in the Shell General Business Principles nearly 40 years ago – underpin everything we do. A commitment to contribute to sustainable development was added in the late 1990s. These principles apply to the way we do business and to our conduct with the communities where we operate.

When we invest in energy projects, we seek to balance the short- and long-term interests of our business. For investment decisions, we consider the economic, social and environmental risks and opportunities as well as the political and technical. Our commitment to safety, the environment and to communities plays a crucial role in how we plan, design and operate projects.

Shell's long-term success relies on our ability to provide the energy and related products people need, in a way that is competitive and socially and environmentally responsible.

INTEGRATING SUSTAINABILITY Helping to shape a more sustainable energy future

At Shell, we believe the world needs to produce more energy and emit less greenhouse gases if society is to meet its development and environmental goals – achieving these goals requires an energy transition. We have acknowledged man-made climate change for many years and called for action by our industry, governments and energy customers.

Today, the energy transition presents opportunities to develop new ways of producing, distributing and consuming energy. As part of our strategy, we intend to make investments in large-scale and commercial forms of lower-carbon technology and energy, such as natural gas, carbon capture and storage, biofuels, wind and solar energy. We continue to develop advanced biofuels and hydrogen-based fuels for electric transport and energy storage. We also collaborate with others to support the transition – for example, we are part of the World Bank's coalition to support governmental carbon-pricing mechanisms.

Sharing wider benefits where we operate

The long-term nature of the energy industry means that we can be part of a community for decades. An open dialogue with communities is fundamental to the way we operate – it helps us to identify

any environmental and social opportunities and challenges. We have teams that work closely with communities throughout a project's lifetime to listen to and address people's concerns. (See [page 9](#)).

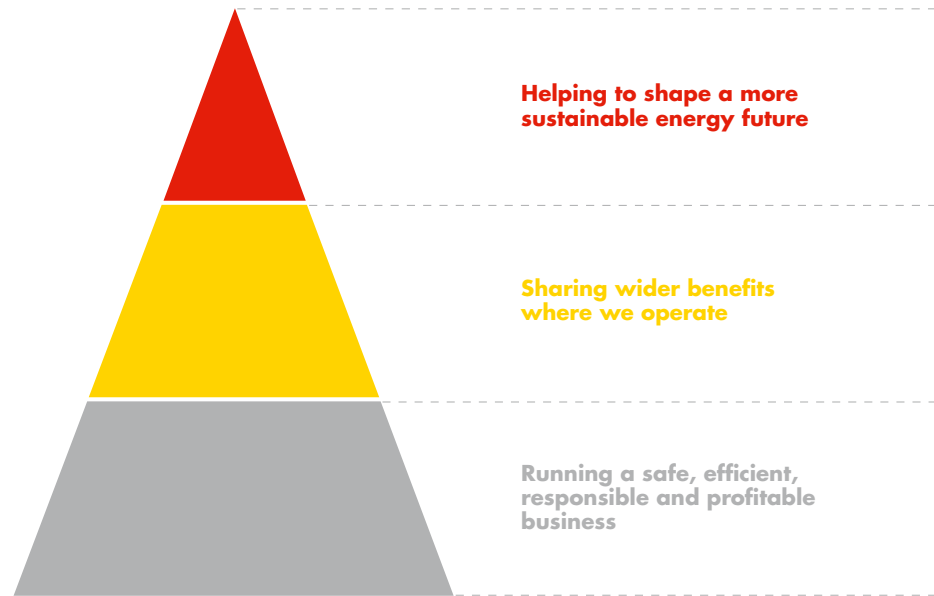
We also help to develop local economies by creating jobs, sourcing from local suppliers, supporting business development, and paying taxes and royalties. In China, for example, 99% of Shell's more than 20,000 employees and contractors are Chinese. Our social investment programmes aim to improve road safety, access to energy and encourage local enterprise where we operate. (See [page 39](#)).

Running a safe, efficient, responsible and profitable business

Safeguarding and respecting people – our employees, contractors and neighbours – is fundamental to how we conduct business. We aim to continuously improve the way we operate to prevent incidents, and identify and minimise adverse impacts at our projects and facilities. We report publicly on our performance using a range of indicators.

We share our experience in sustainability by working with trade associations and others to improve operational standards and practices in safety, community engagement and environmental management. (See [pages 44 and 45](#)).







INTEGRATING SUSTAINABILITY



REPORTING AGAINST ASPIRATIONS

This table represents a selection of global metrics that we track within Shell. It helps us assess our performance as we continue to integrate sustainability across our business. It shows our goals and progress in 2015 and our focus for 2016.

For example, Goal Zero was introduced for personal safety in 2007. Since then, we have broadened the goal to aim for no harm to people and the environment across our business. More information on our performance, definitions of the indicators and the referenced goals are provided on [pages 52 and 53](#).

GOALS, PERFORMANCE AND PLANS FOR 2016 AND BEYOND						
	Goals	Progress in 2015			Priorities in 2016	
PERSONAL SAFETY	2015 goal: achieve total recordable case frequency (TRCF) below 1.13 for employees and contractors. Goal Zero has been our ambition for personal safety since 2007.	 We continue to make progress towards Goal Zero. For more information see page 33 .				<ul style="list-style-type: none">■ Work with contractors in our safety improvement programmes and simplify contracts.■ Support the development and application of common industry safety standards.
		2005	2014	2015		
		2.5	0.99	0.94		
PROCESS SAFETY	2015 goal: achieve a number of operational leaks below 65 (classified as “Operational Process Safety Tier 1 events”). Since 2011, we have extended our ambition of Goal Zero to process safety.	 The number of process safety events has decreased. For more information see page 33 .				<ul style="list-style-type: none">■ Strengthen our process safety risk awareness.■ Keep a strong focus on asset integrity and operational discipline.
		2012	2014	2015		
		91	57	51		
ENVIRONMENT	2015 goal: achieve operational spills below a volume of 1.2 ('000 tonnes) (Classified as “hydrocarbons reaching soil or water”). Goal Zero also extends to the environment with our goal of no operational spills.	 The volume of operational spills slightly increased but we continued to reduce the number of operational spills. For more information see page 36 .				<ul style="list-style-type: none">■ Continue to invest in improving the reliability of our facilities to reduce operational spills.■ Ensure we are effective in learning from spill incidents.
		2005	2014	2015		
		3.4	0.7	0.8		
GHG & ENERGY	2015 goal: reduce flaring in our upstream business (million tonnes CO₂ equivalent). Our policy is to reduce any continuous flaring or venting to as low a level as reasonably practical. In 2015, we signed the World Bank Zero Routine Flaring 2030 initiative.	 We continued to implement measures to reduce our operational flaring. Overall, reductions in some locations were partly offset by higher production. For more information see page 28 .				<ul style="list-style-type: none">■ Implement the flaring reduction projects currently underway.■ Work with the World Bank to find solutions to host-government funding for flaring reduction projects.
		2005	2014	2015		
		20.8	13.0	11.8		
GHG & ENERGY	2015 goal: achieve a refineries energy intensity below 96.3 (based on the Refineries Energy Index). We aim to achieve top level energy-efficiency performance in our refineries. Improve energy efficiency to reduce our greenhouse gas emissions.	 Our refinery energy intensity level increased slightly. For more information see page 36 .				<ul style="list-style-type: none">■ Monitor existing energy efficiency projects.■ Share best practice within Shell.■ Continue to focus on reliable and efficient operations.
		2012	2014	2015		
		98.4	94.9	95.4		
SOCIAL	2015 goal: improve effectiveness of community feedback. Since 2012, our community feedback mechanisms (CFM) have been used to address community concerns. We track the effectiveness of CFMs to improve the quality of our reporting.	 We strengthened the quality of our data, and as a result we: <ul style="list-style-type: none">■ included noise as a category in relevant monitoring programmes;■ used the data to inform our social investment in Nigeria, to increase the participation of local community groups. For more information see page 38 .				<ul style="list-style-type: none">■ Introduce an online community feedback tool to improve the quality of reporting and tracking of community feedback.

SUSTAINABILITY GOVERNANCE

We have put clear and effective governance structures in place throughout Shell, supported by standards, policies and controls. These are the foundation of the decisions we make and actions we take at every level of the company.

Our governance procedures are applied to all areas of decision-making across Shell. This involves the Board of Royal Dutch Shell plc, four Board committees, the Executive Committee (EC), and the teams and people who work across our operations. We make sure that decisions are communicated and implemented within the business.

The Corporate and Social Responsibility Committee (CSRC) is one of the Board committees. Its views and findings about our sustainability practices are integrated into Shell's business to strengthen our procedures and operations within countries.

The overall accountability for sustainability within Shell lies with the Chief Executive Officer (CEO) and the EC. They are assisted by the health, safety, security, environment and social performance (HSSE & SP) executive team. Our standards are set out in our HSSE & SP Control Framework and apply to every Shell company. The process safety and HSSE & SP assurance team, with a mandate from the CSRC, provides independent assurance on compliance with the Control Framework.

CORPORATE AND SOCIAL RESPONSIBILITY COMMITTEE

The CSRC was established in 2005. The Committee's role is to review and advise on policies and performance against the Shell General Business Principles, the Shell Code of Conduct and mandatory HSSE & SP standards.

In 2015, the CSRC visited an LNG-powered supply vessel at our deep-water operations in the Gulf of Mexico.



The Committee's members bring a variety of experience from industry and national government. In the first five months of 2015, the Chairman of the CSRC was Charles O. Holliday, former CEO and Chairman of DuPont. He was succeeded in May 2015 by Hans Wijers, former CEO and Chairman of Akzo Nobel. Other members of the Committee in 2015 were Sir Nigel Sheinwald, a former British diplomat; Patricia A. Woertz, a business leader with extensive experience in the oil sector; and Gerrit Zalm, a former Minister of Finance of the Netherlands, who stood down from the CSRC at the end of 2015.

"The CSRC has a responsibility to review and assist Shell to continuously improve its business practices," says Hans Wijers. "As a Committee, we apply our own individual experience and combined knowledge to review Shell's standards and the sites we visit. It is a critical role that can lead to improvements in implementing safety and environmental standards and in Shell's work with communities."

ACTIVITIES IN 2015

The Committee met five times in 2015. During these formal meetings, the CSRC undertakes in-depth reviews of key exposure areas of our business, monitors any major issues of public concern and Shell's strategy to address them, especially with respect to environmental and social issues. Some topics are reviewed on an annual basis, such as sustainability performance, process safety, and management and audit results.

Other topics are reviewed on a rotational basis – for example, maritime risks were reviewed in 2015. There are also subjects that are discussed because they are current. The Committee continued to spend time on topics related to climate change and the energy transition and also discussed developments in Alaska, Nigeria and seismic activity in Groningen, the Netherlands.

The Committee visits locations to meet Shell employees, contractors and suppliers and to help review whether we are adequately putting our standards into practice. During these visits, the Committee meets members of the local community and other interested parties, such as non-governmental organisations, to hear their views. After each visit, the Committee shares its observations with the Board of Directors.



External opinion

"The International Audit Protocol Consortium (IAPC) was founded by the global infrastructure firm, AECOM, to focus on promoting excellence in global environmental, health, and safety auditing. Shell has demonstrated outstanding leadership in the IAPC by participating across all consortium activities. This participation has included benchmarking key elements of its world-class HSSE & SP audit programme and sharing best practices and continuous improvement concepts."

The consortium's 57 multinational member companies collaborate to advance audit practices. Much of the consortium's success is based on open forums that enable the sharing of experiences. The future challenge for Shell – as a leading company within the IAPC – will be to promote critical insight and knowledge to even greater levels of assurance among internal and external stakeholders."

John Nagy, CPEA
Vice President, IAPC
AECOM Global EHS Management
Consulting Practice
Chicago, Illinois USA

In 2015, the CSRC visited Shell deep-water operations in the Gulf of Mexico and the Raízen biofuels business in Brazil. During each visit, the Committee met employees and representatives from government and non-governmental organisations. In 2015, individual CSRC members also visited the Peterhead carbon capture and storage project in the UK, the Moerdijk chemical plant and the Nederlandse Aardolie Maatschappij joint venture (NAM, Shell interest 50%) sites in the Netherlands.

EMBEDDING SUSTAINABILITY INTO PROJECTS

ASSESSING OUR PROJECTS

When we plan or develop new activities, or make changes to existing ones, we apply a staged project development process (see diagram) and seek to be consistent around the world. We embed sustainability across our projects by:

- conducting integrated assessments on the potential environmental, social and health impacts. These may include specialist studies on topics such as water, cultural heritage or security; and
- engaging with communities to understand concerns they may have and discuss possible ways to address these concerns.

These assessments help us to manage and reduce potential impacts at all stages of the project. We also draw on international standards, such as those of the World Bank and the International Finance Corporation, to guide our engagement with communities.

OUR PEOPLE

We train our teams to understand how to embed sustainability into our projects. They are supported by specialists in the areas of, for example, environmental management, health and social performance including, but not limited to:

- biodiversity, waste, energy and water management; and
- indigenous peoples' rights, cultural heritage and resettlement.






The specialists work with the project team to help manage potential impacts on communities or the environment during project design, construction and operation.

OUR PROCESS

At each review stage in the project development process, we decide if and how we are going to move forward with the project. This includes balancing short- and long-term interests, and integrating economic, environmental and social considerations into our decision-making.

The results of all assessments are documented in a project-management plan which is approved by the manager accountable for the project. The plan is updated and its implementation is monitored and reviewed throughout the lifespan of the project.

PROJECT PROCESSES IN PRACTICE

ACTION	PROJECT DEVELOPMENT STAGE					
	IDENTIFY AND ASSESS	SELECT	DEFINE	EXECUTE	OPERATE	DECOMMISSION AND RESTORE
 Identify people who may be interested in or affected by the project.	●	●	●	●	●	●
 Engage with stakeholders (e.g. communities, host governments and NGOs) and feed responses into our risk analyses and decision making process.	●	●	●	●	●	●
 Conduct baseline studies of the local environment (e.g. water, biodiversity, social livelihoods) and consider how the project may affect it.	●	●				
 Based on assessment of potential impacts and stakeholder engagement, identify mitigation and enhancement measures, e.g. change a pipeline route or reduce water used.		●	●	●		
 Implement mitigation plan through project development and construction and then in ongoing operations.				●	●	●

THE ENERGY TRANSITION

An energy transition is under way to a global low-carbon energy system. Managing this transition is complex: energy is needed to meet the needs of a growing global population, yet the energy produced needs to be less carbon-intensive.

There are things societies can do to speed up their own energy transitions. For example, expand the use of renewable energy, use cleaner-burning natural gas to replace coal, and increase the uptake of carbon capture and storage.

This section outlines Shell's approach to the energy transition.

49%

Share of our production that was natural gas



72 MILLION TONNES

Direct greenhouse gas emissions from facilities we operate



315 KILOTONNES

Reduction of CO₂ at Quest CCS facility in 2015



Quest carbon capture and storage started up at our oil sands operations in 2015. It can capture more than one million tonnes of CO₂ emissions each year from the Scotford Upgrader and store it safely underground. Alberta, Canada.



THE ENERGY FUTURE

Energy is essential to our daily lives. But the way the world produces and consumes energy continues to change.

For many, energy is a defining feature of modern life. Lives and livelihoods, economies and communities depend on convenient, reliable and affordable energy – for power, heating, industry and transport – to prosper and grow. As more people strive to attain energy-dependent products and services, more energy will be needed.

Energy has enhanced our lives: we have never been more connected and, today, more people have better opportunities, better health and better living conditions. This progress has been dependent on reliable, accessible energy. As the global population increases and incomes rise, demand for energy will grow: by 2050, the world's population will be approaching 10 billion, up from 7 billion today, while more than two in three people could be living in cities. Shell's New Lens Scenarios show that, within 50 years, global energy demand could be 60% higher than in 2015.

MORE ENERGY, LESS CO₂

The world must find ways to meet this rising energy demand while reducing global greenhouse gas

emissions to limit the effects of climate change. The historic Paris Agreement adopted by 195 countries in late 2015, and expected to be ratified over the coming year, established a goal to limit the global temperature rise this century to well below 2 °C.

This reinforces the need to shift our existing energy system to one based on energy sources that are lower-carbon. It requires a huge undertaking – a global energy transition involves producing and consuming energy in a different way. We need to design our economies, communities and lives to thrive on these energy systems.

It will be necessary to achieve close to net-zero carbon dioxide (CO₂) emissions as early as possible this century if we are to maintain a world below 2 °C. In a net-zero emissions world, CO₂ emissions would be safely absorbed by the earth's natural infrastructure – such as forests and oceans – with any remaining emissions safely stored underground by carbon capture and storage (CCS). Shell's New Lens Scenarios show that, while difficult, it could be possible for society to approach

net-zero emissions by the end of this century. However, these scenarios assume an average global temperature increase of 2–3 °C by 2100.

A huge part of the challenge is to cut the carbon from the existing fossil fuels that currently make up around 80% of the energy mix. Our New Lens Scenarios show that energy needs towards the end of this century will be predominantly met by renewable energy sources such as solar, wind and biomass, with fossil fuels around 25% of the energy mix.

GLOBAL ENERGY CONSUMPTION

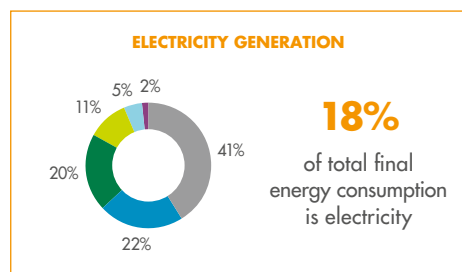
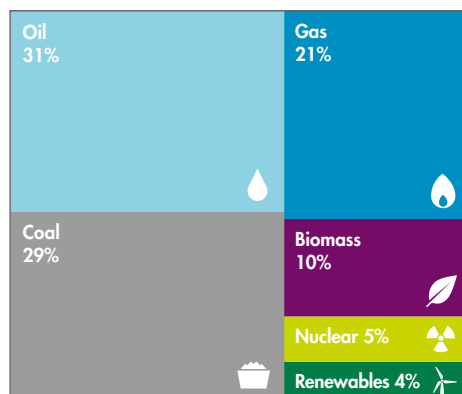
While renewable energy sources are growing fast, there are technological challenges to achieving a completely renewable energy system. The world needs to shift four main areas of global energy consumption to low-carbon alternatives: electricity, transport, industry and domestic use (see diagram). Each of these sectors will transition at a different pace.

Today, 18% of total global energy use is provided by electricity. Around 40% of this electricity is still generated by coal, while just over 20% comes from renewable energy sources. By 2050, more than 40% of the world's electricity could be powered

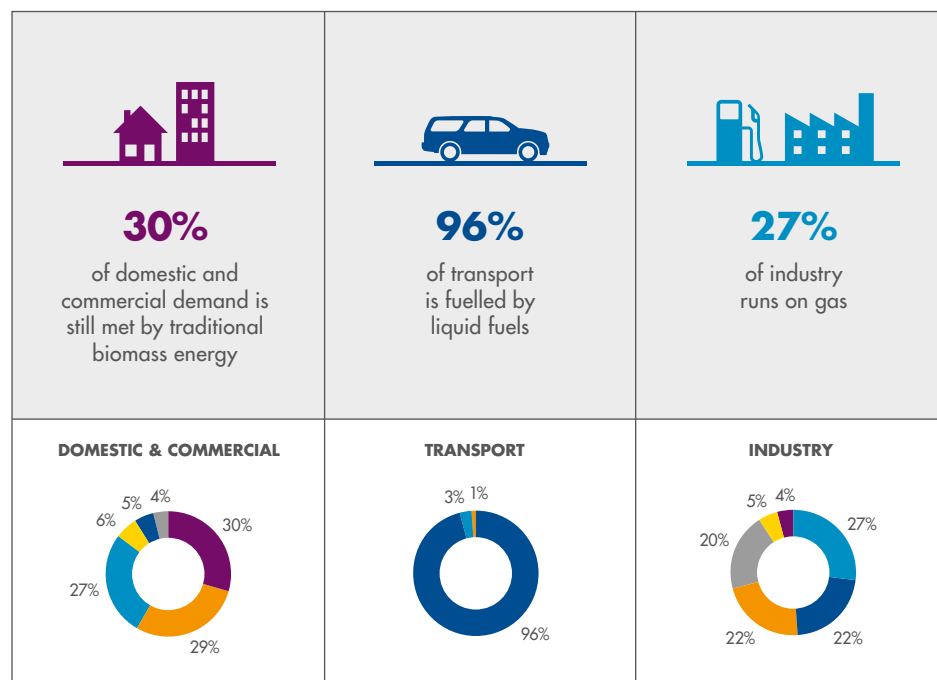
TODAY'S ENERGY NEEDS

The world today currently consumes most of its energy from coal, oil and gas sources, with around a fifth of total energy supply used to generate electricity. Energy sources differ across the sectors of industry, transport and domestic use which all need to transition to low-carbon energy options.

CURRENT GLOBAL ENERGY DEMAND



ENERGY CONSUMPTION BY SECTOR AND CONSUMER TRENDS



Oil Coal Gas Biomass Nuclear Renewables (including hydro) Electricity Heat Liquid fuels (including biofuels)

Source: International Energy Agency, Key world energy statistics 2015 and World energy outlook 2015.

THE ENERGY FUTURE CONTINUED

by renewable energy sources, according to the International Energy Agency. At the same time, only around 3% of transport is powered by renewable energy sources. In 2040, this could reach 8%. Many forms of transport will, likely, still rely on oil-based products (blended with biofuels).

There are some industrial users, such as steel and aluminium producers, whose processes require temperatures that are currently difficult to achieve without hydrocarbons. Across other industries and in our homes, the existing infrastructure needs to change to shift from fossil fuels to electricity. The scale of the required investment is another reason why the energy transition will take time.

One possible solution to meet energy demand is to have a hybrid system of both renewable energy sources and lower-carbon oil and gas. This combination would give people access to a full suite of energy products until the technological challenges to achieving a lower-carbon energy system are solved.

MEETING THE ENERGY CHALLENGE

A successful energy transition requires sustained and substantial investment in all energy sources, including oil and gas production, to meet the global demand needed to fuel economic development. If the world is to achieve an energy transition

and approach net-zero emissions, our New Lens Scenarios suggest that society should grow its share of renewable energy to up to 70% by 2100.

Even if global demand for hydrocarbons is flat, there still needs to be investment in oil and gas supply simply to meet this demand. Without this ongoing investment, the production from existing fields drops an average 4–6% each year.

MANAGING THE TRANSITION

The Paris Agreement has set the global direction for the energy transition. Government and business need to deliver policies and products in support of this. The energy transition will require a mixture of vision and realism, urgency and long-term planning.

There are many things that can be done now to reduce global emissions. Some will have a more immediate impact – such as substituting coal for natural gas or advancing renewable energy; while other solutions and technologies could play a larger role later in the transition – such as introducing new forms of transport fuels or carbon capture and storage (CCS). In a similar vein, it will be easier for some sectors of the economy or particular countries to reduce their carbon emissions faster than others in the coming decades.

Within Shell, we can best help to decarbonise the existing hydrocarbon energy system by promoting the use of cleaner-burning natural gas and by advancing CCS technology. We also support the implementation of widespread government-led carbon-pricing mechanisms (see [page 13](#)) and are investing in efficient fuels and lubricants, and transport alternatives that include biofuels and hydrogen fuel. (See [page 20 and 21](#)).

Yet, there needs to be a broader response with cross-sector collaboration on an unprecedented scale. Government, business and civil society need to work together, particularly in the design and implementation of local energy policies, city planning and infrastructure. For example, the transport and mobility sector needs greater collaboration among manufacturers, energy companies and governments if innovation is to reach the scale required. In 2015, Shell was a founding member of the Energy Transitions Commission. This is a cross-sector collaboration of leading individuals from the public, private and social sectors to make recommendations that will contribute to the energy transition.





We believe that our capacity to innovate and to take a long-term view on investment, along with our experience, can help us to make an important contribution to the energy transition.

FUTURE ENERGY NEEDS

A successful energy transition requires substantial investment across all energy sources, including oil and gas production, to meet a growing demand for energy.

THE ENERGY CHALLENGE







There is more demand for energy globally as the world's population and living standards increase.

 <p>GROWING POPULATION</p> <p>Global population will increase from around 7 billion today to nearly 10 billion by 2050, with 67% living in cities.</p>	 <p>RIISING DEMAND</p> <p>Global energy demand will likely be almost 60% higher in 2060 than today, with 2 billion vehicles on the road (800 million today).</p>	 <p>ONGOING SUPPLY</p> <p>Renewable energy could triple by 2050, but we will still need large amounts of oil and gas to provide the full range of energy products we need.</p>	 <p>MITIGATING CLIMATE CHANGE</p> <p>Net-zero emissions is a potentially achievable societal ambition.</p>
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Source: UN World Population Prospects (2015 revision); World Urbanization Prospects (2014 revision); International Energy Agency, Energy Technology Perspectives 2015; Shell New Lens Scenarios.

TOWARDS A LOWER-CARBON FUTURE

Shell is working to meet the energy challenge in many different ways:

 <p>Bringing lower-carbon natural gas to a wider market</p>	 <p>Industry leader in carbon capture and storage</p>	 <p>A biofuels business</p>
 <p>Investment in lower-carbon technologies such as hydrogen and wind</p>	 <p>Continued investment in oil and gas to meet growing demand</p>	 <p>Advocating government-led carbon-pricing mechanisms</p>

ADDRESSING CLIMATE CHANGE

At Shell, we believe there are clear, practical steps the world can take to tackle climate change while continuing to provide energy to meet present and future needs.

The Paris Agreement provides a way forward for governments and society to find effective policy and cultural changes that can drive low-carbon business and consumer choices. Shell supports long-term climate goals that address environmental pressures and provide development opportunities for communities. We all need to work together to achieve the ambitions set in the Paris Agreement. Targets for countries are a good place to start and set the direction for the significant global undertaking ahead.

REDUCING EMISSIONS

It will be necessary for the world to reach net-zero carbon dioxide (CO₂) emissions if there is to be a successful shift to a low-carbon energy system and to keep global temperatures well below 2 °C. This will require a combination of the best of renewables, gas and oil to meet all types of energy needs and create low-carbon economies and communities. It also requires the large-scale implementation of technologies, such as carbon capture and storage. A number of measures can be applied to reach net-zero emissions, including:

- regulatory measures such as government implemented carbon-pricing mechanisms to motivate investment in emissions reduction and energy efficiency;
- energy efficiency to encourage smarter practices and stricter regulations for compact urban development, infrastructure and energy-efficient buildings, as well as investment in low-emission transport;
- ways to reduce or offset CO₂ emissions, such as reforestation and carbon capture and storage (CCS);
- removal of consumption subsidies for fossil fuels to create a level playing field for all energy providers, and
- financial incentives that encourage the development, demonstration and deployment of new low-carbon technologies.

We are currently working with a number of governments around the world to develop an appropriate energy mix that can help these countries to move towards a low-carbon energy system. (See box).

Natural gas can play a role in helping countries diversify their energy mix. Shell has been working with China's Development Research Centre on China's long-term energy development strategy. Guangzhou Zhujiang, China.

CHINA'S FUTURE ENERGY MIX

Since 2011, Shell has worked closely with the Chinese government's Development Research Centre (DRC) of the State Council on China's medium- to long-term energy development strategy. The ongoing collaboration has identified the key energy challenges facing the country and suggested detailed, practical solutions.

The recently concluded second phase of the collaboration examined the important role natural gas can play in helping China diversify its energy mix, boost economic development, improve air quality, and help meet China's Intended Nationally Determined Contribution for reducing carbon emissions. Displacement of coal use was specifically identified as one of the key areas for natural gas development.

The research draws on international experience from other countries and regions that have increased the share of gas in their energy mix and offers insights into how China could replicate this. The Shell-DRC joint report "Research on China's Gas Development Strategy" recommended the liberalisation of China's natural gas value chain as a way to support and enable greater natural gas consumption.

This would require opening up China's gas market to new entrants and increasing domestic natural gas supplies; enhancing the construction of pipeline networks and gas storage facilities, accelerating the reform of regulatory systems and institutions, and the development of market-based pricing mechanisms. The report recommendations have informed the development of China's 13th Five Year Plan for 2016–2020.



ADDRESSING CLIMATE CHANGE CONTINUED

MITIGATING CLIMATE CHANGE

Shell is meeting the energy challenge in many different ways. Over the past decade we have invested in cleaner-burning natural gas and sugar-cane ethanol, a low-carbon biofuel. We are also working on new fuels for transport. Our approach to mitigating climate change is to take action in the following ways:

Natural gas as an alternative to coal

Natural gas produces half the amount of CO₂ as coal when burnt to generate electric power. Greater use of natural gas as a fuel for power plants, instead of coal, could significantly reduce emissions from the power sector. This can also be the most affordable route for countries that are seeking to reduce their CO₂ emissions while maintaining reliable power generation.

Government carbon-pricing mechanisms

Shell has long called for governments to create carbon-pricing mechanisms that deliver a meaningful cost on CO₂ emissions. These mechanisms offer an effective way to stimulate the development of low-carbon technologies, generate revenue for governments and, ultimately, give consumers new energy choices. It could encourage the deployment of renewable energy, carbon capture and storage (CCS) and nuclear power plants.

Carbon capture and storage

The International Energy Agency estimates that without CCS the cost of achieving a 2 °C scenario could be around 138% higher. Over time, CCS could capture enough CO₂ to deliver a 13% reduction in overall emissions needed by 2050 to limit the rise in global temperature to 2 °C. CCS is currently the only technology that can capture industrial CO₂ emissions.

If CCS is to have an impact on global CO₂ emissions it needs to be both supported by governments and taken up widely by industry, including power generation companies. In 2015, Shell started operating Quest, our CCS project in Canada. (See [page 19](#)).

Low-carbon energy: renewable energy and biofuels

Shell's New Lens Scenarios show how renewable energy could eventually become the largest component of the global energy system. We currently produce biofuels in Brazil through our Raizen joint venture. We have longer-term investments with partners in developing alternative transport fuels, such as hydrogen, and advanced biofuels. (See [page 20](#)).

Combining renewable energy with hydrocarbons

Reliable energy solutions can be designed by combining fast-growing renewable energy with hydrocarbons. In practice, some countries may choose to develop smaller scale power grids that use a mix of energy sources. For example, Shell is working on the design of a combined natural gas and solar power project with Marikina City, Metropolitan Manila, the Philippines.

COLLABORATION AND PUBLIC POLICY

Governments play a key role in their energy transitions: their policy choices can drive innovation in low-carbon technologies, and encourage investment in low-carbon energy and infrastructure. Policies and frameworks need to be developed to support businesses and consumers to make choices that reduce emissions. This could bring about fundamental change. Innovation can be driven by a global carbon emissions market – an approach that is suggested in the Paris Agreement.

Shell has a long history of collaborating to build international policy and market frameworks. For example, we were a founding member of the International Emissions Trading Association (IETA), which today is a leading business association focused on carbon pricing and the development of emissions markets. We continue to work with IETA and a number of other organisations on climate change issues. (See [page 45](#)).

SHAREHOLDER RESOLUTION IN 2015

In 2015, a shareholder resolution was filed for Shell's Annual General Meeting (AGM) requesting additional information from Shell regarding business risks associated with climate change. We have been asked to disclose this information from 2016 onwards.

The resolution was prepared by a coalition of UK asset owners and mutual fund managers. It was intended to emphasise the need to balance the short- and long-term interests of Shell's shareholders in relation to Shell's actions to mitigate climate change.

We supported the resolution at the 2015 AGM. We provided additional reporting in 2015 and we maintain our commitment to engage with our shareholders. In 2016, we continue to report on the five areas specified in the resolution. These five areas are Shell's ongoing operational emissions management, asset portfolio resilience to post-2035 scenarios, low-carbon research and development and investment strategies, as well as Shell's public policy interventions. Information that addresses the resolution can be found on the following pages of this report:

- reducing emissions, [page 13](#);
- portfolio resilience, [page 15](#);
- low-carbon energy investment, [page 18](#);
- Shell's scorecard structure, [page 48](#); and
- collaboration and public policy, [page 14](#).

The full resolution can be viewed at www.shell.com/ghg. We will continue to publish additional information on this website as it becomes available. This will include, for example, our greenhouse gas emissions, additional information on our resilience to post-2035 scenarios and our submission to the Carbon Disclosure Project.

PORTFOLIO RESILIENCE

Shell has long taken into account the potential risks and threats to the viability and profitability of major projects to ensure the robustness of our portfolio. Our investment horizons can be decades ahead.

At Shell, we assess the greenhouse gas (GHG) risks on all our planned ventures. We generally apply a GHG project screening value (PSV) for all new projects, and have done so since 2000. Since 2008, our GHG PSV has been \$40 per tonne. This means that new projects are assessed for the financial impact if a government imposed price or levy of \$40 per tonne for GHG emissions is implemented. For projects with a high exposure to government imposed carbon pricing or legislation, we consider the impact of higher GHG prices.

The screening value can affect our project design in a number of ways. Some projects may be stopped at an early stage if the GHG footprint is too high or a design may be altered to reduce GHG emissions at start-up. For example, we have stopped some projects at an early stage, due to high levels of CO₂ in the hydrocarbon reservoir. Alternatively, a project may be designed to enable CO₂ reduction at a later date if there is an increase in the local government imposed carbon price – for example, by adding CCS.

Special equipment enables us to measure changes in environmental conditions, which are factored into our project design criteria and support safe and more efficient operations. Gulf of Mexico, USA.

We strengthen the resilience of our portfolio with internal targets on energy efficiency and emission reductions at our assets. We use targets that are based on the local context and which cannot meaningfully be converted into company-wide goals. Our Carbon Disclosure Project submission provides more information about how we apply our targets.

ADAPTATION

The effects of climate change will require governments, businesses and local communities to adapt their infrastructure to the changing environment. Across Shell, we take steps at our facilities around the world to ensure that they are resilient to climate change. This reduces the vulnerability of our assets and infrastructure to potential extreme variability in weather conditions linked to climate change.

We take different approaches to adaptation for existing operating assets and new projects. We progressively adjust our design standards for new projects while, for existing assets, we identify those that are most vulnerable to climate change and take appropriately timed action – for example, by upgrading refinery drainage systems.

ENERGY EFFICIENCY

Across all our Upstream and Downstream operations, we strive for improved energy efficiency to help reduce Shell's overall GHG emissions. Better energy efficiency can be achieved by improving the reliability of our equipment, by smart scheduling of maintenance activities or by installing more energy-efficient equipment. The main metric that we use to measure our energy efficiency is energy intensity – that is, the amount of energy consumed for every unit of output.

Each of our 13 Shell-operated refineries has to identify measures to improve energy efficiency every year. For example, in 2015 we installed a cogeneration unit at our Bukom refinery in Singapore. This unit improves energy efficiency by recovering waste heat from the gas turbine's exhaust to generate steam.

Between 2009 and 2015, the energy intensity of our refineries decreased by about 6%, due to a combination of improved equipment reliability and better operating processes and energy-efficiency projects. Energy savings in downstream, combined with changes in the refining energy mix to lower-carbon alternatives, reduced the refining CO₂ emission footprint by about 1.5 million tonnes each year. These energy savings helped us to reduce costs: the total annual energy cost of our 13 refineries is around \$2.5 billion. We were able to reduce costs between 2009 and 2015 by about \$100 million each year.

We also continue to improve the scheduling of our shipping operations which helps to reduce fuel consumption, loading and discharging times.

For information on our energy-efficiency performance, see [page 36](#).



NATURAL GAS

The world needs to find lower-carbon ways to produce and consume energy. At Shell, we believe natural gas has an important role to play in meeting that challenge.



Natural gas is abundant, versatile and cleaner-burning than coal. It makes up about half of Shell's total production and is one of the few energy sources that can meet many energy needs: to generate electricity, heat homes, power industry, and fuel ships and trucks. According to the International Energy Agency, there are enough recoverable natural gas resources to last more than 200 years at current levels of consumption.

Natural gas can make an important contribution to the energy transition. It produces around half the CO₂ emissions of coal when burnt to generate electricity. The production and use of both coal and natural gas for power generation emits methane, which contributes to global warming. The use of gas for power will have less global warming impact than coal over a 100-year time frame as long as the total methane emissions of the gas supply chain do not exceed 3%. Most independent studies demonstrate that the emissions from the gas value chain are well below this level. (See [page 27](#)).

There is also potential to significantly reduce local air pollution by replacing coal with natural gas in power generation. This is already happening in Beijing, for example, where steps are being taken

to switch coal-fired power plants to natural gas. Modern natural gas plants emit less than one-tenth of sulphur oxides, nitrogen oxides, particulates, and heavy metals compared with coal. We work with a number of governments to support the creation of infrastructure needed to use gas as an energy source – such as liquefied natural gas import terminals.

Renewable energy will play a key role in the transition to a lower-carbon future. Yet, some renewable energy sources, such as solar and wind power, are intermittent due to the current absence of large-scale energy storage. They need a partner, such as natural gas, to maintain a reliable flow of electricity. A natural gas-fired power plant takes much less time to start and stop than a coal-fired plant.

Natural gas can also be used in combination with carbon capture and storage (CCS) to reduce CO₂ emissions. CCS could remove up to 90% of CO₂ emissions from power generation and play a key role in supporting the shift to a lower-carbon future. (See [page 19](#)).

Phase 3 of the Malampaya deep-water gas-to-power project was completed in 2015, providing up to 30% of the country's energy requirements. The Philippines.



LIQUEFIED NATURAL GAS

Liquefied natural gas (LNG) is helping to bring the benefits of cleaner-burning natural gas to markets all over the world. Shell is one of the world's leading suppliers of LNG.



The LNG process enables natural gas to be easily transported from areas where it is abundant to places where it is needed. To create LNG, natural gas is cooled to -162°C , turning it into liquid form and shrinking its volume by 600 times. At its destination, the LNG is converted back into gas for conventional use.



Shell was a pioneer of the LNG industry more than 50 years ago and is one of the world's largest LNG suppliers. Today, new global LNG supply is mainly coming from Australia, North America and East Africa. At the same time, we expect LNG demand to rise by 5% each year over the next two decades. Shell is currently involved in several LNG projects around the world.

For example, the LNG plant at Sakhalin-2 (Shell interest 27.5%), located off the east coast of Russia, provides around 9% of Japan's and 8% of South Korea's LNG supplies. LNG Canada (Shell interest 50%), is a proposed joint venture to develop an LNG export project in British Columbia, connecting the gas supply from north-west Canada to markets in Asia.

FLOATING LNG

Floating liquefied natural gas (FLNG) facilities enable LNG to be produced, liquefied, stored and offloaded at sea. This makes it possible to reach offshore gas fields previously considered too expensive or too difficult to develop. FLNG is designed to reduce the local environmental footprint of LNG infrastructure and decrease the disturbance to land and marine life.

We are constructing our first FLNG facility, Prelude FLNG (Shell interest 67.5%), which will be located 475 km off the coast of Western Australia. It is under construction in various locations around the world – the main construction site is the Samsung Heavy Industries Yard in Geoje, South Korea. Once completed, Prelude FLNG will be the largest floating offshore facility in the world.

A module is lifted on to Prelude Floating LNG which is being assembled in Geoje, South Korea. Prelude will be located off the coast of Western Australia.



LNG FOR TRANSPORT

Cleaner vehicles and fuels are needed to meet increasing demand for transport with less greenhouse gas emissions. Cleaner-burning LNG is a fuel for heavy-duty road transport, shipping and industry that is virtually free of sulphur emissions and has lower levels of nitrogen dioxide and particulates. It can be used as an alternative transport fuel to diesel and heavy fuel oil.

In shipping, LNG is already used as a fuel for vessels on inland and coastal waterways. In Norway, Gasnor, a Shell company, is a leading supplier of LNG to industrial and marine operators. Since 2015, Shell is able to import and use storage capacity at the Gas Access to Europe (Gate) LNG terminal in the Netherlands, which enables us to supply LNG to marine and road transport customers in north-west Europe. Shell is also using the terminal to supply LNG fuel to its growing truck-refuelling network in the Netherlands. In the same year, Shell also signed an agreement with Plouvier Transport NV and Intertrans Tankschiffahrt in Europe to charter 15 new inland dual-fuel barges. They will run predominantly on LNG and are expected to use the new Gate terminal.

Since 2015, Shell has been operating two offshore supply vessels for our deep-water activities in the Gulf of Mexico. The vessels run mainly on LNG, with one more LNG-fuelled vessel on order. We have also started construction of an LNG refuelling vessel to supply LNG-powered vessels and ships across north-west Europe.

In the USA, Shell continues to work with the truck-stop chain, Travel Centers of America, to develop a network of LNG refuelling stations for trucks. The first station was opened in California in 2014 and five more LNG stations are now operational in California, Texas and Louisiana. Shell also has two LNG refuelling stations in Canada.

RESEARCH AND DEVELOPMENT

Innovation and advanced technologies play a crucial role in the energy transition. Our research and development (R&D) activities aim to address the need for more energy while reducing the environmental impact.

We have programmes, partners and funding methods to help us develop new technologies. Shell has research partnerships with leading universities and research institutes including Massachusetts Institute of Technology in the USA, Imperial College in the UK and Tsinghua University in China.

Our three main programmes that support future energy technology development are Shell GameChanger, Shell Technology Ventures (STV) and Shell TechWorks. Shell GameChanger nurtures radical, unproven ideas that have the potential to influence the energy future. STV, our corporate ventures arm, invests in companies and technologies that are likely to accelerate the development and deployment of innovations in the energy sector. Shell TechWorks is an open innovation programme that connects entrepreneurs and technology start-ups from other sectors to apply different technologies to the energy sector.

LOW-CARBON ENERGY INVESTMENT

Over the past six years, we have invested about \$1.1 billion in low-carbon R&D. We support the development and implementation of new energy technologies by investing in companies and technologies that are complementary to Shell's existing business.

Through STV, we invest across the full scope of alternative energy: in production, we invested in GlassPoint solar technology (see page 21); in energy distribution, we invested in Next Step Living, a company that helps homeowners improve energy efficiency and use more renewable energy; in energy storage, we invested in Aquion Energy, a company that produces saltwater ion batteries that can store solar power for use at night for industrial purposes.

Other areas of low-carbon investment include supporting the global Carbon XPRIZE in the area of carbon capture and use. In Canada, Shell and

nine members of Canada's Oil Sands Innovation Alliance are funding an XPRIZE to foster ideas to find alternative uses for captured carbon dioxide.

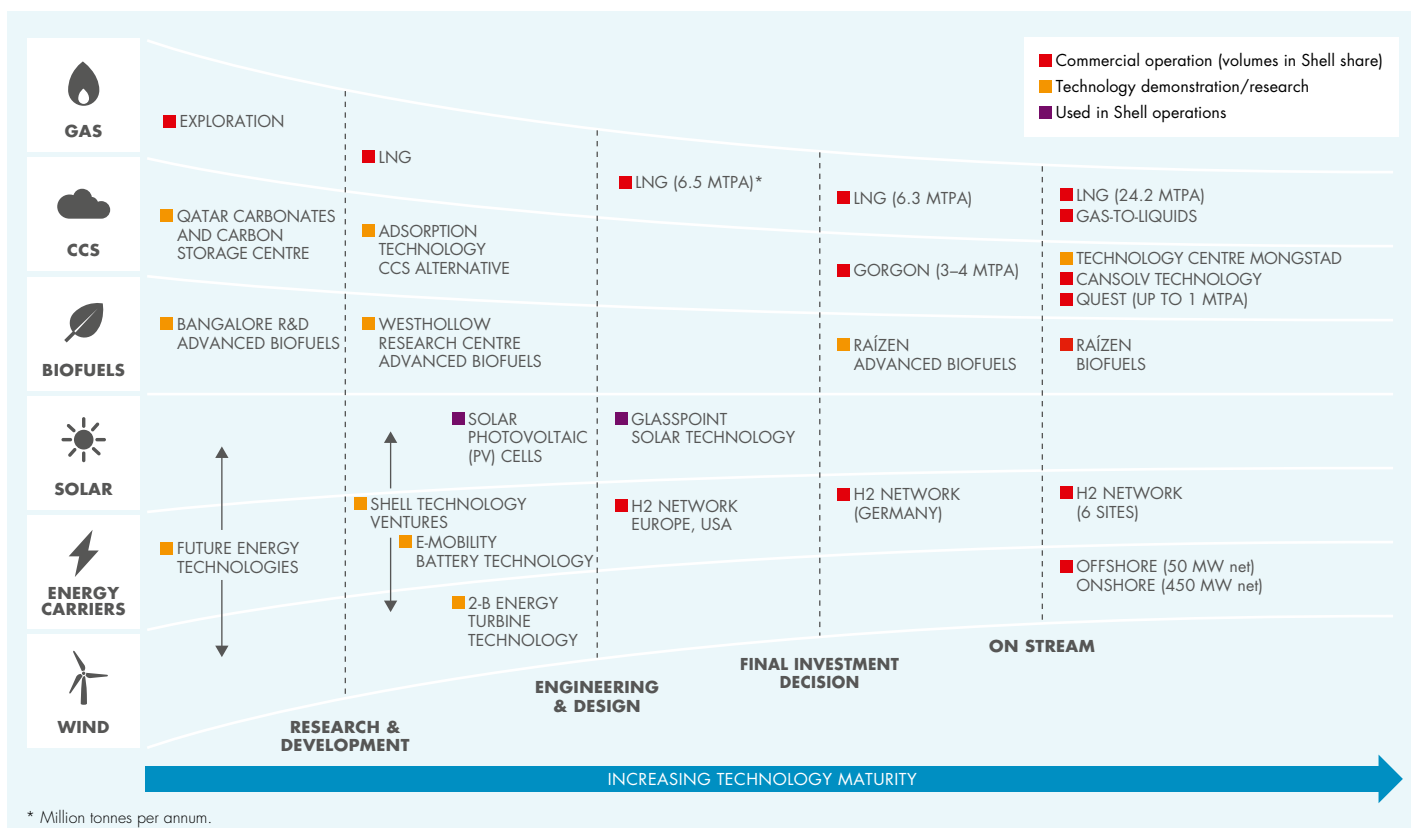
As part of our low-carbon investment portfolio, we are also researching new transport solutions including hydrogen technologies, energy storage for electric vehicles (see page 21) and advanced biofuels (see page 20).

Stages of low-carbon investment

Our investment in low-carbon R&D can be categorised into six areas. (See diagram). We try and test many new technologies, often working in partnership with others. If the technology development shows commercial viability at the R&D stage, we will continue to invest in it.

For example, over a number of years, we have conducted seven advanced biofuel trials to test new biofuels made from plant and crop waste. Today, we have three demonstration plants where we evaluate cellulosic ethanol and manufacturing processes in which advanced biofuels are added to existing fuels.

LOW-CARBON RESEARCH & DEVELOPMENT INVESTMENT



CARBON CAPTURE AND STORAGE

Carbon capture and storage – or CCS – is the name given to a combination of technologies that captures and stores carbon dioxide (CO₂) deep underground, preventing its release into the atmosphere.

At Shell, we believe the world will need CCS to achieve the ambition of net-zero emissions. CCS is already being used around the world to capture CO₂ from power generation and industrial processes with around 25 million tonnes of CO₂ captured and stored globally each year. Many companies have further CCS projects in development. There is considerable potential for the future deployment of CCS in a variety of industrial sectors including power, iron and steel.

QUEST, CANADA

In Alberta, Canada, Shell operates a joint venture (Shell interest 60%) to develop the first commercial-scale CCS for reserves extracted from our oil sands operations. The facility is designed to capture up to 35% of the current CO₂ emissions from the Scotford Upgrader – the site where bitumen is processed into synthetic crude oil. The captured CO₂ is stored in a porous rock layer about 60 km away and more than 2 km below ground.

Quest started operating in 2015. At full capacity it can capture and store more than 1 million tonnes of CO₂ each year – equivalent to the emissions from about 250,000 cars. Since its start-up, Quest has reduced CO₂ emissions by 315 kilotonnes. The provincial government of Alberta and federal government of Canada have provided C\$865 million to support the development of Quest.

Shell and our joint-venture partners are freely sharing any data or intellectual property generated by the Quest project to help others advance CCS projects and demonstrate its value on an industrial scale.

Monitoring Quest

Quest is designed to meet all the requirements for the safe and permanent storage of CO₂. We have developed a rigorous monitoring programme to ensure that the CO₂ remains safely and securely underground. This includes continuous pipeline monitoring and early-warning systems, groundwater sampling and 3D seismic surveying. Throughout the development of Quest, we conducted an extensive

consultation programme with nearby communities. We share our baseline results from our monitoring programme with the local community.

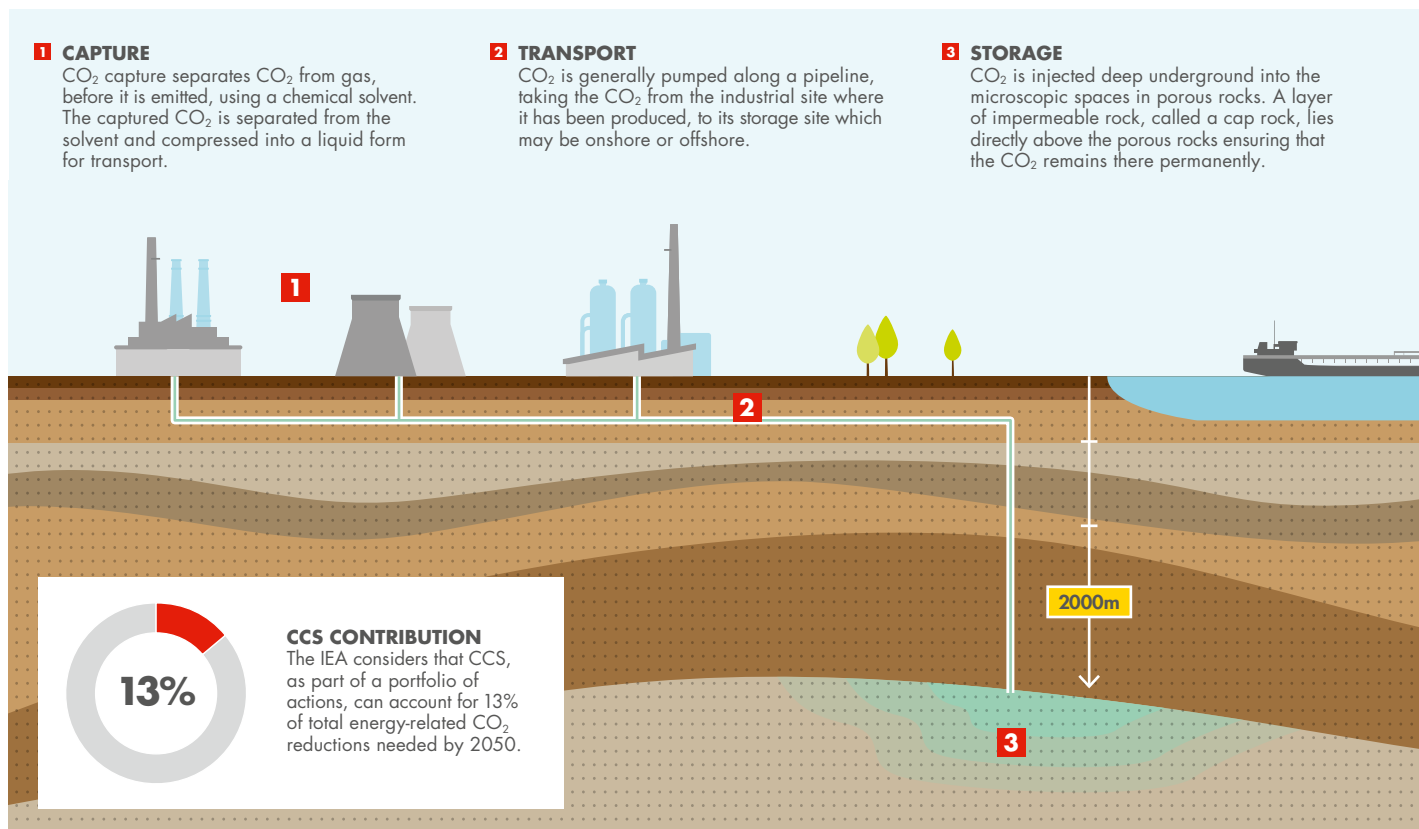
SHELL CANSOLV

CCS technology developed by Shell Cansolv is used at the Boundary Dam power station in Saskatchewan, Canada. It is Saskpower's largest coal-fired power station and a significant source of power for the region. Both sulphur dioxide and CO₂ are captured from the power station.

PETERHEAD, UK

At the Peterhead power station in Scotland, which is operated by the British energy company SSE, we were, until recently, designing a full-scale gas CCS project for a natural gas-fired power plant. The CCS technology was being designed to capture and move CO₂ from the power station offshore through pipelines for storage deep under the seabed of the North Sea. Unfortunately, the UK government withdrew potential funding in late 2015, and the project did not proceed. We learnt much about how to reduce the costs of future CCS projects. The technical data and reports from our work is made publicly available.

CARBON CAPTURE AND STORAGE OVERVIEW



LOWER-CARBON ALTERNATIVES

Shell invests in a range of lower-carbon technologies and fuels, sometimes working with partners. Many of these technologies have the potential to bring about changes in the energy system.



BIOFUELS

In the coming decades, biofuels produced from sugar cane and other crops are expected to play a valuable part in the changing energy mix. They are a cost-effective way to reduce CO₂ emissions in the transport sector, as long as their production is managed in a responsible way.

Our joint venture, Raízen (Shell interest 50%), in Brazil is the world's largest producer of sugar-cane ethanol. We also buy and blend biofuels into conventional fuels. We invest in advanced biofuels made from plant and crop waste. These are expected to further improve the sustainability of biofuels and increase production from the same amount of land.

Producing biofuels with Raízen

The use of sugar-cane ethanol produces 70% less CO₂ emissions than conventional petrol. In 2015, Raízen produced more than 2 billion litres of low-carbon ethanol from Brazilian sugar cane.

The company's production process is designed to minimise its environmental footprint. By-products are recycled as natural fertilisers. Waste sugar-cane fibres are used as fuel to generate electricity for the mills or exported to the grid. The sugar cane is grown using only natural rainfall, water recycled from the production process and irrigation on a small area. Raízen's harvesting process is already 98% mechanised which improves worker conditions and operational efficiency.

Raízen was the first company to certify a sugar-cane mill using the Bonsucro sustainability standard in 2011. Bonsucro's robust social and environmental standards are independently audited and certified. At the end of 2015, 13 of Raízen's 24 sugar-cane mills were certified to the Bonsucro standard. Raízen is also working in partnership with the non-governmental organisations, Imaflo and Solidaridad, to support its third-party sugarcane suppliers to become more sustainable producers.

SUSTAINABILITY STANDARDS

Shell currently buys biofuels from more than 100 suppliers around the world for blending with conventional fuels. In 2015, we used around 9.5 billion litres of biofuels in the petrol and diesel we sold worldwide – making us one of the largest blenders and distributors of biofuels globally.

Nearly all of the contracts with our suppliers of biofuels that we purchase for blending contain environmental and social clauses. These requirements aim to protect human rights and the biodiversity of ecosystems. We also continue to work on increasing the proportion of independently certified volumes. In 2015, around 40% of these volumes were certified as sustainable by an independent auditor, working to standards set out in the European Union's Renewable Energy Directive.

We support the adoption of international standards including the Round Table on Responsible Soy, the Roundtable on Sustainable Biomaterials, the Roundtable on Sustainable Palm Oil (RSPO) and Bonsucro for sugar cane. Every year, 100% of the palm oil that Shell blends is either independently certified by RSPO or the International Sustainability and Carbon Certification, or covered by offsets from GreenPalm.

In 2015, Shell completed a project with Patum Vegetable Oil in Thailand that helped farmers to meet RSPO standards. Around 800 farmers were successfully audited and received RSPO certification, which increased the availability of certified material by around 15,000 tonnes. We are also working to increase the purchase of independently certified sustainable sugar-cane ethanol and soy biodiesel.

DEVELOPING ADVANCED BIOFUELS

We continue to invest in new ways to produce biofuels from sustainable feedstocks such as waste and cellulosic biomass. Shell has three pilot plants at different stages of construction in the USA and India. The pilot plants will convert cellulosic biomass, which is non-food plants and waste, into a range of products, including petrol, diesel, aviation fuel and ethanol.

In addition, in 2015 Raízen opened its cellulosic ethanol plant at its Costa Pinto mill in Brazil. It is expected to produce 40 million litres a year of advanced biofuels from sugar-cane residues.

ENERGY-EFFICIENT TRANSPORT

Energy efficiency is an important consideration in our development of fuels and lubricants that keep people and goods on the move.

Efficient fuels

Shell supplies fuels to millions of drivers around the world every day. For more than a century, our scientists have worked to develop high-quality products to improve the driving experience and energy efficiency of our customers. For example, Shell FuelSave Diesel contains ingredients designed to improve the combustion process in vehicle engines. This, in turn, can boost efficiency and help drivers save fuel. Shell FuelSave Diesel has helped reduce the carbon footprint of business customers in the bus, coach, construction and trucking sectors.

Shell GTL Fuel uses a gas-to-liquids (GTL) process, with natural gas as a feedstock, to produce a cleaner-burning alternative fuel to conventional diesel. It is virtually sulphur-free, odourless and helps to improve local air quality. Shell GTL Fuel can be used as a drop-in diesel fuel without engine modification or new infrastructure or vehicle investment.

HYDROGEN



Hydrogen has the potential to be an important low-carbon transport fuel. Hydrogen electric vehicles are quick to refuel and can drive a similar range as conventional cars. Hydrogen electric vehicles could also help improve local air quality as they produce water rather than emissions from the tailpipe. When electricity from renewable sources is used to produce the hydrogen, in future, they could generate close to no carbon emissions.

Shell is taking part in several initiatives to encourage the adoption of hydrogen electric energy as a transport fuel. Hydrogen electric transport can succeed if vehicle manufacturers and fuel suppliers, with the support of governments, work together to enable wide uptake of the technology. There needs to be a sufficient refuelling infrastructure to attract customers, as well as incentives for businesses to build this infrastructure.

In Germany, for example, the government is supporting the deployment of a national network of hydrogen electric fuelling stations across the country by 2023. We are working on this project with our joint-venture partners in H2 Mobility Germany – Air Liquide, Daimler, Linde, OMV and Total. We currently operate three hydrogen filling stations in Germany and have two hydrogen filling stations in Los Angeles, California. We are assessing the potential for similar projects in the USA, UK, Switzerland, Austria, France, Belgium, Luxembourg and the Netherlands.

Advanced lubricants

The lubricants we produce for motorists and commercial vehicles are designed to increase engine efficiency and reduce fuel consumption. Shell is one of the largest investors in research and development (R&D) among international oil and gas companies and employs more than 200 scientists and engineers in lubricants R&D. Our technology centre in Shanghai, China, researches motor oils for passenger cars, heavy-duty engine oils and transmission fluids for the Asian markets, while our marine power innovation centre in Hamburg, Germany, develops lubricants for ships.

Our Shell Rimula range of heavy-duty engine oils was developed with leading engine makers including Mercedes Benz. The oils help heavy-duty commercial vehicle operators improve the fuel economy of their fleets, while providing extra protection against wear in the vehicle engine.

We also produce high-quality engine lubricants which can improve the fuel efficiency of passenger cars and motorcycles. These include products manufactured using Shell PurePlus Technology that applies the GTL process to produce a clear base oil. This has much lower levels of impurities than other base oils and can help improve performance.

Fuel efficiency

Each year, Shell runs a series of competitions, called Shell Eco-marathon, in which we challenge student teams from around the world to design and build ultra energy-efficient vehicles. The events – which take place in the Americas, Africa, Asia and Europe – inspire young engineers to push the boundaries of innovation. The winning teams are those which can travel the furthest on the least amount of energy. Competitors regularly enter vehicles capable of travelling more than 1,000 km on a single litre of fuel. In 2015, one of the leading vehicles was capable of travelling more than 2,500 km on 1 litre of fuel.

Project M

Shell lubricants experts are working closely with leading car designer, Professor Gordon Murray, and engine specialists, Geo Technology, to co-engineer a compact, ultra-efficient concept car for urban driving. Due for launch in April 2016, it could help to advance efficient energy use in transport if it is produced by a car manufacturer.

Electric mobility

We have taken part in electric mobility trials since 2013 with commercial partners in Germany, the UK and the USA. In 2015, we took part in a trial in California, USA, with San Diego Gas & Electric. The trial integrated electric vehicles into California's wholesale energy market by aggregating the storage capacity of electric vehicle fleets across five locations.

A customer fills his car with hydrogen at one of Shell's hydrogen fuelling stations in Hamburg, Germany.



SOLAR AND WIND TECHNOLOGIES



Solar and wind power are playing a growing part in meeting global energy demand. At Shell, we expect an emerging low-carbon energy system to include traditional fuels such as oil and natural gas alongside renewable energy and carbon capture and storage.

Shell has been involved in wind power for more than a decade. We have interests in eight operational wind power projects in North America and one in Europe. Our share of the energy capacity from these projects is about 500 megawatts. When designing the European wind farm, we used our experience with oil and gas platforms to ensure it could withstand the harsh North Sea conditions. STV has invested in 2-B Energy, a renewable energy company, to support its two-blade turbine wind technology and reduce the cost of offshore wind power. (See [page 18](#)).

We are also exploring the possibilities offered by solar power. Petroleum Development Oman (PDO, Shell interest 34%) uses technology developed by GlassPoint Solar – a company in which Shell has invested – to reduce energy consumption within its operations. GlassPoint uses solar power to generate steam which is, in turn, injected into wells to enhance the recovery of oil.

PDO and GlassPoint are constructing a solar thermal steam plant in Oman, called Project Miraah. Once completed in 2020, Miraah will be the world's largest solar thermal steam plant, providing about a third of the Amal oilfield's steam requirements. It will potentially be capable of producing up to 1 gigawatt of power. This solar technology will replace gas-fired steam generation and free the gas for other uses, to reduce the CO₂ intensity of the oil production. We are looking at further opportunities to deploy both steam and power using photovoltaic systems on an industrial scale at oilfields in the Middle East and California.

We also use renewable energy in our own operations. This can result in significant cost and CO₂ savings. For example, in Pakistan we installed a 100 kilowatt solar photovoltaic system at our fuel depot in Karachi, generating around 170 megawatt-hours of power each year. This helps reduce diesel consumption for backup power generation.

MANAGING OPERATIONS

The nature of the energy industry means that we often operate in challenging environments. We work to reduce our environmental impact and manage our operations safely and responsibly, wherever they may be.

This section describes those operations identified by stakeholders as of high interest in 2015. It explains how we are striving to improve our performance in areas such as safety and reduce our impact on the environment and communities.

1.2 MILLION



Tonnes decrease of GHG emissions from flaring compared with 2014

58%



Approximate reduction of number of operational spills in Nigeria compared with 2014

85%



Water recycling rate in oil sands



We monitor our tight-gas operations in line with our onshore operating principles. An employee checks a pressure gauge at Groundbirch, Canada.



OUR ACTIVITIES IN ALASKA

In September 2015, we ended our offshore exploration drilling operations in Alaska for the foreseeable future.



We drilled in Alaska's outer continental shelf during the summer months of 2015. We successfully met the regulatory safety and environmental standards expected

of us. After safely drilling an exploration well in the Burger prospect in the Chukchi Sea, we found that there was insufficient oil for commercial development. This, in part, led us to stop drilling operations in Alaska for the foreseeable future.

This decision reflects the outcome of the Burger J well, and the high costs associated with the project. We support regulation that enforces high safety and environmental standards. However, the unpredictable federal regulatory environment for the Alaska outer continental shelf also made it difficult to operate efficiently. In the summer months of 2016, we will remove the remaining equipment from the drilling sites in Alaska.

Currently, 6% of the world's oil and gas comes from the Arctic region, including Alaska, according to Wood Mackenzie. We believe this region will be an important source of energy in the future. However, our drilling in Alaska was an issue that divided public opinion: throughout our operations there was a high level of litigation and environmental activism in opposition to our drilling in the region. While we maintained our focus on safe and successful exploration in 2015, we recognised

the concerns of many international non-governmental organisations who do not believe continued fossil fuel extraction from the Arctic is necessary.

WORKING WITH COMMUNITIES

Our relationship with local communities, including the indigenous peoples of Alaska's North Slope, the Iñupiat, played a key role in our operations in Alaska. The Arctic Iñupiat Offshore (AIO) – a company that includes some of Alaska's North Slope village corporations and the Arctic Slope Village Corporation – took part in discussions with Shell about potential impacts on their lifestyles and livelihoods. Its president, Rex Rock, Sr., was pivotal in the signing of an agreement between AIO and Shell for its members to have an option to share in future oil and gas production from Shell's Chukchi Sea leases.

An important part of our work with the Iñupiat communities was to create opportunities for jobs and to develop skills that were both sustainable and transferable to other sectors that operate in the region. Shell trained people from the community in skills that included communications, observing marine mammals, working on drill ships and oil-spill response.

The drilling ship Polar Pioneer anchored in Dutch Harbor for the 2015 exploration season, Alaska, USA.



ARCTIC SCIENCE

Our work in remote areas, such as the Arctic, requires an in-depth understanding of the region's ecosystem, including its wildlife, marine mammals and wetlands. Shell's chief environmental scientist for the Arctic, Michael Macrander, has been leading our research efforts over two decades to improve our understanding of the Arctic and, in particular, Alaska.

In Alaska, Shell set up and has funded since 2006, a science programme with the local governments of the North Slope. As part of the agreement, the Iñupiat communities were able to choose subjects for scientific research which included topics of research relating to their traditional way of life.

The scientific research led to a deeper understanding of the birds and mammals in the Arctic region. The work provided insight into migration patterns, the sensitivity of aquatic species to man-made sounds and important patterns of biodiversity.

For example, our science teams investigated whether Shell's work affected the migration route of the bowhead whale. We found that the bowhead whales tended to avoid areas of seismic activity while on their established migration path. Another scientific discovery – one that the Iñupiat peoples had always supported but western science had disputed – was that the bowhead whale has a sense of smell. These discoveries helped guide our operations to have minimal impact on the Iñupiat peoples' subsistence activities.

This body of scientific research has established an understanding of Arctic systems and the effect of oil and gas operations on them. The findings help to inform our operations in other sensitive environments and minimise our impacts on local biodiversity. We share our science research with the industry and regulators, and have published our findings in academic journals.

OUR ACTIVITIES IN NIGERIA

Incidents in 2015, including the continued theft of crude oil, reinforced the need to maintain the highest standards of safety and security in Nigeria.



In 2015, the Shell Petroleum Development Company of Nigeria Ltd (SPDC), which is the operator of the SPDC joint venture (SPDC, Shell interest 30%), divested its interest in three onshore leases and a major pipeline. Our performance metrics for Nigeria this year reflect, in part, these divestments.



Shell Companies in Nigeria (SCiN) recorded a total of seven fatalities in 2015, in four separate incidents. In one incident, four people lost their lives while working to remove an illegal tap point from a pipeline in the Niger Delta. The incident is being investigated, in line with our procedures, and we are taking steps to learn from what happened. "This loss of life is a deeply troubling turn for SCiN after no fatalities in 2014," says Osagie Okunbor, the Managing Director of SPDC and Country Chair of SCiN. "Crude oil theft is a major issue, with attacks not only on pipelines but increasingly on flowlines and well heads."

In the same year, the gas flared from SPDC JV operations declined by 28% and flaring intensity decreased by 15% from 2014, partly due to divestments and also to their focus on gas flare reduction. However, a lack of adequate joint-venture funding from our government partner has delayed planned start-up dates for two other major gas gathering projects. (See [page 28](#) for more on flaring).

SPILL PREVENTION AND RESPONSE

In 2015, the new Nigerian president stated that he would prioritise the recommendations of the United Nations Environment Programme (UNEP) report on Ogoniland. The report called on the Nigerian government, oil and gas companies and communities to put an end to all forms of oil contamination and to begin a comprehensive clean-up of the region.

The government brought together a number of parties including representatives of the Ogoni Community who will work to move forward with implementing the report's recommendations. An 18-month roadmap has been agreed by the government, UNEP and SPDC which includes a governance framework. SPDC fully supports the UNEP report and remains committed to playing its part in implementing the UNEP recommendations. SPDC also announced a £55 million settlement in 2015 with members of the Bodo community in Nigeria regarding two operational spills in 2008. Ongoing discussions are taking place with the Bodo community to allow international contractors to proceed with oil removal and clean-up. This is in accordance with the Memorandum of Understanding between the SPDC JV and the Bodo community.

SPDC is working on a number of initiatives to prevent and minimise the impact of theft and sabotage in Ogoniland, including community-based pipeline surveillance, education and alternative livelihood programmes. In 2015, SPDC introduced new ways for the community to directly log complaints or issues. This is intended to improve the company's communication with host communities.

SPILLS AND RESPONSE DATA

SPDC continues work to clean up areas near our facilities affected by spills irrespective of the cause of the spills. The number of operational spills fell from 37 in 2014 to 15 in 2015. The volume of oil spilled in operational incidents also fell, from 0.3 thousand tonnes of spills volume to 0.2 thousand tonnes.

Theft of SPDC JV crude oil on the pipeline network amounted to around 25 thousand barrels of oil a day in 2015. This reduction from around 37 thousand barrels of oil a day in the previous year is partly due to continued surveillance efforts and implementing anti-theft protection mechanisms on key equipment. Since 2012, SPDC has removed more than 850 illegal theft points.

The number of sabotage-related spills in 2015 declined to 93 compared with 139 in 2014. This decrease was due to divestments in the Niger Delta and increased surveillance and security by the Government of Nigeria. However, theft and sabotage are still the cause of around 85% of spills from SPDC JV operations.

In total, 133 new sites requiring remediation were identified in 2015, of which 23 were in Ogoniland. Of the total of 305 sites identified for remediation and certification at the start of 2015, 184 have been remediated and certified. 55 of these sites were in Ogoniland (representing a net reduction of 29% in remediation sites in that area during 2015).

SCiN hold interests in a number of offshore licences including the Shell-operated Bonga field, Gulf of Guinea, Nigeria.



WORKING WITH COMMUNITIES

SCiN work with government, communities and civil society to implement programmes that can positively impact people's lives in the Niger Delta and in other parts of Nigeria. The programmes focus on community and enterprise development, education and health.

In 2015, SPDC JV and Shell Nigeria Exploration & Production Co Ltd (SNEPCo) invested around \$10 million (Shell share around \$3 million) in scholarships and education programmes. Grants were awarded to 930 secondary school students and 638 university undergraduates during 2015. Ten postgraduate scholarships were also awarded to students from Rivers, Bayelsa and Delta states to study engineering and geosciences at international universities.

The cradle to career programme enrolled 60 new students in 2015. The programme was launched in 2010 to pay for children from rural communities in the Niger Delta to attend some of the country's leading secondary schools. Over five years, 410 places have been awarded.

SPDC JV has supported community health in the Niger Delta since the 1980s: the Obio Cottage Hospital in Port Harcourt, set up by SPDC JV, has become one of the most visited health facilities in the region. This is due to a community health-insurance scheme which was the first of

its kind for the Niger Delta. More than 45,000 people had been enrolled in the SPDC JV community health-insurance scheme at Obio Cottage Hospital by the end of 2015. In total, more than 550,000 host communities have benefited from outreach programmes between 2007 and 2015. The SPDC JV supports 18 health centres in the Niger Delta and SNEPCo supports two centres outside the Niger Delta.

SNEPCo will also be collaborating with Project Gaia Prospects, an international non-governmental organisation to conduct a year-long pilot study to promote the use of clean cookstoves in Lagos households. SNEPCo will provide 2,500 clean cookstoves in 2016.

LiveWIRE, Shell's youth entrepreneurship programme, has now been extended beyond the Niger Delta to include Lagos, with 255 trainees, and 126 business grants awarded in 2015. In total, 6,290 people have been trained under the programme between 2003 and 2015 and 3,183 grants awarded.

SPDC JV also provides funds for communities as part of its global memorandum of understanding (GMOU), where projects are nominated by community groups. To date, 35 GMOUs are in place covering 359 host communities, with the Ogulagha cluster of communities joining in 2015.

SHELL'S ECONOMIC CONTRIBUTION

In addition to SPDC and SNEPCo, Shell also holds interests in a number of offshore licences including the Shell-operated Bonga field (Shell interest 55%). Shell also has a 25.6% interest in Nigeria Liquefied Natural Gas (NLNG), which exports LNG around the world.

\$42 billion:	economic contribution from SPDC JV partners to the Nigerian government 2011–2015.
\$1.1 billion:	Shell share of royalties and corporate taxes paid to the Nigerian government in 2015 (SPDC \$0.6 billion; SNEPCo \$0.5 billion).
93%:	SCiN contracts awarded to Nigerian companies.
\$0.9 billion:	SCiN spend on local contracting and procurement.
94%:	employees of SCiN are Nigerian (data as of October 2015).
\$145.1 million:	SPDC JV and SNEPCo contribution to Niger Delta Development Commission in 2015 (Shell share \$62.3 million).
\$50.4 million:	SPDC JV and SNEPCo direct spending on social investment projects in 2015 (Shell share \$15.4 million).



External opinion

"SPDC and its joint-venture partners provide funds to support projects that are nominated by community groups under the GMOU agreement. SPDC was prepared to fund a marine services business for the Andoni Cluster, which is made up of 22 Niger Delta communities. This would enable the community-led enterprises to provide marine services to SPDC.

We invested the GMOU funds in a ship. Today, we have a vessel that is contracted to Shell and operating in the Santa Barbara field. This initiative has been a huge support to the communities in the Andoni Cluster and has employed seven young people. However, it would be simpler if payments were made direct to the community enterprise rather than through the marine services contractor."

Chief (Hon) Gad Harry Ekprikpo (JP)

Chairman, Andoni Cluster
GMOU Foundation
Andoni Local Government Area,
Rivers State Nigeria

TIGHT GAS AND OIL

Tight gas and oil continue to play an important role in meeting global energy demand. We use advanced, proven technologies, including hydraulic fracturing, and follow our global operating principles to unlock these resources safely and responsibly.



Tight gas and oil resources are trapped in microscopic pores of very dense shale or sandstone rock, normally thousands of metres underground. Hydraulic fracturing has been used for many years in the oil and gas industry to extract tight gas and oil. The process fractures the rock and releases the gas and oil into the well.

The US Energy Information Agency states that tight gas and oil in the USA has boosted the production of natural gas by around 35% since 2005. This has reduced the need for gas imports. The increased use of these resources instead of coal in North America has helped to reduce carbon dioxide emissions.

ONSHORE OPERATING PRINCIPLES

Some communities and environmental groups have raised concerns about the use of hydraulic fracturing. These groups question the high volumes of water used, the risk of chemical release into water sources and the potential release of methane gas or other chemicals into the air.

In 2011, we developed and publicly shared a set of five global principles that govern the onshore tight or shale gas and oil activities where we operate and where hydraulic fracturing is used. The principles cover safety, air quality, water protection and use, land use and engagement with local communities. We encourage regulations that set comparable standards. The principles are reviewed and updated as new technologies, challenges and regulatory requirements emerge. We share our global onshore operating principles publicly.

Each of our projects takes into account the local context – including the geology of the area and impacts such as noise and traffic – and we then design our activities to suit the local conditions. We have implemented technologies that reduce the environmental impact of tight gas and oil activities, including capturing methane emissions and improving the detection and repair of leaks. (See [page 27](#)).

COLLABORATION

We strive to be transparent in our activities and work in partnership with communities and others in the industry to bring about improvements in the sector.

For example, in the USA, we collaborate with the Center for Sustainable Shale Development (CSSD) and its members. These include environmental organisations, foundations and oil and gas companies. CSSD has developed 15 voluntary performance standards covering air quality, water resources and climate. Our tight-gas operations in the Appalachia region received CSSD certification in 2015.

We also work with the Environmental Protection Agency in the USA to contribute to discussions on effective regulations and programmes to reduce emissions. Significant reductions are being achieved by a combination of existing regulation and voluntary efforts by the industry.

Throughout 2015, Shell worked closely with industry, regulators and academics in Western Canada to address concerns about emerging risks of induced seismicity associated with hydraulic fracturing. Shell is working with industry partners, through the Canadian Association of Petroleum Producers, to develop best practice that includes monitoring, mitigation and response procedures to avoid or minimise seismicity potentially associated with hydraulic fracturing.

LISTENING AND RESPONDING

There remain some concerns about the development of tight gas and oil resources due to the use of hydraulic fracturing. (See [table](#)).

LISTENING AND RESPONDING TO COMMUNITY CONCERNS

Concerns raised by communities	Shell operating principles	Examples in practice
Chemicals could be released into local water sources.	We always have at least two physical barriers in the section of the well that passes through the potable groundwater aquifer, to prevent the production stream from mixing with potable groundwater.	In Appalachia, USA, we test the quality of water wells around our sites both before and after drilling to ensure we can detect any changes.
High volumes of water are used in hydraulic fracturing which can compete with other local water needs.	We design our operations to reduce the use of potable water and to use non-potable water as far as reasonably practical.	Our Fox Creek operations in Canada have an agreement with the town to use their treated waste water in our operations. In 2015, we used around 60% alternative or waste water sources in our Fox Creek operations. Shell also funded a design study to upgrade the town's natural water facilities.
Methane gas and other chemicals could be released into the air from hydraulic fracturing sites.	At many locations, we monitor production facilities and pipelines for fugitive emissions. This may be done by pressure testing, visual observation, infrared testing or other emerging technologies.	In Appalachia, USA, we introduced a number of voluntary measures at our sites to reduce methane emissions. These exceeded local, state and federal air quality regulations. Around 90% of our surface facilities have low-emission devices to reduce fugitive emissions.
Noise and traffic could affect local communities.	We work to understand and reduce the impact of our operations on communities, wildlife and livestock. This includes limiting our activities during specific times.	At our sites in Permian, USA, we invested in pipelines and water recycling facilities. This has significantly reduced the number of trucks coming to our site.
Effects of operational land use on local communities.	We assess the impacts of our operations on the social and economic aspects of the community and find ways to reduce the effects and identify the opportunities.	Shell proactively engages with First Nations in Canada to understand traditional land use and help reduce impacts on culturally-sensitive areas or areas used for traditional purposes such as fishing and hunting.
Hydraulic fracturing activity could cause seismic events that damage infrastructure and threaten public safety.	Shell analyses publicly available seismic, geological and geophysical data to determine historical seismicity in areas where we plan to operate. If seismic activity beyond historic levels is detected, we will investigate and review our operations.	We support appropriate local regulations based on local geology and surface conditions, to manage the risk of induced seismicity in areas where we operate. To date, we have not experienced any induced seismic events from our Shell-operated water injection or hydraulic fracturing activities in North America. We have also introduced guidelines to help avoid or minimise induced seismicity.

MANAGING METHANE EMISSIONS

An important part of the effort to tackle climate change is to cut methane emissions. Shell is using specialist equipment to find methane emission sources quickly and cost effectively.

The Intergovernmental Panel on Climate Change (IPCC) has estimated that around 370 million tonnes of methane are released into the atmosphere each year from man-made sources which, on a carbon dioxide (CO₂) equivalent basis, makes up about 20% of total global greenhouse gas (GHG) emissions.

Methane is more potent than CO₂; it has 34 times the global warming potential of CO₂ over a 100-year time frame, according to the IPCC AR5 report. Reductions in methane emissions today will help to slow the rate of global temperature rise, as methane remains in the atmosphere for a much shorter time than CO₂.

The regulation of methane emissions varies among countries. Shell and the industry are working with governments to highlight the challenges and help find the most cost-effective and efficient solutions for methane management. Any solutions should be informed by robust data and peer-reviewed science.

METHANE IN OIL AND GAS PRODUCTION

Methane emissions associated with oil and natural gas production tend to occur in four main areas: combustion (emissions of unburnt methane from fuel combustion); flaring (where the flaring itself fails to burn all the methane); venting (including from equipment); and unintended emissions (for example, small leaks sometimes called fugitive emissions).

Reports by the Environmental Defense Fund (EDF) and the International Energy Agency have shown that gas used in power generation will continue to have lower total GHG emissions than coal, as long as methane leakage throughout the natural gas supply chain is less than 3% or 8% respectively. (The variation is due to assumptions made about how long methane emissions endure in the atmosphere.) The Environmental Protection Agency (EPA) in the USA estimates that total methane emissions in the natural gas supply chain – as a percentage of the global total volume of natural gas produced – are around 1.3%. This takes into account methane leaks during gas processing and transmission through pipelines for power generation.

Collaborating to reduce emissions

Shell has collaborated on academic studies to better understand methane life-cycle emissions. In 2014, we participated in a University of Texas and EDF assessment of methane emissions from tight-gas production in the USA. Recommendations from the study have been used as input for our programme to improve or replace equipment to reduce our methane emissions.

Shell has been a partner with the EPA Natural Gas STAR programme since 1995. The programme encourages oil and gas companies to adopt cost-effective technologies and practices that improve operational efficiency to reduce

methane emissions. It also encourages the introduction of internal voluntary measures such as Shell's onshore operating principles. (See [page 26](#)).

OUR PERFORMANCE

In 2015, methane emissions contributed less than 5% of Shell's GHG emissions on a CO₂ equivalent basis. We recognise that it is important to reduce methane emissions from our operations. Methane from flaring and venting in our Upstream operations represented more than 45% of our reported methane in 2015. (For our flare reduction work, see [page 28](#)).

There are also concerns that tight-gas production could cause fugitive emissions. Our reported methane emissions from the production of tight gas in 2015 were less than 0.5% of the gas produced from these assets. We have leak detection and repair programmes across our sites to identify unintended emissions or equipment that has high emissions so they can be replaced or repaired. Following successful pilots in the USA, Shell is now deploying advanced leak detection and repair technology using infrared cameras to scan for methane emissions.

Shell continues to work to identify all potential methane sources to help reduce our emissions. We report our methane emissions from these sources according to regulations and industry standards. We also monitor work in the industry for more accurate reporting methods.

Shell is using infrared cameras to scan for methane emissions so that leaks can be repaired. Appalachia, Pennsylvania.



FLARING

The flaring of natural gas produced with oil wastes valuable resources and contributes to climate change. At Shell, we are working hard to minimise flaring associated with oil and gas production.

When oil is extracted from a reservoir, gas is produced as the oil is brought to the surface. Operational flaring is sometimes carried out for safety reasons. However, continuous flaring occurs when there are no facilities to capture the gas – this wastes valuable energy resources and releases carbon dioxide into the atmosphere.

Shell's policy is to reduce any continuous flaring or venting at our operations to a level as low as technically and financially feasible. We also aim to minimise operational flaring required for safety reasons such as during the start-up of a new facility. Our flaring policy is set out in our health, safety, security, environment and social performance (HSSE & SP) Control Framework, including the requirement that new facilities are designed so as not to continuously flare or vent.

Shell has been an active member of the World Bank sponsored Global Gas Flaring Reduction (GGFR) partnership since 2002. This public-private partnership promotes and facilitates progress in reducing flaring by working collaboratively to find alternative uses for gas that would otherwise be flared. As part of the GGFR partnership, the World Bank has developed a Zero Routine Flaring by 2030 initiative to encourage governments, companies and development organisations to work closely together to end continuous flaring. Shell joined the initiative in April 2015 before it was launched. The initiative aims to identify ways to use associated gas from projects at the design stage – for example, to generate electricity for local communities.

OUR PERFORMANCE

In 2015, we reduced flaring from facilities we operate from the level reported in 2014 despite an increase in flaring levels in Malaysia in line with increased oil production in 2015. More than 90% of our flaring occurs in Iraq, Nigeria, Malaysia and Qatar.

In Iraq, flaring decreased slightly in 2015 as Shell Iraq Petroleum Development (Shell interest 45%)

safely delivered the first phase of a gas-capturing system at our Majnoon facilities. When the second phase is complete, the project will capture about 65% of the gas that would otherwise be flared. The start-up of this project marks a significant milestone in our efforts to reduce gas flaring at Majnoon and deliver natural gas for power generation for the people of Iraq.

The flaring volume from Shell Petroleum Development Company's (SPDC) joint-venture facilities in Nigeria was reduced by 85% between 2002 and 2015. The flaring intensity (the amount of gas flared for every tonne of oil and gas produced) was reduced by around 70% over the same period. Flaring from SPDC facilities decreased in 2015, due to divestments and improved operations at our assets. Progress was also made on several gas-gathering projects, which are now at advanced stages of completion. For example, we have installed a gas-gathering plant at the Oloma Station that is ready for final commissioning. However, the planned start-up dates for two other major gas gathering projects have been delayed due to a lack of adequate joint-venture funding from our government partner.

Flaring increased in Malaysia, due to increased oil production at Gumusut Kakap (Shell interest 33%) which started production in 2014. The associated gas was flared until reinjection equipment was ready for use in October 2015. The gas is now injected back into the hydrocarbon reservoir from which it came.

At our Pearl gas-to-liquids (GTL) plant in Qatar, flaring takes place for operational reasons. In 2015, our flaring decreased due to lower activity while maintenance and enhancements to the plant took place. This helped lower operational flaring by using more waste gas for electricity generation.

We expect our overall flaring levels to continue to decline in 2016 as the gas-gathering facilities in Iraq and Malaysia become operational.

WIDER FLARE REDUCTION EFFORTS

Basrah Gas Company (BGC, Shell interest 44%) is a joint venture with South Gas Company and Mitsubishi. It captures associated gas that would otherwise be flared from three non-operated oil fields in southern Iraq (Rumaila, West Qurna 1 and Zubair) for use in the domestic market. BGC recently achieved a record production of 515 million standard cubic feet of gas each day. If used for power generation, this would be enough to power more than 3.5 million homes. In 2015, BGC in Iraq and SPDC in Nigeria received awards from the World Bank Group for their flare reduction work. (See external opinion).



External opinion

"Gas flaring at oil production sites around the globe has been steadily declining for several years. However, progress has been too slow, particularly when the world is demanding strong climate action and when many oil producing countries have severe energy shortages. If the amount of gas flared globally was instead used for power generation, it could produce more electricity than the whole of Africa currently consumes.

In 2015, the World Bank introduced a new initiative – Zero Routine Flaring by 2030 – to accelerate efforts to reduce global gas flaring. Shell demonstrated leadership by endorsing the initiative before its official launch in Washington, D.C. Its endorsement was an impetus for other oil companies to join. We expect Shell to continue its progressive, proactive role to turn the initiative into action.

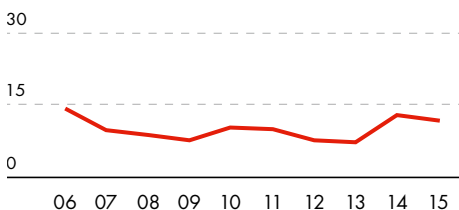
The Zero Routine Flaring by 2030 initiative means new oil fields will be developed with solutions that avoid flaring or venting. Existing legacy flaring must end as soon as possible and no later than 2030. In late 2015, Shell received a Global Gas Flaring Reduction Partnership Excellence Award for its achievements in Iraq and Nigeria. We look forward to continuing our partnership towards a more sustainable energy future."

Bjørn Håmsø

Programme Manager, Global Gas Flaring Reduction Partnership, World Bank, Washington D.C., USA

FLARING – UPSTREAM

million tonnes CO₂ equivalent



OIL SANDS

Canada's oil sands in Alberta and Saskatchewan are among the largest oil reserves in the world. In 2015, we opened the Quest carbon capture and storage (CCS) facility in Alberta to reduce our carbon dioxide emissions.



Oil sands are a mixture of sand, water, clay and heavy oil called bitumen. Shell has a 60% interest in the Athabasca Oil Sands Project (AOSP) which includes Shell Albion Sands (Muskeg River and Jackpine mines) and the Scotford Upgrader, which processes bitumen into synthetic crude oil. During 2015, we improved efficiency in water and energy use. This was part of our ambition to become more economically and environmentally resilient and competitive.

In 2015, we took the decision to stop construction of our Carmon Creek oil sands project in Alberta.

MANAGING GHG EMISSIONS

Oil sands emit 4–23% more greenhouse gas (GHG) emissions – from production through to use as a transport fuel – than the average crude oil used in the USA, according to research in 2013 by Cambridge Energy Research Associates. Since the start-up of the Quest CCS in 2015, the GHG intensity of Shell's oil sands operation has decreased. These emissions are now closer to the average GHG emissions of North American oil. (See [page 19](#)).

Overall, we have reduced our energy intensity by 8%. Two programmes are currently in place at Albion: one uses waste heat from tailings to reduce the demand for steam; and the other programme has installed a pressure-reducing turbine that converts steam to electricity. We also explore advanced energy-efficiency techniques with other oil sands producers through our membership of Canada's Oil Sands Innovation Alliance (COSIA) – an organisation that aims to accelerate the development of environmental technologies by sharing information among oil sands operators.

In 2015, the government of Alberta announced a new climate plan, which affects the oil and natural gas industry, and includes a carbon-pricing regime and an emissions limit for the oil sands. This is a policy that aligns with our own advocacy to support carbon pricing. (See [page 14](#)).

WATER USE AND RECYCLING

Oil sands mining operations require water to separate bitumen from the sand. Shell is committed to exploring ways to minimise water use in our oil sands operations. We use water efficiently and recycle as much as possible: in 2015, we increased water recycling in our mines by 3%.

Reductions in our water use are due to a number of efforts. This includes increased tailings monitoring and increased reclamation capacity by transferring processed water between the mines.

TAILINGS

The separation of bitumen from sand creates tailings – a mixture of water, sand, clay and residual hydrocarbons, as well as naturally occurring traces of heavy metals and other chemicals. Tailings are stored in ponds to allow the sand to settle at the bottom, so that the water can be recycled and the solids can be used for reclamation. We carefully manage our tailings to prevent contamination of local surface-water courses and groundwater.

Tailings ponds at the Muskeg River and Jackpine mines covered 42.9 km² at the end of 2015. This is in line with the planned development of the mines, as the size of the ponds has increased to support ongoing production and facilitate reclamation of older ponds.

The Alberta government has introduced a new Tailings Management Framework to minimise the growth of tailings ponds and accelerate reclamation. Shell supports these regulations. We have invested approximately C\$465 million during the past decade to develop technologies that speed up the drying process for fluid fine tailings, and have processed around 3.4 million cubic metres of fluid fine tailings during that period. In 2015, we processed around 5.1 million cubic metres of fluid fine tailings at our Athabasca site.

INDIGENOUS COMMUNITIES

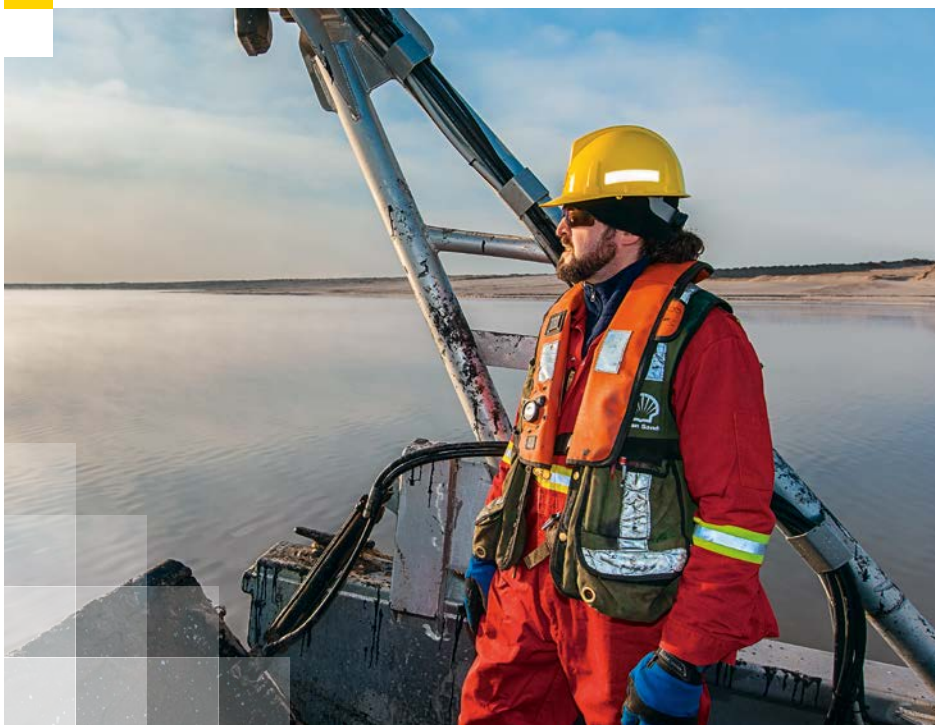
Shell has been working closely with indigenous communities in Canada for many years to reduce the impact of oil sands development on traditional land use and culture, as well as bring benefits to these communities. Since 2005, Shell has spent more than C\$1.8 billion with local indigenous contracting companies (See [page 46](#)).

RECLAMATION

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. We will then place topsoil and plant suitable vegetation on the sites in question. Reclamation is an integral part of our mine development.

We work with local and indigenous communities on our reclamation work. To date, Shell has salvaged and stockpiled nearly 47 million cubic metres of soil for future reclamation. A total of 185 hectares of land has been permanently reclaimed at our Albion mines.

We carefully manage our tailings to prevent contamination of local surface water and groundwater. Albion Sands, Alberta, Canada.



OUR PERFORMANCE

Each year, we measure our performance: we assess the safety of our operations and our impact on the environment, including our greenhouse gas emissions and energy intensity. This helps us to improve our operations and strive towards our Goal Zero ambition of no harm and no leaks.

We also work closely with communities near our operations to address concerns and we contribute in areas such as local employment.

This section provides information on our safety, economic, environmental and social performance in 2015.

186 MILLION CUBIC METRES

Fresh water used in our operations



0.94

Total recordable case frequency of injuries



\$122 MILLION

Spent on voluntary social investment



Pearl GTL is the world's largest source of gas-to-liquids products. It produces up to 140,000 barrels of GTL products each day. Ras Laffan, Qatar.



SAFETY

We work to deliver energy responsibly and safely, while looking after our employees, contractors, local communities and the environment. We strive to improve safety performance throughout the energy industry.

Our ambition of Goal Zero is to achieve no harm and no leaks across all of our projects and operations. To accomplish this goal, we focus on the three areas of safety which have the highest risks for our type of activities: personal, process and transport safety.

We have consistent, high safety standards and requirements across Shell that all our employees and contractors must meet, no matter where they work. These standards apply to any joint ventures that we operate. We work relentlessly to strengthen our safety culture and leadership, with the focus on caring for people. We learn from incidents within Shell and other companies. Our approach is to reduce safety risks as far as technically and financially feasible, and to minimise the potential impacts of an incident.

PERSONAL SAFETY

Everyone who works for us, or with us, has an important part to play in making Shell a safer place to work. We have been working to create an environment in which our employees and contractors take personal responsibility for achieving Goal Zero. This is more than a culture of compliance, but one in which people feel looked after. Our aim is to have a more motivated, productive, healthier and safer workforce.

All employees and contractors must follow Shell's 12 Life-Saving Rules, which cover the most critical safety hazards that have caused loss of life in our activities. We introduced the rules in 2009 and have since achieved a notable reduction in fatalities and injuries. Personal responsibility also extends to intervening to prevent unsafe conditions, and respecting fellow workers and the communities in which we work.

The safety of our contractors is an important area of focus, as we have a large contractor workforce which often performs activities with higher safety risks. (See [page 46](#)). We work with our contractor partners to ensure they understand our safety requirements and expectations, and we help them to build skills and expertise where needed.

For example, Shell is the world's largest contractor of vessels, with around 1,300 on the water on any given day. We introduced a safety programme to encourage contractor partners and the industry to share their knowledge and experiences. This has led to better leadership and safety behaviour. The number of serious or potential incidents has been reduced by more than half within Shell since 2011. In 2015, the programme won a Shell CEO's HSSE & SP award which recognises outstanding performance in safety.

PROCESS SAFETY

Process safety starts at the early phase of designing and building facilities and continues throughout their life cycle, making sure they are operated safely, well maintained and inspected regularly. Our global technical and operational safety standards are in place to ensure that hazardous materials are safely contained. If an incident happens, we learn from it to help prevent any similar incidents from occurring again.

We also make sure that we have the necessary resources to deal with spills, leaks, fires and explosions. Our emergency-response plans are routinely tested and improved after simulation exercises.

TRANSPORT SAFETY

Aviation, rail, maritime and road transport activities to move people, product and equipment are an area of risk within our industry. Risks vary across different types of transport. We develop best-practice standards within Shell, and work with specialist contractors and industry bodies, where needed. For example, we are focusing on reducing the risks involved when we load and unload product. (For more on road transport see [page 32](#)).



External opinion



"Effective safety management requires more than engineering skills: it needs to be complemented with an understanding of human factors and organisational behaviour. Shell appreciates that a broad scientific perspective is essential for risk control and regularly sponsors psychological research on safety.

Our projects at the University of Aberdeen – based on platforms, rigs and tankers – have provided insights into what makes a good safety leader. This led to the development of an appraisal tool for the energy industry that Shell made publicly available.

Recently, we studied how Shell managers remain vigilant and respectful of operational risks, even when everything is apparently running smoothly. This kind of behavioural research shows the willingness of a company to be self-critical. It is a powerful component for sustaining operational and process safety."

Rhona Flin

Emeritus Professor of Applied Psychology, University of Aberdeen, Aberdeen, UK

SAFETY CONTINUED

SAFETY IN DEEP WATER

Shell has a long history of working safely in deep water – that is, offshore oil or gas production at depths greater than 300 metres. Today, technological advances enable us to work in water up to 10 times that depth.

At Shell, as we operate in deeper and more challenging environments, we continually review our procedures, improve our equipment and develop the skills of our employees. For example, Phase 3 of our Malampaya gas project off the coast of the Philippines, which started up in 2015, is supported by a specialist health, safety and environment (HSE) training centre. More than 6,000 Filipinos have been trained to the highest HSE standards at the centre since 2013.

At our training centre in Louisiana, USA, we have equipment and simulators that replicate normal and emergency conditions on an offshore deep-water platform. This allows us to provide new operators with the necessary skills to work safely offshore and to reduce their training time from around three years to eight months.

OIL-SPILL RESPONSE

We regularly test our oil-spill emergency response procedures and capability to ensure employees and contractors can respond rapidly to an incident. We continue to work with the oil and gas industry to further develop effective oil-spill emergency response capabilities.

Shell is a founding member of the Marine Well Containment Company (MWCC), which is designed to respond to a deep-water well control incident in the Gulf of Mexico, USA. The MWCC can cap or contain wells at depths of more than 3,000 metres. MWCC continues to make upgrades and enhancements to its cap and containment systems, including developing equipment that has higher temperature and pressure capabilities.

Shell is also a founding member of the Subsea Well Response Project, backed by nine major companies. The project has deep-water well-capping and spill-response equipment in Brazil, Norway, Singapore and South Africa. In early 2015, new well containment equipment – designed to capture oil from a leaking well if other systems fail – was made available to member companies around the world.

RAISING INDUSTRY STANDARDS

We want to help improve safety performance throughout the energy industry. Shell works in partnership with industry associations and other professional groups to share our safety experience and standards with other operators and contractors. These include the International Association of Oil & Gas Producers, the American Petroleum Institute (API) and the Society of Petroleum Engineers. We also work with other third parties, such as the Energy Institute in the UK, to promote industry-leading research into safety culture in organisations, safety leadership and how best to learn from incidents.

The Center for Offshore Safety (COS), sponsored by the API and of which Shell is a member, is an example of collaboration between the industry and regulators to continuously improve safety and environmental performance in the Gulf of Mexico. Safety and environmental management systems of COS members are audited and certified by third parties. Member companies also co-operate to learn from their best practices and experiences. For example, Shell has been participating in an analysis of safety incidents involving lifting and hoisting.

ROAD SAFETY

Road safety is a global concern. The World Health Organisation states that there are around 1.25 million deaths each year from road traffic incidents. Shell is always working to improve road safety among our drivers in the 70 countries where we operate, with a greater focus on countries that have a higher risk.

Our road safety approach focuses on the skills and behaviour of the driver, the condition of the vehicle, the local environment and road conditions. These are supported by activities such as our global mandatory road safety training programme for drivers as well as by routine audits of our contractor road safety capabilities. Since introducing our first global driver safety programmes in 2008, there has been a significant decline in fatal road incidents across Shell. We recorded no road fatalities across our own operations in 2015.

Our employees and drivers are required to follow Shell's Life-Saving Rules at all times. These include following a prescribed route for road journeys, wearing a seat belt, not using mobile phones or any other devices while driving and adhering to speed limits. Monitoring systems are in place in many of our vehicles to give drivers feedback and coaching on their driving performance. We also try to reduce road transport risks by reducing the number of journeys – using buses to transport employees, and marine vessels and trains to transport equipment.

We think it is important to share our experience of effective road safety with governments and non-governmental organisations, and to learn from others. We are board members of the Network of Employers for Traffic Safety and the Global Road Safety Partnership. (See [page 39](#)). We also learn from and share our knowledge with companies outside of the oil and gas industry.

Everyone working at Shell must take responsibility for achieving Goal Zero.
Caroline, Alberta, Canada.



SAFETY PERFORMANCE

Our safety performance in 2015 was mixed, as described below.

Personal safety

In 2015, following steady and significant improvements in our safety performance over the past decade, we achieved our lowest ever number of injuries per million working hours – the total recordable case frequency (TRCF). We also achieved our lowest ever level of injuries that led to time off work in 2015, measured as lost time injury frequency (LTIF).

Sadly, seven people lost their lives while working for Shell in 2015; four of them during one single operational incident. Our fatal accident rate (FAR) – the number of fatalities per 100 million hours worked – increased in 2015 after many years of significant improvement. We investigate and learn from these incidents – along with any significant near misses – to reduce the risk of harm.

Process safety

A process safety incident is any leak or spill of hazardous material. In line with industry standards, we measure and report according to the significance of the incidents, with Tier 1 as the most significant. In 2015, we achieved our lowest ever total for both Tier 1 and 2 operational process safety events: 51 Tier 1 occurrences in 2015 (57 in 2014) and 169 Tier 2 in 2015 (194 in 2014).

Process safety events that are related to sabotage and theft in Nigeria are recorded separately. There was an improvement during 2015 with fewer incidents: 28 Tier 1 and 17 Tier 2 events (91 Tier 1 and 48 Tier 2 in 2014).

In 2015, the six most significant operational incidents were:

- four fatalities during a pipeline repair (Nigeria);
- a gas release from the Curlew offshore production facility (UK);
- a crude oil spill from an onshore well (Nigeria);

- a fire at a furnace at the Rhineland refinery (Germany);
- a fire at the Bukom refinery (Singapore); and
- a gas release from a subsea reinjection pipeline (UK).

Safety in the community

The Groningen gas field in the Netherlands is operated by Nederlandse Aardolie Maatschappij B.V. (NAM, Shell interest 50%) and is one of the largest onshore gas fields in Europe. Earthquakes occur in the province of Groningen as a result of gas production. Following the Huizinge earthquake in August 2012, new insights emerged about the potential intensity of future earthquakes. NAM is in discussions with the local communities about their concerns regarding safety and the uncertainties about the future.

An extensive study is in progress to better understand seismic risk in the area. Several international universities and researchers are involved, with the final report expected in 2016. Interim results from November 2015 include a seismic risk assessment which demonstrates that all production levels analysed meet the acceptable risk boundaries set by the Netherlands Ministry of Economic Affairs.

Since 2012, the ministry has set gas production reduction measures, including a production limit. A range of actions has been taken to improve safety, liveability and economic prospects in the region. NAM is working hard, together with all relevant parties, to fulfil commitments to the residents of the area. A long-term programme has been developed by the National Coordinator for Groningen to work with regional authorities and residents on issues such as improving the handling of claims and resolution of disputes. NAM is publicly sharing information on its progress and publishes earthquake measurements.

SECURITY

We carefully assess the security threats and risks to our operations. We work with governments and partners to safeguard our assets and provide a secure working environment for our employees and contractors.

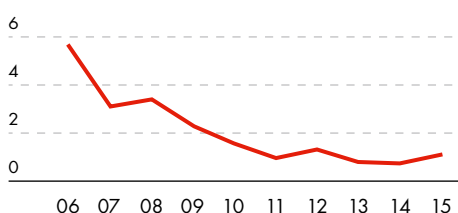
Shell only uses armed security in countries where the threats are greatest, or if it is a requirement under local laws. The use of armed security reflects greater threats, mostly due to increased geopolitical volatility in certain parts of the world.

We implement the Voluntary Principles on Security and Human Rights (VPSHR) in our operations – and with companies with whom we co-operate – to reduce the risk to employees, contractors and communities of human rights violations by the security forces. Our security plans are validated by independent audits and assurance checks.

Our security risk management plans are part of our efforts to minimise negative impacts on communities and the environment. We work alongside governments, companies and non-governmental organisations who are involved in the VPSHR initiative to increase adoption of the principles.

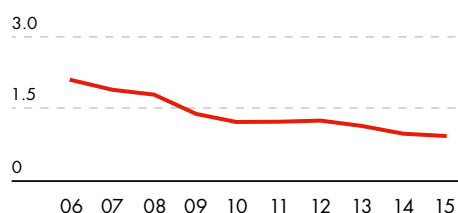
FATAL ACCIDENT RATE (FAR)

fatalities per 100 million working hours



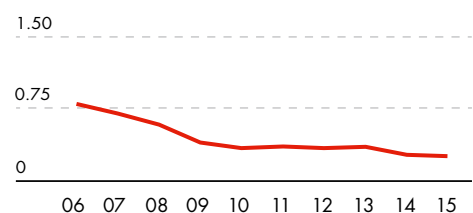
TOTAL RECORDABLE CASE FREQUENCY (TRCF)

injuries per million working hours



LOST TIME INJURY FREQUENCY (LTIF)

injuries per million working hours



ENVIRONMENT

We carefully consider the potential environmental impact of our activities and how local communities might be affected throughout the lifetime of a facility.

Our approach is to comply with all environmental regulations, to improve our performance continually in line with best practice, and to prepare to respond to future challenges and opportunities. We use external standards and guidelines, such as those developed by the World Bank and International Finance Corporation, to inform our approach.

We have global environmental standards that include a focus on managing our emissions, minimising our use of fresh water and conserving biodiversity. Within our operations, we also focus on reducing our energy use, flaring less gas and preventing spills and leaks.

OUR STANDARDS

Our environmental standards are detailed in our health, safety, security, environment and social performance (HSSE & SP) Control Framework. Shell standards are applied to joint ventures of which we are the operator. We also encourage our joint-venture partners to apply materially equivalent standards at ventures we do not operate. Our projects and operated facilities comply with local environmental regulations and our own standards.

Whenever we plan new projects, we carry out detailed assessments of the potential environmental, social and health impacts. These assessments help us to manage and reduce impacts on the environment and communities during construction, operation and, when relevant, decommissioning. We make the results of these assessments available to the public when we are legally and contractually permitted to do so.

For example, LNG Canada (Shell interest 50%) has conducted a number of studies since 2012 on the potential impacts of its proposed project to build a liquefied natural gas (LNG) export facility in Kitimat, western Canada. The studies reviewed the potential impact of the project on the environment and local community, including its economy, health and cultural heritage. It involved meetings with people affected by the potential project, including aboriginal groups, local communities and government regulators. The full assessment has been approved by the regulatory authorities with letters of support from the community, and First Nations whose traditional territory would be affected by the project. Its recommendations will be implemented if the proposed LNG plant is built and operated.

SENSITIVE AREAS

We work to avoid impacts on biodiversity when developing new projects. In some cases, our projects can affect local biodiversity and the communities who rely on its biodiversity for their livelihoods. We develop comprehensive biodiversity action plans to assess and mitigate the extent to which local biodiversity and communities may be affected by operations in critical habitats. For example, at our Corrib facility in Ireland, we constructed a pipeline tunnel under an estuary to minimise the impact on land and water habitats.

We partner with major conservation organisations, such as the International Union for Conservation of Nature, The Nature Conservancy, Wetlands International and Earthwatch. We seek their guidance on how best to protect natural habitats. (See page 47).

PROTECTING OCEANS

The biodiversity of the world's oceans is at risk from a range of different challenges, including overfishing, climate change and pollution from plastics. We combine science and knowledge from local communities to enhance our understanding of the marine environments in which we operate. We also train people in communities to help protect marine mammals off the coast in countries where we are active, for example, in New Zealand and Colombia.

In the Gulf of Mexico, USA, we are encouraging scientists to use Shell's expertise and technology – such as remotely-operated vehicles – to explore the depths of the ocean. This collaboration between academics and the deep-water oil and gas industry has led to sightings of rarely seen sea creatures and the discovery of what is thought to be a new species of octopus.

CREATING GREEN INFRASTRUCTURE

Green infrastructure is the term used to describe the use of natural systems to complement man-made infrastructure, an approach which typically makes the overall system more resilient. We are looking for ways to integrate natural systems into the design of our projects. In some cases, natural systems could be used as part of climate change adaptation strategies by governments, businesses or communities.



External opinion

"Shell has contributed to UNEP-WCMC's Proteus Partnership for more than 13 years, supporting the development and accessibility of valuable biodiversity information. Shell has made good progress integrating biodiversity data into operational decisions by screening for critical habitats and implementing biodiversity management plans. But there is always room for improvement.

Our research shows there are overlaps between hydrocarbon resources and areas that the conservation community considers important for biodiversity. This will make securing social licence to operate increasingly challenging. The energy industry needs to place a greater emphasis on the value of nature, economic or otherwise, in its decision-making. This would enable a more nuanced approach to developing resources in areas which require sensitive management of the social and environmental impacts and risks."

Dr Jon Hutton

Former director, UNEP-World Conservation Monitoring Centre (WCMC), Cambridge, UK

In Louisiana, USA, a Shell-funded programme, operated by the Coalition to Restore Coastal Louisiana, organised the collection of hundreds of tonnes of oyster shells from local restaurants to help rebuild oyster reefs and restore the state's coastline. Louisiana is home to 40% of the USA's wetlands, and a natural habitat for oysters. The oysters clump together to form reefs, which trap sediment and help create shallow marshes and estuaries. These are the nurseries for one of the country's largest commercial fisheries and refuge for more than 5 million migratory birds. The reefs also help shield homes, businesses and ports from storms on Louisiana's coast.

MANAGING WATER

The availability of fresh water is a growing challenge in some regions of the world. At Shell, we know that it is important to preserve this valuable resource and manage our water use responsibly. Water constraints tend to affect people at the local or regional level, so we tailor our use of fresh water to local conditions.

In water scarce areas, we develop water management plans. These plans describe the long-term risks to water availability and define measures to minimise our use of fresh water or prescribe alternatives to fresh water, such as recycled water, processed sewage water and desalinated water. Waste water from our operations is treated before discharge into the environment. Where appropriate, we look for ways to treat waste water using natural solutions such as constructed wetlands. This helps us to reduce the energy use associated with water management.

Our technology centre in Bangalore, India, is home to our water research laboratories. It is also a hub that connects Shell's water experts around the world

so that they can share their experience. The centre works in collaboration with leading universities, non-governmental organisations and global technology firms such as Wetsus, one of the top water research organisations in the Netherlands. A focus of this work is on the development of advanced technologies to increase recycling and reuse rates.

Shell is also involved in a number of working groups with different organisations, such as the World Business Council for Sustainable Development and IPIECA, the global oil and gas industry association for environmental and social issues. In these groups we share experiences and encourage the adoption of common practices across the industry. In 2012, we published an accounting methodology for water used in oil and gas operations, in co-operation with the University of Utrecht.

SPILLS

Shell has clear requirements and procedures in place to prevent operational spills. We have routine programmes to maintain our facilities and pipelines, and improve their reliability, in order to reduce operational spills. However, spills still occur for reasons such as operational failure, accidents or unusual corrosion. (See [page 36](#)).

AIR EMISSIONS

We track emissions released into the atmosphere from our upstream and downstream facilities and work to reduce air pollution from our operations. This includes making investments to lower our emissions of nitrogen oxides, sulphur oxides and volatile organic compounds that are released during oil and gas production and processing. These pollutants can affect air quality in the areas where we operate.

DECOMMISSIONING AND RESTORATION

Decommissioning is an intrinsic part of the life cycle of any asset and must be done safely and responsibly when the asset reaches the end of its life. When we decommission a well pad, for example, we safely seal the well, remove the production equipment and reinstate the land. We use expertise from the decommissioning industry to help us with this work. However, as with much of the oil and gas industry, some of our more complex decommissioning projects take place offshore.

Our largest decommissioning activity, to date, is for the Brent oil and gas field which lies in the North Sea between Scotland and Norway. The preparation for the decommissioning of the four Brent field platforms started more than eight years ago. It has involved consultation with more than 180 interested parties and an independent review group to validate Shell's decision-making process. In 2014, Shell submitted a recommendation to the UK regulator to decommission the topside of one Brent platform in a single lift – the largest ever attempted offshore – and transport it onshore for recycling. These plans have been approved.

In 2015, we took a further step to sharpen our focus on decommissioning by forming a team within Shell to improve safety, increase efficiency, reduce cost and meet environmental and stakeholder requirements for these projects. The team will work with the industry to identify best practice and enhance technologies for decommissioning our wells and facilities responsibly and efficiently.

In Louisiana, USA, a Shell-funded programme organised the collection of oyster shells to help restore parts of the state's eroded coastline.



ENVIRONMENT CONTINUED

ENVIRONMENTAL PERFORMANCE

We improved or maintained our environmental performance across most areas during 2015. This was due to operational improvements as well as reduced activity and divestments. Details about our environmental performance are provided below and on [pages 27 and 28](#) for methane and flaring.

Spills

The number of operational oil spills in 2015 was 108, down from 153 in 2014. The volume of operational spills of oil and oil products increased to 0.8 thousand tonnes, from 0.7 thousand tonnes in 2014.

The number of spills caused by sabotage and theft fell to 94 from 139 in 2014. The volume of these spills decreased to 2.2 thousand tonnes in 2015 from 2.7 thousand tonnes in 2014. In 2015, sabotage and oil theft remained a significant cause of spills in the Niger Delta, Nigeria. See [pages 24 and 25](#) for more information on spills in Nigeria.

The reduction in spills was in part due to divestments. We investigate and learn from all spills to improve our performance and we clean up the areas near our operations that are affected by spills, irrespective of the cause. As of the end of March 2016, there were two spills under investigation in Nigeria that may result in adjustments.

Water use

Our facilities are designed and run to help minimise their use of fresh water, particularly in areas of water scarcity. In 2015, the amount of fresh water we used decreased to 186 million cubic metres from 199 million cubic metres in 2014. More than three-quarters of our fresh water use was for manufacturing oil products and chemicals. Our Upstream operations accounted for almost a quarter of our total fresh water use.

Energy efficiency

One of the ways we can manage our direct GHG emissions is to work on improving the energy efficiency of the facilities we operate. The main metric that we use to measure our energy efficiency is energy intensity (the amount of energy consumed for every unit of output).

In 2015, the overall energy intensity for the production of oil and gas in our Upstream business (excluding oil sands and gas-to-liquids) improved slightly compared with 2014. This was partly due to divestments of unconventional assets in the USA and Canada.

All our major upstream 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 it will be more difficult in future to maintain the energy-efficiency levels of recent years, as existing fields age and new production comes from more energy-intensive sources. This may increase our upstream energy intensity over time.

In our oil sands operations, energy intensity improved from 6.3 gigajoules for every tonne of production in 2014 to 5.8 gigajoules in 2015. The overall energy intensity for the manufacture of oil products at our refineries worsened, from 94.9 refinery energy index in 2014 to 95.4 in 2015. This was mainly due to more unplanned production shutdowns at several refineries.

The methodology for calculating the energy intensity of our chemical plants was updated in 2015; therefore data for preceding years is not directly comparable and have not been recalculated. Based on the new methodology, the comparable result for 2014 was 90.7, compared with 90.4 which was originally calculated. The increase to 91.6 in 2015 was mainly due to unplanned equipment shutdowns at our chemical plant in Moerdijk. (To read more about our energy efficiency, see [page 15](#)).

GREENHOUSE GAS EMISSIONS

The direct GHG emissions from facilities that we operate were 72 million tonnes on a CO₂-equivalent basis in 2015, down from 76 million tonnes of CO₂ equivalent in 2014.

We have changed our reporting methodology to align with the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. This has involved updating the way we calculate the global warming potential (GWP) of the greenhouse gases we emit. GWP compares the impact of emissions from greenhouse gases with the impact of emissions from the equivalent amount of CO₂. This update has increased our reported GHG emissions (on a CO₂-equivalent basis) by around 0.5 million tonnes.

The reasons for our overall decrease in GHG emissions were as follows:

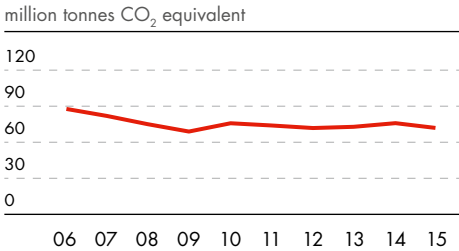
- divestments, including unconventional assets in North America, some operations in Nigeria and the Geelong refinery in Australia;
- operational improvements across many assets;
- overall reduction in flaring (see [page 28](#));

- start-up of Quest CCS in Canada's oil sands (see [page 19](#)); and
- shutdown of multiple units at our Moerdijk chemical plant in the Netherlands.

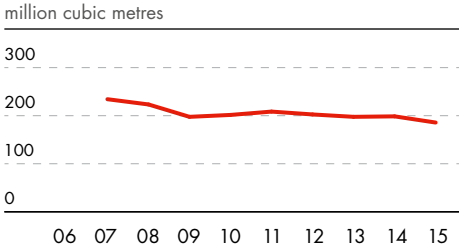
Around 45% of our GHG emissions came from the refineries and chemical plants in our Downstream business. The production of oil, gas and gas-to-liquids products in our Upstream business accounted for around 50% of our GHG emissions, and our shipping activities for less than 3%. We continue to work on improving operational performance and energy efficiency to reduce GHG emissions.

The indirect GHG emissions from the energy that we purchased (electricity, heat and steam) decreased to 9 million tonnes on a CO₂-equivalent basis in 2015, from 10 million tonnes in 2014. These emissions were calculated using a market-based approach, as defined by the World Resources Institute GHG Protocol. We estimate that the CO₂ emissions from the use of our refinery and natural gas products were around 560 million tonnes in 2015.

DIRECT GREENHOUSE GAS EMISSIONS



FRESH WATER WITHDRAWN



Air emissions

We track emissions released into the atmosphere from all our operations. Our sulphur oxides emissions decreased from 97 thousand tonnes in 2014 to 88 thousand tonnes in 2015. This decrease was partly due to using fuel with lower sulphur content in our shipping activities but was partly offset by the higher sulphur content of the crude oil processed by our refineries.

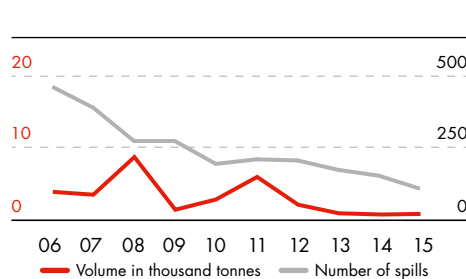
Our nitrogen oxides emissions decreased from 146 thousand tonnes in 2014 to 104 thousand tonnes in 2015. The realignment of reporting boundaries in 2015 to follow guidance from IPIECA/API/IOGP, in part affected these numbers.

Our emissions of volatile organic compounds (VOCs) decreased to 125 thousand tonnes in 2015 compared with 151 thousand tonnes in 2014. This was mostly due to a reduction of venting in Majnoon, Iraq. We expect our VOC emissions to further decrease in the coming years as a result of our efforts to reduce flaring and venting.

Waste

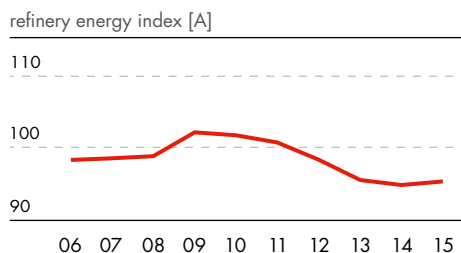
We aim to reduce the amount of waste we generate and to reuse or recycle materials, wherever possible. For example, in 2015, five of our Downstream manufacturing sites sent more than 75% of their waste generated during the year off-site for recycling or reuse. We track the amount of waste sent off-site for disposal or recycling.

SPILLS – OPERATIONAL [A]



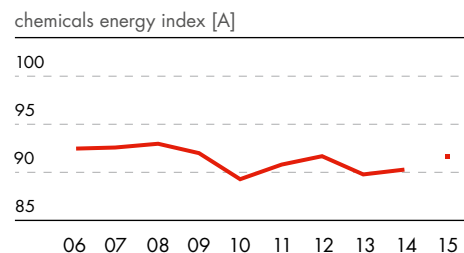
[A] Over 100 kilograms.

ENERGY INTENSITY – REFINERIES



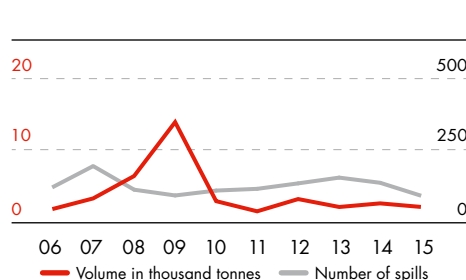
[A] Indexed to 2002; based on 2006 Solomon EII™ methodology.

ENERGY INTENSITY – CHEMICAL PLANTS



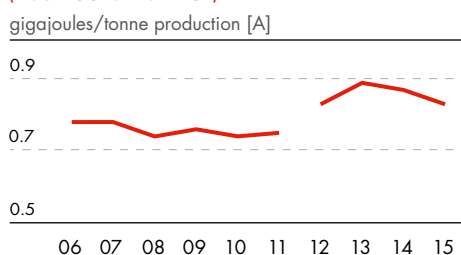
[A] CEI calculation methodology changed in 2015; therefore, data for prior years are not directly comparable.

SPILLS – SABOTAGE [A]



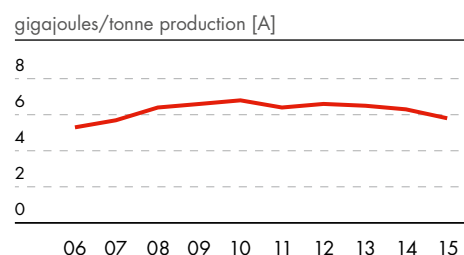
[A] Sabotage and theft-related spills over 100 kilograms.

ENERGY INTENSITY – UPSTREAM (EXCLUDING OIL SANDS AND GTL)



[A] 2012-2015 data are reported in accordance with IPIECA/API/IOGP guidance 2010.

ENERGY INTENSITY – OIL SANDS



[A] Includes mining and upgrading operations.

WORKING WITH COMMUNITIES

Many of our operations are located close to communities. We work with communities to understand their priorities and concerns. This is essential to our being a responsible company.

We engage with communities to identify how we can avoid, minimise or mitigate any negative impacts. This engagement also determines how and where we can add sustainable benefits in the form of employment, contract opportunities and social investment programmes.

Our work with communities follows our health, safety, security, environment and social performance (HSSE & SP) Control Framework. Our social performance teams, working closely with our environmental teams, use the framework to guide their work. It governs how we plan projects and run operations. The framework recognises international standards as a benchmark – such as the environment and social performance standards set by the International Finance Corporation.

Each major project and asset at Shell has a social performance plan. This includes a summary of our impacts on communities and the environment – which are identified during the impact assessment process – and the actions we take to address them. (See [page 9](#)). We use indicators to monitor the progress of our work in communities. The indicators used are relevant to each local community and may include monitoring spending on local goods and services or measuring and categorising community feedback.

LISTENING AND RESPONDING

We know that effective communication with communities can help to both avoid and, if necessary, remedy grievances. We ensure that people in neighbouring communities are able to express their views in a variety of ways, including community meetings, surveys, community advisory panels and employee hotlines.

Community liaison officers are employed to keep people informed about the ways our operations may affect them. They listen to the concerns of people in the community so that those concerns can be incorporated into our plans, whenever appropriate. This approach was successfully applied during our recent operations in Alaska where we had an agreement with the Iñupiat communities near the Chukchi Sea to inform them daily of our activities to avoid disturbing their hunting and fishing activities.

Shell has implemented community feedback mechanisms at all major operations and projects to receive, track and respond to questions and complaints from community members. This enables us to capture and resolve concerns quickly and in a transparent and balanced manner.

A hydropower generator has been installed as part of a pilot project to bring electricity to the indigenous Batak people. Palawan, the Philippines.



External opinion

"Shell is one of about ten new operators who have recently entered into offshore exploration in Myanmar. Our Centre has been working with most of them during an impact assessment we conducted on oil and gas. This has involved a number of multi-stakeholder discussions on issues like environmental impact assessment, community engagement, community investment and the Voluntary Principles on Security and Human Rights.

It's been important to have Shell in those discussions to hear how international standards can be applied in Myanmar. They have, for example, shared with us their field experience in community consultations in Myanmar. Shell and other multinationals are breaking new ground by discussing the potential impacts of their operations directly with communities. Shell's transparency about successes and challenges with civil society and others, can help to overcome years of distrust of business and build a better oil and gas industry in Myanmar."

Vicky Bowman

Director, Myanmar Centre for Responsible Business, Yangon, Myanmar

WORKING IN SPECIALIST AREAS

Some projects require specialist social performance expertise on topics such as indigenous peoples, cultural heritage or resettlement. (See [page 43](#)). In these cases, our relevant specialists will support the project teams to interpret and apply local and international standards that protect community rights.

In Iraq's Basra province, we were assessing potential sites for the proposed Nebras petrochemical complex. When our team visited an initially proposed site, we discovered a children's cemetery that had not been documented. The proposed site was also used to access fishing grounds. These factors held significant weight in the final assessment of site options. As a result, an alternative site was identified as the preferred option for the project.

In some cases, our operations require temporary or permanent access to areas of land or sea where people are living or working. We first try to avoid the need to resettle people. In circumstances where this cannot be avoided, we work closely with local communities and governments to help people relocate and to restore their livelihoods. In some situations, even where physical relocation is not

necessary, our operations may affect people's livelihoods – for example, by limiting access to their land. In these cases, we will support people to restore or establish alternative livelihoods.

In Sichuan province, China, for example, we partnered with the non-governmental organisation, Mercy Corps, to assist 150 smallholder farmers who were affected by our operations. We worked with the farmers to help them improve their agricultural practices, manage their businesses better, and identify markets for selling their produce. In the early stages of the project, 83% of the farmers reported increased knowledge of farming techniques, while 40% had improved their agricultural practices or adopted new farming technologies.

INVESTING IN COMMUNITIES

Investing in communities where we operate – what we call social investment – is an important part of being a good neighbour. Most of our social investment is at country and community level. Our businesses tailor their social investment strategy to the communities' needs, while working to a common global vision and framework.

Shell has three core themes of social investment in areas that are closely connected to our business: enabling access to energy, improving road safety, and enabling employment within communities. Local Shell teams determine which social investment themes are relevant to the community and design programmes accordingly, working within a common framework for measuring social and business outcomes. (See box). Social investment teams also have the freedom to implement locally-tailored programmes for community development, education, biodiversity and conservation in response to local needs. We also partner whenever possible with other businesses, development agencies and non-governmental organisations to implement our programmes.

Our global framework enables us to measure the impact of our social investment programmes in terms of positive outcomes for the community as well as achievement of our business goals. Our social performance teams also work closely with our contracting and procurement organisation to encourage local procurement of goods and services, contributing to local or regional economic development. (See [page 40](#)).

ACCESS TO ENERGY

Energy is crucial to economic and social development, and improves the livelihoods of people across the world. Globally, more than 1.1 billion people are without access to electricity – and a billion more only have access to unreliable and unsafe power networks. Nearly 3 billion people rely on solid fuels for cooking. For many in the world, better access to energy could help people out of poverty: it affects their health, education and their ability to earn a living.

At Shell, we apply our core business skills and technical resources to help enable access to energy for communities in regions where the need is great and we have a presence. In countries such as Iraq and Nigeria, we supply natural gas that was previously flared for domestic power generation. As part of our social investment programme, Shell Philippines, through the Pilipinas Shell Foundation, funded a micro-grid that uses hydropower and solar energy to power an indigenous village in Palawan, the Philippines. It provides the local Batak tribe with a constant supply of electricity.

The smoke emitted from traditional or inefficient cookstoves poses severe health risks. Shell is the largest private-sector partner of the Global Alliance for Clean Cookstoves, which works to encourage a global market for clean and efficient household cookstoves and fuels in developing countries. Shell offers both financial and in-kind support to the Alliance and its grant facility, the Spark Fund.

ENCOURAGING LOCAL ENTERPRISE

The need to develop local enterprise, skills and jobs is one of the most common topics raised by local communities. Shell has many programmes in place to support and encourage the building of new businesses and generate local employment. Our LiveWIRE programme helps entrepreneurs turn their ideas into long-term sources of income. The programme was extended to Malaysia in 2015 and is active in 15 countries where we operate. In 2015, more than 8,000 people took part in LiveWIRE and small business development programmes and more than 90 businesses were established.

We further support communities by offering training for jobs in the oil and gas industry. For example, in Argentina, we are working with the mayor of San Patricio del Chañar on two local training initiatives. One programme trains adults to work in the welding and electrical trades; the other prepares students for specific jobs in the energy industry, such as working on a drilling rig or inspecting equipment.

ROAD SAFETY

The promotion of road safety awareness among people in local communities is another focus area of our social investment projects. In southern Iraq, for example, near our Majnoon operations, we work with the AMAR International Charitable Foundation to train local health staff and women safety volunteers to raise awareness among parents and children about road safety. We are also working with authorities in education, government and the police to set up road safety zones around primary schools and build speed bumps, new footpaths and warning signs.

We are a board member of the Global Road Safety Partnership (GRSP), a global alliance that brings together governments, civil society and businesses to improve road safety. Shell chairs the Global Road Safety Initiative, a private sector collaboration with GRSP that works to improve road safety in cities and communities. It operates in eight countries and its "Safe to School – Safe to Home" programme focuses on helping children to travel safely to and from school. (See more on our road safety work on [page 32](#)).

WORKING WITH COMMUNITIES CONTINUED

SOCIAL PERFORMANCE

We have indicators in place that gauge our relationship with communities near our operations. We also measure our contribution to communities through our social investment programmes and the procurement of local goods and services within our supply chain.

Community feedback

Shell uses data from our community feedback mechanisms as a performance indicator at both the local community and global levels. Community complaints are registered in different categories to identify common issues across Shell and share knowledge on how they were resolved. In 2015, the largest number of complaints received related to social and environmental issues. These included concerns about Shell's allocation of its social investment funds, the creation of local jobs and the impact of our operations on people's land, property or livelihoods. Most environmental complaints related to nuisances, such as noise, odours or dust.

Social investment

We invest in projects that aim to benefit local communities over the long term. In 2015, we completed our first assessment of the long-term impact of our social investment projects globally. In 2015, we spent around \$122 million on voluntary social investments worldwide (compared with \$160 million in 2014). Our social investment is closely connected to the locations where we operate and so portfolio changes can affect the amount that we spend. This is the main reason for the decrease in social investment in 2015. These figures do not include investments that were part of contractual agreements or legal requirements with host governments, which was around \$97 million.

Of the \$122 million, we spent around \$29 million on our three global strategic themes of enterprise development, road safety and energy access. Around \$93 million was spent on local programmes for community development, disaster relief, education, health and biodiversity. We estimate that almost \$43 million of our spend in 2015 was in countries that are part of the UNDP Human Development Index 2015, that is, those defined as having a gross domestic product of less than \$15,000 a year per person. Significant support is also provided in the form of voluntary work by Shell employees and donations of equipment.

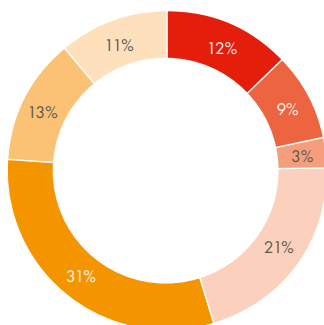
Local procurement

We prioritise buying goods and services from local suppliers that meet the standards we require. In some cases, we support local businesses and skills development to meet these standards. In 2015, we spent more than \$56.3 billion on goods and services worldwide. Around 65% of this was spent in Canada, the Netherlands, Nigeria, the UK and the USA. We estimate around \$5.9 billion was spent in countries that have a gross domestic product of less than \$15,000 a year per person. In these countries, Shell companies spent more than 75% (\$4.4 billion) on goods and services from local companies.

We also check that our suppliers comply with key sustainability criteria, including good working conditions. In 2015, we conducted 10 assessments of suppliers in Africa and the Middle East, 126 in the Americas, 129 in the Asia-Pacific region, and 119 in Europe to check their compliance with our Shell Supplier Principles. These principles cover areas such as human rights, labour practices (including those relating to child and forced labour) and business integrity. (See [page 46](#)).

VOLUNTARY SOCIAL INVESTMENT IN 2015

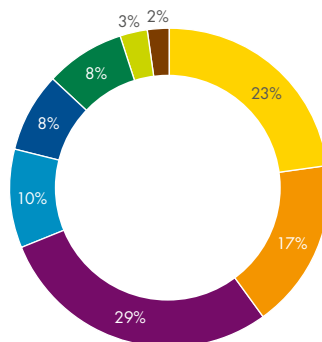
proportion of spend



Enterprise development
Energy access
Road safety
Community development
Education
Biodiversity
Other

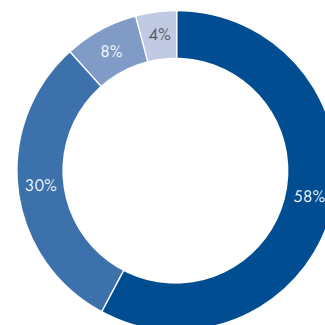
VOLUNTARY SOCIAL INVESTMENT IN 2015

split by region



MENA
Africa
Americas
Asia
Europe
Asia Pacific
Russia and CIS
Global (various regions incl. Shell Foundation)

COMMUNITY COMPLAINTS IN 2015



Local content, social investment and benefit sharing
Land, livelihood and property
Stakeholder engagement
Physical impacts

Shell Foundation

Shell Foundation (SF) is an independent charity that applies a business approach to global development challenges that constrain job creation, access to energy and urban mobility.

Since 2000, SF has worked with social enterprise partners to create new business solutions to deliver social and environmental improvement internationally. SF provides a mix of business support, grant funding and market links to help entrepreneurs prove their business models, achieve financial independence and expand into new markets.

Once a social enterprise partner is able to serve low-income consumers on a commercial scale, SF creates intermediary businesses and industry associations. These support the growth of new markets around the partner. For example, helping to create the model for the Global Off-Grid Lighting Association – an industry association that is building market infrastructure for off-grid lighting to reach low-income consumers.

To date, SF has deployed \$207 million of grant funding into social enterprises and new market builders operating in Africa, Asia and Latin America.

In 2015, SF published an analysis of the successes and failures of its work over the past 15 years in a report entitled "Enterprise Solutions to 2030". The report collates the Foundation's learnings from more than 200 partnerships with public and private social investors. It outlines a road map for co-ordinated action to accelerate progress towards sustainable development in emerging markets.

2015 social enterprise partner highlights

■ **d.light:** a leading provider of low-cost, high-quality solar energy products. Its expanded product range includes the world's most affordable and reliable solar-powered lantern that is sold for just \$5;

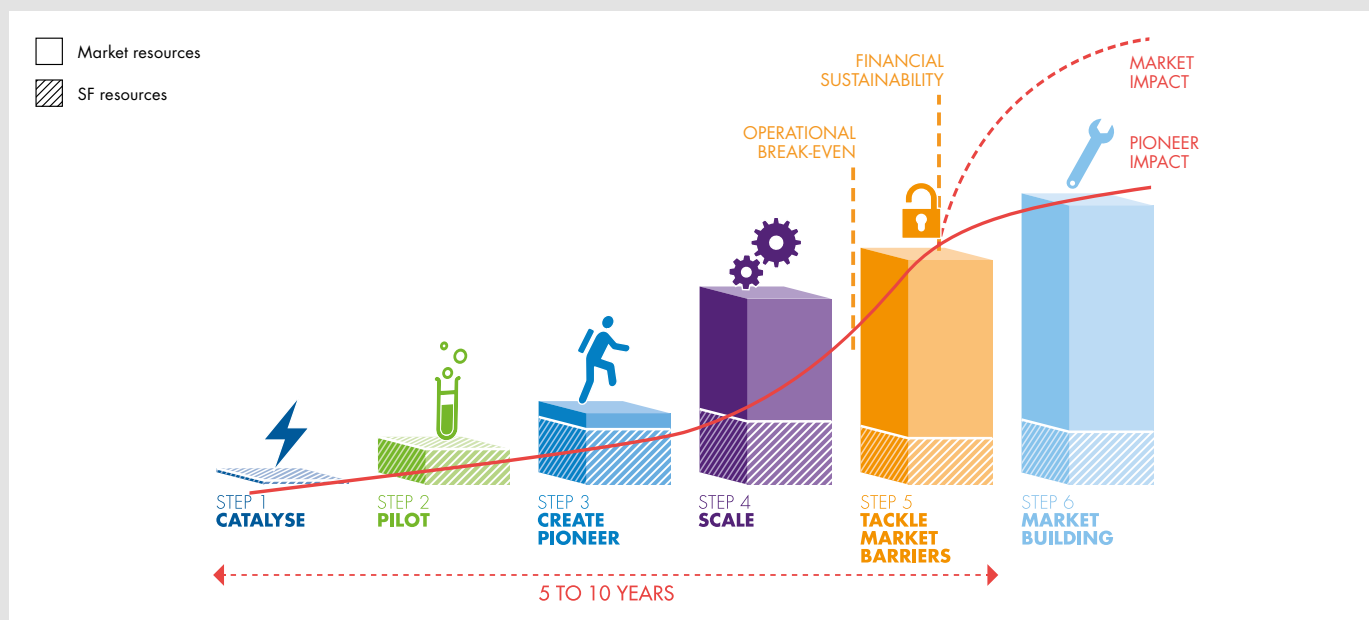
■ **Envirofit:** pioneer of high-quality, efficient and affordable clean-cooking solutions. More than 1 million clean cookstoves have been sold so far, improving the lives of 5 million people in 45 countries;

■ **Husk Power Systems (HPS):** a rural utility that generates low-cost electricity from waste and solar power. In 2015, HPS launched the world's first combined solar and biomass hybrid power plant to bring continuous electricity to communities in rural India; and

■ **GroFin:** provider of finance and business support to small- and medium-sized enterprises to spur job creation in emerging markets. Last year, the company launched a \$100 million fund backed by individual and business investors to generate 47,000 jobs in Africa by 2025.

For more information visit:
www.shellfoundation.org/2030

SHELL FOUNDATION'S SIX-STEP THEORY OF CHANGE



SHELL FOUNDATION'S IMPACT TO DATE



WORKING TOGETHER

All of the work we do around the world requires working collaboratively: with contractors, suppliers, non-governmental organisations and other businesses, among many others. We work together towards a number of goals: to achieve operational excellence, best practice on sustainability issues and to improve standards within the energy sector.

Collaboration will be critical to achieving a low-carbon society. Government, business and civil society need to work together to design and support practical solutions.

This section details our work with many of our partners.

19%



Women in senior leadership positions

600,000



Training days for employees and JV partners

216,000



Contractors working for Shell



Shell employees at the Bellanaboy Bridge gas terminal at the Corrib natural gas plant that started up in 2015. County Mayo, Ireland.



LIVING BY OUR PRINCIPLES

The core values of honesty, integrity and respect for people are reflected in our business principles, which strictly govern the way we work.

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 honesty, integrity and respect for people, the environment and communities. We aim to do business fairly, ethically and in accordance with laws that promote and safeguard fair competition between businesses. We do not tolerate the direct or indirect offer, payment, solicitation or acceptance of bribes in any form, including facilitation payments.

All Shell companies and joint ventures that we operate must conduct their activities in line with our business principles. We also encourage joint ventures we do not operate to apply materially equivalent business principles.

Our Code of Conduct

All Shell employees, contractors and anyone acting on behalf of Shell must follow the Code of Conduct, which describes the behaviour Shell expects of individuals. The Code of Conduct was refreshed in 2015, making it easier for individuals to identify potential risks associated with their roles. All employees and contractors are required to complete Code of Conduct training.

We encourage employees and contractors to seek advice and report concerns of any potential breaches, anonymously if they wish. Concerns or allegations are investigated by specialists within Shell and if a violation is confirmed, we take appropriate action. This may involve serious consequences, up to and including dismissal or contract termination. We maintain a stringent no retaliation policy to protect any person making a good faith allegation.

Business integrity in our supply chain

The Shell Supplier Principles, along with specific contractual clauses, set out our expectations for suppliers and contractors to behave with business integrity. (See [page 46](#)). Our risk-based due diligence processes assess prospective suppliers to determine whether they can meet our expectations. We regularly engage with suppliers to reinforce these principles, offer support to help them strengthen their own practices, if needed, and to hold them accountable for their performance.

HUMAN RIGHTS

We respect human rights and our approach applies to all of our employees and contractors. It is informed by the Universal Declaration of Human Rights, the core conventions of the International Labour Organization (ILO), and the UN Guiding Principles on Business and Human Rights. Respect for human rights and provision of remedy are ways in which we uphold our business principles.

We consult with international organisations, companies, civil society and other relevant bodies to understand and respond to current and emerging human rights topics. (See [page 45](#)). We collaborate closely with the Danish Institute of Human Rights to assess and improve our approach to human rights. We participate in IPIECA working groups (the global oil and gas industry association for environmental and social issues) to develop guidance and implementation tools to improve respect for human rights across the industry.

Our human rights approach focuses on four key areas:

Communities

We assess and manage the potential environmental, health and community impacts of our projects in line with international standards, such as the International Finance Corporation's performance standards on environmental and social sustainability. Our community engagement mechanisms allow our neighbours to raise any concerns about the impacts of our activities and enable us to respond to those concerns through credible and effective non-judicial processes. These mechanisms are informed by, and are important components of, the UN Guiding Principles on Business and Human Rights.

Security

We aim to keep employees, contractors and facilities safe, while respecting the human rights and security of local communities. The Voluntary Principles on Security and Human Rights (VPSHR) are implemented across Shell and are included in our private security contracts and our engagements with public security forces. We conduct annual risk assessments in our relevant operations and provide training to employees and contractors.

Labour rights

We respect the principles of freedom of association, the right to collective bargaining, non-discrimination and equal opportunity, adequate conditions of work, adequate remuneration and the elimination of forced labour and child labour. We respect the rights of our employees, contractors and suppliers by working in alignment with ILO conventions and the UN Global Compact.

Supply chain

We seek to work with contractors and suppliers who are committed to acting in an environmentally and socially responsible way. In line with our business principles, the Shell Supplier Principles include specific expectations for contractors and suppliers concerning labour and human rights. (See [page 46](#)).

INDIGENOUS PEOPLES

Our activities have the potential to affect indigenous peoples who hold specific rights for the protection of their cultures and traditional ways of life. We consult and engage with indigenous communities to understand how our activities may impact their rights. (See [page 38](#)). Our approach is to work with indigenous communities to find ways to mitigate negative impacts and to help neighbouring communities benefit from our activities. We train our employees to understand how to work and engage with indigenous peoples. And we continue to work with IPIECA to develop a consistent approach and best practice across the oil and gas sector for free, prior and informed consent.

ENVIRONMENTAL AND SOCIAL PARTNERS

Shell has a long track record of working in partnership with environmental and development organisations. These partnerships bring important insights to our work.

The aims of these partnerships vary from helping to reduce our environmental impact, to improving the quality of land around our operations and implementing social investment programmes. For example, we partner with organisations that advise us on specific issues such as biodiversity or human rights.

ENVIRONMENTAL PARTNERSHIPS

Shell has environmental partnerships with Wetlands International, the International Union for Conservation of Nature (IUCN), The Nature Conservancy (TNC) and Earthwatch. Our environmental partners can bring specific expertise to our projects in areas such as biodiversity, while they can advance their own scientific or conservation knowledge by working on our projects.

Protecting the Arctic's critical habitats with Wetlands International

Wetlands International is working with Shell to identify and assess critical habitats in the Arctic regions. Wetlands International has developed a tool that predicts the distribution of Arctic species. The tool maps critical wetland habitats for species in the Arctic, including migratory waterbirds and endangered species. The information it generates follows the International Finance Corporation's performance standards and will become part of Shell's standard biodiversity screening tools. It has been used by our project teams to screen for sensitive areas and to help manage and prevent potentially adverse impacts on Arctic biodiversity. We have been working with Wetlands International since 2001 on projects that range from managing biodiversity and water issues at our operations in Iraq, Brunei and Canada to strengthening sustainability practices with communities in Nigeria.

Protecting whales with IUCN

Shell and IUCN have been working together since 2004 to minimise the impacts on western gray whales at Shell's joint-venture operations at Sakhalin, Russia. Under the guidance of the Western Gray Whale Advisory Panel – a panel of 13 prominent scientists convened by IUCN – we have worked to reduce the impacts that phases of our operations may have on the whales and their habitat. In 2005, we rerouted pipelines away from the whales' feeding grounds. In 2015, Sakhalin Energy was the only energy company operating at Sakhalin that had an IUCN independent observer on their team implementing a seismic survey monitoring and mitigation programme. The panel will continue to examine the impact of oil and gas development on the whales following a positive review of its role in 2015.

Mapping biodiversity and rehabilitating coastlines with TNC

Shell and TNC have completed a pilot project to map critical biodiversity in three watersheds of the central Magdalena River Basin in Colombia – a place of important environmental and cultural significance. The results will be made publicly available and will provide the energy industry and the Colombian government with an understanding of local biodiversity.

We have also been working with TNC to develop a nature-based approach to reduce the cost and rate of erosion along the pipelines in the Louisiana coastal zone. This is done by creating living shorelines with planted vegetation, or creating oyster reefs to restore wetlands and improve the resilience of the coastline. Over time, the living shorelines will also enhance the local flora and fauna.

Employees participate in Earthwatch activities

Our employee volunteer partnership, Project Better World, has been running for 18 years. As part of this, Shell sponsors employees to work with scientists and communities on environmental research and conservation projects. This deepens our employees' understanding of sustainability in areas such as climate change and habitat loss. In another programme, Shell employees provide mentoring to managers in organisations working to preserve protected areas. To date, over 800 Shell employees have taken part in the Earthwatch programmes.

COMMUNITY PARTNERS

We work with both international and community-based organisations to address social issues close to our operations. The benefits of these collaborations can help meet a specific need within a community – such as unemployment – and they can help Shell to improve its own operational practices. For example, the Danish Institute for Human Rights provides guidance on the integration of human rights into labour practices, procurement, security and community issues.

Partnerships in specific countries help to build trust and draw on local knowledge. For example, Shell is working with the United Nations Development Programme to expand and refurbish Al Jawadian School in Al Dayr, near Basra in southern Iraq. The partnership has also constructed four local playgrounds so that children can play in safe areas away from traffic. Another project in Iraq has supported 13 local businesses – including women entrepreneurs – with business training, coaching and capital investment.

We also have a global partnership with Mercy Corps, an international organisation that helps people to recover from crises, build better lives and transform their communities. In its first three years, the partnership has focused on transforming how companies and non-governmental organisations can work together for mutual benefit. In Sichuan province, China, for example, we are helping smallholder farmers to improve their agricultural practices and the way they manage their businesses. (See Communities, page 38).

Project Better World is a partnership with Earthwatch. Shell sponsors employees to work on environmental research and conservation projects. Manitoba, Canada.



COLLABORATIONS

Shell collaborates and works with different organisations around the world. These relationships help us to build trust among a diverse range of stakeholders, including non-governmental organisations.

We define collaboration to mean all forms of working with organisations outside of Shell. Collaborating with these different organisations helps us to gain insight into our business and industry, while the sharing of knowledge and experience with others contributes to the continuous improvement of practices. We participate in relevant sector discussions, ranging from improving industry-wide technical standards to reviewing ways to tackle human rights abuses within the supply chain.

Some of the views of the organisations with which we work may differ from our own. For example, we may not always agree with their opinions on topics, such as climate change. In these cases, we make our views known within the organisation and seek to influence their policy position.

However, we believe it is important to remain involved with these organisations to do this, particularly where we benefit from working together in areas such as safety, the environment and human rights. In our Carbon Disclosure Project submission, we provide more information on organisations with which we work but whose position on climate change is not entirely consistent with our own.

We review this work to ensure the objectives of these collaborations are being met and that the relationships remain mutually beneficial. The table shows some of the organisations that we collaborate with globally on sustainability and technology. Shell also works with many local organisations in countries around the world.

COLLABORATIONS OVERVIEW

	Environmental sustainability and climate change	Human rights and social responsibility	Safety and technical standards	Technology and innovation	Transparency and governance
American Petroleum Institute (API)	■		■	■	■
Bonsucro	■	■			
Canada's Oil Sands Innovation Alliance (COSIA)	■			■	
Center for Sustainable Shale Development (CSSD)	■	■			
Danish Institute for Human Rights (DIHR)		■			
Energy Institute (EI)			■	■	
Energy Transitions Commission (ETC)	■				
Extractive Industries Transparency Initiative (EITI)					■
Global Alliance for Clean Cookstoves	■	■			
Global Business Initiative on Human Rights (GBI)		■			
Global Gas Flaring Reduction Partnership (GGFR)	■				■
Global Road Safety Partnership (GRSP)			■		
International Association of Oil and Gas Producers (IOGP)	■	■	■	■	■
International Audit Protocol Consortium (IAPC)	■		■		
International Emissions Trading Association (IETA)	■				
IPIECA (industry association for environmental and social issues)	■	■	■		■
Network of Employers for Traffic Safety (NETS)			■		
Roundtable for Responsible Soy (RTRS)	■	■			
Roundtable on Sustainable Palm Oil (RSPO)	■	■			
UN Global Compact	■	■			■
Oil and Gas Climate Initiative (OGCI)	■				
World Business Council for Sustainable Development (WBCSD)	■	■	■		■

CONTRACTORS AND SUPPLIERS

In 2015, Shell spent \$56.3 billion on goods and services from 52,000 suppliers globally. Around 216,000 contractors worked to deliver Shell projects and help run our operations.

We seek to work with contractors and suppliers that behave in an economically, environmentally and socially responsible way, as stated in our Shell General Business Principles. We have a set of principles for our suppliers that provides a consistent framework detailing what we expect. The Shell Supplier Principles cover what is required from our suppliers regarding business integrity, health and safety, social performance, and labour and human rights. These apply regardless of the business environment in the oil and gas industry.

It is important that our suppliers have the appropriate policies, principles and standards in place within their own company. Building strong relationships with our suppliers is essential to delivering our projects, running our operations and ensuring suppliers place the same importance on health, safety, the environment and community impact as we do. In close collaboration with suppliers and contractors, we work towards our safety goal of no harm and no leaks at our sites.

Certain areas of our supply chain may pose a higher labour rights risk, due to their location and the nature of the goods and services we procure. Of all assessments carried out for compliance with our supplier principles in 2015, 384 suppliers were subsequently awarded contracts. The number of assessments follows our risk-based approach and is dependent on the level of project activity and the number of new contracts awarded throughout the year. If gaps are identified, we sometimes work with our suppliers and contractors to help them understand how to close these gaps. We also work closely with specific suppliers – such as those in developing countries – to help them develop the right skills, policies and management systems.

We work in close collaboration with our suppliers and contractors to meet our safety and environmental standards.

A successful example of this is the VIP Car Rental company in Iraq (see external opinion).

LOOKING AFTER OUR WORKFORCE

During 2015, as part of our global worker welfare programme, we implemented our Accommodation and Welfare Guide, which was published in 2014. This provides tools and management guidance for providing safe, secure and comfortable accommodation for workers who are away from home and sometimes in remote areas – whether their needs are physical, mental, cultural or social. This guidance is applied at a number of new Shell ventures.

Shell contributes to economic development in the countries where we operate – either by employing people directly or through our partners, such as government or business partners. At the outset of a project, we consider how we can employ local suppliers and individuals. If needed, we help them build capabilities that meet our safety and quality standards. We also support the growth of local businesses in many countries where we work (we refer to these efforts as local content). (See [page 40](#)).

In many countries, a local content plan forms part of the bid criteria against which potential suppliers are assessed. For example, a global supplier to Shell partnered with an independent First Nations company to form The Bouchier Carillion Group, in line with the plan included in the bid. They provide facilities management services to Shell in Alberta, Canada. This partnership enables The Bouchier Carillion Group to use its global experience and support regional initiatives, particularly those focused on aboriginal youth and women in business.



External opinion

"The VIP Car Rental company provides passenger transport services for Shell Iraq Petroleum Development (SIPD) in the Majnoon area of southern Iraq. We are proud to be a supplier to a global company like Shell.

By working closely with the SIPD logistics team, we are able to quickly solve issues so that we can provide the services needed by SIPD in a safe and timely manner.

We are a fully-owned Iraqi company, managing one of the highest risk activities in Iraq. Local driving habits are tolerable at best, but with the support of SIPD, we have successfully driven 2 million km and achieved two years of operations without injury. We have also scored 100% in Shell's road safety and driver assessment programme.

In future, we recommend that Shell works closely with the local police to improve road security between Basra and Majnoon."

Sabah Alkhazrahej
General Manager,
VIP Car Rental
Basra, Iraq



JOINT VENTURES

We often work in joint ventures with national and international energy companies. All of our business partners bring important skills and experiences to a joint venture.

When we operate a joint venture (JV), Shell's health, safety, security, environment and social performance (HSSE & SP) Control Framework is applied, as well as the Shell General Business Principles and the Shell Code of Conduct. (See [page 43](#)).

NON-OPERATED VENTURES

More than half of Shell's JVs are non-operated ventures. For these ventures, our Shell JV representatives and the Shell-appointed JV board directors encourage our partners to apply similar standards and principles as our own.

When these JVs implement our Control Framework, or a similar approach, we offer to support them by assuring the JV's compliance. We also offer to review the effectiveness of the framework's implementation, overseen by the JV's Board of Directors.

If there is no such assessment, we periodically evaluate the health, safety, environment and community risks of the JV. If the JV is falling below expectations, plans will be put in place, in agreement with the other partners, to improve performance.

LEARNING FROM EACH OTHER

Another advantage of working with our business partners – who are often located in different parts of the world – is that they offer an opportunity to share knowledge and insights and learn from each other's experience. As a result we can work together to create better solutions that tackle specific social, environmental, safety or technical challenges.

For example, in Russia, our JV, Salym Petroleum Development (Shell interest 50%), has developed competence in social performance. It conducts structured and regular community engagements and applies a social impact assessment process.

Its key priority areas with communities where it operates are education, healthcare and the development of small businesses.

The Brunei Shell Petroleum JV (Shell interest 50%) used our HSSE & SP Control Framework to carry out an assessment of the effects on the local ecosystem from using 3D seismic surveying. The assessment surveyed offshore and onshore areas in Brunei. Measures were put in place to reduce the impact of seismic surveying, including a biodiversity action plan that was created with Wetlands International to protect and conserve critical habitats, such as Brunei's peat swamp forests.

In Brazil, our biofuels JV, Raízen, adopted Shell's Goal Zero approach to implement safe practices across all its businesses, with the aim of achieving no incidents. In one crop year, Raízen recorded a 37% reduction from the previous year in the frequency of incidents that could have prevented employees from working. (See [page 31](#)).

OUR PEOPLE

The quality of our people is essential to the success of our company. In 2015, we employed an average of 93,000 employees in more than 70 countries.

We work to maintain a productive and healthy organisation, resource talented people across the business, accelerate development of our people, grow and strengthen our leadership capabilities, and enhance employee performance through strong engagement.

OUR WORKFORCE

Around 40% of our workforce is in countries outside of Europe and North America. In 2015, we recruited around 1,000 graduates and 1,500 experienced professionals. Close to 40% of our graduate recruits came from universities outside of Europe and the Americas.

Shell manages the effects of business changes on people as consistently as possible. Affected employees are supported in their search for alternative employment as appropriate by country law and policy.

COMMUNICATION AND ENGAGEMENT

We strive to maintain healthy relations with our employees. Dialogue between management and employees is integral to our work practices and takes place directly and, where appropriate, through employee representative bodies. Management briefs employees on operational and financial results regularly through a variety of channels. The annual Shell People Survey is one

of the principal tools used to measure employees' views on a range of topics. For example, the average employee engagement score in 2015 was 80% favourable and 5% unfavourable (both the same as 2014). The survey also measures employees' views on the inclusiveness of their workplace. In 2015, 71% felt positive about this, while 11% felt negative about inclusion in the workplace, the same figures as 2014.

We promote the safe expression and reporting of views about our processes and practices. We offer multiple channels for employees to report, confidentially and anonymously, breaches of the Shell General Business Principles or our Code of Conduct, or other concerns.

DIVERSITY AND INCLUSION

Embedding the principles of diversity and inclusion in the way we do business gives us a better understanding of the needs of our stakeholders. We provide equal opportunity in recruitment, career development, promotion, training and reward for all employees regardless of gender, ethnicity, sexual orientation or physical ability. We actively monitor diversity: at a global level, we measure representation of women and local nationals in senior leadership positions. We have a talent development process to bring about more diverse representation.

At the end of 2015, the proportion of women in senior leadership positions was 19% compared with 18% in 2014. The representation of senior local nationals is monitored in 20 principal countries. We measure the percentage of senior nationals employed in Shell compared with the number of senior positions in their home country. The reporting shows two categories: local national coverage greater than 80% (12 countries in 2015) and less than 80% (eight countries in 2015).

TRAINING AND DEVELOPMENT

In 2015, we invested about \$335 million in training and development, providing more than 600,000 training days for our employees and joint-venture partners. We focused on growing our leadership capability, improving skills in technical, safety and commercial areas, and our expertise in specialist areas such as cultural heritage and indigenous peoples.

CODE OF CONDUCT VIOLATIONS

Shell employees and contractors must abide by our Code of Conduct. Violations can be reported through a variety of local channels, which are adapted to local regulations and customs, and one global channel, which is a dedicated helpline operated by an independent provider. In 2015, from the incidents reported through the global helpline, 217 were confirmed as Code of Conduct violations after investigation (267 in 2014). As a result, we dismissed or terminated the contracts of 89 employees and contractors (118 in 2014).

ECONOMIC PERFORMANCE

During 2015, significantly lower oil and gas prices challenged our industry, with an average Brent price of \$52 a barrel. Our integrated business and improved operational performance helped reduce the impact of lower energy prices.

We are managing our business through the current oil price downturn which underpins our intention to continue to pay attractive dividends to shareholders while investing for the future. In 2015, we reduced our operating costs and capital spending; restructured our upstream business, tight and shale gas, and oil products; sold assets worth \$20 billion in 2014–15; and delivered new projects with substantial cash flow potential.

Our income in 2015 was \$1.9 billion, impacted by significantly lower oil and gas prices during the year. In 2015, the average Brent price was \$52, down 47% from 2014. We distributed dividends of some \$12 billion to our shareholders of which \$2.6 billion was taken in shares through our scrip dividend programme.

We reduced our total capital investment to \$29 billion to reflect the falling oil price and focused on progressing only the most competitive projects, which will help to build and sustain our business for the future. We completed divestments of \$5 billion from our non-core portfolio, including proceeds from the USA's midstream master limited partnership. We also spent \$1,093 million on our research and development programme.

Shell generated \$29.8 billion of cash flow from its operating activities in 2015.

In 2015, we started up our Corrib facility in Ireland (Shell interest 45%) and Bonga Phase 3 (Shell interest 55%), off the coast of Nigeria. Only the most competitive projects are going ahead: in the same year, we took just four major final investment decisions, three of which were in Downstream. We also announced the cancellation of the Alaska exploration project and Carmon Creek heavy oil project and in early 2016, we postponed the final investment decisions on LNG Canada and Bonga South West.

Shell's oil and gas production in 2015 was 3 million boe a day, down 4% from 2014. Our sales of liquefied natural gas decreased to around 22.6 million tonnes.

Following the announcement of a recommended offer in April 2015, Shell completed the acquisition of BG Group plc in February 2016. This acquisition will mark the start of a new chapter in Shell. It rejuvenates Shell's Upstream business by adding more deep-water and integrated gas to our portfolio. These are areas where Shell has significant capabilities and technologies.

Shell is becoming a company that is more focused on its core strengths, and more resilient and competitive throughout the oil price cycle.

\$12 BILLION

Dividends distributed



\$30 BILLION

Cash flow from operating activities



\$29 BILLION

Capital investment



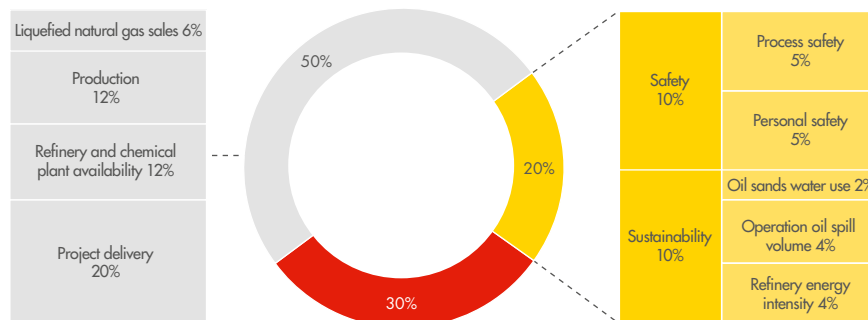
EXECUTIVE SCORECARD

In 2015, 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 2015, the EC's sustainable development measures were split evenly between Shell's safety and environmental performance. Our environmental measures cover operational spill volume, energy efficiency and use of fresh water. From 2015, process safety Tier 1 events were introduced as a new measure for safety, with an equal weighting for personal safety. These measures reflect Shell's Goal Zero ambition of no harm and no leaks.

Targets are set each year by the Board's Remuneration Committee, taking into account performance over the past three years in order to incentivise continuous and sustained improvement. In 2015, our performance was better than the target for all sustainable development measures and was our strongest result to date.

SCORECARD STRUCTURE



Operational excellence
Cash flow from operating activities
Sustainable development

TAX AND TRANSPARENCY

Tax binds governments, communities and businesses together. Revenue transparency provides citizens with important information to hold their government representatives accountable and to advance good governance. Shell is committed to transparency.

Our operations generate revenue through taxes and royalties for governments around the world. In 2015, Shell paid more than \$60.8 billion to governments. We paid \$7.7 billion in income taxes around the world, and \$2.7 billion in royalties. We collected \$50.4 billion in excise duties, sales taxes and similar levies on our fuel and other products on behalf of governments.

OUR APPROACH

For Shell, paying taxes in the countries where we operate is about more than complying with the law. It is about showing that extraction of natural resources provides governments with an opportunity to generate revenues, support economic growth and enhance social development.

We comply with the tax laws wherever we operate. We are transparent about our tax payments to governments and we strive for an open dialogue with governments. This approach helps us to comply with both the letter and the spirit of the laws.

Principles

In line with the Shell General Business Principles we support a number of external voluntary codes, which include the Organisation for Economic

Co-operation and Development (OECD) Guidelines for Multinational Enterprises and the Business and Industry Advisory Committee to the OECD Statement of Tax Principles for International Business.

Transparency

In 2012, we were one of the first companies to voluntarily publish revenues that our operations generate through income taxes, royalties and indirect taxes for governments around the world. From 2016 onwards, Shell will make mandatory disclosures under the Reports on Payments to Governments Regulations 2014, and will file its Payments to Governments Report with the UK's Companies House. This report will be published on our website www.shell.com/payments.

Tax strategy

It is the right of governments to determine what a fair share of tax is and to draft tax laws accordingly. They do so against strong competition for capital and investment, which is internationally mobile. It is not the role of business to form views on what level of taxation is fair. We use legitimate tax incentives and exemptions designed by governments to promote investment, employment and economic growth.

When considering the viability of investments, tax is one of the factors we examine. Income tax is just one part of the overall tax regime considered. We expect to pay tax on our income in the country where activities take place, and believe double taxation of the same activity by different jurisdictions should be avoided. Shell supports efficient, predictable and stable tax regimes that incentivise long-term investment. We expect the laws to be applied consistently, creating a level playing field for all.

Governance of tax

Shell's Board of Directors is responsible for maintaining a sound system of risk management and internal control, and for regularly reviewing its effectiveness. This system also covers taxation, which forms an integral part of the Shell control framework. Annually, the Board conducts a review of the effectiveness of Shell's system of risk management and internal control, including financial, taxation, operational and compliance controls.

COLLABORATING WITH OTHERS

Shell supports co-operative compliance relationships with tax authorities on the basis of the framework proposed by the OECD Forum on Tax Administration. We have a co-operative compliance relationship in place in the UK, the Netherlands and Singapore, and pilot relationships in Austria and Italy.

\$7.7 BILLION



Paid in income taxes around the world

\$2.7 BILLION



Royalties paid to governments

\$50 BILLION



Collected excise duties and sales tax

We provide the authorities with timely and comprehensive information on potential tax issues. In return, we receive treatment that is open, impartial, proportionate, responsive and grounded in an understanding of our commercial environment. This approach improves the transparency of our tax affairs and allows Shell to better manage its tax-related risks throughout the life cycle of each project.

Transparency is only really effective if all parties in a country follow the same disclosure standards. Shell is a founder and board member of the Extractive Industries Transparency Initiative (EITI). Consistent with the EITI requirements, we continue to advocate mandatory country-by-country global reporting, as most tax payments are made at the corporate level to national governments. We support unified revenue reporting rules and standards applicable to all multinationals, irrespective of their ownership or place of business.

Shell is actively involved in the revenue transparency discussion and we are working with stakeholders to develop an approach that takes into account the views of the relevant stakeholders involved, i.e. industry, governments and civil society.

Ben van Beurden, CEO, speaking at the Shell Annual General Meeting in May 2015. The Hague, The Netherlands.



DATA AND REPORTING

Each year, we measure our global performance and report on the safety of our operations, our impact on the environment and our contribution to communities.

Our External Review Committee assesses the report and offers an objective view on our progress in sustainability.

This section provides data on our safety, environmental and social performance for 2015, and an opinion from the Committee.



Our office building in Singapore has been certified to meet green building standards.



ABOUT OUR REPORTING

We began reporting voluntarily on our environmental and social performance with the first Shell Report in 1997. We support transparency and share information and data in this report and on our company website.

We also 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.

ABOUT OUR DATA

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

All non-financial data in this report are reported on a 100% basis for companies and joint ventures where we are the operator. Environmental data pertain to 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. We refer to the number of people employed or contracted on a "full-time equivalent" basis.

Operations acquired or divested during the year are included only for the period of our ownership. Our 2015 reporting does not include data from BG Group. Other data are collected from external sources, staff surveys and other internal sources as indicated.

We only include data in this report that were confirmed by the end of March 2016. If incidents are reclassified or confirmed, or if significant data changes occur after preparation of this report, they will be updated in the following year's publication. Data marked in the social data table come from an internal survey completed by the senior Shell representative in each country. The accuracy of environmental and social data may be lower than that of data obtained through our financial systems.

ASSURANCE

We have clear standards and reporting requirements for our health, safety, security, environment and social performance data. This is supported by internal controls such as audit trails and statistical checks to help ensure the accuracy of the Shell Sustainability Report.

The External Review Committee of independent experts helps to 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 2015. Limited assurance means nothing has come to the auditor's attention that would indicate that the data are not correct.

Conversions into US and Canadian dollars are based on the average exchange rates for 2015.

ENVIRONMENTAL DATA

ENVIRONMENTAL DATA	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
Greenhouse gas emissions (GHGs)										
Direct total GHGs (million tonnes CO ₂ equivalent) [A]	72	76	73	72	74	76	69	75	82	88
Carbon dioxide (CO ₂) (million tonnes)	68	73	71	69	71	72	66	72	79	85
Methane (CH ₄) (thousand tonnes)	119	126	120	93	133	128	127	126	119	124
Nitrous oxide (N ₂ O) (thousand tonnes)	1	1	1	1	1	2	2	2	2	2
Hydrofluorocarbons (HFCs) (tonnes)	18	16	17	23	22	23	25	23	28	24
Energy indirect total GHGs (million tonnes CO ₂ equivalent) [B]	9	10	10	9	10	9	9	n/c	n/c	n/c
Flaring										
Flaring (Upstream) (million tonnes CO ₂ equivalent)	11.8	13.0	7.4	7.7	10.0	10.4	7.8	8.8	9.7	14.3
Flaring (Upstream) (million tonnes hydrocarbon flared)	3.5	3.8	2.1	2.3	3.4	3.6	2.6	2.8	3.4	4.8
Nigeria [C]	0.9	1.3	1.1	1.5	2.0	2.4	1.9	2.3	2.5	3.7
Rest of world [D]	2.6	2.5	1.0	0.8	1.4	1.2	0.7	0.5	0.9	1.1
Energy intensity										
Upstream excl. oil sands and GTL (gigajoules per tonne production) [E]	0.83	0.87	0.89	0.83	0.75	0.74	0.76	0.74	0.78	0.78
Oil sands (gigajoules per tonne production) [F]	5.8	6.3	6.5	6.6	6.4	6.8	6.6	6.4	5.7	5.3
Refineries: Refinery Energy Index [G]	95.4	94.9	95.6	98.4	100.8	101.8	102.2	98.9	98.6	98.4
Chemical plants: Chemicals Energy Index	91.6	90.3	89.8	91.7	90.8	89.3	92.0	93.0	92.6	92.5
Acid gases and VOCs										
Sulphur oxides (SO _x) (thousand tonnes SO ₂)	88	97	99	113	136	139	141	175	212	233
Nitrogen oxides (NO _x) (thousand tonnes NO ₂) [H]	104	146	156	147	146	159	142	150	145	154
Volatile organic compounds (VOCs) (thousand tonnes)	125	151	89	89	129	147	126	130	148	185
Ozone-depleting emissions										
CFCs/halons/trichloroethane (tonnes)	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.4	0.6	0.3
Hydrochlorofluorocarbons (HCFCs) (tonnes)	8	6	8	8	12	21	24	26	27	35
Spills and discharges [I] [J]										
Sabotage spills – volume (thousand tonnes) [K]	2.2	2.7	2.2	3.3	1.6	3.0	14.0	6.5	3.4	1.9
Sabotage spills – number [K]	94	139	157	137	118	112	95	115	197	123
Operational spills – volume (thousand tonnes)	0.8	0.7	0.9	2.1	6.0	2.9	1.4	8.8	3.5	3.9
Nigeria [L]	0.2	0.3	0.4	0.2	5.3	0.7	0.3	7.1	1.6	1.4
Rest of world	0.7	0.4	0.5	1.9	0.7	2.2	1.1	1.7	1.9	2.5
Operational spills – number	108	153	174	207	211	195	275	275	392	465
Nigeria [M]	16	38	31	37	64	32	37	42	52	41
Rest of world	92	115	143	170	147	163	238	233	340	424
Hurricane spills – volume (thousand tonnes)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oil in effluents to surface environment (thousand tonnes)	1.0	0.9	1.0	1.0	1.3	1.6	1.5	1.7	1.6	1.8
Water										
Fresh water withdrawn (million cubic metres)	186	199	198	203	209	202	198	224	235	n/c
Waste disposal										
Hazardous (thousand tonnes)	455	529	770	820	740	1,048	962	688	907	716
Non-hazardous (thousand tonnes)	1,680	1,674	2,065	2,295	1,850	1,079	1,139	996	1,899	1,154
Total waste (thousand tonnes) [N]	2,135	2,203	2,835	3,115	2,590	2,127	2,101	1,684	2,806	1,870

[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/IOGP) indicate that a number of sources of uncertainty can contribute to the overall uncertainty of a corporate emissions inventory. 2015 emissions are calculated using Global Warming Potential factors from the IPCC's Fourth Assessment Report. Data for prior years were calculated using Global Warming Potential factors from the IPCC's Second Assessment Report.

[B] These emissions were calculated using a market-based approach in line with the GHG Protocol Corporate Accounting and Reporting Standard.

[C] Nigeria includes SPDC onshore operations (0.8 million tonnes flared in 2015) and SNEPCo offshore operations (0.1 million tonnes flared in 2015).

[D] Flaring from the Majnoon field in Iraq and from Malaysia amounted to 1.4 and 0.6 million tonnes of hydrocarbons respectively in 2015.

[E] Since 2012 data are prepared in accordance with IPIECA/API/IOGP guidance 2010. Data for prior years are not directly comparable.

[F] The data include mining and upgrading operations. The data do not include in-situ production.

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

[H] Decrease in NO_x emissions in 2015 was partially driven by the realignment of reporting boundaries with the IPIECA/API/IOGP guidance.

[I] All spill volumes and numbers are for spills over 100 kilograms. Due to the rounding of numbers, spill volumes for Nigeria and rest of world might not add up to the exact total volume of spills.

[J] As of the end of March 2016, there were two spills under investigation in Nigeria that may result in adjustments.

[K] All sabotage- and theft-related spills have occurred in Nigeria except in 2015 (0.005 thousand tonnes outside Nigeria), 2007 (0.7 thousand tonnes outside Nigeria) and 2006 (0.6 thousand tonnes outside Nigeria).

[L] 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.

[M] Nigeria includes SPDC onshore operations (15 operational spills in 2015) and SNEPCo offshore operations (one operational spill in 2015).

[N] In 2015, we sent waste offsite for recycling or reuse, or sold close to 500 thousand tonnes of material that would otherwise have been disposed of as waste.

n/c = not calculated.

SOCIAL AND SAFETY DATA

SOCIAL AND SAFETY DATA

	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
Fatalities										
Total number	7	5	5	8	6	12	20	26	21	37
Employees	1	3	0	3	1	0	1	2	1	2
Contractors	6	2	5	5	5	12	19	24	20	35
Fatal accident rate (FAR)	1.11	0.74	0.79	1.32	0.96	1.56	2.3	3.4	3.1	5.6
Fatalities per 100 million working hours (employees and contractors)										
Injuries and process safety incidents										
Total recordable case frequency (TRCF)	0.94	0.99	1.15	1.26	1.24	1.23	1.4	1.8	1.9	2.1
Injuries per million working hours (employees and contractors)										
Lost time injury frequency (LTIF)	0.26	0.28	0.36	0.34	0.36	0.35	0.4	0.6	0.7	0.8
Lost time injuries per million working hours (employees and contractors)										
Operational Process Safety Events										
Tier 1 [O]	51	57	65	91	n/c	n/c	n/c	n/c	n/c	n/c
Tier 2 [O]	169	194	246	308	n/c	n/c	n/c	n/c	n/c	n/c
Illnesses										
Total recordable occupational illness frequency (TROIF)	0.60	0.96	0.77	0.51	0.66	0.76	0.6	1.2	1.5	1.8
Illnesses per million working hours (employees only)										
Security										
Using armed security (% of countries)	19	24	19	17	14	9	17	17	16	15
Using armed company security (% of countries)	1	1	3	0	1	1	1	1	2	2
Using armed contractor security (% of countries)	8	10	8	10	9	6	10	9	12	9
Gender diversity [P]										
In supervisory/professional positions (% women)	28.0	29.0	28.8	28.1	27.3	26.3	26.4	24.7	24.6	23.2
In management positions (% women)	20.0	21.0	18.8	18.2	17.6	17.0	16.1	15.3	17.7	16.2
In senior leadership positions (% women)	19.0	18.2	17.2	16.2	16.6	15.3	14.0	13.6	12.9	11.6
Staff forums and grievance procedures										
% countries with staff access to staff forum, grievance procedure or other support system	100	100	100	100	99	100	99	100	100	99
Child labour (% countries with procedures in place)										
Own operations	100	100	100	100	100	99	98	100	99	95
Contractors	100	100	100	100	97	96	97	99	98	89
Suppliers	100	100	100	100	97	96	97	99	96	82
Forced labour (% countries with procedures in place)										
Own operations	100	100	100	100	100	99	98	n/c	n/c	n/c
Contractors and suppliers	100	100	100	100	97	95	89	n/c	n/c	n/c
Integrity										
Code of Conduct violations [Q]	217	267	181	209	226	205	165	204	361	n/c
Contracting and procurement										
Estimated expenditure on goods and services in lower-income countries (\$ billion) [R] [S]	6	14	12	14	12	13	12	12	13	10
Social investment [T]										
Estimated voluntary social investment (equity share) (\$ million)	122	160	159	149	125	121	132	148	170	140
Estimated social investment spend (equity share) in lower-income countries (\$ million) [U]	43	73	74	67	45	61	54	61	65	n/c

[O] Process safety events are classified based on guidance from the IOGP and API. In 2015, there were 28 Tier 1 and 17 Tier 2 sabotage related events.

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

[Q] Code of Conduct violations represent the number of reported incidents in the Shell Global Helpline (excluding queries or customer service queries), which have been investigated and closed during the relevant period and where allegation was found to be (at least partially) true.

[R] Estimated expenditure in countries where gross domestic product amounts to less than \$15,000 a year per person (source: UNDP Human Development Index 2015). In 2015, the UNDP index update no longer includes some of the countries in which Shell invests, which impacts on our reported spend amount.

[S] From 2013 onwards, this figure only includes the amount spent on goods and services by Shell group companies.

[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 2015). As the countries included in the UNDP index change, this affects our spend numbers. In 2015, the UNDP index update no longer includes some of the countries in which Shell invests, which impacts on our reported spend amount.

[S] Social investment and 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



External Review Committee:
(clockwise from centre front)

1. **Seema Arora** (Chair), Executive Director, Confederation of Indian Industry, India
2. **John Gardner**, Vice President and Chief Sustainability Officer, Novelis Inc, UK
3. **Reidar Kvam**, Global Lead, Social sustainability and standards, World Bank, Norway
4. **Lavinia Hollanda**, Head of Research, FGV Energia, Brazil
5. **Mark Brownstein**, Vice President, Climate and Energy Program, Environmental Defense Fund, USA
6. **Ed Whittingham**, Executive Director, Pembina Institute, Canada
7. **Bernice Lee**, Head of Climate Change and Resource Security Initiatives, World Economic Forum, Hong Kong

In 2005, Shell established an External Review Committee (ERC) to help evaluate the quality and credibility of the annual sustainability report and to recommend improvements to our sustainability performance.

Members of the ERC come from a range of professional backgrounds, but they share the following expertise and experience:

- globally respected, independent, pragmatic in their approach;
- familiar with, and able to convey, the perspectives of Shell stakeholder groups or are experts in the main sustainability challenges that Shell faces;
- broadly representative of regions of strategic importance to Shell;
- reasonably familiar with the oil and gas industry, Shell, and related sustainability issues; and
- capable of adding fresh perspectives to Shell's thinking and reporting on sustainability.

Committee members are asked to serve for three years, with two or three new members appointed each year. This is long enough to develop the necessary understanding of the issues and process, without diminishing the independence or external perception of independence critical to the ERC's effectiveness. The intention is that the Committee should bring a balance of experience and perspectives.

ERC RECOMMENDATIONS IN 2014

Each year, the ERC is asked to present its independent opinion on the Shell sustainability report. Below is an example of some of the recommendations included in the ERC's letter in the Shell Sustainability Report 2014 and Shell's response. The ERC recommendations have been fundamental in shaping this current report. (See table).

REVIEW PROCESS

The Committee meets in person three times annually (in The Hague, the Netherlands), and on other occasions by teleconference. It holds meetings with Shell senior management, including Shell's Executive Committee, to discuss Shell's approach to sustainability and our reporting. When reviewing the sustainability report, the ERC focuses 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 interests?
- Has Shell provided sufficient information and access for the ERC to do its job effectively?

This review does not include the verification of performance data in the sustainability report, or the information on which the case studies in the report are based. Separately, the ERC provides Shell with its observations on the company's strategy and sustainability performance.

ERC RECOMMENDATIONS AND OUR RESPONSES

ERC recommendation in 2014	How Shell responded in the 2015 report	Pages
The ERC would like to see Shell disclose how the energy transition will further impact the company's business strategy, influence its targets and determine its future actions.	A dedicated section describing Shell's view and actions in relation to the energy transition has been introduced.	10 to 21
The ERC believes the report should more clearly describe how Shell's methane emissions compare to the studies performed, and the plans Shell has in place to reduce its methane emissions.	We have included more detail on our efforts to reduce our methane emissions and on our progress in reducing flaring.	27 and 28
In Nigeria, Shell's efforts to reduce theft and sabotage are clearly described in the report and demonstrate the company's commitment to improve operational standards, even in a challenging context. The ERC encourages Shell to further disclose its progress in this area.	A summary of our progress is included on the different aspects of spill remediation. It also highlights the safety and security challenges that our employees face, which slows the pace of this work.	24 and 25

To acknowledge the ERC's time and expertise an honorarium is offered, payable either to the individual members, their organisation or their charity of choice. They are also offered reimbursement for their expenses.

ERC OPINION

The External Review Committee (ERC or the Committee) is pleased to share its independent opinion on Shell's 2015 Sustainability Report (the report).

The ERC recognises that the report has improved considerably compared with previous years in both tone and content, with significant improvements in its structure, flow, design and readability. The ERC believes the report covers the issues most relevant to Shell and its stakeholders. It is helpful that the 2015 report includes a section summarising action taken on some of the issues identified in the 2014 ERC letter.

The ERC's engagement with Shell's senior leadership during the 2015 report cycle was well structured; this has enabled the ERC to better understand Shell's current thinking on its business strategy and sustainability. The report more clearly reflects the social and environmental challenges and opportunities facing the energy industry than in previous years, although the ERC feels there is further room for improvement.

ENERGY TRANSITION AND CLIMATE CHANGE

The report outlines Shell's approach to the energy transition and how it is preparing for the transition to a lower-carbon world. In our view, the report does not adequately convey the urgency of this transition in light of the 2015 Paris Agreement to keep the global temperature rise well below 2 °C above preindustrial levels and to pursue efforts to limit it to 1.5 °C. The ERC encourages Shell to disclose more precisely how its strategy aligns with this global ambition and to provide more disclosure on Shell's thinking on the role of natural gas (and other fossil fuels) beyond 2050.

In terms of technological choices, for example, the report outlines Shell investments in carbon capture and storage (CCS), transportation alternatives based on hydrogen and biofuels, and even renewables. Yet it is not clear whether these efforts are being pursued with the urgency and scale required to meaningfully shift Shell's operations in the timeframe implied by the Paris Agreement.

The ERC encourages Shell to more clearly articulate short- and medium-term (up to five years) and longer-term (five to 20 years) goals detailing a robust and comprehensive low-carbon transition strategy.

NATURAL GAS AND METHANE

The ERC welcomes the inclusion of a separate section on methane and the description of Shell's actions to control these emissions. As cited in the report, the IPCC estimates that methane makes up about 20% of man-made greenhouse gas emissions

on a CO₂-equivalent basis. The ERC also notes that the oil and gas supply chain from production, transmission and distribution is the largest industrial source of these emissions. In light of Shell's declared strategy to increase its focus on natural gas, the ERC believes that the report understates the magnitude of the climate problem posed by methane and the risk this represents to Shell. The report would benefit from greater clarity on how managing methane emissions and the related risks within its operations are reflected in Shell's business strategy.

In future reports, the ERC encourages Shell to include more detail on improvements undertaken in measuring and assessing emissions; the steps required to reduce these emissions including specific targets, and the role Shell is playing in advancing legal and regulatory policies that support methane reductions.

ALASKA

In recent years, the ERC has raised various questions about Shell's exploration work in Alaska, for example, urging Shell to communicate how different risk factors are considered in a balanced manner. The 2015 report explains that the ultimate decision to cease Alaska exploration was based on the failure to find hydrocarbons. The report also acknowledges the many challenges Shell experienced in respect of Alaska operations over the last few years, including the high operating costs, increased opposition from environmental groups and others, as well as the unpredictable regulatory environment. The ERC thinks it would help stakeholders to hear more about how the different financial and non-financial risk factors were considered over time and how the company will apply learning from Alaska to ongoing investments in the Arctic and other sensitive regions.

OIL SANDS

The ERC believes halting construction of the Carmon Creek oil sands project warranted additional explanation. Future reports might include further discussions on the evaluation and balance of technical and non-technical risks for controversial activities such as oil sands development. This could also include discussions on how Alberta's new oil sands emissions limits – which Shell publicly supported – may impact Shell's future operations.

NIGERIA

In 2015, Shell recorded seven fatalities in four separate incidents in their Nigeria operations. Once investigations are completed, the ERC urges Shell to disclose the measures undertaken to reduce the risk of future events.

The ERC appreciates the complexity of oil leak clean-ups in Nigeria, but encourages Shell to be more transparent in the timing of the remediation programme committed to by the Shell Petroleum Development Company of Nigeria joint venture to implement the United Nations Environment Programme report recommendations.

TARGETS AND GOALS

For several years, the ERC has encouraged Shell to include sustainability targets and goals in its reporting to demonstrate its long-term ambition and corresponding management focus. The ERC welcomes the inclusion of the new section on reporting against aspirations in the 2015 report which lists goals, performance and plans for 2016 and beyond. The ERC suggests that the report also provides information on the process and the criteria for selecting the reported aspirations, including their standing in Shell's materiality assessment. The ERC suggests that future Shell reporting includes a more comprehensive list of targets and goals, analysis of performance trends and action taken where performance is below target.

SOCIAL PERFORMANCE

The ERC acknowledges strong improvement in the clarity of reporting on Shell's social performance in the 2015 report. For example, the report makes a much clearer distinction between a rights-based approach to risk management and providing opportunities to local communities and other groups than in the past. Also, the detail provided on Shell community social investment efforts combines well with descriptions of the work of the Shell Foundation, providing a broader understanding of impact. The ERC hopes to see continuing emphasis in the report on this area, which can be strengthened further with more robust indicators and data related to social performance.

CONCLUSION

The Committee recognises the progress in the 2015 report, particularly the response to the ERC's recommendations from previous years. In future reports, the ERC would like to see a more strategic conversation on the role of fossil fuels as the world pursues efforts to limit global warming to 1.5 °C, and the challenges posed by volatility in the market price of oil. In the 2016 Sustainability Report, we anticipate commentary on the acquisition of BG Group and how this will impact Shell's sustainability strategy.

LINKS

Following is a list of links to find more information about topics included in the sustainability report.

INTRODUCTION

02	Topic selection for 2015	An overview of our work in sustainability: www.shell.com/sustainability
04	About Shell	An overview of Shell's business: www.shell.com/about
09	Embedding sustainability into projects	Information about our impact assessment process: www.shell.com/impactassessment

THE ENERGY TRANSITION

11	The energy future	Our work in cleaner energy, future transport, cities and the Shell Scenarios: www.shell.com/energyfuture
14	Addressing climate change	Shareholder resolution in 2015: www.shell.com/ghg
16	Natural gas	Our natural gas story: www.shell.com/naturalgas
18	Research and development	Areas of innovation: www.shell.com/innovatingtogether
19	Carbon capture and storage (CCS)	Our CCS projects: www.shell.com/ccs
20	Lower-carbon alternatives	Innovations in lower-carbon transport: www.shell.com/futuretransport

MANAGING OPERATIONS

24	Our activities in Nigeria	For more information about work in Nigeria: www.shell.com.ng
26	Tight gas and oil	Shell's onshore operating principles: www.shell.com/operatingprinciples
29	Oil sands	Oil sands information on water use, recycling, reclamation and our work with indigenous communities: www.shell.ca/oilsands

OUR PERFORMANCE

32	Safety	Our approach to transport safety: www.shell.com/roadsafety
36	Environment	Our greenhouse gas reporting: www.shell.com/ghg
41	Shell Foundation	Shell Foundation's Enterprise Solutions to 2030 report: www.shellfoundation.org/2030

WORKING TOGETHER

43	Living by our principles	The Shell General Business Principles and Code of Conduct: www.shell.com/values
45	Collaborations	Our Carbon Disclosure Project submission: www.shell.com/ghg
46	Contractors and suppliers	Supplier qualification criteria: www.shell.com/supplier/qualification
47	Joint ventures	Our work with partners featured in the Shell magazine, Shell World Joint Ventures: www.uae.shell.com/shellworldjointventure
47	Our people	Shell's history and purpose: www.shell.com/whoweare Our Shell global helpline: www.shell.com/globalhelpline
49	Tax and transparency	Our revenues for governments: www.shell.com/payments

DATA AND REPORTING

51	Our reporting	How we report our greenhouse gas emissions: www.shell.com/ghg
52/53	Environmental, social and safety data	Interactive data tables: www.shell.com/performance/data

REPORT SPECIFICATIONS

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- Detailed operational information including maps
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