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

**HIGHLIGHTS IN 2017**

- We started working with nature-based projects to compensate for greenhouse gas emissions while improving the livelihoods of local communities and preserving biodiversity.
- We recorded our lowest volume of operational spills.
- The Australian government approved a biodiversity offsetting plan from the Shell-operated QGC gas project.

We aim to comply with all applicable environmental regulations, continually improve our performance and prepare for future challenges and opportunities. We use external standards and guidelines, such as those developed by the World Bank and its International Finance Corporation, to inform our approach.

Our global environmental standards include requirements for 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.

When planning new projects, we carry out detailed assessments of the potential environmental, social and health impacts. These assessments help us manage and reduce impacts on the environment and communities during construction, operation and, when relevant, decommissioning.

As a member of the Natural Capital Coalition, we also continue to follow and contribute to work on the evolving concept of natural capital – the value of nature to people, society, businesses, and the economy. This helps us to better understand its potential applications.

Read more about Shell and the environment.

**BIODIVERSITY**

We seek to understand and respond to any potential impacts our activities may have on biodiversity or ecosystem services. This covers the benefits that people or businesses derive from ecosystems, such as food and clean water.

In our projects and operations, our primary aim is to avoid impacts on biodiversity and ecosystem services. Where avoidance is not possible we aim to minimise our impact. Where our operations have affected biodiversity and the communities who rely on biodiversity for their livelihoods, we take measures to help restore habitats or ecosystems. We look for opportunities to make a positive contribution to biodiversity conservation in the communities where we operate.
To help us improve our environmental performance, including protecting biodiversity, we work with scientific and conservation organisations around the world. For example, at our Stones deep-water project in the Gulf of Mexico, we share deep-water data with marine scientists.

We develop biodiversity action plans when operating in areas that are rich in biodiversity, known as critical habitats, to assess and mitigate our impact on local biodiversity and dependent communities.

**BIODIVERSITY IN AUSTRALIA**

In 2017, the Australian government approved a biodiversity offsetting plan from the Shell-operated QGC gas project which included protecting an area with a rich ecosystem.

QGC had acquired the Valkyrie property in 2015 as a biodiversity offset to compensate for clearing vegetation and habitat for the development of gas resources. It is located next to the Dipperu National Park and contains large areas of eucalyptus woodlands, endangered brigalow woodlands, semi-evergreen vine thickets, riparian vegetation and wetlands.

The Valkyrie property provides a refuge for fauna. It will help to regenerate endangered ecosystems and can be used for nature-based carbon storage and ecological research.

**WATER**

The availability of fresh water is a growing challenge in some parts of the world. Increasing demand for water resources, growing community expectations, and water-related legislation might affect our ability to secure access to fresh water and to discharge water from our operations.

We design and operate our facilities to help reduce their fresh water use. We manage our water use carefully, and we tailor our use of fresh water to local conditions because water constraints affect people at the local or regional level.

In water-scarce areas, we develop water management plans for our facilities. These plans describe the long-term risks to water availability and define measures to minimise our use of fresh water or recommend alternatives to fresh water, such as recycled water, processed sewage water and desalinated water.

We work together with organisations, such as the World Business Council for Sustainable Development (WBCSD) and IPIECA, the global oil and gas industry association for environmental and social performance. For example, we contributed to WBCSD’s publication and case studies on circular water management, published in 2017.

We manage our water use carefully, and we tailor our use of fresh water to local conditions because water constraints affect people at the local or regional level.

**WATER RECYCLING IN TEXAS**

Shell has taken steps to improve water recycling in one area of the Permian shale asset in west Texas, USA. Previously, we transported groundwater used for hydraulic fracturing through a 21 kilometre pipeline due to limited local water supply in this area. Since late 2016, we have replaced about 40% (or around 0.37 million m$^3$) of this water by recycling produced water near a new development area. Permian now reuses produced water sourced from three saltwater disposal facilities.

**WATER MANAGEMENT**

We develop technologies to treat, reuse and recycle water from our operations so that we can manage our water footprint in a responsible way while meeting environmental standards.

Where appropriate, we look for ways to treat water from our operations using natural solutions such as constructed wetlands. At our research and technology centre in Doha, Qatar, we run a pilot programme to evaluate the effectiveness of constructed wetlands in removing various chemical components found in the gas field waste water. Tests over the past two years have shown the technology is feasible and we are now testing other waste-water streams for treatment.

At the Petroleum Development Oman (PDO, Shell interest 34%) joint venture operations in the Omani desert, the Nimr reed beds are used to naturally clean the water that is extracted alongside oil production. PDO is also investigating the potential of using some of the water to irrigate crops that are tolerant to high levels of dissolved salt.

Read about our fresh water use in 2017 in the Environmental performance section.

Read more about Shell and water.
MANAGING WASTE
We aim to reduce the amount of waste we generate and to reuse or recycle materials, wherever possible. For example, in 2017, seven of our downstream manufacturing sites sent more than 50% of their waste generated during the year for recycling or reuse. Of these seven, four sites sent more than 80% of their waste for recycling and reuse.

We determine if waste is hazardous to ensure it is managed properly. In Tunisia, we addressed a long-standing challenge to responsibly dispose of a significant volume of solid sulphur waste that we had stored on site due to the lack of disposal facilities for this waste in North Africa that met international standards. After studying potential disposal options, we transferred the solid sulphur to an international standard disposal facility in Norway for final disposal.

Read more about Shell and managing waste

RECYCLING MANUFACTURING WASTE IN THE USA
In Michigan, USA, where we make catalysts for refineries and chemical plants, we now recycle waste from the manufacturing site by sending it to a local company for use in the production of cement. We previously sent the waste to a landfill but it now forms a component to make clinker, an ingredient in the process of making Portland cement. The initiative has significantly reduced our volume of waste and reduced costs.

SOIL AND GROUNDWATER
We assess and carefully manage the risks of potential soil and groundwater contamination. We also conduct scientific research on the risks of contamination from petroleum activities and share our findings with government agencies to support the development of environmental guidelines.

In China, for example, local and national environmental regulations are emerging in response to rapid urbanisation and the government’s aim to return significant portions of contaminated land to productive use. In 2017, we shared our expertise in managing land contaminated by oil and gas activity to help Chinese regulators and research institutes develop comprehensive sustainable, risk-based approaches.

PRODUCT STEWARDSHIP
Product stewardship at Shell means protecting employees, customers, communities and the environment from potential hazards caused by our products when they are manufactured and used.

We work to understand and communicate the potential health, safety and environmental impacts of the products Shell makes to ensure they are managed responsibly throughout their life cycle, from production to final disposal or reuse.

We ensure this by:
- checking the safety of all our products and assessing their potential harmful effects;
- assessing how suitable the products are for each market;
- communicating the hazards and risks of our products; and
- complying with applicable regulations.

Before we decide to sell a product in a new market, we assess the risks of using it in a new way, and the applicable regulatory requirements. This enables us to manage the risks posed by a product, and even to selectively choose whether to participate in certain market end-uses based on those risks.

We communicate the potential hazards associated with products through product labelling and safety data sheets. These documents explain how to safely manage the products.

We also monitor changing regulations in countries where we manufacture, sell or import products.

Here you can access our safety data sheets.

You can also read more about our product stewardship, as well as understand our commitment to animal welfare in relation to product safety testing in our annual reports.
ENVIRONMENTAL PERFORMANCE

We improved or maintained our environmental performance across many business areas during 2017. This was due to operational improvements as well as reduced activities at some of our facilities and divestments. Details about our environmental performance are provided below and in the Greenhouse gas emissions, Managing methane emissions and Flaring sections.

MANAGING WATER USE

In 2017, our intake of fresh water was 201 million cubic metres, about the same as 2016. Around 80% of our fresh water consumption was used for manufacturing oil products and chemicals, with the balance mainly consumed in oil and gas production. Around 40% of fresh water intake was from public utilities such as municipal water supplies.

Fresh water withdrawn

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Fresh water consumed

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<tr>
<th>Million cubic metres</th>
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| 100  
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| 300  

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.

The volume of operational spills of oil and oil products in 2017 was 0.3 thousand tonnes, a decrease of around 60% from 2016. The number of operational spills increased to 99 from 72 in 2016. We have programmes in place to improve the long-term trend for the number of operational spills (See 10-year data table).

The number of spills caused by sabotage and theft increased to 62 from 49 in 2016. The volume of these spills decreased to 1.4 thousand tonnes in 2017 from 3.9 thousand tonnes in 2016. Sabotage and oil theft remained a significant cause of spills in the Niger Delta, Nigeria.

In 2017, we also recorded four spills of 0.3 thousand tonnes in total caused by the hurricane Harvey in the USA.

We investigate and learn from all spills to improve our performance and we clean up the areas around our operations that are affected by spills, irrespective of the cause. As of the end of March 2018, there were 3 spills under investigation in Nigeria that may result in adjustments to our figures.

ENERGY EFFICIENCY

Improving the energy efficiency of the facilities we operate is one of the ways we manage our greenhouse gas (GHG) emissions. The main metric is energy intensity, the amount of energy consumed for every unit of output.

Shell-operated facilities and proposed projects that generate more than 50,000 tonnes of GHG emissions a year are required to produce a GHG and energy management plan with annual updates.

These plans must include the sources of GHG emissions, as well as a forecast of expected emissions at the site for at least 10 years, and must identify options for improving energy efficiency or reducing emissions.

Some of the ways Shell improved energy efficiency include making our equipment more reliable through regular maintenance, by smart scheduling of maintenance activities or by installing more energy-efficient equipment.

The overall energy intensity index of our chemical plants and refineries in 2017 was similar to the year before: our chemical plants improved to 88.2 in 2017, from 91.0 in 2016 and our refineries improved to 94.8 in 2017 from 95.4 in 2016.
We aim to achieve superior energy-efficiency performance at our 17 operated refineries and chemicals plants and each site has a CO₂ and energy-management plan. We invest in combined heat and power units and implement heat integration and waste gas recovery systems. We exchange steam turbine drives with electrical motors and replace end-of-life equipment with higher-efficiency types. We have incorporated top-quartile energy-efficiency technology into the design of our new-build chemicals plant in Pennsylvania, USA.

In 2017, the overall energy intensity for the production of oil and gas in our Upstream and Integrated Gas businesses (excluding liquefied natural gas and gas-to-liquids) increased slightly compared with 2016, mainly due to lower production from the NAM joint venture (Shell interest 50%) in the Netherlands. We expect it will be difficult to maintain the energy intensity 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.

OTHER 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. We evaluate and take action to mitigate potential adverse impacts of our emissions.

Our sulphur oxides emissions in 2017 remained relatively flat at 81 thousand tonnes compared with the previous year (83 thousand). A decrease in emissions due to divestment of Port Dickson refinery in Malaysia in 2016 was offset by higher emissions from the Bukom site in Singapore.

Our nitrogen oxides emissions decreased from 122 thousand tonnes in 2016 to 107 thousand tonnes in 2017. The decrease was mainly due to the change in oil sands mining reporting boundary and changes in calculation methodologies at some of our facilities (for example in Australia to align with regulatory methodologies).

Our emissions of volatile organic compounds (VOCs) decreased to 95 thousand tonnes in 2017 compared with 146 thousand tonnes in 2016. This was mostly due to a decrease of venting at our facilities 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.

We track emissions released by our facilities and work to reduce air pollution from our operations. We have technologies and work practices in place to help find and address unintended emissions in our operations and we also implement reduction programmes.

GREENHOUSE GAS EMISSIONS
Shell tracks emissions released by our upstream and downstream facilities and works to reduce air pollution from our operations.

We report our greenhouse gas (GHG) emissions in line with the recommendations of the Intergovernmental Panel on Climate Change. Shell’s Health, Safety, Security, Environment and Social Performance (HSSE&SP) Control Framework defines standards and accountabilities at each level of the organisation, and sets out the procedures people are required to follow. For example, our environmental standards include the requirement that all Shell-operated facilities that generate more than 50,000 tonnes of GHG emissions have GHG and energy management plans.

OUR PERFORMANCE
Our direct GHG emissions increased from 70 million tonnes carbon dioxide (CO₂-equivalent) in 2016 to 73 million tonnes CO₂-equivalent in 2017. Our 2016 base year GHG emissions did not change by more than 5% in 2017 and therefore the base year has not been recalculated.
The main reasons for the overall increase in our GHG emissions were the inclusion in our data from May 2017 of the facility previously operated by the Motiva joint venture in the USA and the return to production of previously shutdown units at the Bukom site in Singapore. These increases were partly offset by divestments (for example in Canada, Gabon, Malaysia and the UK) and reduced production at our Pearl gas-to-liquids (GTL) plant in Qatar.

In 2017, around 50% of our direct GHG emissions came from our refineries and chemical plants. The production of oil, gas and GTL products accounted for around 45% of our GHG emissions, and our shipping activities accounted for around 2%. We continue to work on improving operational performance and energy efficiency to manage GHG emissions.

The indirect GHG emissions associated with the generation of the energy we purchased (from electricity, heat and steam) were 12 million tonnes on a CO2 equivalent basis in 2017 compared with 11 million tonnes CO2 equivalent in 2016. The increase is mainly due to the inclusion of former Motiva refineries and a rise in production at our QGC facilities in Australia. 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 by others were around 579 million tonnes in 2017, which represents less than 2% of the world’s emissions.

(See more on www.shell.com/ghg)

MANAGING METHANE EMISSIONS
Methane is a more potent GHG than CO2. It has 34 times the global warming potential of CO2 over a 100-year time frame, according to the UN Intergovernmental Panel on Climate Change Fifth Assessment Report.

We have a range of technologies and work practices in place to help find and address unintended – or fugitive - methane emissions in our operations. We also implement energy-efficiency measures, as well as flaring and venting reduction programmes. Our Methane Fact Sheet provides a comprehensive account of our voluntary initiatives to reduce methane emissions. Actions to further reduce our emissions will continue to be a focus in coming years.

HIGHLIGHTS IN 2017
- We joined the Oil and Gas Methane Partnership, a global voluntary methane emissions reduction programme under the Climate and Clean Air Coalition.
- We launched our latest methane detector pilot at our oil and gas exploration asset in Alberta, Canada.
- Shell and seven energy companies agreed to guiding principles to further reduce methane emissions from their natural gas assets.

In our onshore unconventional operations, we regularly use leak detection and repair (LDAR) programmes, which have infrared cameras to help identify fugitive leaks. We use LDAR in Australia, Canada, the Netherlands, Trinidad and Tobago, Tunisia and the USA, among others, and will continue to extend this approach across our operations.

COLLABORATING ON EMISSIONS REDUCTION
In January 2017, we joined the Climate and Clean Air Coalition Oil & Gas Methane Partnership, which brings together industry, governments and non-governmental organisations to improve understanding of methane emissions and work to reduce them. Later in the year, we submitted a detailed plan of our operations that will initially participate in the partnership.

As a member of the Oil and Gas Climate Initiative (OGCI), we are working with experts to improve methane data collection and our understanding of the natural gas life cycle. Shell is working with governments, the oil and gas sector and regulators, to manage methane emissions effectively. We advocate government policies that will support the reduction of methane emissions across all sectors of the economy.

In October 2017, OGCI members committed to a range of measures including establishing a methodology to improve the collection, verification and reporting of methane emission data in 2018. We actively test new technologies in this area through our membership of OGCI Climate Investments. This collaboration, launched in 2016, will invest $1 billion over 10 years in low-carbon technologies.
Shell is working with industry, as well as international institutions, non-governmental organisations and academia, to make progress on improving methane management. In November 2017, Shell and seven energy companies signed guiding principles for reducing methane emissions across the natural gas value chain, from production to the final consumer.

In December 2017, Shell joined the Environmental Partnership in the USA, which requires companies to apply voluntary methane reduction measures in areas such as leak detection and the repair, replacement or upgrade of equipment. The partnership was developed by American Petroleum Institute (API) and includes 25 of its members — companies that account for around a quarter of gas production in the USA. Non-API members can also sign up to the partnership.

We have participated in the EPA Natural Gas STAR programme for many years. This programme encourages oil and gas companies to adopt technologies and practices that reduce methane emissions.

We also collaborate on research with Eurogas, the association representing the European gas industry, and the Natural and Bio Gas Vehicle Association, on methane emissions in the gas supply chain in Europe.

**Rocky Mountain House pilot**

In June 2017, Shell launched a methane detector pilot at our Rocky Mountain House project in Canada. The pilot is part of the Methane Detectors Challenge, which is a collaboration between the Environmental Defense Fund, oil and gas companies, US-based technology developers and other experts.

**OUR PERFORMANCE**

In 2017, our total methane emissions were 123 thousand tonnes. Methane emissions contributed less than 5% of Shell’s GHG emissions on a CO2-equivalent basis. More than 60% of our reported methane emissions in 2017 came from flaring and venting in our upstream and midstream operations.

We report our methane emissions in accordance with applicable regulations and industry standards. We also engage in industry-wide work on developing more accurate reporting methods, such as through IPIECA, the global oil and gas industry association for environmental and social issues.

**FLARING**

The flaring of natural gas wastes valuable resources and contributes to climate change. We are working hard to reduce flaring associated with oil and gas production.

When oil is extracted from a reservoir, gas is also produced as the oil is brought to the surface. This is known as associated gas. This gas can be captured and used alongside the oil. When there are no facilities to gather the gas, or they have insufficient capacity, it is sometimes flared, or burned off. Flaring is also carried out for safety reasons to relieve pressure in the production system.

Shell’s policy is to reduce any routine flaring or venting of associated gas at our operations to a level as low as technically and economically feasible. We also aim to minimise operational flaring required for safety reasons such as during the startup of a new facility. Our flaring policy is set out in our Health, Safety, Security, Environment and Social Performance (HSSE&SP) Control Framework. It includes the requirement that all facilities must be designed to export, use or reinject associated gas and that all facilities have to meet strict performance criteria.

Shell has been an active member of the World Bank-sponsored Global Gas Flaring Reduction partnership since 2002. This public-private partnership helps reduce flaring by working collaboratively to find alternative uses for gas that would otherwise be flared. As part of the partnership, the World Bank has developed the Zero Routine Flaring by 2030 initiative, which Shell signed in 2015. This encourages governments, companies and development organisations to work together to end flaring. The initiative aims to identify ways to use gas from oil production – for example, to generate electricity for local communities.

**OUR PERFORMANCE**

Flaring of gas in our Upstream and Integrated Gas businesses contributed around 11% of our overall direct GHG emissions in 2017. Almost half of this flaring took place at facilities where there was no infrastructure to capture the associated gas.

Close to 80% of flaring from Shell-operated assets in 2017 occurred in Iraq, Nigeria, Malaysia and Qatar. Our flaring increased by slightly less than 10% from 7.6 million tonnes in 2016 to 8.2 million tonnes in 2017. This was primarily a result of increased production in Nigeria following the return to production of fields previously closed due to security issues. Work continues to bring additional gas gathering facilities online in Nigeria to reach our goal of no routine flaring by 2030.

In Iraq, the Majnoon facilities (Shell interest 45%) captured about 44% of associated gas that otherwise would have been flared in 2017. The gas was exported to a local power plant for electricity generation.

Basra Gas Company (BGC, Shell interest 44%) is a non-operated joint venture with Iraq’s South Gas Company and Japan’s Mitsubishi. It captures gas that would otherwise be flared from three non-Shell-operated oil fields in southern Iraq (Rumaila, West Qurna 1 and Zubair) for use in the domestic market. In 2017, BGC processed an average of 676 million standard cubic feet of gas each day from these fields to produce electricity.

These projects are helping to improve the power infrastructure of the country and deliver much-needed energy to the population. They involve collaboration with the Iraqi government, joint-venture partners, domestic companies and non-governmental organisations.
Nigeria
In Nigeria, flaring from Shell Petroleum Development Company’s (SPDC) joint-venture (Shell interest 30%) facilities fell by close to 90% between the start of the programme in 2002 and 2017. This reduction was mainly due to investing in associated gas gathering and processing facilities that capture the associated gas and commercialise it for either the domestic or export market. Divestments also resulted in a further reduction. However, flaring intensity levels from SPDC JV facilities increased in 2017, mainly due to the restart of facilities that were offline in 2016.

SPDC supports the elimination of routine flaring as quickly as practical. However, to do so requires significant investment in gas-gathering and processing facilities or the stoppage of associated oil production which generates revenue for the Nigerian economy. Several new gas-gathering projects came on stream at the end of 2017 however, the planned startup dates for two gas-gathering projects have historically been delayed due to a lack of adequate joint-venture funding. Nevertheless, with funding now restored the projects are planned for completion in 2018-19.

Malaysia
In Malaysia, associated gas flaring at the Gumusut (Shell interest 29%) and Kikeh fields was eliminated by introducing a system in 2016 that injects gas back into the hydrocarbon reservoir. In 2017, the system worked as expected and production from the oil field was maximised.

Qatar
In Qatar, at our Pearl gas-to-liquids plant (Shell interest 100%), flaring takes place for operational reasons. In 2017, further enhancements to the plant were made to reuse more waste gas. (See Natural gas).

Flaring – upstream

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[A] includes Upstream and Integrated Gas.

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

HIGHLIGHTS IN 2017

- Following work by a Shell led task force, the International Association of Oil & Gas Producers published recommended practices for addressing safety risks at fabrication sites, which have now been adopted for all Shell projects.
- We recorded the lowest ever injuries per million working hours – the total recordable case frequency.
- We also achieved the lowest ever level of injuries that led to time off work, measured as lost time injury frequency.

PERSONAL SAFETY
Everyone who works for us, or with us, has an important part to play in making Shell a safer place. We aim for a safety culture that goes beyond compliance to one where people feel listened to and cared for and comfortable raising concerns.

We run an annual safety day that gives our employees and contractors the opportunity to learn how they can manage the safety hazards in their work and share ideas with each other. Conversations in 2017 focused on the three themes of care, dilemmas and avoiding becoming complacent about everyday risks.

PROCESS SAFETY
Process safety management is about keeping our hazardous substances in pipes, tanks and vessels so they do not cause harm to people or the environment. It starts with designing and building projects and is implemented throughout the life cycle of these facilities to ensure they are operated safely, well-maintained and regularly inspected.

Read about our process safety performance in 2017.
PROCESS SAFETY FUNDAMENTALS
In 2017, we launched a set of fundamental rules for process safety tasks to enable employees to prevent the release of hazardous materials. These rules help us carry out tasks that are critical for operating safely.

They are based on the process safety operating practices rolled out across our manufacturing business in 2016. By the end of 2017, the number of process safety events related to operational integrity in this business fell by around 30%.

10 process safety fundamentals

- Always use two barriers for hydrocarbon and chemical drains and vents
- Do not leave an open drain or critical transfer unattended
- Take interim mitigating measures in case of failure of Safety Critical Equipment
- For all defined high-risk activities, follow the procedures and sign off after each step
- Walk the Line – Verify and validate any line up change

- Do not make a change without a proper Management of Change
- Verify for complete tightness after maintenance work
- Always check that equipment is pressure free and drained, and provides safe isolation before starting maintenance work
- Perform Management of Change and install backflow protection when connecting utilities to process
- Respond to critical alarms

TRANSPORT SAFETY
Moving large numbers of people, products and equipment by road, rail, sea and air brings safety risks with it. We work closely with specialist contractors and industry bodies to reduce risks.

We have taken proactive steps to improve safety in shipping, for example, working with our global shipping and maritime partners on a programme to improve the quality and consistency of their safety management and on tools to help learn from incidents. In 2017, we carried out around 400 vessel visits to engage mariners on safety and to understand how to implement the programme better in future.

Road traffic accidents claim around 1.25 million lives every year, according to the World Health Organization. Shell employees and contractors drive a combined distance of around 650 million km each year in more than 70 countries. We run road safety programmes, such as our mandatory defensive driving course, which teaches safe techniques and behaviour.

We require everyone driving more than 7,500 km a year on company business and those who drive in high-risk countries to take the in-vehicle defensive driving course. In 2017, 2,900 people completed the course.

Outside our operations, we also work to improve road safety in several communities and countries where we operate.

Our performance indicators report on personal and process safety in line with industry standards. Outside our reporting scope and therefore not reflected in these indicators is a devastating road-tanker incident that occurred in Pakistan in June 2017. A tanker, operated by a contractor, was transporting fuel from the Shell Pakistan Limited oil terminal in Karachi to Vehari when it overturned in the central Punjab province resulting in a fuel spill. Following the accident, people from a nearby village approached the site to collect the fuel spilling from the tanker. Tragically, the fuel ignited and more than 200 people died and more were injured. Shell Pakistan Limited is implementing a long-term relief plan for those impacted.

Read about our transport safety performance.

ROAD SAFETY IN MYANMAR
In Myanmar, Shell helped launch a road safety campaign in 2017 to educate drivers and the communities along the Yangon-Naypyidaw highway, a road known for its high accident rate. We ran this in partnership with the Myanmar Red Cross Society and the Global Road Safety Partnership.

The programme also teaches children and adults about safe road use, as many drive motorbikes or are pedestrians along the high-speed expressway. More than 6,000 people participated in the workshops in 11 villages. We also launched a nationwide online awareness campaign.
ROAD SAFETY IN THE PERMIAN BASIN

We have taken proactive steps to improve road safety around the Permian Basin, in Texas, USA, where we have significant shale acreage. Rising oil and gas production activity in recent years has led to increased traffic and more serious accidents and fatalities. In 2015, around 200 people were killed in road accidents in 15 counties, accounting for around 33% of all fatalities reported in Texas.

In June 2015, Shell led the formation of the multi-stakeholder Permian Road Safety Coalition. The coalition has worked to improve road infrastructure and best practice on road safety for oil and gas companies operating in the area. It has also called for funding from local and state governments and rolled out an annual public education and awareness campaign. In 2016, 118 people were killed in road traffic accidents across the 15 counties.

EMERGENCY PREPAREDNESS AND RESPONSE

We make sure that we have the necessary resources to deal with spills, leaks, fires and explosions. We regularly test our oil-spill and emergency response procedures and capability to ensure employees and contractors can respond rapidly to an incident.

In 2017, we trained around 2,000 employees in six large-scale exercises to test different response scenarios to potential oil spills at refineries, offshore wells and vessels. All the exercises involve our emergency response contractors and the local authorities. One simulation exercise in The Hague, the Netherlands, for example, focused on a large marine oil spill. Part of the emergency response for the 200 trainees involved mobilising deep-water equipment to cap the leaking well and then collect the oil in a vessel.

During drilling operations, we gather and analyse information about wells to better understand the geology of the area. Pressure and temperature sensors track conditions in real time so that we can immediately detect any changes. Shell-operated drilling activities are monitored from a global network of onshore operating centres which allows oversight and timely technical support.

Internal voice: “We pooled the industry’s best technology and ideas to improve well safety”

The Subsea Well Response Project is a unique group of nine oil and gas companies that came together following the BP Macondo incident in 2010 to prevent any occurrence of this kind happening again. It has pooled the best technologies, ideas and plans from all the companies involved. In 2017, we saw the culmination of these efforts with the delivery of a new set of containment hardware called Offset Installation Equipment.

One of the challenges we faced was that as a group of nine companies, we were not all aligned on how much effort would be required. We broke the process down into smaller steps, first agreeing to invest in capping stacks, which created time and space to work on the feasibility for a containment solution that could be supported by all the companies. As containment reached its investment decision, we continued working in parallel to mature a solution to cap shallow water wells: the Offset Installation Equipment.

I am very proud of what the project achieved, but there is still a significant responsibility on everyone involved to use this equipment properly to prevent future incidents.

Arne Kolle
Subsea Well Response Finance Manager, Stavanger, Norway
**HURRICANE HARVEY EMERGENCY RESPONSE**

In August 2017, Hurricane Harvey forced Shell to safely shut down the Shell Deer Park manufacturing complex, shut in deep water Gulf of Mexico facilities and temporarily close the Houston Lubricants plant. Many pipelines were down or had reduced feeds and several facilities in the region suffered supply issues. It was critical to get Shell facilities safely back online and to supply our customers.

We sent response teams to remote locations to provide much-needed support to staff and residents in the region. Among several other contributions made by Shell and staff, we donated $1 million to the Hurricane Harvey disaster relief fund of the American Red Cross and provided office space for people involved in the response.

**RAISING INDUSTRY STANDARDS**

We share our safety experience and standards with other operators, contractors and professional organisations, including the International Association of Oil & Gas Producers (IOGP).

In 2017, IOGP published recommended practices for addressing safety risks at fabrication sites. Shell led the task force within the IOGP which developed these recommended practices and is now working on a set of enabling activities and a resource library to support their implementation. From June 2017, we adopted recommended practices at all Shell projects.

In 2017, together with several South Korean shipyards, we developed a set of common safety practices that are being implemented at all fabrication yards in the country.

Shell’s Prelude floating liquified natural gas facility and the Appomattox hull, our deep-water development in the Gulf of Mexico, were both built in South Korea.

**APPOMATTOX**

The Appomattox development is a cornerstone of our global deep-water strategy. The hull was completed and arrived in Texas, USA in 2017. Construction of the host platform and fabrication of undersea infrastructure is now under way and Appomattox is on track for first oil by the end of the decade.

Appomattox is one of Shell’s first major projects to implement construction site safety standards, a precursor to the IOGP’s recommended safety practices for fabrication site construction. These standards are being applied by all of Appomattox’s major fabrication and installation contractors. They address key construction safety hazards such as dropped objects, working at height, lifting and hoisting, and confined space entry. They also provide a framework of activities for health, safety, security and environment leadership, care for the workforce, training, and upfront planning.

Since 2014, executives from Shell have partnered with chief executive officers of major contractor partners to identify strategies and practical steps to improve the safety culture and achieve our Goal Zero ambition of no harm and no leaks, including driving standardisation together. The initiative now includes 18 contracting companies.

Shell will also deploy an advanced well-capping stack for Appomattox, allowing us to quickly shutdown operations in the unlikely event of a spill.

**WORKING WITH OUR CONTRACTORS**

We work with our contractors to ensure they understand our safety requirements and together we build skills and expertise to improve safety performance.

Since 2014, executives from Shell have partnered with chief executive officers of major contractor partners to identify strategies and practical steps to improve the safety culture and achieve our Goal Zero ambition of no harm and no leaks, including driving standardisation together. The initiative now includes 18 contracting companies.

**SHARING OUR RESILIENCE PROGRAMME**

Resilience is about working through difficult experiences and having the ability to bounce back quickly.

Our contractor partners Subsea 7 and Heerema Marine Contractors, together with four other engineering and construction firms, have developed a series of training videos on resilience for offshore crews based on Shell’s resilience programme. The International Marine Contractors Association is now adopting the approach and making it available to all contractor members from 2018.

Our programme improves not only employee resilience, but employee engagement as well. Shell data show a correlation between engagement and safety performance: a 1% increase in engagement can result in a 4% improvement in safety performance.
SECURITY
Managing security risks is part of our effort to protect our staff, contractors, nearby communities and the environment.

In line with our goal of no harm to people, we carefully assess the security threats and risks to our operations. We work with governments and partners to safeguard our facilities and projects and provide a secure working environment for our employees and contractors. Shell only uses armed security in countries where the threats are most severe, or if it is a requirement under local laws.

SECURITY AND HUMAN RIGHTS
We continuously work to maintain the safety, security and human rights of our employees, contract staff, and local communities. The Voluntary Principles on Security and Human Rights (VPSHR) are implemented across Shell operations where there are identified threats of infraction. Shell continues to play an active role in the Voluntary Principles Initiative (VPI), and in 2017 was the chair of the Corporate Pillar, and a member of the steering committee, working with other partners on the initiative to advance security and human rights implementation.

As part of our internal implementation efforts, we include VPSHR clauses in our private security contracts and raise the principles in our engagements with public security forces. We carry out annual risk assessments and develop plans to manage the identified risks. In Tunisia, for example, we trained private security providers on VPSHR and human rights. In Nigeria, we continued to work with a third-party human rights institute to deliver human rights training to our operational teams. For more details on our implementation, please see our VPSHR report.

SAFETY PERFORMANCE
PERSONAL SAFETY
In 2017, following steady and significant improvements in our safety performance over the past decade, the number of injuries per million working hours – the total recordable case frequency – further improved compared with 2016 and was the lowest ever. We also achieved our lowest ever level of injuries that led to time off work in 2017, measured as lost time injury frequency.

Our fatal accident rate – the number of fatalities per 100 million working hours – decreased in 2017 to the lowest ever level, but we still need to do more in this area. Regrettably, two people lost their lives while working for Shell in 2017.

Process safety
In line with industry standards, we measure and report according to the significance of the incidents, with Tier 1 as the most significant. In 2017, our process safety performance deteriorated. The number of Tier 1 and 2 operational process safety events increased from 146 to 166, of which 49 were Tier 1 and 117 were Tier 2.

In 2017, the most significant operational incidents were fires at our Enchilada offshore platform in the USA and Pulau Bukom manufacturing site in Singapore. All businesses are working hard to return to the positive trend of previous years.

Process safety events related to sabotage and theft in Nigeria are recorded separately. There was an improvement during 2017 with fewer incidents: 9 Tier 1 and 0 Tier 2 events, compared to 20 Tier 1 and 0 Tier 2 in 2016.

Transport and road safety
We sadly recorded one road fatality in 2017, when one of our contractors was fatally injured in an accident while driving between sites in the Gold Creek area in Canada.
Social Performance plays a key role in delivering Shell’s business strategy at the community level. Building strong relationships with people, understanding their priorities and concerns and managing our impact on them are essential to being a responsible company.

**HIGHLIGHTS IN 2017**
- We made significant progress towards completing the resettlement of families in the village of Berezovka in Kazakhstan.
- We registered archaeological finds with the Iraqi government in our role as the operator of the Majnoon oil and gas field, a site of rich cultural heritage.

Our projects and operations can impact our neighbours. Our social performance team, working with environmental specialists, assesses and manages the impact of Shell’s business to ensure that work is carried out in a responsible way. The team also contributes to building skills in the communities where we operate by supporting education and training programmes, and by encouraging the development of local businesses.

We apply local laws and the principles of international law in our work. Shell’s Control Framework uses international standards as benchmark, such as those set out by the International Finance Corporation.

We assess and manage the potential social impact of our projects as part of integrated environmental, social and health impact assessments. Our engagement is essential to identifying how we might impact people and to helping us design and apply impact monitoring and mitigation measures.

In Alberta, Canada, at the Shell Scotford complex, we consult local people who may be affected by our activities and find ways to address their specific issues. For example, in 2017 the Scotford team discussed with a local farmer how to minimise unwanted snow melt and rainwater that were running off a Shell well pad at our carbon capture facility. These discussions led to a project that will divert the water and ensure the landowner’s crops do not get water-logged.

At the end of a project’s life cycle, we take great care with decommissioning. In 2017, after we decided to exit the Jinqiu tight gas exploration project in Sichuan province, China, we worked closely with local farmers to ensure that drill sites were restored to productive arable use, and we used recycled project materials to pave a local road and build irrigation systems for eight communities.

**COMMUNITY FEEDBACK IN 2017**
Shell’s network of around 100 community liaison officers act as a bridge between the local community and the project or asset. We have implemented community feedback mechanisms at all of our operations and projects to receive, track and respond to questions and complaints from community members. This enables us to capture and resolve concerns quickly in a transparent way, and to track our performance.

Several of our exploration locations off the coast of Colombia include Afro-descendants and Wayuu and Arahuacos indigenous groups whose main livelihood is fishing using traditional methods. We identified them as vulnerable communities and recognised that we could impact their way of life or that they could impact our operations.

We have worked to better understand the cultural norms and socioeconomic needs of the region, with three Shell employees staying with communities over the last five years.

The fishermen and women reported that they often lost colleagues at sea or were frequently injured in fishing trips. Together, we evaluated the causes and frequency of the accidents and identified ways to improve safety and prevent the most serious incidents. We also provided the communities with equipment, including GPS navigation, boats and motors. Overall, 800 people were involved in the programme. You can read more about our work with these communities on www.shell.com.
RESSETLEMENT

Our operations sometimes require temporary or permanent access to areas of land or sea where people are living or working. Where resettlement is unavoidable, we work with local communities to help them relocate and maintain, or improve, their standard of living. If necessary, we help support them as they establish alternative livelihoods.

As a result of the BG acquisition, Shell became joint operator of Karachaganak Petroleum Operating BV (KPO, Shell interest 29.25%) in Kazakhstan. In 2015, the government approved an expansion of the safety perimeter around the Karachaganak field, which required two villages to relocate. Led by the regional government and funded by KPO, around 464 families from these villages were resettled in line with international best practice.

In late 2015, the first 82 families were successfully resettled. The second phase of resettlement was nearly completed by the end of 2017 and we are working with the government to ensure that the remaining 382 families in the village of Berezovka have comparable or better housing and that their livelihoods are restored. Read more about the resettlement and the positive impact it has had on local residents’ lives.

INDIGENOUS PEOPLES

Our activities in certain parts of the world affect indigenous peoples who hold specific rights for the protection of their cultures, traditional ways of life and special connections to land and water.

Our approach is to continue seeking the support and agreement of indigenous peoples potentially affected by our projects. We do this through mutually agreed, transparent and culturally appropriate consultation and impact management processes. In 2016, Shell developed a public position statement on Free Prior Informed Consent (FPIC), which is based on a pre-requisite to engage in dialogue with local indigenous communities and come to a joint agreement on the way forward in project development. In 2017, we shared outcomes from our involvement with FPIC with the industry through IPIECA, the global oil and gas industry association for environmental and social issues, which enables us to refine how we apply FPIC in our operations.

In Bolivia, the government requires that a percentage of capital investment in the hydrocarbon sector be applied for the social benefit of indigenous and farming communities holding collective land rights. To fulfil this requirement, Shell implemented three social investment programmes after engaging with more than 50 local communities during a 2016 seismic campaign. These programmes involved bee keeping; improving fruit and vegetable production; and building a marketing platform for the communities’ agricultural products. In 2017, the Bolivian national oil and gas company recognised Shell’s programme as best practice.

We entered the second phase of exploration in the country, drilling the Jaguar exploration well in 2017. Building on the same methodology, together Shell and the local Weenhayek communities decided that the required social investment funds would be used to sustainably increase local agricultural production in communal lands surrounding the well for the duration of the project.
CULTURAL HERITAGE
Cultural heritage can be tangible, such as treasured artefacts, or intangible, such as language and traditions. Our specialists work to preserve cultural heritage near our operations.

In 2017, Shell was the operator of the Majnoon oil and gas field in Iraq, a site of rich cultural heritage due to its proximity to the area widely held to be the cradle of civilisation. Shell formally registered archaeological finds with the Ministry of Antiquities and handed over the artefacts to the Basrah Museum in 2017, leaving a positive legacy of valuable archaeological data and management practices. You can read more about our work to protect Majnoon’s heritage on www.shell.com.

SOCIAL INVESTMENT
We invest in community projects to help people to benefit from social and economic development. This investment is sometimes voluntary and sometimes required by governments, or as part of a contractual agreement. The intent of our social investment programmes is to benefit both Shell as well as society or the environment. Areas on which social investment programmes are focussed are determined by local community needs and priorities.

In 2017, Shell was the operator of the Majnoon oil and gas field in Iraq, a site of rich cultural heritage due to its proximity to the area widely held to be the cradle of civilisation. Shell formally registered archaeological finds with the Ministry of Antiquities and handed over the artefacts to the Basrah Museum in 2017, leaving a positive legacy of valuable archaeological data and management practices. You can read more about our work to protect Majnoon’s heritage on www.shell.com.

We aim to deliver business growth and have a positive impact on people. To help us achieve this we have three global social investment themes:
- access to energy;
- science technology engineering and mathematics (STEM) education; and
- community skills and enterprise development.

In 2017, we spent $189 million on social investment of which 41% was required by government regulations or contractual agreements. We spent $111 million on voluntary social investment, of which around $57 million was in line with our global themes. The remaining $54 million was spent on local programmes for community development, disaster relief, education, road safety, health and biodiversity.

Almost $107 million of our total social investment spend in 2017 was in countries that are part of the United Nations Development Programme’s Human Development Index 2016. These countries have 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 equipment donations.

Social investment in 2017: proportion of spend

Social investment in 2017: split by region
We began reporting voluntarily on our environmental, safety 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.

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

We provide all non-financial data in this report on a 100% basis for companies and joint ventures where we are the operator. Environmental data pertain to our direct operations 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 2017 are included only for the period in which we operated these assets. 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 2018. 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 (HSSE&SP) data.

Shell facilities are required to comply with these standards, which define management roles and responsibilities, the scope of data at facilities and how data are calculated and collected. These standards are part of our HSSE&SP Control Framework.

To ensure we provide accurate information, our data assurance process of HSSE&SP data is also a key element of the HSSE&SP Control Framework. The process flows from the facility all the way up to central group level. Some examples of what is controlled through this process are:

- self-assessments at the facility level;
- internal audits at all levels of the company;
- quarterly reviews and assessments of the data at all levels;
- an annual series of meetings between leaders at the group level and senior business managers to discuss outcomes and reporting parameters; and
- a formal sign-off by Shell’s senior country leaders

The Report Review Panel 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 (GHG) data for 2017. Limited assurance means nothing has come to the auditor’s attention that would indicate that the GHG data and information as presented in the GHG Assertion were not materially correct. The assurance statements are available at shell.com.

Conversions into US and Canadian dollars are based on the average exchange rates for 2017.
### Environmental data

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<tr>
<td>Sabotage spills – volume [thousand tonnes] [K]</td>
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<td>29.3</td>
<td>22.7</td>
<td>17.2</td>
<td>14.0</td>
<td>12.3</td>
<td>12.1</td>
<td>11.7</td>
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<td>Operational spills – number</td>
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<td>Nigeria [L]</td>
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<td>1.1</td>
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<tr>
<td>Hurricane spills – volume [thousand tonnes]</td>
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<td>Oil in effluents to surface environment (thousand tonnes) [O]</td>
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<td>1.0</td>
<td>1.0</td>
<td>0.9</td>
<td>1.0</td>
<td>1.0</td>
<td>1.3</td>
<td>1.6</td>
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**Water**

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<tr>
<td>Fresh water consumed (million cubic metres)</td>
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<td>Waste disposal [P]</td>
<td>368</td>
<td>658</td>
<td>455</td>
<td>529</td>
<td>770</td>
<td>820</td>
<td>760</td>
<td>1,048</td>
<td>962</td>
<td>688</td>
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<tr>
<td>Hazardous (thousand tonnes)</td>
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<td>Non-hazardous (thousand tonnes)</td>
<td>1,382</td>
<td>1,491</td>
<td>1,680</td>
<td>1,674</td>
<td>2,065</td>
<td>2,295</td>
<td>1,850</td>
<td>1,079</td>
<td>1,139</td>
<td>996</td>
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<td>Total waste (thousand tonnes) [P]</td>
<td>2,022</td>
<td>2,148</td>
<td>2,135</td>
<td>2,203</td>
<td>2,835</td>
<td>3,115</td>
<td>2,590</td>
<td>2,127</td>
<td>2,101</td>
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**Notes:**

[A] Greenhouse gas emissions (GHGs) comprise carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride and nitrogen trifluoride. 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 AR 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 several sources of uncertainty can contribute to the overall uncertainty of a corporate emissions inventory. 2015-2017 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] We have updated our 2015-2016 figures following review of data.

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

[D] The term upstream in this context includes assets and activities from our Upstream, Integrated Gas and Oil Sands operations.

[E] Nigeria includes SPDC onshore operations and SNEPCo offshore operations. A single spill at the Bonga offshore field, Nigeria, amounted to 4.8 thousand tonnes in 2009.

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

[G] Chemical plants: Chemicals Energy Index

[H] Refineries: Refinery Energy Index

[I] Flaring (Upstream) (million tonnes 

[J] Energy indirect total GHGs (million tonnes CO₂ equivalent)

[K] Energy intensity

[L] Operative spills – volume (thousand tonnes)

[M] Sabotage spills – volume (thousand tonnes)

[N] Sabotage spills – number

[O] Hurricane spills – volume (thousand tonnes)

[P] Flaring (Upstream) (million tonnes hydrocarbon flared)

[Q] Flaring (Upstream) (million tonnes CO₂ equivalent)

[R] Greenhouse gas emissions (GHGs)

[S] Hydrochlorofluorocarbons (HCFCs)

[T] Hydrofluorocarbons (HFCs)

[U] Methane (CH₄)

[V] Nitrous oxide (N₂O)

[W] Nitrogen oxides (NOₓ)

[X] Overall releases

[Y] Operational spills – number

[Z] Operational spills – volume (thousand tonnes)

[AA] Discounted oil sales

[BB] Energy intensity

[CC] Flaring (Upstream) (million tonnes)

[DD] Operational spills – number

[EE] Spills and discharges

[FF] Sabotage spills

[GG] Hurricane spills

[HH] Flaring (Upstream) (million tonnes hydrocarbon flared)

[II] Hurricane spills

[JJ] Spills and discharges

[KK] Sabotage spills

[LL] Energy intensity

[MM] Operational spills

[NN] Hurricane spills

[OO] Flaring (Upstream)

[PP] Flaring (Upstream)
### Social and safety data

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<tr>
<td><strong>Fatalities [A]</strong></td>
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<td>5</td>
<td>5</td>
<td>5</td>
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<td>Fatal accident rate (FAR)</td>
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<td>0.53</td>
<td>1.11</td>
<td>0.74</td>
<td>0.79</td>
<td>1.32</td>
<td>0.96</td>
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<tr>
<td>Fatalities per 100 million working hours [employees and contractors]</td>
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<td><strong>Injuries and process safety incidents [A]</strong></td>
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<td>Total recordable case frequency (TRCF)</td>
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<td>0.9</td>
<td>1.0</td>
<td>1.2</td>
<td>1.3</td>
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<tr>
<td>Injuries per million working hours [employees and contractors]</td>
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<tr>
<td>Lost time injury frequency (LTIF)</td>
<td>0.2</td>
<td>0.25</td>
<td>0.26</td>
<td>0.28</td>
<td>0.36</td>
<td>0.34</td>
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<tr>
<td>Lost time injuries per million working hours [employees and contractors]</td>
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<tr>
<td>Operational process safety events</td>
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<tr>
<td>Tier 1 [B]</td>
<td>49</td>
<td>39</td>
<td>51</td>
<td>57</td>
<td>65</td>
<td>91</td>
<td>n/c</td>
<td>n/c</td>
<td>n/c</td>
</tr>
<tr>
<td>Tier 2 [B]</td>
<td>117</td>
<td>107</td>
<td>169</td>
<td>194</td>
<td>246</td>
<td>308</td>
<td>n/c</td>
<td>n/c</td>
<td>n/c</td>
</tr>
<tr>
<td><strong>Illnesses</strong></td>
<td></td>
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<tr>
<td>Total recordable occupational illness frequency (TROIF)</td>
<td>0.30</td>
<td>0.40</td>
<td>0.60</td>
<td>0.96</td>
<td>0.77</td>
<td>0.51</td>
<td>0.66</td>
<td>0.76</td>
<td>0.6</td>
</tr>
<tr>
<td>Illnesses per million working hours [employees only]</td>
<td></td>
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</table>

#### [A] In line with industry standards, we distinguish three contract modes. Mode 1: contractor/supplier performs work under Shell's HSSE Management System (HSSE MS); Mode 2: contractor/supplier performs work under its own HSSE MS, which is materially equivalent to the Shell's HSSE MS; Mode 3: contractor/supplier performs work under its own HSSE MS. Also in line with industry standards, we report on safety performance only for contract modes 1 and 2.

#### [B] Process safety events are classified based on guidance from the IOGP and API. In 2017, there were 9 Tier 1 and 0 Tier 2 sabotage-related events.

#### [C] Diversity data obtained from our human resources system.

#### [D] 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 the allegation was found to be (at least partially) true.

#### [E] Estimated expenditure in countries where gross domestic product amounts to less than $15,000 per 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.

#### [F] Using armed contractor security (% of countries) in place)

#### [G] Social investment spend (equity share) in lower-income countries ($ billion) [H]

#### [H] 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 2016).