



# Sustainability Report 2016

The energy we produce serves to power economic growth and lift people out of poverty. In the future, the way heat, light and mobility are delivered will change. We aim to anchor our business in these changing patterns of demand, rather than in the quest for supply. We have a real contribution to make to the world's ambition of a low carbon future.

A wide-angle photograph of an offshore oil and gas field in the middle of the ocean. In the foreground, a large red supply vessel is moving towards the right. In the background, a large offshore platform is visible, along with several smaller support vessels. The sky is blue with some light clouds, and the water is a deep blue.

For a secure,  
affordable  
and sustainable  
energy future.

[bp.com/sustainability](https://www.bp.com/sustainability)

# Introduction from our group chief executive



We have set out our strategy for the coming decades, integrating our ambition to be a safe, strong, successful business with our aspiration to be a good corporate citizen and part of the solution to climate change.

Sustainability is at the heart of BP's strategy. Ours is a long-term business and I believe that our company will only prosper over the long term if we operate safely and fulfil a positive role in society. In particular, the energy transition underway poses a significant challenge – how to meet the world's increasing demand for energy while, at the same time, reducing carbon emissions. Every part of our business has a tremendous contribution to bring to this.

Large companies have responsibilities to multiple groups. I take pride in the fact that BP not only provides returns for our shareholders, but billions in tax revenues to support public services, jobs for staff and suppliers, and of course, heat, light and mobility for customers – enabling millions to enjoy higher standards of living around the world. As Henry Ford said: "A business that makes nothing but money is a poor business."

In recent months, we have set out our strategy for the coming decades, integrating our ambition to be a safe, strong, successful business with our aspiration to be a good corporate citizen and part of the solution to climate change.

Our strategic framework is rooted in society's need to use more energy while reducing carbon emissions. It reflects a changing global fuel mix in which oil remains important but is used more efficiently; the cleanest traditional fuel, natural gas, is a vital energy source in a lower carbon economy; and renewables grow faster than any other form of energy.

The four priorities of our strategic framework are aligned with these trends. First, we plan to run a highly competitive upstream business with an expanding gas portfolio. Second, we will have a market-led downstream business providing fuels and lubricants that help make vehicles more efficient and lessen their carbon impact. Third, we will run a growing renewable energy business, alongside a dynamic venturing arm. Fourth, we will underpin all of these businesses with an ongoing drive to modernize BP and maximize efficiency in ways which are good for business and good for the environment.

The environmental dimension of this strategy builds on two decades of action and advocacy on climate change, which saw important new steps in 2016. We made strong progress with our large natural gas projects and signed long-term gas supply agreements in Azerbaijan, Egypt, Indonesia, Oman and elsewhere, providing a cleaner alternative to higher emissions fuels at scale. And to maximize the potential of gas, we are investigating how we can best reduce the methane emissions of our operations. We now have the largest operated renewables business among our peers, with major biofuels and wind businesses employing more than 5,000 people.

BP also supports a series of low carbon start-up companies through our venturing team. The industry Oil and Gas Climate Initiative, which I chair, announced \$1 billion of investment in low carbon technologies, initially focused on reducing methane emissions from gas production and accelerating deployment of carbon capture, use and storage.

In 2016, these steps to build a sustainable future came at the same time as we responded to the short-term pressures of the business environment, maintaining critical investments for safety and future growth while acting to control costs and increase our operational and financial resilience.

Safety will always be our top priority and the record for last year shows that we broadly held the gains made since 2010, with many

fewer incidents and injuries across the business. This was in a year in which we increased our activities, with an additional 13 million hours of working time. However, we did suffer three workforce fatalities in 2016, a loss of life that we deeply regret. As this report explains, we are taking actions to manage risk, such as working more closely with contractors, including joint simulation exercises, and using technologies such as sensors and crawler robots to detect potential problems and keep our people away from harm.

Our future depends on our people – their health, safety, capability and dedication. In 2016, I was encouraged to see in our surveys that their levels of confidence, pride and trust rose, despite tough circumstances and a further reduction in staff numbers. That says a lot about the resilience and spirit of the BP team. I am also proud that we have a truly global, diverse workforce, with large numbers of citizens of the countries where we work.

I believe that global companies with clear values can act as a stabilizing and positive force in local communities and this report shows how we approach that role. We invest in education, enterprise and energy sustainability – from the Enterprising Science programme for teachers in the UK to support for hospitals and small businesses in Egypt. We act to support labour rights among our suppliers, and we enforce a zero-tolerance policy towards bribery and facilitation payments. We assess and respond to environmental and social issues raised by our operations, from piloting new technologies for air quality monitoring in Azerbaijan to helping to build a new water pumping station for a community in Iraq.

Wherever we work, we stand by our values of safety, respect, excellence, courage and one team. There is much still to do, but if we can continue to deliver meaningful benefits to our many stakeholders as well as building a business that is both economically and environmentally sound, then I believe BP can look ahead to a successful future as a sustainable business in a sustainable world.

Bob Dudley  
Group chief executive  
6 April 2017

## **i** More information

**BP's role in a lower carbon future**  
Pages 12-13

**Governance of sustainability issues**  
Page 41

# Our key issues

We report on the issues which matter most to our stakeholders and our business.

## We engage

We talk to our stakeholders – the many individuals and organizations who are affected by BP’s activities – throughout the year.

## We listen

Our stakeholders often have differing priorities. For an environmental NGO, for example, the immediate focus may be on how we manage any potential impacts of our activities on sensitive areas, while for a government representative, the contribution we make to the local community may be the priority.

## We assess

We prioritize the issues according to how important they are to our stakeholders and how they could impact BP’s ability to deliver its strategy. We validate this with internal and external stakeholders, our assurance provider, Ernst & Young, and our board committee responsible for sustainability-related issues.

### Our stakeholders



In preparing our 2016 report, we met with around 100 different organizations around the world, including investors, non-governmental organizations (NGOs), industry associations, business partners, shareholders and analysts. We also held sessions with our employees to find out how they use our report and what they would like us to cover. The input and feedback we received has helped inform this report.

### Commonly asked questions

“  
*How is BP’s Energy Outlook integrated into your strategy?*

“ See pages 12-13.

“  
*How are you maintaining safety in a low oil price environment?*

“ See page 22.

“  
*How do you assign accountability for sustainability in BP?*

“ See page 41.

“  
*What are you doing to reduce methane emissions?*

“ See page 15.

“  
*How does your approach change in water-stressed areas?*

“ See page 37.

“  
*Are you looking to increase your renewables portfolio?*

“ See page 16.

“  
*How are you managing human rights in your supply chain?*

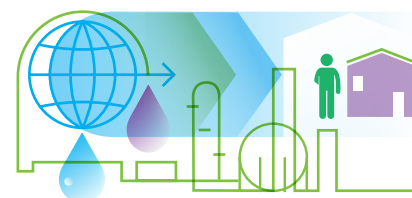
“ See pages 34-35.

## We report

We include issues in our report if we assess them as being either medium or high materiality in terms of stakeholder concern and business impact. Our material issues tend to be consistent year to year. In 2016, air quality and supply chain management were issues that gained greater prominence.

We have structured the report by our material issues – starting with global issues before moving on to how we manage our impacts at a local level. This is underpinned by our people, governance and practices for managing our business.

Global issues Local issues



Foundations for operating responsibly

### Taking action on climate change

#### Our material issues

BP's role in a lower carbon future  
Natural gas and methane  
Renewable energy  
Operational emissions

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### Focusing on safe operations

Process safety  
Personal health and safety  
Transportation safety  
Security and crisis management

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### Maximizing value to society

Supporting local development  
Engaging with communities  
Revenue transparency  
Anti-bribery and corruption

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### Respecting human rights

Our approach to human rights  
Labour rights  
Security and human rights

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### Managing local environmental impacts

Water  
Air quality  
Biodiversity and sensitive areas

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### Foundations for operating responsibly

Governance of sustainability issues  
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#### **i** More information

##### How we run our business

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##### Five-year performance data

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##### Assurance statement

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# How we run our business

From the deep sea to the desert, from rigs to retail, we deliver energy products and services to people around the world. We provide customers with fuel for transport, energy for heat and light, lubricants to keep engines moving and the petrochemicals products used to make everyday items as diverse as paints, clothes and packaging.

Our diverse portfolio is balanced across businesses, resource types and geographies. Having upstream and downstream businesses, along with well-established trading capabilities, helps to mitigate the impact of lower oil and gas prices. Our geographic reach gives us access to growing markets and new resources, as well as diversifying exposure to geopolitical events.

## Our role in society

The energy we produce helps to support economic growth and improve quality of life for millions of people. We strive to be a world-class operator, a responsible corporate citizen and a good employer.

We believe that the societies and communities we work in should benefit from our presence. In supplying energy we contribute to economies around the world by employing local staff, helping to develop national and local suppliers, and through the taxes we pay to governments. Additionally, we aim to create meaningful and sustainable impacts in those communities through our social investments.

**\$11.2bn**

employee wages and benefits

**\$2.2bn**

taxes paid to governments – comprising income and production taxes

**\$7.5bn**

total dividends distributed to BP shareholders

## Enabling our business model

### Safe and reliable operations

We strive to create and maintain a safe operating culture where safety is front and centre. This is not only safer for people and the environment – it also improves the reliability of our assets.

See Focusing on safe operations on p21.

### Talented people

We work to attract, motivate, develop and retain the best talent the world offers – our performance and ability to thrive globally depends on it.

See Our people on p42.

## Finding oil and gas



## Developing and extracting oil and gas

## Creating value

### Finding oil and gas

New access allows us to renew our portfolio, discover additional resources and replenish our development options. We focus our exploration activities in the areas that are competitive in the portfolio. We develop and use technology to reduce costs and risks.

### Developing and extracting oil and gas

We create value by seeking to progress hydrocarbon resources and turn them into proved reserves, or sell them on if they do not fit with our strategic priorities. We develop and produce the resources that meet our return threshold, which we then sell to the market or distribute to our downstream facilities.

Our upstream pipeline of future projects gives us choice about which we pursue.

We also seek to grow or extend the life of existing fields and are using new business models to increase value. Our US Lower 48 onshore business and Aker BP in Norway are two examples of how we've used innovative new business models in response to the competitive environment.

### Transporting and trading

We move oil and gas through pipelines and by ship, truck and rail. We also trade a variety of products including oil, natural gas, liquefied natural gas, power and currencies. Our traders complete around 550,000 transactions and serve more than 12,000 customers across some 140 countries in a year.

**Technology, innovation and venturing**

New technologies are enabling us to produce energy safely and more efficiently. We selectively research and invest in areas with the potential to add greatest value to our business now and in the future.

See Investing in start-ups on p17.

**Partnerships and collaboration**

We aim to build enduring relationships with governments, customers, partners, suppliers and communities in the countries where we operate.

See Maximizing value to society on p27.

**Governance and oversight**

Our risk management systems and policy provide a consistent and clear framework for managing and reporting risks. The board regularly reviews how we identify, evaluate and manage risks.

See How we manage risk on p44.

Transporting and trading

Manufacturing



Generating renewable energy

We use our market intelligence to analyse supply and demand for commodities across our global network. This helps us deliver what the market needs, when it needs it, identify the best markets for BP's crude oil, source optimal raw materials for our refineries and provide competitive supply for our marketing businesses.

**Manufacturing and marketing fuels and products**

We produce petroleum products at our refineries and supply distinctive fuel and convenience retail services to consumers. Our advantaged infrastructure, logistics network and key partnerships help us to have differentiated businesses and deliver compelling customer offers.

Our lubricants business has premium brands and access to growth markets. It also leverages technology and customer relationships, all of which we believe gives us competitive advantage. We serve automotive, industrial, marine and energy markets across the world.

And in petrochemicals our proprietary technology solutions deliver leading cost positions compared to our competitors. In addition to our own petrochemicals plants, we work with partners and license our technology to third parties.

**Generating renewable energy**

We have the largest operated renewables business among our oil and gas peers. We operate a biofuels business in Brazil, using

one of the world's most sustainable and advantaged feedstocks to produce low carbon ethanol and low carbon power.

We provide renewable power through our significant interests in onshore wind energy in the US. We develop and deploy technology in our wind business to drive efficiency and capacity.

**More information**

**Providing renewable energy**  
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**Foundations for operating responsibly**  
Page 40

# BP around the world

We are a global energy company with wide reach across the world's energy system. We have operations in Europe, North and South America, Australasia, Asia and Africa.

## Scale

**18,000**

retail sites

**72**

countries

**\$187.3bn**

economic value generated

**6,000+**

marine voyages completed by BP-operated and chartered vessels

**3.3**

million barrels of oil equivalent per day

## BP in action

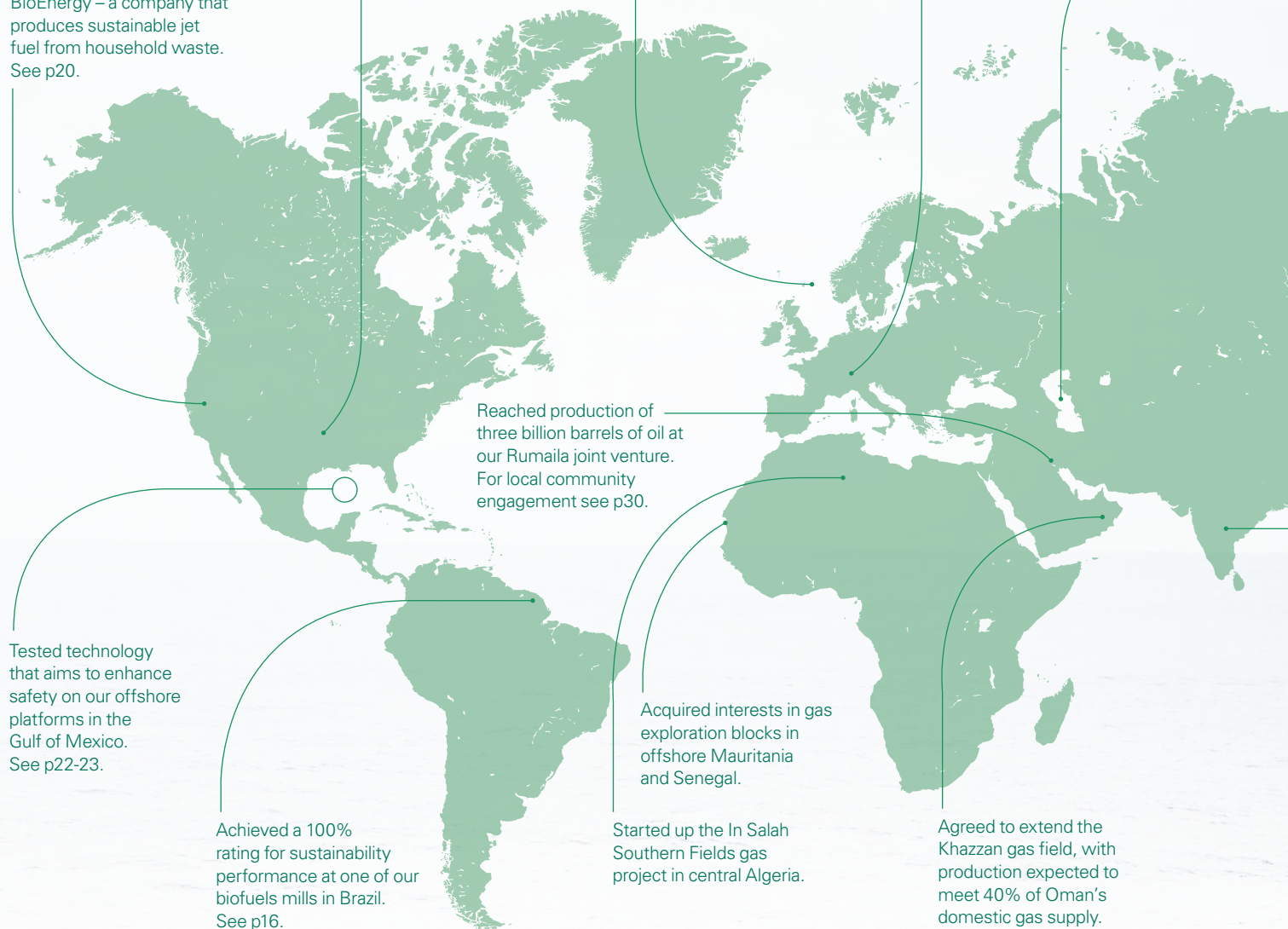
Highlights of some of our activities in 2016.

Entered into a strategic partnership with Fulcrum BioEnergy – a company that produces sustainable jet fuel from household waste. See p20.

Announced plans to optimize wind business – BP is one of the top producers of wind energy in the US. See p16.

Enhanced our human rights due diligence process for using spot-chartered vessels in the North Sea. See p35.

Launched our low carbon and carbon neutral PTA brand. See p20.



Reached production of three billion barrels of oil at our Rumaila joint venture. For local community engagement see p30.

Tested technology that aims to enhance safety on our offshore platforms in the Gulf of Mexico. See p22-23.

Achieved a 100% rating for sustainability performance at one of our biofuels mills in Brazil. See p16.

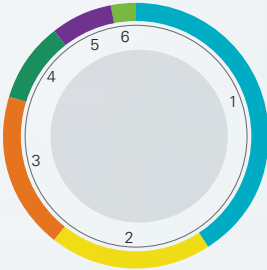
Acquired interests in gas exploration blocks in offshore Mauritania and Senegal.

Started up the In Salah Southern Fields gas project in central Algeria.

Agreed to extend the Khazzan gas field, with production expected to meet 40% of Oman's domestic gas supply.



BP employees by region



1. Europe	30,600
2. US and Canada	14,600
3. Asia Pacific	14,300
4. South and Central America	7,200
5. Middle East and North Africa	5,600
6. Sub-Saharan Africa	2,200
<b>Total</b>	<b>74,500</b>

BP employees by segment



1. Upstream	18,700
2. Downstream	41,800
3. Other businesses and corporate	14,000
<b>Total</b>	<b>74,500</b>

Data as at 31 December 2016.

Increased gas recovery from offshore operations in the Caspian Sea. See p18.

Signed the largest deal yet in China's emerging carbon trading market. See p14.

Launched a diesel lubricant in India that uses re-refined engine oil as its base. See p20.

Gained approval to expand our Tangguh LNG plant, building on a decade-long commitment to the local community. See p28.

Piloted pre-contract audits of potential suppliers on labour rights in Malaysia. See p34.



# Our performance

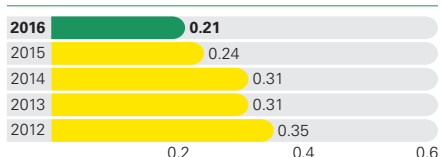
Data on our sustainability performance from 2012-2016.

## Safety<sup>a</sup>

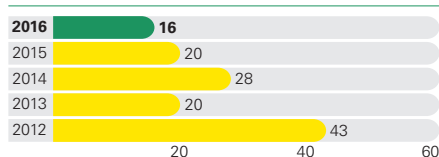
	2012	2013	2014	2015	2016
Fatalities – employees	1	4	0	0	<b>0</b>
Fatalities – contractors	3	2	3	1	<b>3</b>
Day away from work cases – workforce	152	130	145	108	<b>94</b>
Day away from work case frequency <sup>b</sup> (DAFWCF) – workforce	0.076	0.070	0.081	0.061	<b>0.051</b>
Recordable injuries – workforce	710	578	547	428	<b>385</b>
Recordable injury frequency <sup>b</sup> (RIF) – workforce	0.35	0.31	0.31	0.24	<b>0.21</b>
Tier 1 process safety events <sup>c</sup> (number)	43	20	28	20	<b>16</b>
Tier 2 process safety events <sup>c</sup> (number)	154	110	95	83	<b>84</b>
Losses of primary containment <sup>d</sup> (number)	292	261	286	235	<b>275</b>
Oil spills <sup>e</sup> – number (> one barrel)	204	185	156	146	<b>149</b>
Oil spills contained	102	111	93	91	<b>91</b>
Oil spills reaching land and water	102	74	63	55	<b>58</b>
Oil spills – volume (million litres)	0.8	0.7	0.4	0.4	<b>0.7</b>
Oil unrecovered (million litres)	0.3	0.3	0.2	0.1	<b>0.3</b>

## Indicators linking to our strategy and 2016 remuneration

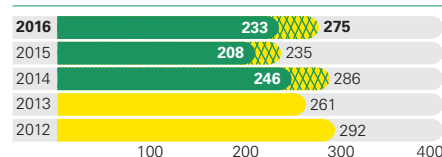
### Reported recordable injury frequency<sup>ab</sup>



### Tier 1 process safety events<sup>ac</sup>



### Loss of primary containment<sup>ad</sup>



## Greenhouse gas emissions<sup>f</sup>

	2012	2013	2014	2015	2016
Direct carbon dioxide (CO <sub>2</sub> ) (million tonnes (Mte))	56.4	47.0	45.5	45.1 <sup>g</sup>	<b>46.1</b>
Direct methane (Mte)	0.17	0.16	0.15	0.16	<b>0.16</b>
Direct greenhouse gas (GHG) (MteCO <sub>2</sub> equivalent (CO <sub>2</sub> e))	59.8	50.3	48.7 <sup>h</sup>	49.0 <sup>i</sup>	<b>50.1</b>
Indirect carbon dioxide (CO <sub>2</sub> ) <sup>j</sup> (Mte)	8.4	6.7	6.8	6.9	<b>6.2</b>
Real sustainable reductions in GHG emissions <sup>k</sup> (Mte)	0.2	0.2	0.1	0.1	<b>0.3</b>
Greenhouse gas intensity (TeCO <sub>2</sub> equivalent/unit)					
Upstream (per thousand barrels of oil equivalent)	29.2	30.1	32.0 <sup>l</sup>	32.7 <sup>m</sup>	<b>34.7</b>
Refining (per utilized equivalent distillation capacity)	901	995	978	944	<b>951</b>
Petrochemicals (per thousand tonnes)	293	283	291	290	<b>287</b>
Flaring <sup>n</sup> (upstream) (thousand tonnes (kte) of hydrocarbons)	1,548	2,028	2,188	1,863	<b>1,896</b>
Customer emissions <sup>o</sup> (MteCO <sub>2</sub> )	517	422	406	402	<b>395</b>
Carbon dioxide avoided through our renewables business <sup>p</sup> (MteCO <sub>2</sub> e)	2.4	2.9	3.2	3.3	<b>3.1</b>

<sup>a</sup> This represents reported incidents occurring within BP's operational HSSE reporting boundary. That boundary includes BP's own operated facilities and certain other locations or situations.

<sup>b</sup> DAFWCF and RIF are the annual frequency per 200,000 hours worked.

<sup>c</sup> We report tier 1 process safety events, which are losses of primary containment of greatest consequence – causing harm to a member of the workforce, costly damage to equipment or exceeding defined quantities. Tier 2 events are those of lesser consequence.

<sup>d</sup> Loss of primary containment is the number of unplanned or uncontrolled releases of oil, gas, or other hazardous materials from a tank, vessel, pipe, railcar or other equipment used for containment or transfer. Figures for 2014 to 2016 include increased reporting due to the introduction of enhanced automated monitoring for remote sites in our US Lower 48 business. Using a like-for-like approach with previous years' reporting, our LOPC figure is 233 (2015 208, 2014 246).

<sup>e</sup> Oil spills are defined as any liquid hydrocarbon release of more than, or equal to, one barrel (159 litres, equivalent to 42 US gallons).

<sup>f</sup> We provide data on GHG emissions material to our businesses on a carbon dioxide-equivalent basis. This includes CO<sub>2</sub> and methane for direct emissions. This encompasses all BP's consolidated entities as well as our share of equity-accounted entities other than BP's share of TNK-BP and Rosneft for the relevant periods.

<sup>g</sup> The reported 2015 figure has been amended from 45.0.

<sup>h</sup> The reported 2014 figure has been amended from 48.6.

<sup>i</sup> The reported 2015 figure has been amended from 48.9.

<sup>j</sup> Indirect emissions are associated with the purchase of electricity, heat, steam or cooling into our operations.

## Value to society

	2012	2013	2014	2015	2016
Benefits to employees – including wages, salaries, share-based payments, benefits and pensions (\$ million)	13,448	13,654	13,936	12,928	<b>11,233</b>
Taxes to governments – comprising income taxes and production taxes paid (\$ million)	15,064	13,904	7,980	3,516	<b>2,174</b>
Total dividends distributed to BP shareholders <sup>q</sup> (\$ million)	6,276	6,911	7,168	7,301	<b>7,469</b>
Contribution to communities (\$ million)	90.6	103.8	85.0	67.2	<b>61.1</b>

## Environment

	2012	2013	2014	2015	2016
Freshwater consumption <sup>r</sup> (million m <sup>3</sup> )	–	106	93	92	<b>87</b>
Percentage of withdrawal <sup>r</sup>	–	37	33	32	<b>34</b>
Water consumption intensity – group (tonnes water/tonnes production) <sup>r</sup>	–	–	0.37	0.38	<b>0.36</b>
Freshwater withdrawal	354	289	280	285	<b>257</b>
Air emissions – nitrogen oxides (thousand tonnes)	140	129	129	123	<b>125</b>
Air emissions – sulphur oxides (thousand tonnes)	51	41	39	36	<b>36</b>
Air emissions – non-methane hydrocarbons (thousand tonnes)	114	102	99	94	<b>91</b>
Environmental expenditure <sup>s</sup> (\$ million)	7,230	4,288	4,024	8,017	<b>536</b>
Environmental and safety fines <sup>t</sup> (\$ million)	22.4	2.5	1.0	0.6	<b>15.0</b>

## Our people and culture

	2012	2013	2014	2015	2016
Number of employees – group	86,400	83,900	84,500	79,800	<b>74,500</b>
Number of employees – group leadership	546	530	501	431	<b>394</b>
Women in group leadership (%)	17	18	18	19	<b>22</b>
Women at management level <sup>u</sup> (%)	25	27	27	28	<b>29</b>
People from UK and US racial minorities in group leadership <sup>v</sup> (%)	6	6	8	7	<b>7</b>
People from beyond the UK and US in group leadership <sup>v</sup> (%)	20	22	22	23	<b>26</b>
Employee turnover <sup>w</sup>	13	15	12	16	<b>16</b>
OpenTalk cases <sup>x</sup>	1,295	1,121	1,114	1,158	<b>956</b>
Dismissals for non-compliance and unethical behaviour <sup>y,z</sup>	424	113	157	132	<b>109</b>

### Data tool



See [bp.com/hsechartingtool](http://bp.com/hsechartingtool) for 10-year data on BP's health, safety and environmental performance.

<sup>k</sup> This measure reflects actions taken by our businesses that reduce their GHG emissions. See page 19.

<sup>l</sup> The reported 2014 figure has been amended from 31.9.

<sup>m</sup> The reported 2015 figure has been amended from 32.4.

<sup>n</sup> We report the total hydrocarbons flared from our upstream operations.

<sup>o</sup> Based on BP's total reported production of natural gas, natural gas liquids and refinery throughputs.

<sup>p</sup> Based on BP's total ethanol production and wind generating capacity. The 2016 figure decreased due to lower sugar cane yields and the divestment of our stake in a wind farm.

<sup>q</sup> This includes dividends paid in cash and scrip dividends.

<sup>r</sup> Data for freshwater consumption and percentage of withdrawal was not reported in 2012 and water consumption intensity data was not reported in 2012 and 2013.

<sup>s</sup> Environmental expenditure was substantially higher in previous years due to environmental and spill response costs relating to the Gulf of Mexico oil spill.

<sup>t</sup> The increase in 2016 is primarily due to a fine received by BP West Coast Products, LLC. For further information see page 267 of *BP's Annual Report and Form 20-F 2016*.

<sup>u</sup> Includes employees who are group leaders, senior level leaders or in other management positions.

<sup>v</sup> This excludes our share of those employed by joint operations in legal entities.

<sup>w</sup> These figures relate to non-retail employees only. In 2016 voluntary turnover (resignations and retirements) was 4%.

<sup>x</sup> Any employee, contractor or other third party can contact our confidential helpline, OpenTalk.

<sup>y</sup> This excludes dismissals of staff employed at our retail service stations.

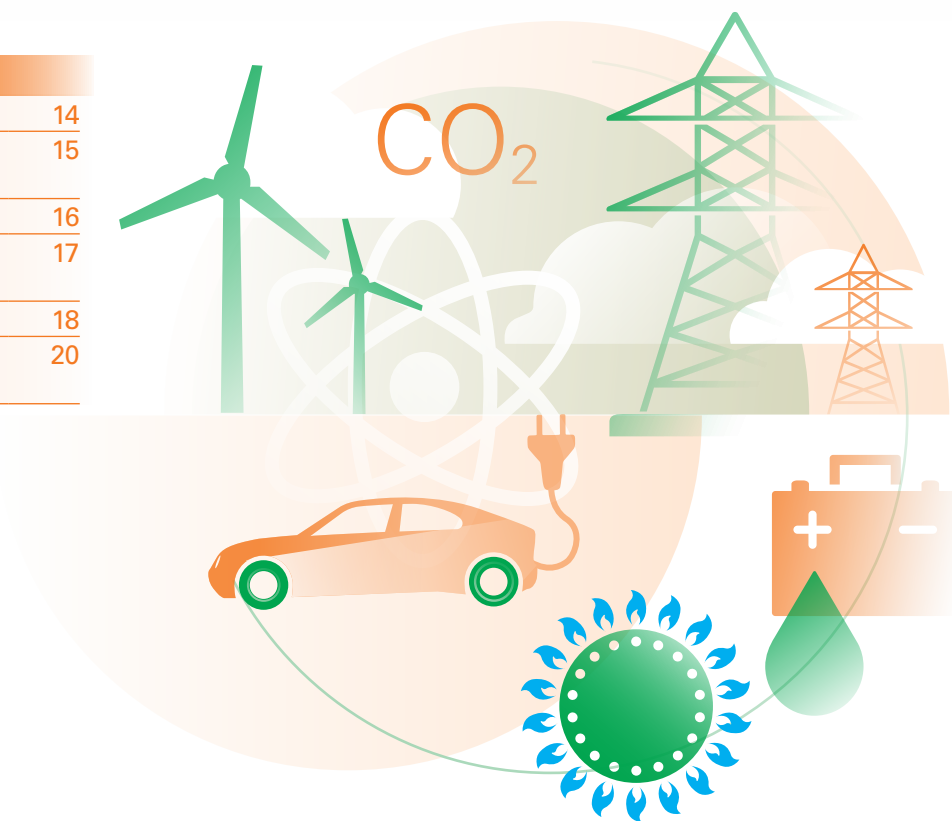
<sup>z</sup> In 2012 this data included employee and contractor dismissals. From 2013 this figure includes employee dismissals only.



# Taking action on climate change

Working with others, BP can help drive the transition to a lower carbon future. We want to bring down our greenhouse gas emissions – while supplying the affordable energy the world needs.

What we are doing	
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Supplying natural gas and managing methane	15
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Investing in start-ups and innovation	17
Pursuing efficient operations	18
Helping our customers reduce emissions	20



# Two decades of helping to tackle climate change

## 1997

BP's chief executive, Lord Browne, calls for precautionary action to cut greenhouse gas (GHG) emissions.

## 1999

BP is a founding member of the International Emissions Trading Association.

## 2003

Tsinghua-BP Clean Energy Research and Education Center launches in China.

## 2005

BP launches its Alternative Energy business.

## 2009

- BP begins using a carbon price in investment decisions.
- BP sets up the Energy Sustainability Challenge, partnering with 15 universities.

## 2014

- BP starts participating in the Oil and Gas Climate Initiative.
- BP endorses the World Bank carbon pricing statement.

## 2016

- BP completes detailed assessments of many of its upstream operations to identify primary sources of methane emissions.
- BP is world's first supplier of commercial jet biofuel using existing infrastructure at Norway's Oslo airport.
- BP launches *PTAir* – with around a 30% lower carbon footprint than average European purified terephthalic acid production.

## 1998

- BP sets target to cut emissions from our operations to 10% below 1990 levels by 2010. We met this target in 2001.
- BP pilots an internal emissions trading scheme, helping to demonstrate the viability of emissions trading for the industry.

## 2000

- BP initiates the CO<sub>2</sub> Capture Project with other companies and governments, to develop carbon capture and storage (CCS) technology.
- BP partners with Princeton University on the Carbon Mitigation Initiative, set up to find solutions to the carbon and climate problem.

## 2004

BP and partners launch a CCS project at the In Salah gas field in Algeria.

## 2006

BP launches Target Neutral, our not-for-profit carbon offsetting programme for customers.

## 2011

BP becomes the largest operator of Brazil biofuels among our oil and gas peers.

## 2015

- BP signs up to the World Bank Zero Routine Flaring by 2030 initiative.
- BP joins the Climate and Clean Air Coalition's Oil and Gas Methane Partnership.
- BP launches Zhuhai 3 petrochemical plant, delivering 65% lower GHG emissions than comparable plants.



## Being part of the solution

With the Paris Agreement, almost 200 governments agreed to hold temperature rise to well below 2°C and to pursue efforts to limit temperature rise to 1.5°C. This has energized countries, companies and consumers to take action.

As scientists and engineers, BP recognizes the urgency of the climate challenge – and we intend to be part of the solution. We are calling for a price on carbon, increasing gas in our upstream portfolio, investing in renewables and low carbon innovation, and pursuing energy efficiency.

We are also collaborating with others to help address this global challenge. As one example, the Oil and Gas Climate Initiative – currently chaired by our group chief executive Bob Dudley – brings together 10 oil and gas companies working to reduce the GHG emissions from our industry's operations and the use of our products.

The initiative's current focus areas are minimizing methane emissions and accelerating the deployment of carbon capture, use and storage.

**Caption:** Bob Dudley, BP's group chief executive, with Janos Pasztor, the UN's senior adviser on climate change, at the OGCI 2016 annual meeting.

# BP's role in a lower carbon future

BP is working to make sure our business is sustainable – commercially, environmentally and in a lower carbon future.

The global energy landscape is changing. The energy mix is shifting, driven by technological improvements and environmental concerns. Fast-growing emerging markets are overtaking traditional centres of demand.

The energy transition underway poses a significant challenge – how to meet the world's growing demand for energy while also reducing carbon emissions. That creates important choices and opportunities for BP and our industry.

We are evolving our strategy – allowing us to be competitive in a time when prices, policy, technology and customer preferences are changing. Our strategy anticipates a range of scenarios to give us flexibility in our approach, rather than pursuing a single view of the future.

We believe having a balanced portfolio and a dynamic investment strategy give us the resilience to meet the challenge.

[See bp.com/strategy](http://bp.com/strategy)

## The changing world of energy

The energy world is changing at a pace not seen in decades. BP is ready for the opportunities and challenges this brings.

### Energy mix is shifting

New technologies and consumer preferences for low carbon energy are leading to changes in the fuel mix, resulting in a gradual decarbonization.

Renewables are the fastest-growing energy source. They are expected to increase at around 7% a year and account for 40% of the growth in power generation over the next two decades. Renewables currently contribute around 3% of total global energy demand,

## BP's strategy – our priorities

Our strategic priorities help us to deliver heat, light and mobility solutions for a changing world.

### Shift to gas and advantaged oil

We are investing in new large-scale gas projects and focusing on quality oil projects in core basins – such as those in Abu Dhabi, Azerbaijan and the Gulf of Mexico – while moving away from projects that don't fit our strategy, like the Great Australian Bight.

### Market-led growth in the downstream

We are developing and producing fuels and lubricants to make the cars of today and tomorrow more efficient, thus reducing greenhouse gas emissions. This includes new lubricants that incorporate plant-based or recycled oils. And, we are establishing retail services to support electric vehicles.

### Venturing and low carbon across multiple fronts

We are optimizing and growing our biofuels and wind businesses and investing in new low carbon business models to meet changing consumer and policy expectations. We will also develop partnerships and invest in start-up companies to access innovation and accelerate technology development.

### Modernizing the whole group

We are modernizing and transforming our operational performance. We are developing creative business models when working with partners, such as collaborating with automakers to improve fuel efficiency and reduce emissions.

and we estimate that, as a result of rapid improvements in their competitiveness, they will contribute around 10% by 2035.

Over the same period, we think oil and natural gas are likely to continue to play a significant part in meeting demand for energy. They currently account for around 56% of total energy consumption. By 2035, we think oil will have around a 29% share, with annual growth slowing down over this period. Meanwhile we believe the share of gas will go up slightly to 25% of global energy, placing it ahead of coal and not far behind oil.

BP is gearing up to meet this shifting demand by increasing its gas and renewables activities. We don't expect our oil and gas portfolio to be 'stranded' in the future. This is because we produce and replace our proved reserves over a 15-year time frame on average – which gives us the flexibility to shift our investment strategy.

### Growing demand for energy

Affordable energy is essential for economic prosperity. Energy provides heat and light for homes, fuel for transportation and power for industry. And, everyday objects – from plastics to fabrics – are derived from oil.

We expect world demand for energy to increase by around 30% between 2015 and 2035 – largely driven by rising incomes in emerging economies. The extent of this increase is being curbed by gains in energy efficiency, as there is greater attention around the world on using energy more sustainably.

### Advances in technology

Emerging technologies – such as improved batteries, solar conversion, electricity storage and autonomous vehicles – are accelerating the energy transition. For example, the base case scenario in our *Energy Outlook* suggests that the use of electric vehicles will grow almost one hundred-fold by 2035. That means that about 6% of the cars on the road would be electric, with a reduction in total oil demand of around one million barrels a day. However, a faster mobility revolution – including car sharing, ride pooling, autonomous vehicles and electric cars – could reduce oil demand by several times that amount.

Our *Technology Outlook* shows how technology can play a major role in meeting the energy challenge by widening energy resource choices, transforming the power sector, improving transport efficiency and helping to address climate concerns out to 2050.

[See bp.com/technologyoutlook](http://bp.com/technologyoutlook)

We prioritize certain new technologies for in-depth analysis – based on their fit with our strategy and how soon and likely we think they are to break through technological and commercial barriers.

[Read about our investment in potentially transformational technologies on page 17.](#)

### Emerging greenhouse gas policy and regulation

Governments are putting in place taxes, carbon trading schemes and other measures to limit greenhouse gas (GHG) emissions. We expect around two-thirds of BP's direct emissions will be in countries subject to emissions and carbon policies by 2020.

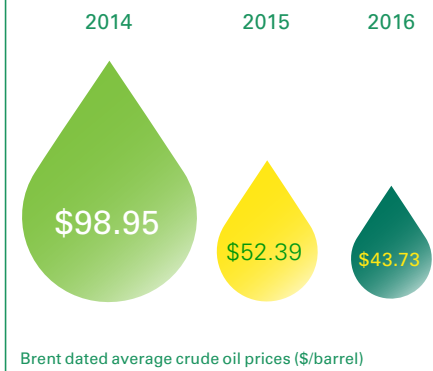
To help anticipate greater regulatory requirements for GHG emissions, we factor a carbon cost into our own investment decisions and engineering designs for large new projects and those for which emissions costs would be a material part of the project. In industrialized countries, this is currently \$40 per tonne of CO<sub>2</sub> equivalent, and we also stress test at a carbon price of \$80 per tonne.

Our carbon cost, along with energy efficiency considerations, encourages projects to be set up in a way that will have lower GHG emissions.

### Lower oil price environment

Oil prices have been substantially lower since 2014, primarily due to oversupply. The market is gradually readjusting, as both demand and supply respond to lower prices. However, the high level of oil inventories suggests this adjustment is likely to take some time.

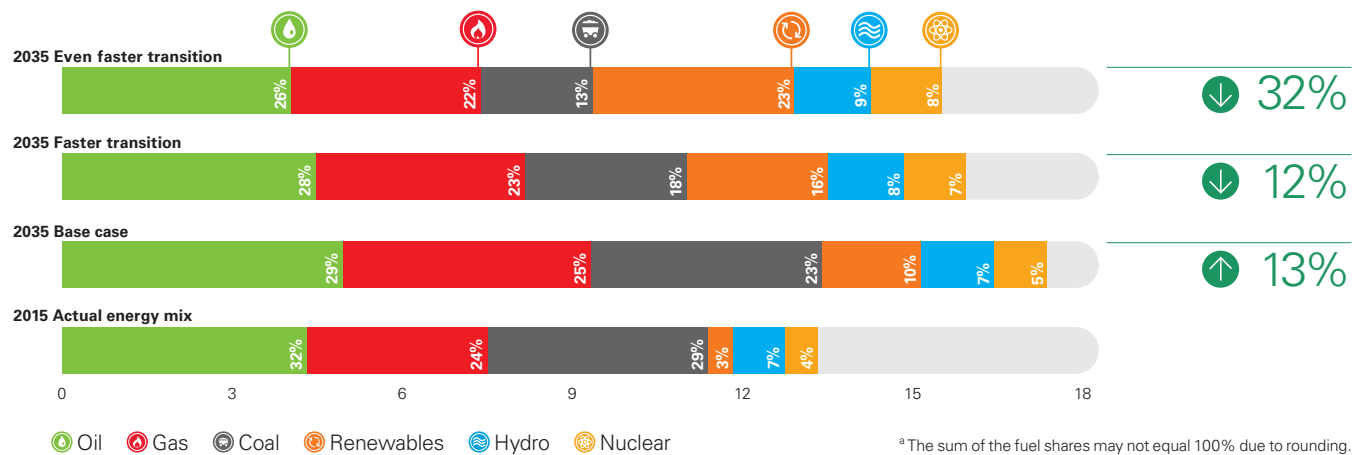
In line with our refreshed strategy, we test our investments against a range of oil and gas prices to check their profitability over the long term. We take into account current price levels and our long-term outlook.



## A changing energy mix

Energy consumption – billion tonnes of oil equivalent<sup>a</sup>

Change in CO<sub>2</sub> emissions from 2015



### Energy Outlook

*BP Energy Outlook* provides our projections of future energy trends and factors that could affect them out to 2035. The three scenarios reflect different assumptions about the pace of the energy transition due to factors such as policy and consumer behaviour.

### Base case

This scenario outlines our view of the most likely path for energy to 2035. The growing world economy will require more energy but consumption will increase less quickly than in the past.

### Faster transition

This scenario sees carbon prices in leading economies rise to \$100/tonne by 2035 and policy interventions encourage more rapid efficiency gains and fuel switching.

### Even faster transition

This scenario matches the path of the International Energy Agency's '450 scenario', which aims to limit the global temperature rise to 2°C.

# Calling for a price on carbon

BP believes that carbon pricing by governments is the best policy to limit GHG emissions.

Putting a price on carbon – one that treats all carbon equally, whether it comes out of a smokestack or a car exhaust – would make energy efficiency more attractive and lower carbon energy sources, such as natural gas and renewables, more cost competitive.

A carbon price incentivizes both energy producers and consumers to reduce their greenhouse gas (GHG) emissions.

It can reduce emissions at a larger scale and at lower cost than alternative policy measures by reducing the demand for carbon-intensive products.

Pricing carbon obviously adds a cost to our production and our products – but would help provide a roadmap for future investment, a level playing field for all energy sources across geographies and a clear role in securing a more sustainable future.

## A global carbon price

We need governments across the world to provide us with clear, stable, long-term, ambitious policy frameworks. We were pleased to see that the Paris Agreement creates the possibility for carbon pricing to help deliver global goals and national contributions for reducing GHG emissions.

We recognize different national prices are a necessary and practical first step but would like to see convergence towards a single global carbon price over time.

In the meantime, any national carbon pricing mechanism should address the impacts of unequal international competition. Otherwise there is a risk of carbon leakage, meaning that energy-intensive industrial activity and investment could just move from one country to a less-regulated part of the world – potentially increasing their associated GHGs worldwide.

## Our advocacy efforts

We endorsed the World Bank carbon pricing statement and in 2015 joined other oil and gas companies in calling on the UN and governments to put a price on carbon.

We are working with our peers and other parts of the private sector, governments and civil society to help support the expansion and implementation of carbon pricing, through our membership of the Carbon Pricing Leadership Coalition.

## BP and carbon trading

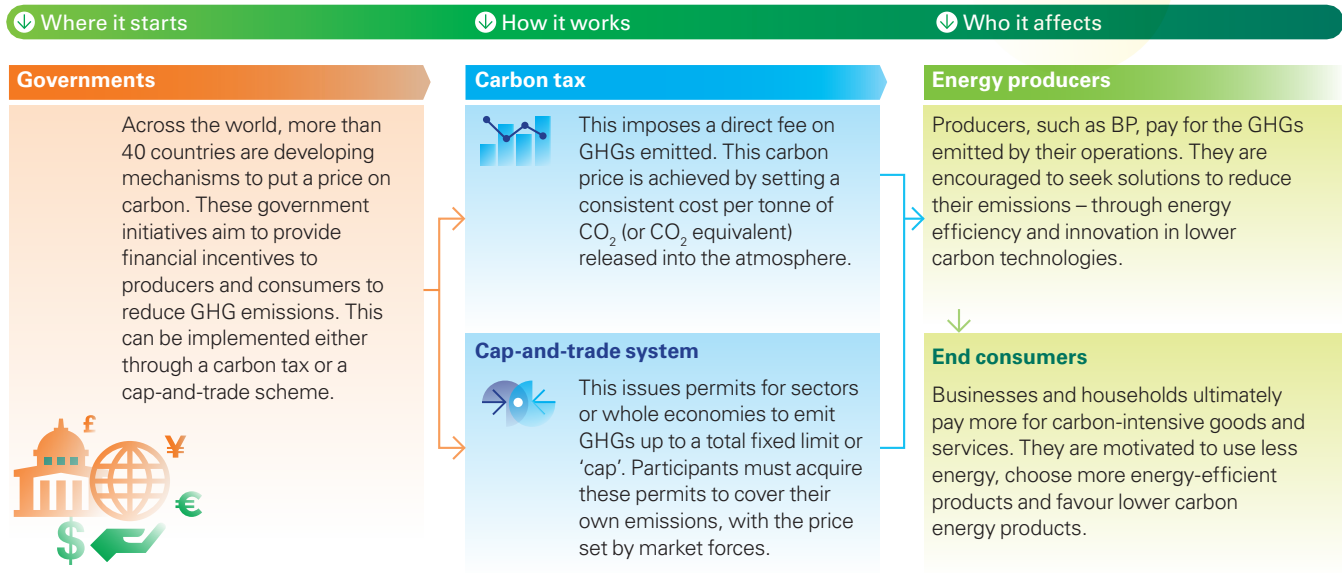
There are currently 17 carbon trading systems operating across four continents with more in the pipeline.

BP has been active in these markets since their inception, starting in Europe and expanding to the US, New Zealand and China. For example, BP offers a portfolio of emission credits in California, including carbon offsets generated through forestry management. And in 2016 we signed the largest deal yet in China's emerging carbon trading market for four million tonnes (Mte) of CO<sub>2</sub>.

In 2016 our financing of low carbon project activities resulted in annual emissions reductions of more than 20Mte of CO<sub>2</sub> equivalent in the form of offsets. As reference, that's equal to 40% of our direct emissions.

## How carbon pricing works

We believe a global carbon price would help to provide the right incentives for everyone – energy producers and consumers alike – to play their part.





# Supplying natural gas and managing methane

## As we increase gas in our portfolio, we are taking action to reduce methane emissions.

We believe natural gas is a vital lower carbon energy source. It produces about half as much greenhouse gas (GHG) emissions as coal when burned to generate power and it can serve as a back-up for intermittent renewable energy sources.

In the US, the growing use of shale gas has had a significant impact on carbon dioxide (CO<sub>2</sub>) emissions, which have fallen back to 1990s levels.

### A growing natural gas portfolio

Around half of BP's upstream portfolio is currently natural gas.

- We are one of the top 10 natural gas producers in the US, with operations in five states.
- We have several new big gas projects coming onstream in the next few years including Khazzan in Oman, West Nile Delta and Zohr in Egypt, Juniper in Trinidad, and the Southern Gas Corridor from the Caspian Sea to Europe.
- We acquired interests in gas exploration blocks in Mauritania and Senegal in 2016.

### Methane – the issue

Minimizing methane emissions from gas production is essential to maximize the role of gas in a lower carbon world.

Methane has a strong warming effect on the climate – trapping substantially more heat than CO<sub>2</sub>. But it has a relatively short lifetime in the atmosphere because it breaks down more rapidly once it is released. The global warming potential of methane is at least 84 times greater than CO<sub>2</sub> over a 20-year period. That potential decreases to around 25 times greater when calculated over a 100-year period – the time frame most governments and companies use to assess its impact.

Methane emissions can occur along the gas supply chain – that includes flaring and venting, to leaks from equipment in gas production

through to the delivery of gas to customers. We are working with Imperial College London through the Oil and Gas Climate Initiative to compare GHG and air emissions across different gas and coal supply chains to identify the most effective ways to reduce GHG emissions. Our life cycle analysis of the liquefied natural gas from our Tangguh plant in Indonesia shows that the GHG emissions from that gas are at least 50% lower than coal.

### Improving data reliability

We are working to build a more reliable and complete picture of methane – one that provides a set of global data categorized by different types of gas fields and operations. For example, through the Climate and Clean Air Coalition's Oil and Gas Methane Partnership, we are deepening our industry's understanding of the core sources that account for the bulk of methane emissions in upstream operations. This will help to inform actions we can take to reduce emissions.

All this activity builds on the work we have carried out over the past 15 years to estimate methane emissions from our own operations. We calculate that our methane intensity – that is, methane emissions as a percentage of marketed gas production – is around 0.2%.

In 2015 and 2016 we conducted detailed assessments of many of our upstream operations to fine tune our estimates. As this work progresses, we will continue to refine our data on methane emissions and intensity.

### Reducing emissions

We believe methane emissions from gas developments can be economically and technically controlled.

At our Khazzan site in Oman we have built a central processing facility that reduces the need for processing equipment at each individual well site, which can be additional sources of methane emissions in gas production.

In the US we use a process called green completions at our gas operations. This process captures natural gas that would otherwise be flared or vented during the completion and commissioning of wells. Another technique to reduce methane emissions is to replace gas-driven pneumatic equipment. For example, at our San Juan operations, we use solar energy to power equipment and that has led to a reduction in methane emissions and gas that would otherwise be vented.

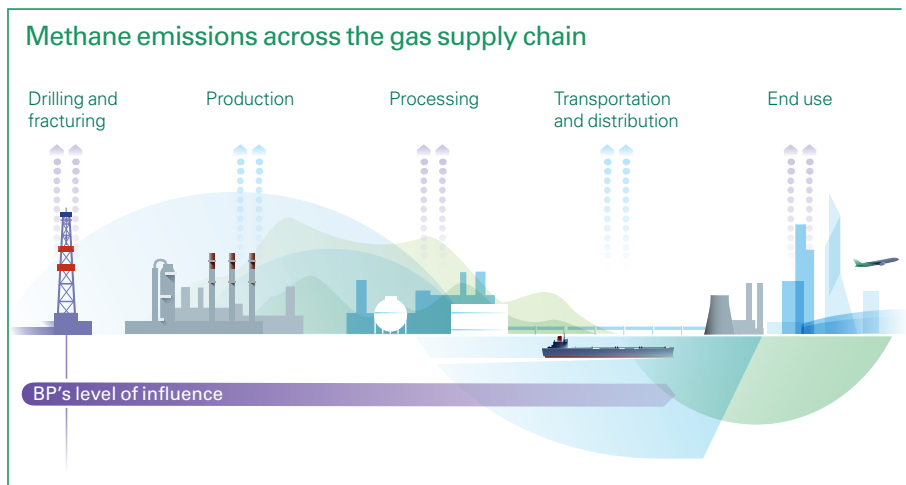
We have complex operational sites and pipelines that can stretch through hundreds of miles of difficult terrain. Depending on the location, we use infrared cameras, centralized monitoring stations, sniffer dogs (see page 45), or other techniques to detect gas leaks.

We inspect our major operations for leaks at least annually – and often more frequently depending on the technique used.

*“Our infrared cameras have been a valuable addition to the way we manage our methane emissions. The technology supplements our existing gas detection equipment, so we can identify and intervene on small seeps before they become more hazardous gas leaks. They've proved so successful that we are now looking to share our experiences with our upstream sites around the world.”*

**Fraser Buchan**

Health and safety leader, North Sea operations, BP



# Providing renewable energy

BP has the largest operated renewables business among our oil and gas peers.

Renewables will play an increasingly important role in a lower carbon future. They are projected to grow seven times faster than all other energy types combined. Today, they account for around 3% of global energy demand, excluding large-scale hydroelectricity.

BP has been producing renewable energy for more than a decade. Our strategy is to invest in renewable energy where we can build commercially viable businesses at scale.

With a focus on biofuels and wind, we have the largest operated renewables business among our oil and gas peers. This means that we are directly managing these businesses – from manufacturing biofuels from sugar cane to generating and distributing wind energy.

We are also evaluating other areas where we can access lower carbon, commercially attractive opportunities to complement our existing businesses.

## Biofuels

Biofuels can help reduce emissions from transportation, the fourth-largest source of greenhouse gas (GHG) emissions today. They can be used in existing cars and infrastructure without major changes.

Our biofuels business in Brazil makes ethanol and sugar from sugar cane. Brazilian sugar cane ethanol has life cycle GHG emissions that are 70% lower than conventional transport fuels. And, when used in hybrid vehicles, it can deliver similar GHG life cycle emissions reductions to electric vehicles.

Since we acquired majority ownership of the Tropical mill in 2011, we have more than doubled our production of ethanol equivalent.

In 2016, our three sites produced 733 million litres of ethanol equivalent. We estimate that our ethanol production avoided around 515,000 tonnes of CO<sub>2</sub>, equal to 241,000 fewer European cars on the road for a year.

We are investing in the development and commercialization of biobutanol, in conjunction with our partner, DuPont.



**Caption:** Sherbino is one of our four wind farms in Texas, which together can generate 580MW of electricity – enough to power around 157,000 homes.

Compared with other biofuels, biobutanol has the potential to be blended with fuels in higher proportions and be easier to transport, store and manage.

## Sustainable biofuels

Our Brazil biofuels business takes sustainability into consideration across the value chain. We make electricity from burning bagasse – the fibre that remains after sugar cane stalks are crushed. This low carbon power supplies energy for our mills and the local electricity grid. Our electricity exports represent around 11% of our mills' total revenues.

The sustainability of biofuels can vary greatly depending on the raw materials used and agricultural conditions. Brazilian sugar cane is one of the most land-efficient feedstocks for producing biofuels and other products.

Less than 2% of the land used for crops and pasture in Brazil goes towards sugar cane cultivation for ethanol. Even at this scale, enough ethanol is produced to fuel around half of the cars in Brazil.

Our largest biofuels mill is certified to Bonsucro, an independent standard for sustainable sugar cane production.

## Water

Sugar cane cultivation has the potential to increase pressure on water resources. The water intensity of our sugar cane cultivation in Brazil averages around 14 kilograms of water per kilogram of sugar and ethanol.

This is slightly higher than in 2015, due to drought early in the season, which led to more irrigation. Sugar cane ethanol water intensity still compares favourably to that of many agricultural food crops within the region.

## Wind energy

In the world today, wind power accounts for over half of all renewable power. And, we expect that – with decreasing production costs – onshore wind will become even more widespread.

BP is among the top wind energy producers in the US. The net generating capacity from our portfolio, based on our financial stake, is 1,452 megawatts of electricity. That's enough electricity to power almost 400,000 homes. And, we calculate that our wind activities helped avoid around 2.54 million tonnes of CO<sub>2</sub> in 2016.



*The US wind industry continues to experience steady growth, particularly with continued improvements in efficiency and costs, which have fallen by more than half since 2009.*



**Laura Folse**  
CEO, BP wind energy

# Investing in start-ups and innovation

Technological innovation underpins our efforts to make our operations and products more efficient and sustainable.

New technologies will help pave the way to a lower carbon future. We monitor selected technologies – particularly those aligned with BP's expertise.

## Venturing

Over the past decade, we have invested in start-up companies to help accelerate development and commercial viability of certain technologies. To date, we have invested around \$300 million in over 40 venture start-ups and funds, which has enabled a further \$2 billion in external equity investments and grants from other sources. In 2016, we deployed seven technologies within our own assets.

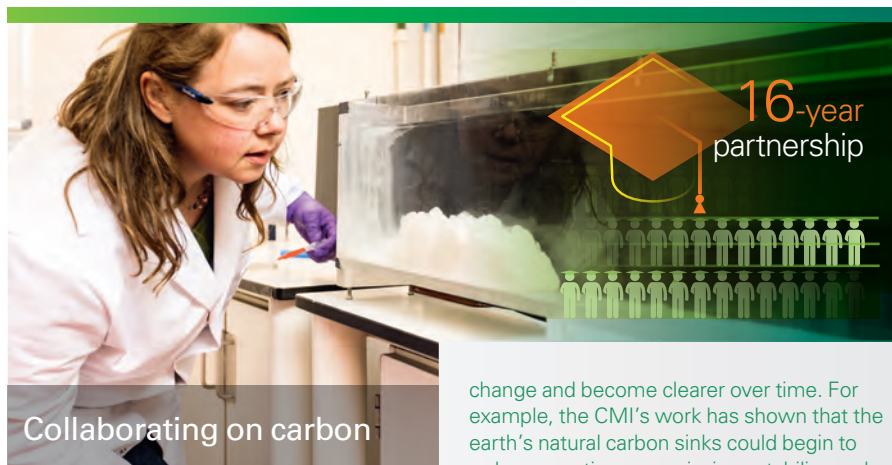
Around half of our venturing investments focus on low carbon solutions. For instance, Tricoya Technologies uses a process that alters the chemical structure of wood chips. This creates a more durable building material with increased thermal insulation and the ability to repel water. It also avoids carbon dioxide (CO<sub>2</sub>) emissions when used as a substitute for non-wood based building products.

Meanwhile, Solidia's technology has the potential to reduce the carbon footprint of concrete production between 30-70%. And, Lightning Hybrids has developed a hydraulic hybrid system for delivery trucks that, combined with *Castrol* hydraulic fluids, is designed to save fuel and reduce nitrogen oxide emissions.

## Carbon capture, use and storage

Implementation of carbon capture, use and storage (CCUS) technology could enable continued large-scale use of fossil fuels in a tightly carbon-limited world. For CCUS to become a reality there needs to be a stable policy framework and a commercially viable business model.

We are working with the Oil and Gas Climate Initiative to help speed up wide-scale use of CCUS. This is one of the focus areas for the initiative's \$1 billion investment vehicle dedicated to the development of low emissions technology.



## Collaborating on carbon

For the past 16 years, we have been working closely with Princeton University in the US on a research programme that aims to identify the most credible methods of capturing and storing a significant proportion of the world's carbon emissions from fossil fuels.

The Carbon Mitigation Initiative (CMI) brings together fundamental science, technological development, policy frameworks and business principles to accelerate the pace of discovery and the application of solutions at scale. Projects include exploring the potential for increasing the volumes of the world's carbon outputs currently stored in existing natural sinks, such as land and forests, and identifying the means to capture and store carbon at scale in new sinks in underground geological formations. Research findings are published at [cmi.princeton.edu](http://cmi.princeton.edu).

The Princeton initiative allows us to better assess the future resilience of our business and investments, not just in terms of understanding climate change but also the potential physical impacts our sites may face from factors such as changing weather and rising sea levels.

The long-term nature of this collaboration means we are better informed about the scientific uncertainties associated with carbon mitigation and fossil fuels as they

change and become clearer over time. For example, the CMI's work has shown that the earth's natural carbon sinks could begin to reduce over time as emissions stabilize and reduce. Improving our understanding of these sinks has important implications for how we manage carbon from fossil fuels in the future.

We also play our part by contributing to the work of the CMI research teams. We bring experience from our pioneering onshore CO<sub>2</sub> capture and storage project in Algeria and we provide data from oil and gas wells in North America that are no longer in use. This has made an important contribution to modelling by the CMI that indicates that less than 0.1% of CO<sub>2</sub> injected into a suitable geological formation is likely to leak over a 50-year period.

Academic collaboration, like that with CMI and others, brings insight and critical challenge to our business strategy.

Other academic institutions we work with on the climate challenge include:

- Energy Technologies Institute.
- Harvard University.
- Imperial College London.
- Tsinghua-BP Clean Energy Center.
- Tufts University.
- University of California.
- University of Cambridge.

BP has already built capability in CCUS technology through demonstration projects such as the In Salah CO<sub>2</sub> joint venture project in Algeria. And through research and investment by the CO<sub>2</sub> Capture Project, which is piloting technology and demonstrating secure geological containment.

[See \[co2captureproject.org\]\(http://co2captureproject.org\)](http://co2captureproject.org)



## Testing out new energy frontiers

BP is partnering with others to understand and develop solutions for the future.

- Sustainable mobility.
- Carbon management.
- Power and storage.
- Bio-products.
- Digital energy.

# Pursuing efficient operations

We work to manage our GHG emissions by improving energy efficiency, as well as by reducing flaring and methane.

Around 5% of all manmade greenhouse gas (GHG) emissions come from global oil and gas industry operations. That includes everything from finding, extracting and processing of hydrocarbon resources, to transforming and delivering these resources to customers.

During these processes, the most significant GHG emissions, including carbon dioxide and methane, come from the combustion of fossil fuels for energy and the flaring and venting of gas.

## Improving energy efficiency

The International Energy Agency estimates that energy efficiency will contribute around half of the emission reductions required by 2030 to stay below a 2°C threshold.

### Upstream

Our sites look for opportunities to increase energy efficiency. For instance, we lowered the furnace temperatures by 5°C at the Sangachal terminal in Azerbaijan, and replaced some gas turbines with electrical compressors at our Prudhoe Bay facility in Alaska. Efforts like these reduce both fuel consumption and GHG emissions, and we are actively sharing these practices across our operations.

To track the energy performance of our upstream operations, we calculate the energy used by, or lost from, our operations as a percentage of the energy produced by our operations. The increase in 2016 is primarily due to the divestments of some of our North Sea assets.

### Downstream

We measure the energy performance of our refineries using the Solomon Energy Intensity Index® (EII®), an industry measure that benchmarks energy efficiencies.

Each of BP's refineries sets and tracks progress against a target. In 2016 our overall refining EII® improved by 0.7%, which is ahead of the industry standard. Our Toledo refinery in

the US achieved the greatest reduction in energy intensity and we are sharing lessons learned with our other refineries.

We focus on ways to reduce energy intensity that deliver long-term benefits. For example, at our Whiting refinery in the US, we are using the steam generated by operations to help power the refinery. This has led to a reduction in Whiting's indirect GHG emissions, with more electricity generated on-site.

At our petrochemicals plant in Geel, Belgium, we have made technology improvements that achieve greater energy efficiency in producing purified terephthalic acid, used to make clothes, plastic bottles and other items. These upgrades allow us to use 30% less power, resulting in an overall GHG reduction of 14%.

### Shipping

We are introducing six liquefied natural gas carriers with energy efficiency enhancements to our shipping fleet. They are designed to use 25% less fuel and emit less nitrogen oxides than our older ships.

## Reducing flaring

Flaring is the controlled burning of gas during oil and gas production, refining and manufacturing operations. This can happen in the initial commissioning of a well, during the start-up of operations, as a safety release or during maintenance. That means that the amount of gas we have to flare fluctuates depending on the types of activity during the year.

We saw a 2% increase in flaring in our upstream operations in 2016, primarily due to operational and export limitations in Angola and increased drilling activity in Oman. These were largely offset by the increased availability of compressors in the North Sea and the drilling of a dedicated reinjection well in Angola.

In Indonesia we have been working on a long-term flare reduction programme. Since 2012 our Tangguh operations have reduced flaring by 67% by recycling gas for use as a fuel.

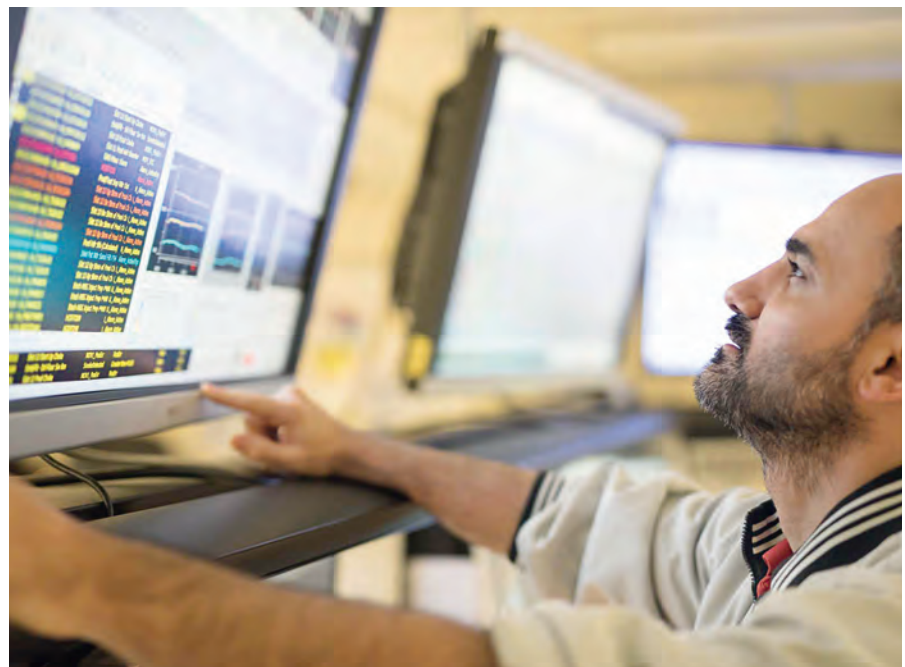
BP is a founding member of the World Bank's Global Gas Flaring Reduction partnership, which brings together governments, companies and international institutions to help use gas that would otherwise be vented or flared. We have worked with the state oil company of Azerbaijan, SOCAR, to increase gas recovery from offshore operations in the Caspian Sea – an effort commended by the World Bank.

We are also a member of the World Bank Zero Routine Flaring by 2030 initiative, which aims to eliminate routine flaring from oil assets by 2030. Routine flaring constitutes less than 5% of total flaring in our upstream operations. Our major new projects are designed to eliminate routine flaring.

We continue to evaluate our existing operations to identify viable opportunities to reduce all forms of flaring.

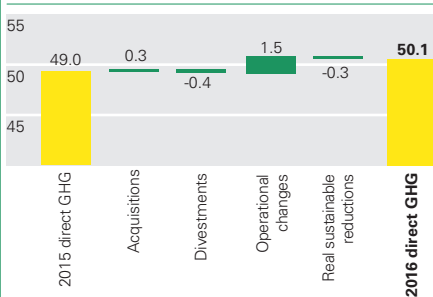
**i** See page 15 for how we are taking action to reduce methane emissions.

**Caption:** An operator at our Shah Deniz project in Azerbaijan, which is one of the largest gas developments in the world.

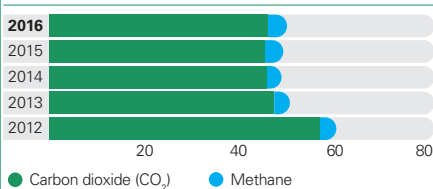


## Our performance<sup>ab</sup>

### Greenhouse gas emissions (MteCO<sub>2</sub> equivalent)



### GHG emissions by source (MteCO<sub>2</sub> equivalent)



### Energy efficiency (indexed to 2010)

	2014	2015	2016
<b>Upstream</b> (production/consumption loss)	112.7	98.3	<b>102.4</b>
<b>Refining</b> (energy intensity index performance)	104.9	103.8	<b>103.1</b>
<b>Petrochemicals</b> (energy intensity)	102.9	94.5	<b>82.3</b>

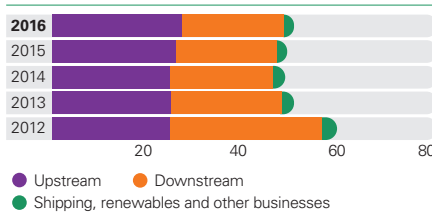
<sup>a</sup> We report GHG emissions from all BP's consolidated entities as well as our share of equity-accounted entities other than BP's share of Rosneft.

<sup>b</sup> See page 8 for minor adjustments made to previously reported data for direct GHG emissions, upstream GHG intensity and refining energy intensity index performance.

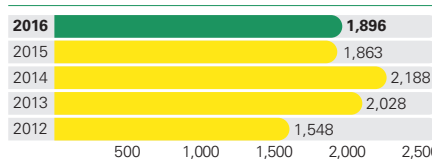
### GHG intensity (TteCO<sub>2</sub> equivalent/unit)

	2014	2015	2016
<b>Upstream</b> (per thousand barrels of oil equivalent)	32.0	32.7	<b>34.7</b>
<b>Refining</b> (per utilized equivalent distillation capacity)	978	944	<b>951</b>
<b>Petrochemicals</b> (per thousand tonnes)	291	290	<b>287</b>

### GHG emissions by activity (MteCO<sub>2</sub> equivalent)



### Flaring in our upstream operations (thousand tonnes (kte) of hydrocarbons)



## GHG emissions

Our direct GHG emissions are impacted year-on-year by changes in our portfolio and operations. For example, emissions can increase when we start up new projects or when we bring operations back online after planned maintenance. Both of these activities are essential for the safe performance and growth of BP's portfolio.

In 2016 the increase in our direct GHG emissions was primarily due to operational changes that include the start-up activities of the Sunrise oil sands project in Canada and the LNG plant in Angola. And one of our US refineries restarted operations following a planned shutdown for maintenance. Around a quarter of the increase is due to changes in how we calculate emissions.

This increase has been partially offset by our 'real sustainable reductions' – these are actions taken by our businesses to permanently reduce their GHG emissions in areas such as flaring, methane and energy efficiency. We began tracking this in 2002, and the running total by the end of 2016 exceeded 9.1Mte.

### Intensity

We track GHG intensity, which is the quantity of GHG emitted in tonnes per a defined unit of measurement. The GHG intensity of our upstream portfolio has risen in 2016 primarily because of an increased contribution from more GHG-intensive operations, such as our unconventional gas operations in the US.

We expect the GHG intensity of our refining portfolio to remain relatively stable or to decrease at certain refineries due to efficiency projects in progress and improved refinery utilization.

The decrease in GHG intensity of our petrochemicals portfolio reflects ongoing efficiency gains in our aromatics and acetyls businesses.



## Climate change adaptation

We seek to address the potential impacts of a changing and unpredictable climate – such as sea-level rise, higher temperatures, extreme weather events and greater or less precipitation – on our new projects from the design phase.

We consider these risks for new projects with an operational life greater than 10 years. For example, we expect our Clair Ridge project in the North Sea to be in use for around four decades – so we have designed the platforms to withstand possible sea level rise, among other factors.

We have guidance to help our existing operations and projects identify potential impacts and adapt to a changing climate.

In Iraq, to redevelop an existing oilfield, we are selecting new equipment to better withstand extended periods of high temperatures. And, at our South Caucasus pipeline, we decided to place some of the pipeline deeper underground to avoid potential washouts due to flooding.

We have used global climate models, supported by scientists from Princeton University and Imperial College London, to help us assess possible climate impacts relevant to selected operations.

# Helping our customers reduce emissions

We are working to reduce the carbon footprint of many of our fuels, lubricants and petrochemicals products.

Around 80-90% of carbon dioxide (CO<sub>2</sub>) emissions from oil and gas products are from their use by consumers in transportation, power plants, industries and buildings. BP provides an increasing number of lower carbon, energy efficient and high-performance products to help our customers reduce their carbon footprint.

## Road transport

BP develops *Castrol* lubricants with lower viscosity, which helps manufacturers improve the efficiency of their vehicles. We estimate that – when compared with our 2004 *Castrol* formulation – our more recent lubricants have helped avoid more than five million tonnes of CO<sub>2</sub> over the past 10 years. That's the CO<sub>2</sub> equivalent of removing almost a quarter of a million European cars from the road each year.

In India, we provide customers with a diesel lubricant that uses re-refined engine oil as its base, thus reducing CO<sub>2</sub> emissions in the production and use of the lubricant. We have also developed lubricants formulated with 25% renewable plant-based oil.

We work in partnership with vehicle and equipment manufacturers to achieve more efficient use of our fuels and engine oils. In Europe, for example, Ford's EcoBoost engines – used in the Fiesta, Focus, Mondeo and other models – are engineered with specially formulated advanced *Castrol* oils, which help to improve fuel efficiency and reduce emissions.

BP's new range of fuels with *ACTIVE* technology use an innovative formula designed to help keep engines running smoothly and efficiently by fighting dirt in the car's engine and protecting against its build up.



## Air transport

BP supplies fuel for more than 6,000 flights a day. We are helping our aviation customers to reduce their emissions in a number of ways.

At Norway's Oslo airport we helped to make jet biofuel available using existing fuelling infrastructure. And in 2016, we achieved carbon neutrality for our into-plane fuelling services across a network of more than 200 Air BP-operated facilities.



*The airline industry has set itself rigorous targets to reduce emissions over the next 30 years. The growth in our biojet business is part of our commitment to helping our customers meet those goals.*



### Tufan Erginbilic

Chief executive, Downstream, BP

In addition, BP is partnering with Fulcrum BioEnergy – a company that produces sustainable jet fuel from household waste. We are investing \$30 million in Fulcrum and are planning to supply the fuel to some of our aviation customers in North America.

## Plastics for everyday items

BP is one of the world's largest producers of purified terephthalic acid (PTA) and its feedstock paraxylene. These are used to make everyday items, such as clothes, soft drinks bottles and other packaging.

Using proprietary technology retrofitted at our site in Belgium, BP has developed *PTAir*: PTA with around a 30% lower carbon footprint than average European PTA production. Customers also have the option to upgrade to carbon neutral PTA and offset their product's entire carbon footprint, using BP Target Neutral.



Target Neutral

Over the past 10 years, our not-for-profit carbon offsetting programme, BP Target Neutral, has helped our customers offset 2.5 million tonnes of carbon dioxide equivalent – half of which was achieved in the past three years.

The programme invests in emissions reductions projects around the world. The independent selection panel considers the project's carbon abatement attributes, as well as its contribution to the UN Sustainable

Development Goals (see page 47). We support efforts as diverse as forest conservation in Zambia, wind farm construction in Turkey and a biomass power generation project in China. All projects meet industry standards approved under the International Carbon Reduction and Offset Alliance code of best practice.

BP uses the carbon credits created by the projects to provide carbon neutral opportunities for our customers. For instance, our range of *Castrol Professional* lubricants – supplied to vehicle manufacturers for use when servicing cars in dealerships – are certified as CO<sub>2</sub> neutral via the programme.

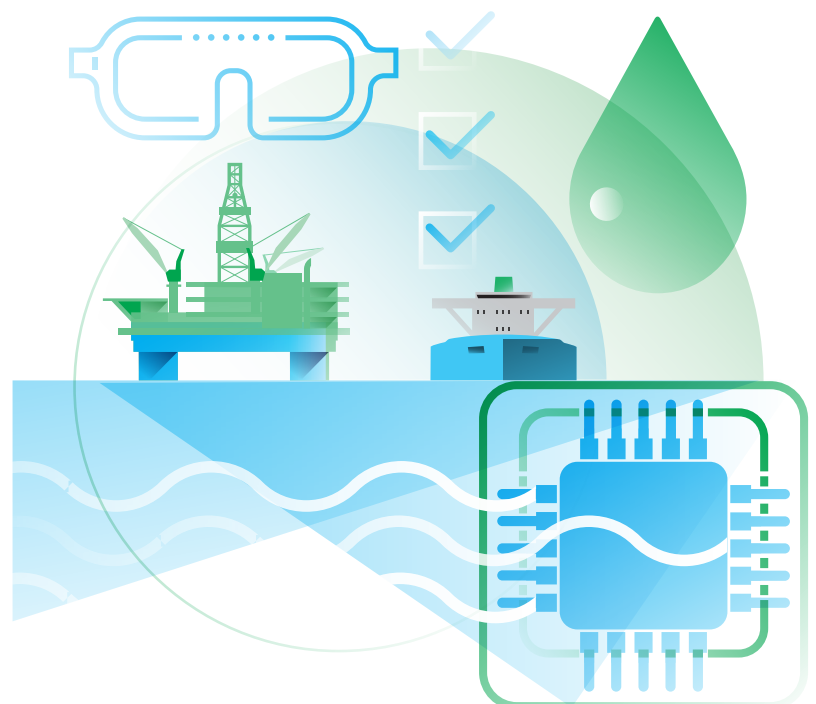
 See [bp.com/targetneutral](http://bp.com/targetneutral)



# Focusing on safe operations

Safety is one of our values and our number one priority. Our stated aim is to have no accidents, no harm to people and no damage to the environment.

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# Process safety

Major accidents can result in serious harm – which is why process safety is so important.



Caption: Using technology to monitor conditions on board our Thunder Horse platform in the Gulf of Mexico.

Process safety means designing our facilities to appropriate standards and using robust engineering principles. It also underlines the importance of having capable people and rigorous operating and maintenance practices.

It starts with taking a systematic approach to identifying and managing the hazards involved throughout our operations' life cycle – from initial project planning through to closure. If we can't eliminate a risk, we put measures, or 'barriers', in place to reduce or manage it, and ultimately mitigate the consequences should these fail.

For example, pipeline corrosion, operating mistakes and equipment malfunctions are just a few of the possible causes for a spill or loss of primary containment. We take time to understand how people, plant or processes could cause such an event – so that we can apply appropriate management and mitigation measures.

Then we carry out checks to make sure these measures are working properly. This helps us detect and fix problems before an incident occurs. We also conduct checks of selected contractors' safety management systems.

## Using advanced technology

New technologies are helping us to increase the amount and quality of data that we gather from our operations and speed up our analysis, allowing us to act more quickly. For example, we are piloting software that identifies early warning signs of potential performance problems by gathering machinery and plant

data, analysing it and bringing it all to a single screen so engineers can more quickly troubleshoot and resolve potential issues.

We are testing magnetic crawler robots to inspect the pipelines that connect our deepwater wells with our platforms. The robots use lasers to identify corrosion or damage. This can provide us with earlier warnings of potential safety issues.

We also use technology that gives us extra eyes on our offshore wells to help inform decision-making. We have a monitoring centre in Houston in the US where our teams can monitor data in real-time from our operated rigs in the Gulf of Mexico, as well as offshore exploration and high-impact wells around the world.

## Our performance

To track our safety performance, we use industry metrics, such as the American Petroleum Institute recommended practice 754 and the International Association of Oil and Gas Producers recommended practice 456. These include tier 1 process safety events, which are losses of primary containment of greater consequence – such as causing harm to a member of the workforce, costly damage to equipment or exceeding defined quantities. Tier 2 events are those of lesser consequence. The overall number of process safety events decreased in 2016, continuing the downward trend of the past five years.

Another metric that tracks unplanned or uncontrolled releases of our products from



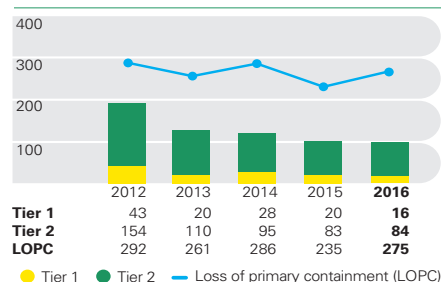
*The fundamentals of how we deliver safe and reliable operations remain unchanged in a lower oil price environment. Our operating management system is good for all seasons, whether the market is weak or strong. Our safety data indicates that our hard work is having an impact. And I see this for myself too through site visits and in my discussions with our leaders – we must keep safety front and centre of everything we do.*



## Bob Fryar

Executive vice president, safety and operational risk, BP

## Process safety events (number of incidents)



pipes, containers or vehicles is loss of primary containment (LOPC). This is a BP metric that includes events within our operational boundary, excluding releases of non-hazardous substances such as water. We saw an increase of LOPCs in 2016, partly due to harsher winter operating conditions in our unconventional gas operations in the US.

We have seen improvements in our process safety performance over the past five years. For example, at our Rotterdam refinery, the number of tier 2 events has reduced from 12 in 2012 to just one in 2016. Alongside this, the refinery's availability has increased, with 2016 its best year in over a decade.

We see examples of this right across our operations – we believe this shows that the rigour needed to produce safe operations tends also to produce reliable operations.



### Human performance in safety

How our people interact with equipment, processes and each other is fundamental to operating safely. We are working to identify and adopt good practices for managing human performance drawn from inside and outside the industry. Through this, we aim to improve our equipment and processes so we can better support our people and reduce the likelihood of mistakes occurring in safety critical tasks.

### A learning organization

We remain focused on improving safety across BP. Our operating management system, which covers requirements on safety, security, contractual relationships and organizational learning, is designed to help us manage risks and drive improvements. We analyse our performance and apply lessons learned from incidents, near misses, self-verification, assurance and audit findings. This helps us build a picture of our risks, focus our analysis and inform where to concentrate our safety efforts.



### Walking the line to zero in Toledo

During 2016 we completed a major maintenance and upgrade exercise at our Toledo refinery in the US. This involved a full shutdown of the plant to carry out the work.

Bringing a refinery back online is a complex process. During previous start-ups, we had experienced leaks or losses of primary containment (LOPCs). Although relatively small, they needed urgent resolution.

In preparation for the maintenance work in 2016, our refinery team revisited an industry methodology known as 'walk the line'. This focuses on the human factors that

can contribute to LOPCs, such as how checks are conducted, and the quality of handovers between teams. It also provides tools to reinforce a more systematic approach to pre-start-up procedures.

In readiness for the start-up, our maintenance teams checked hundreds of valves positioned along pipes to identify and fix potential integrity problems. Site managers used checklists and detailed drawings of the process units to sign-off each completed inspection. Importantly, managers set clear expectations with their teams for the start-up, including the ultimate goal of zero LOPCs.

We saw the benefits of walking the line in Toledo – the refinery restarted without a single LOPC. We are sharing the lessons we learned from this experience with our other refineries.

## Contractor safety

### More than half the hours worked by BP are carried out by contractors.

Our ability to be a safe operator depends in part on the capability and performance of those who help us carry out our work. Our standard model contracts include health, safety and security requirements. Bridging documents are necessary in some cases to define how our safety management system and those of our contractors co-exist to manage risk on a site.

Contracts involving work that could result in the most serious safety risks demand our highest scrutiny. We conduct pre-contract quality, technical, health, safety, security and environmental audits for these contractors on a risk-prioritized basis, and provide structured oversight while the work is carried out.

In 2016 we brought together suppliers of goods and services to our upstream operations to discuss how the industry can collaborate on safety. A focus of the event was the importance of reinforcing a speak-up culture. When people feel comfortable reporting safety concerns, leaders have an opportunity to address issues, and this can in turn help prevent incidents.

### Shared problem solving

We have been working with drilling contractors and equipment manufacturers to analyse causes of failure in blowout preventers – the mechanical devices used to seal and control hydrocarbons during drilling operations.

This work has led to greater reliability, with a significant reduction since 2012 in the number of times that we need to bring this subsea equipment up to the surface for unplanned testing and maintenance. It has also led to equipment manufacturers redesigning valve and seal components in the blowout preventers.

Building on this, we have been working with other operators, rig contractors and equipment manufacturers to develop an industry-wide database to share information on blowout

preventer defects and failures. This has led to broader industry collaboration on enhancing the performance of the equipment.

### Training together

We work with Maersk Training to provide our drilling teams with state-of-the-art simulation facilities in the US and Denmark. BP staff and contractors practice working together under the specific conditions found in their drilling operation.

This provides valuable, hands-on training to prepare our teams to tackle critical jobs on the rig. In addition to technical skills development, the training enhances how participants work with each other, lead, make decisions and manage various challenges.

**i** Watch the video to see how this works in practice at [bp.com/maersktraining](http://bp.com/maersktraining)

# Personal health and safety

We are committed to keeping people safe, whether they work on our sites or live in communities near our operations.

Despite our efforts, we experienced three workforce fatalities in 2016. One contractor died following a leg injury sustained at our biofuels business in Brazil and two contractors died in a pipeline construction incident in Oman. We deeply regret the loss of these lives and continue to focus our efforts on eliminating the risk of injuries and fatalities in our work. Following the Oman incident, we have shared lessons learned across BP as well as with our industry peers.

## Golden rules

Our golden rules of safety guide our workers on staying safe while performing tasks with the potential to cause the most harm. The rules are aligned with our operating management system and focus on areas such as working at heights, lifting operations and driving safety.

## Leadership and capability

Creating and maintaining the right safety culture is an essential part of operating safely. It takes strong leadership and personal responsibility from all members of our workforce, who each have a responsibility and the authority to stop unsafe work.



*There's always an opportunity to learn from each other – especially in terms of safety. It pushes us to consistently challenge ourselves to be better.*



**Jason James**

Blender process superintendent, Cherry Point refinery

## Health and wellbeing

We aim to manage health hazards that could cause harm to our workforce or nearby communities. For some of our more significant hazards – such as exposure to benzene or noise – we monitor exposure levels and use that information to put appropriate measures in place. For example, at our Kwinana refinery in Australia, we reduce noise exposure by using quieter equipment and sound barriers.

Our health programmes consider global concerns, such as the possibility of an influenza pandemic. The zika virus emerged as a new threat in 2016 and we provided guidance to our employees on how to avoid the mosquito-spread disease.

We also encourage our employees to assess their lifestyles and provide online training modules in the areas where we see the most need, such as fatigue, stress, office ergonomics and travel health.

## Product safety

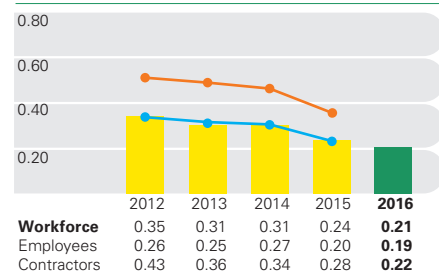
We assess our products to identify any potential health, safety or environmental aspects and to verify compliance with chemical control, product safety and hazard communication regulations, monitoring developments in regulation globally.

## Our performance

We monitor and report on key workforce personal safety metrics and include both employees and contractors in our data.

Our recordable injury frequency and our day away from work rates have reduced across BP in 2016. This continues a pattern of improvement in personal safety over a number of years, which is encouraging. However, we know we must maintain our efforts to continue improving safety in our operations.

### Recordable injury frequency – workforce (per 200,000 hours worked)

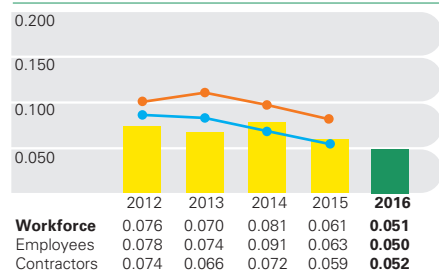


— American Petroleum Institute US benchmark<sup>a</sup>  
— International Association of Oil & Gas Producers benchmark<sup>a</sup>

<sup>a</sup>API and IOGP 2016 data reports are not available until May 2017.

We measure our workforce recordable injury frequency, which is the number of reported work-related incidents that result in a fatality or injury per 200,000 hours worked.

### Day away from work case frequency – workforce (per 200,000 hours worked)



— American Petroleum Institute US benchmark<sup>a</sup>  
— International Association of Oil & Gas Producers benchmark<sup>a</sup>

<sup>a</sup>API and IOGP 2016 data reports are not available until May 2017.

We also measure our day away from work case frequency, which is the number of incidents per 200,000 hours worked that resulted in an injury where a person is unable to work for a day (or shift) or more.

**Caption:** Two of our wind farms achieved seven years without a recordable injury in 2016.

# Transportation safety

We work to safely transport our people and equipment to our sites, and our fuel to customers.

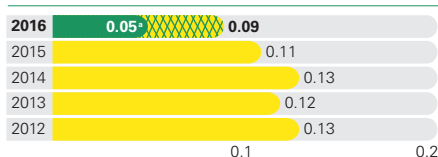
## Driving safety

Vehicle accidents remain one of our industry's key risks. In 2016, BP employees and contractors drove over 500 million kilometres, the equivalent of about 13,300 journeys around the world. Transporting fuel from refineries to service stations, along with other downstream activities, account for most of these kilometres.

There were 554 reported vehicle accidents in 2016. This was the second consecutive year in which we have recorded no driving-related workforce fatalities. We believe this reflects the positive impacts of a sustained effort to improve driving safety, working with employees, contractors and communities.

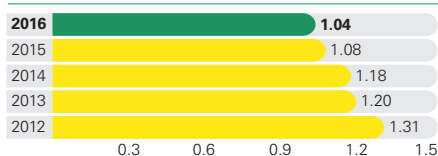
We provide drivers with guidance on road safety, including advice on what constitutes a fit-for-purpose vehicle. We tailor our driving safety programmes to take account of local risks and conditions, such as driving culture, road quality or extreme weather. For example, in certain locations where we consider driving safety to be a greater risk, we use in-vehicle monitoring systems such as GPS tracking and cameras.

### Severe vehicle accident rate (per million kilometres driven)



\*This figure is based on our new definition which aligns with industry practice. We have included an estimate of the rate based on our previous definition for comparative purposes.

### Total vehicle accident rate (per million kilometres driven)



## Rail safety

Our sites receive and distribute oil and gas products by rail using BP-owned or leased, as well as third-party, railcars. Much of this is in the US. For example, at our Cherry Point refinery, we receive on average 55,000 barrels of crude oil by rail per day.

Our railcars have insulation to protect cargo in the event of a fire and a protective shell to defend against puncturing and resulting spills or releases.

## Aviation safety

We use a variety of aircraft in our operations, sometimes in challenging conditions, such as offshore or in remote areas. Our safety requirements cover the approval of aviation operators, contracting for aviation services, and the safe management of any aircraft operated on behalf of BP.

There have been a number of incidents in the industry involving helicopters in the North Sea over the past few years. Helicopter suppliers,

regulators and oil and gas companies have collectively analysed these events. As a result, our industry is using enhanced emergency breathing systems for offshore helicopter passengers in the UK and is evaluating plans for a wider roll-out.

There was a serious incident involving a helicopter in the North Sea in April 2016. Although the incident did not involve BP, the helicopter operators who provide services to us no longer use these aircraft for transporting BP workers.

## Shipping safety

We move significant volumes of oil, gas, lubricants and chemicals around the world by sea and through local waterways. We use both BP-operated and chartered vessels.

All are subject to our health, safety, security and environmental requirements. To help avoid major spills, all ships in our managed international fleet are double-hulled.



### Driving change in Brazil

The World Health Organization estimates that fatalities from road traffic accidents in Brazil are double the rate experienced in the US.

In 2011 BP began its Brazil biofuels operations, producing ethanol and sugar from locally grown sugar cane. Heavy vehicles transport the cane from the farms to the mills and deliver the products to markets across Brazil. In addition, we contract buses to bring the majority of our 6,000-strong workforce to and from work from neighbouring cities.

Sadly, there have been several vehicle-related fatalities among our Brazilian workforce and third parties over the years. Off-road driving, unpaved roads, dust in dry conditions, stopping distances in wet conditions and local driving behaviours were some of the contributing issues.

To improve safety we have replaced the fleet with new buses, enhanced driver training and provided seat belts. Through in-vehicle cameras, we can also record driving behaviour and use this as a coaching aid to improve driving skills.

We experienced no fatalities in our transport activities in 2016 and have seen improvements in driving safety – but we continue to be vigilant in what remains a challenging operating environment.

# Security and crisis management

The scale and spread of our operations means that we must be prepared to respond to a range of possible disruptions.

Potential threats to our business are not always predictable and come in many forms, such as major accidents, political instability, health alerts or extreme weather. We have measures in place to try to anticipate them and be ready if an incident or crisis occurs.

We work with government and other response agencies in crisis and continuity management planning as part of our work to keep our people and the public safe and to mitigate impacts to the environment.

Our businesses carry out crisis response exercises at both a local and regional level to test their readiness.

## Cyber threats

Cybersecurity is one of BP's highest priority risks, with breaches presenting a risk to the security of our information, IT systems and operations.

We work closely with governments, law enforcement agencies and industry peers to understand and respond to new and emerging cyber threats.

We also monitor our IT systems for suspicious activity and work with our employees to promote responsible online behaviours.

**i** See page 44 for how we are encouraging our employees to 'think before they click'.

## Security

BP monitors for hostile actions that could cause harm to our people or disrupt our operations. We assess risk on an ongoing basis in those operating areas that are affected by political and social unrest, terrorism, armed conflict or criminal activity.

Our central security team provides guidance and support to our businesses through a network of regional security advisers.

We help our people to stay safe when they are travelling on business. We have a 24-hour response information centre that keeps watch over global events and related developments.



## Oil spill response – a North Sea case study

Although our priority is to prevent oil spills and other releases, they can still happen. In October 2016, approximately 95 tonnes of oil and a quantity of water leaked from the Clair platform into the sea due to a technical issue with the system that separates the mixed production fluids of water, oil and gas.

We triggered our oil spill contingency plan and emergency response procedures, and stopped the oil reaching the sea within an hour of it being discovered.

We worked with relevant UK government agencies and the oil spill response co-operative, Oil Spill Response Limited, to assess the potential impact on the environment and to agree the best way to respond. In this case, it was by allowing the oil to disperse naturally at sea. Our computer modelling predicted that the prevailing currents and weather conditions would carry any oil away from land and that it would break up and disperse naturally in a few days.

As a precaution, we kept other response options open, such as the use of dispersants and skimming equipment.

Although the likelihood of oil coming ashore was assessed to be very low, we also worked with the local authorities to carry out surveys on Shetland's beaches to confirm baseline conditions and prepare for the extremely unlikely event that any shoreline clean-up might be needed.

In March 2016, for example, we quickly identified, alerted and safely accounted for every member of the workforce who was travelling through Brussels during the tragic terrorist attacks.

We monitored the progress of the oil closely to check whether these other response strategies would be needed. Aerial surveillance and satellite imagery showed that, within five days, there was no visible evidence of oil in the sea. This indicated a rapid evaporation and natural dispersal, which was confirmed by continued monitoring over subsequent days.

Throughout our response we kept in contact with a variety of external interest groups such as the Shetland Islands Council, the Scottish Fishermen's Federation and the Shetland Fishermen's Association.

With this incident, as with any other, we will examine the outcomes of the incident investigation and apply any lessons learned.



*We conduct emergency response exercises regularly and this really helped when it came to a real event in 2016. For example, we had done a lot of preparatory work on the importance of adapting our incident management team in a controlled way in an emergency. We put this into practice in our response in 2016. Having established relationships with external organizations helped too – it made communication considerably easier during the incident.*



### Tommy Clark

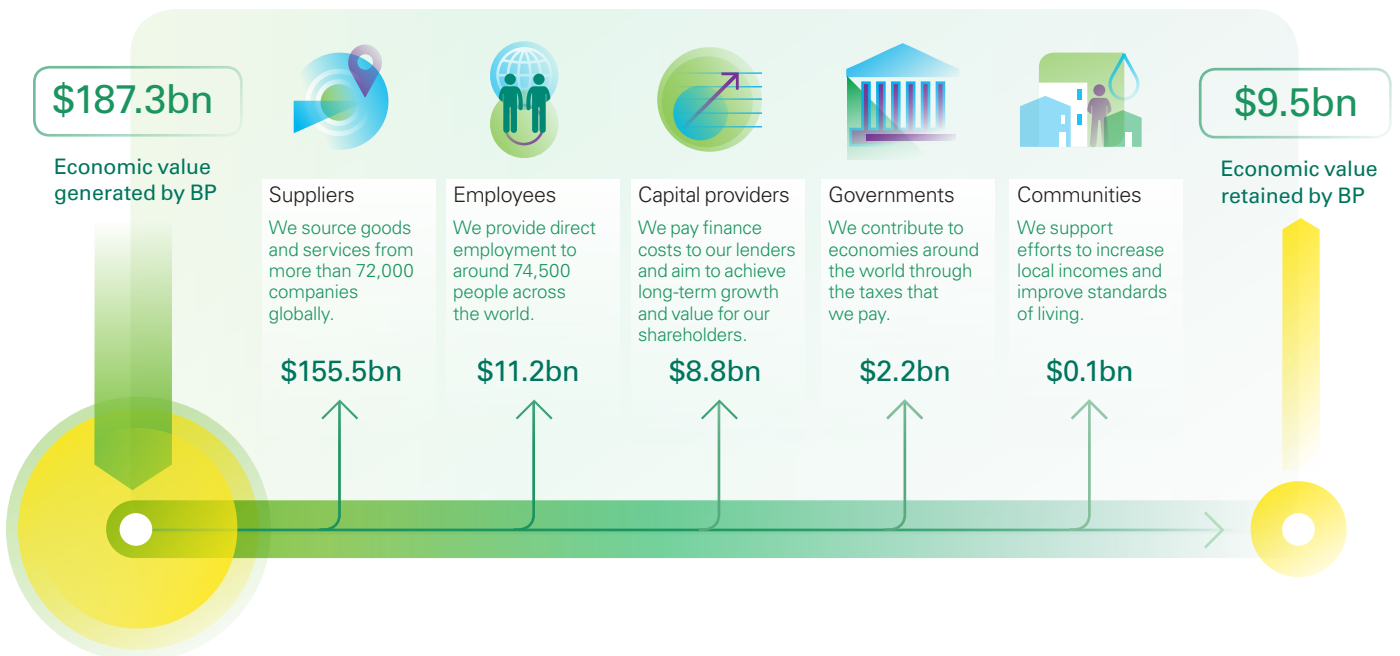
Crisis continuity management and emergency response manager, BP North Sea



# Maximizing value to society

The energy we produce serves to power economic growth and improve the quality of life for millions of people. We aim to have a positive and enduring impact on the communities in which we operate.

## The value we deliver to society



# Supporting local development

We contribute to societies through our core business activities as well as through our community investments.

## Local workforce development

We aim to recruit our workforce from the community or country in which we operate. We believe this benefits the local community and BP – and is often part of our agreement with government partners.

In Angola, 86% of our workforce is Angolan nationals, with plans to achieve 90% by 2020. One way we are working towards meeting this goal is by helping to develop skills in the country. Our offshore technicians programme, for example, helps nationals looking to develop a career in the oil and gas industry. Trainees learn technical skills in engineering disciplines such as production, electrical, instruments and controls. The majority of technicians working on our Greater Plutonio development graduated from this programme.



*When I joined BP's offshore technicians programme as an apprentice in 2003, I didn't think that one day I would become the company's first Angolan area operations manager for Block 18. But the apprenticeship equipped me with the knowledge and skills I need to do the job and I'm excited to be part of this groundbreaking project.*



**Danny Waya**

Area operations manager, Greater Plutonio, BP Angola

## Local suppliers

We contribute to the growth of local businesses in the regions where we operate.

In Azerbaijan, for example, we are helping to build the skills of local companies so that they can improve their competitiveness when bidding for work with international firms, which supports the local economy. Our enterprise and development programme has helped local companies secure international contracts with BP in Azerbaijan in excess of \$61.5 million in 2016.



## A decade-long commitment to Tangguh

Located in the remote Papua Barat province, Tangguh is Indonesia's second-largest liquefied natural gas supply facility.

Until 2014 the people of Papua Barat relied on diesel-fuelled generators for electricity. Health clinics and other public services had to allocate much of their annual budgets to the purchase of diesel. We have reduced the community's reliance on diesel by using gas at the plant to generate and supply electricity to local communities.

More than half of our workforce in Tangguh is Papuan. This is a direct result of internship and apprentice programmes that focus on training graduates from Papua and Papua Barat. We are committed to reaching an 85% Papuan workforce by 2029.

And in South Africa, we support small businesses, with around a third of our spend on suppliers going to enterprises with an annual turnover of less than \$4 million. In addition, around 2% of our profit after tax in South Africa is spent with small companies with a majority black or black women ownership.

In 2016 BP and partners entered a final investment decision to expand our Tangguh facility following approval from the Indonesian government in 2014. As part of the development, we have set a target of sourcing 38% of our services and project materials from local suppliers.

Additionally, our day-to-day operations provide opportunities for sustainable local economic development. Tangguh's need for workplace clothing and uniforms, along with the growing availability of electricity supplies, led us to support the foundation of two sustainable local businesses, one in clothing manufacture and another in air conditioning maintenance.

Meanwhile, the introduction of an early diagnosis and treatment programme for malaria has virtually eliminated the disease in surrounding villages. Support for the provision of teachers, school facilities and infrastructure has improved local literacy rates.

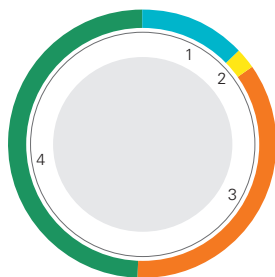
Our progress on human rights, security, governance and other social issues is monitored by the Tangguh Independent Advisory Panel, which we established in 2002.

[See bp.com/tangguhcommitment](http://bp.com/tangguhcommitment)

Through our supplier development programme we have provided business training and mentorship to 14 local suppliers.

In Australia, we have a targeted procurement strategy to support indigenous businesses. In 2016 we spent more than \$400,000 on indigenous suppliers and aim to increase this to around \$800,000 in 2017.

### Contribution to communities by region (\$ million)



● 1. UK	7.9
● 2. Rest of Europe	1.6
● 3. US	21.4
● 4. Rest of world	30.2

### Community investment

We seek to make meaningful community investments that meet local needs and align with our business activities.

As an example, our Khazzan project will provide a major new source of gas for Oman, with production expected to represent

around 40% of its total domestic gas supply. We aim to deliver sustainable socio-economic development in the country, including in the areas near to BP’s projects and operations. The focus of our social investment programme includes building local capability in education, enterprise development and energy sustainability. Since we launched the programme three years ago, we have worked with community partners to reach more than 30,000 people.

In the UK, our five-year Enterprising Science programme focuses on addressing the shortfall of graduates in science, technology, engineering and maths, collectively referred to as STEM. We partner with King’s College London and the Science Museum to provide teachers with tools and techniques aimed at getting more young people interested in careers as scientists and engineers. The aim is to reach more than 400,000 students across the UK by the end of 2017.

### Direct spending on community programmes

Our direct spending on community programmes in 2016, including disaster relief, was \$61.1 million (2015 \$67.2 million, 2014 \$85.0 million).

#### The BP Foundation

The BP Foundation is a charitable organization that works to benefit communities around the world, prioritizing donations to charities that support STEM education and humanitarian relief.

The foundation also matches personal contributions from BP employees that are made to eligible charities of their choice. In 2016 employees gave around \$6.5 million, which was matched with grants of approximately \$6.9 million.

It also contributed \$260,000 to local relief organizations in areas affected by natural disasters.



Creating value in the West Nile Delta, Egypt

Our West Nile Delta project is expected to increase Egypt’s current gas production by 30% when it comes onstream in 2017. To bring lasting benefits to the communities where the gas will come ashore, our social investment programme contains a commitment to employ people from the surrounding communities and use local suppliers where appropriate. We also invest in programmes aimed at improving local economic development and important community services, such as health and education.

For example, we support healthcare in the communities that are closest to the project’s onshore gas processing facilities. The two public local hospitals – in Idku and nearby Rashid – received approximately \$1 million for emergency response equipment in 2016. Idku hospital serves a population of around 150,000, and the donation has helped fund ventilators, defibrillators, cardiac monitors and medication pumps.

We have also set up a micro-finance initiative, administered by non-governmental organizations, that provides small interest-free loans to help establish new local businesses. The initiative approved more than 900 loans, of up to \$1,100 each, in its first seven months of operation. This money helped a range of small enterprises, such as taxi services, mechanical

workshops and weaving businesses. One third of these initial loans went to women setting up their own businesses.

“ Our plan is to deliver a tailored programme that truly reflects our values, showing respect for local needs and local culture. The real measure of success of our social investment programme will be when the community takes pride in the presence of our West Nile Delta project. ”

**Moataz Atef**  
In-country project general manager,  
West Nile Delta, BP Egypt

# Engaging with communities

We work with local communities in an open and constructive way.

Our activities sometimes have impacts on the people who live close to our facilities. For this reason, when we plan new projects we assess potential impacts on communities, including on indigenous peoples, such as health and safety, security, water use, air quality, resettlement, cultural heritage, labour rights and local livelihoods.

This helps us to identify early on whether any activities could affect the rights of people living in nearby communities – and to find ways to prevent or mitigate those impacts before any work begins.

## Community consultation

We consult with communities about potential impacts from our operations so that we can address any concerns or requests. We require our businesses to respond to concerns, as well as record and act on any commitments.

In 2016 concerns raised by communities living near our major operations included property damage, security, noise, odour, dust, job opportunities for local residents, community investment programmes and flaring.

We believe that listening and responding to concerns raised by communities enables all sides to constructively resolve potential disagreements and avoid disruption to our activities.

In Iraq, where we are working in a consortium to develop the Rumaila oil field, residents expressed concerns about the planned expansion of a water treatment plant. We worked with a non-governmental organization that brought together local people, government and the consortium to identify concerns and implement solutions. For example, some residents expressed concerns about the lack of fresh water in the local area, so the consortium constructed a new water pumping station, which has helped deliver fresh water to around 1,000 households. Other actions included rebuilding a road to the plant and improving healthcare facilities.

In Azerbaijan, the construction of a new marine pipeline to our Shah Deniz 2 project had the potential to impact the local fishing industry. We talked to local community



**Caption:** An operator works at the Rumaila oil field in Iraq, which reached production of three billion barrels of oil in 2016.

members and conducted surveys prior to and during construction to monitor any change in the livelihoods of the fishermen.

As a result of the engagement, fishermen were compensated for temporary loss of income and we established a channel for them to raise concerns.

## Evaluating our community complaints mechanisms

We assessed the effectiveness of community complaints mechanisms at 23 of our sites in 2016, using criteria from the UN Guiding Principles on Business and Human Rights.

We found that although some have strong mechanisms in place, there is still room for improvement. Some sites, such as our refinery in Germany and petrochemical plant in Belgium, already make their mechanisms easily accessible to community members and have well-documented procedures. Other sites, for example our plants in China, plan to introduce more systematic mechanisms.

We provide advice, training and tools to help our sites manage community complaints in a way that conforms with our human rights policy and meets our commitment to the UN Guiding Principles. We also share industry guidance from IPIECA on community complaints mechanisms with our sites.

### **i** More information

**Our approach to human rights**  
Page 33

**Managing our environmental and social impacts**  
Page 45

**About our work in Iraq**  
See [bp.com/collaborationiniraq](http://bp.com/collaborationiniraq)



# Fostering transparency and anti-corruption

We support transparency in revenue flows from oil and gas activities to governments and have a responsibility to our host countries to be ethical in our dealings.

We contribute to economies around the world through the taxes that we pay. We paid \$2.2 billion in income and production taxes to governments in 2016 (2015 \$3.5bn, 2014 \$8.0bn).

We participate in initiatives to simplify and improve tax regimes to encourage investment and economic growth. We also support efforts to increase public trust in tax systems.

## Revenue transparency

The Extractive Industries' Transparency Initiative (EITI) supports disclosure of payments made to, and received by, government in relation to oil, gas and mining activity.

As a member of EITI, BP works with governments, non-governmental organizations and international agencies to improve the transparency of payments to governments.

We disclose information on payments to governments for our upstream activities. We report on a country-by-country and project basis as required by UK regulation. These payments could be made in the form of taxes, production entitlements, royalties, bonuses, fees and infrastructure improvements.

We also make payments to governments in connection with other parts of our business – such as the transporting, trading, manufacturing and marketing of oil and gas.

**i** See [bp.com/tax](http://bp.com/tax) for our approach to tax and our payments to governments report.

## Anti-bribery and corruption

We operate in some of the world's highest-risk countries from an anti-bribery and corruption perspective.

Our code of conduct explicitly prohibits engaging in bribery and corruption in any form. We have a responsibility to our employees, our shareholders and to the countries and communities in which we do business to be ethical and lawful in our work.

Our anti-bribery and corruption policy applies to all BP-operated businesses. It sets out appropriate contractual commitments, risk assessments and training. We provide training to those employees for whom we believe it is most relevant. This depends on the nature or location of their role or in response to specific issues. In 2016 nearly 13,000 employees completed this training (2015 13,500).

Before working with a supplier, we conduct an assessment to determine the degree of bribery and corruption risk posed. If needed, we then put in place a risk reduction plan.

We expect our suppliers to comply with laws and act consistently with our code's principles. Our contracts with suppliers make these expectations clear.

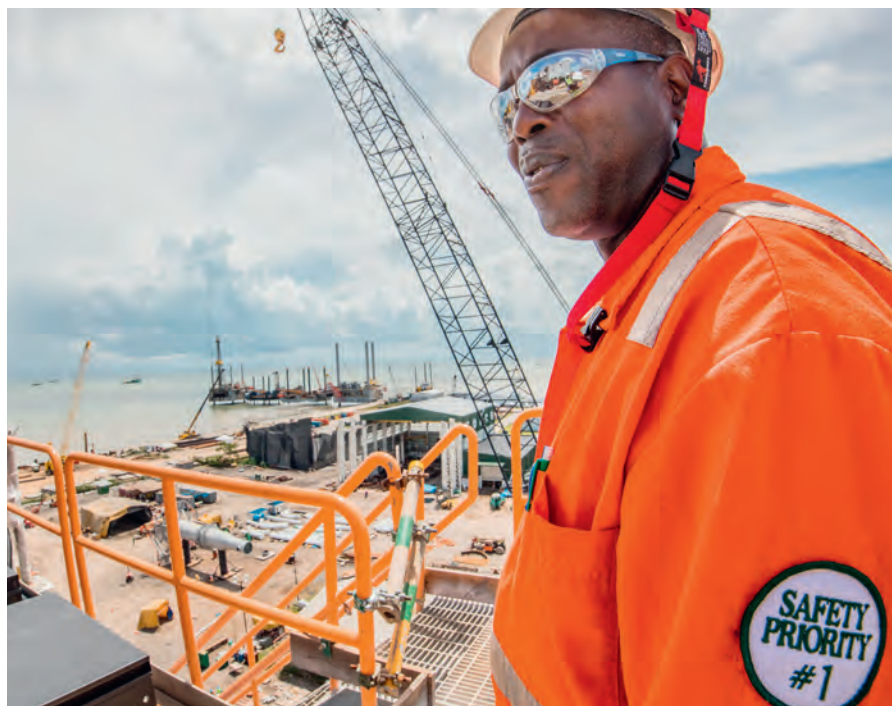
We also carry out checks once contracts are in place. For example, for a number of suppliers in higher-risk regions, our upstream business conducts audits to assess their compliance with our anti-bribery and corruption contractual requirements.

Potential areas for improvement identified by the audits are shared with the suppliers and we often work with them to find the best ways to strengthen their procedures. The learnings from these audits help to reduce risk to both BP and our suppliers. We issued a total of 25 audit reports in 2016 (2015 35, 2014 36).

A key consideration for our downstream and shipping businesses is how best to carry out the safe, efficient and ethical distribution of our products. For example, the movement of goods could be exposed to corrupt requests for 'facilitation payments' to expedite customs clearance or avoid delays to the supply chain. In higher-risk regions, we provide training for our shipping crews and distributors to help them understand and mitigate these risks. BP does not tolerate facilitation payments in any form.

**i** See page 43 for information on our code of conduct.

Caption: Construction of our Juniper platform in Trinidad & Tobago – which published its fourth EITI report in 2016.





# Respecting human rights

We strive to conduct our business in a manner that respects the rights and dignity of all people – this commitment guides how we engage with our workforce, communities, governments and our supply chain.

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# Our approach to human rights

Respect – one of BP’s values – underpins how we interact with all those affected by our operations.

We respect internationally recognized human rights as set out in the International Bill of Human Rights and the International Labour Organization’s Declaration on Fundamental Principles and Rights at Work. These include the rights of our workforce and those living in communities affected by our activities.

We set out our commitments in our human rights policy and our code of conduct. Our operating management system (OMS) contains guidance on respecting the rights of workers and community members.

We are working towards alignment with the UN Guiding Principles on Business and Human Rights by implementing our human rights policy. Our focus is on identifying and addressing human rights risks, including those associated with the recruitment and living conditions of contracted workforces on our sites, and on enhancing community grievance mechanisms and channels for workforces to raise their concerns.

We seek to prevent any potential negative impacts of our operations on the livelihoods, land, environment, culture, health and wellbeing of people in communities near our activities, including indigenous peoples. We aim to minimize and mitigate any unavoidable impacts. We screen our major projects to identify and manage potential impacts, including human rights. See page 45.

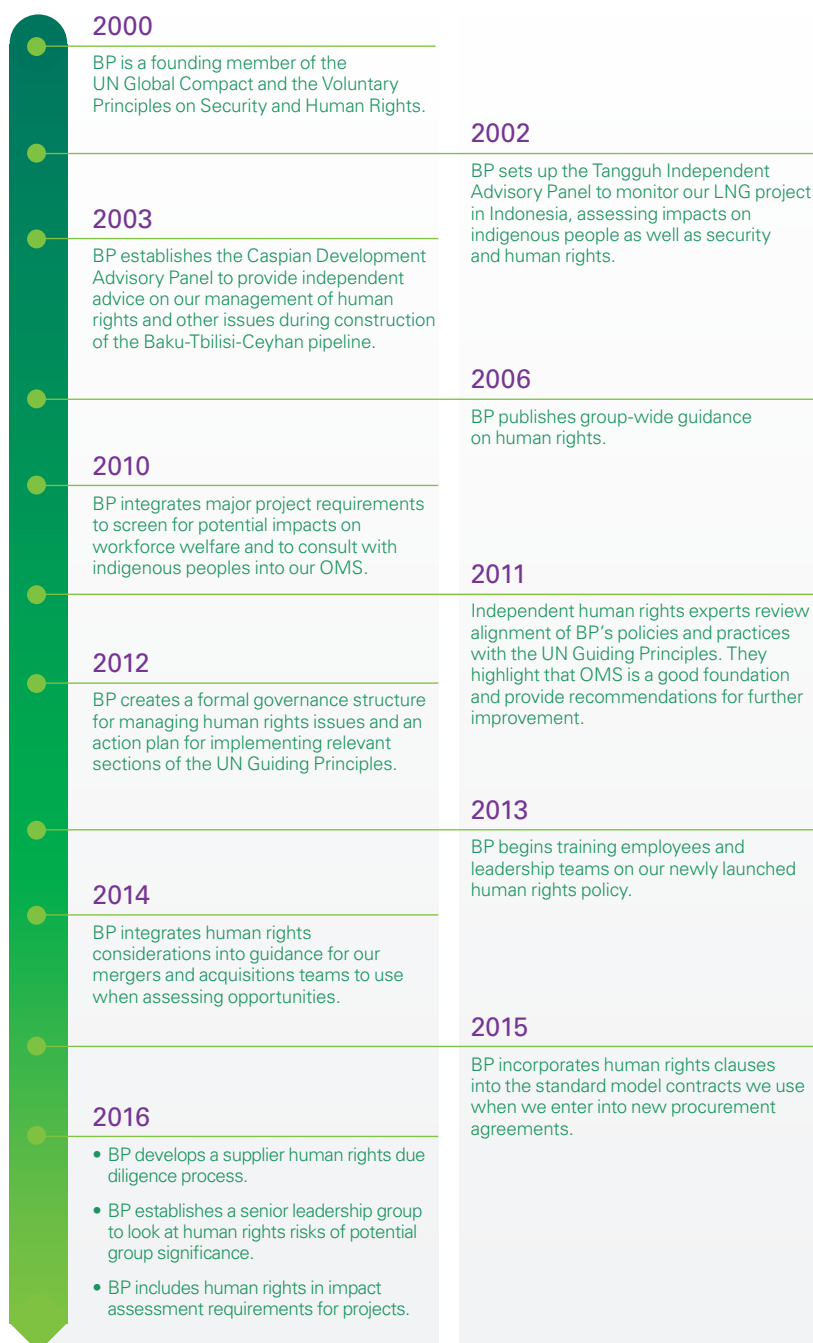
## Raising concerns

We encourage employees, contractors, communities and other third parties to speak up if they see something they feel to be potentially unsafe, unethical or harmful. Grievances can be lodged through our confidential helpline, OpenTalk (see page 43), or our community complaints systems.

Where we identify that we have caused or directly contributed to adverse impacts on the human rights of others, we commit to provide for or co-operate to remedy these impacts.

## BP and human rights – our journey

BP has a long history of seeking to conduct our business in a manner that respects human rights. Here are some of our efforts from 2000 onwards.



# Labour rights

We believe that BP's employees, as well as our contractor and supplier workforces, should work in safe, healthy, secure and fair conditions.

Our code of conduct and human rights policy together reinforce our commitment to freedom of association, equal opportunity and non-discrimination, as well as the elimination of all forms of modern slavery.

## Employees

Through our code of conduct, employees are required to report any human rights abuse in either our operations or those of our business partners.

We are strengthening employee awareness of our human rights policy and potential human rights impacts relevant to our work. For example, we provide updates to our upstream procurement teams on legislative changes and recent media coverage of human rights cases specific to oil and gas companies.

We held more than 30 human rights training events for approximately 400 employees in 2016. Our training covers what human rights means in an operational context, as well as specific topics such as security and human rights, workforce rights and welfare, and relationships with indigenous peoples. Senior leadership teams also participate in awareness-raising training.

## Working with contractors and suppliers

We operate in 72 countries around the world and have more than 72,000 suppliers, with thousands more supporting them. We believe that people who work for our suppliers are entitled to do so under conditions that respect their rights and dignity.

We expect our contractors and their employees to act consistently with our code of conduct and our human rights policy. The standard model contracts that our procurement teams use when agreeing new contracts include requirements for our suppliers to respect internationally recognized human rights in their work for BP, with a specific prohibition on the use of forced or trafficked labour.

## Modern slavery

Modern slavery encompasses a range of exploitative practices including forced or compulsory labour, human trafficking and servitude.

We are assessing the risk of modern slavery in our business and supply chain by taking into account:

- countries identified as posing a high degree of risk by Verisk Maplecroft, a risk analytics firm.
- activities reliant on manual labour such as cleaning, catering, construction and certain types of manufacturing.
- factors related to the vulnerability of the workforce, such as poverty levels; ethnic, religious or gender minorities; and migrant workers.

Given the breadth and complexity of our activities and supply chain, we are focusing our efforts where we believe there could be greater risk.

Through this work, we have identified large upstream construction projects as priorities for review. In our downstream portfolio, we are focusing on selected sites that we operate in our lubricants, fuels retail and refining businesses. We are also reviewing certain shipping activities and suppliers to our biofuels operations.

In some instances, this has led to further actions, including reviewing of contractor workforce recruitment plans, conducting onsite assessments of worker rights and verifying contractors' commitments to labour rights.

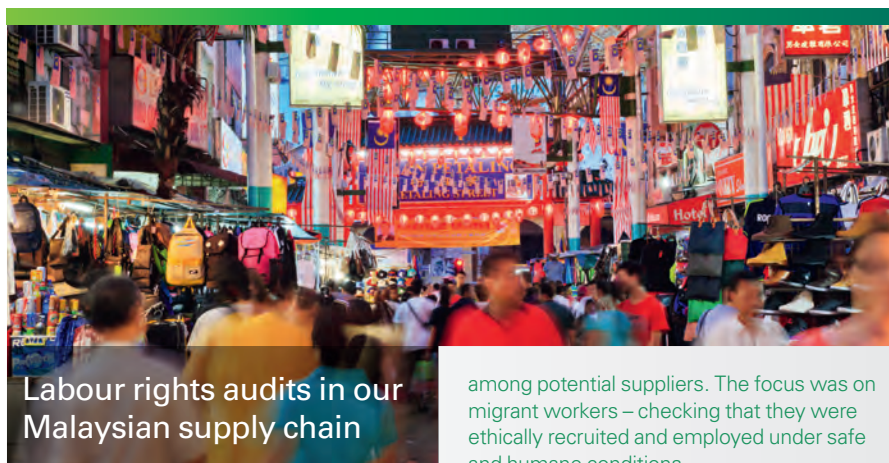
[See bp.com/modernslavery](http://bp.com/modernslavery)

Drawing on our work with industry peers, we have developed a human rights due diligence process that can be used to screen suppliers in a consistent way anywhere in the world. We piloted this with potential suppliers in 2016 and are planning wider use in 2017.

## Monitoring

We are taking a risk-based approach to monitoring our contractors and suppliers.

When appropriate, we conduct labour rights audits that look into potential issues such as working hours, compensation, non-discrimination, prevention of forced labour and human trafficking, and other rights outlined in the International Labour Organization's Declaration on Fundamental Principles and Rights at Work.



## Labour rights audits in our Malaysian supply chain

We piloted labour rights audits in our supply chain as part of qualifying selected potential suppliers in Malaysia in 2016. We chose Malaysia because of its level of risk with respect to the prevalence of forced labour and human trafficking among migrant workers.

The pilot included potential suppliers of equipment for BP's retail sites around the world.

We worked with non-profit organization Verité to identify any labour rights issues

among potential suppliers. The focus was on migrant workers – checking that they were ethically recruited and employed under safe and humane conditions.

Working hours, recruitment processes, freedom of movement and employment contracts were identified as areas for improvement. Working together with Verité and BP, suppliers developed and put in place management plans to remedy the issues within a specified time frame.

As a result of this collaboration, one of the suppliers was successful in its bid for BP business and was awarded a contract. We are continuing to monitor progress against the agreed remedial actions.

In 2016 our downstream business conducted audits to assess potential suppliers as part of our pre-qualification process. In our upstream business, we took steps to review human rights aspects of our spot-chartering activities in the North Sea.

Where we find an issue, we prefer to work with companies to resolve the problem rather than to terminate the contract. Otherwise, the situation of people whose rights are at risk may not improve and may even get worse. If a serious breach is found and no corrective action is taken following our intervention, then we reserve the right to terminate contracts.

In our biofuels business in Brazil, we use a tool to review contractor documentation, including policies governing human rights issues, copies of identification documents for age verification, and payslips and timesheets to check working hours and wage rates. This enables us to assess whether our contractors are respecting the labour rights of their employees.

#### Rights of contracted workforce

Around 70% of the hours worked in our upstream business are carried out by contractors. In 2016 we produced guidance for upstream projects detailing how BP's existing processes can support the fair treatment of contracted workers. The guidance includes performance indicators that projects can consider to check that labour rights are respected, such as the number and type of worker grievances.



### Responding to human rights concerns at sea

BP chartered a vessel to carry two cargos of equipment to a drilling rig in the North Sea in 2016. Sailing under an Indian flag, this particular vessel has operated safely in the area for several years.

When off hire from BP, the UK Maritime and Coastguard Agency detained the vessel after a crew member raised a concern regarding salary payments. It emerged that the crew had not been paid regularly, with some owed at least two months' salary. The Maritime and Coastguard Agency released the vessel once the owner had paid the crew.

We reviewed our contracting process for hiring the vessel and decided to take steps

to enhance the due diligence aspects of our spot-chartering activities in the North Sea.

We asked existing and potential suppliers to answer a targeted set of human rights questions – tailored to the marine industry and based on IPIECA guidance – and to provide documentary evidence of their processes and practices. Based on their answers and our existing due diligence checks, we created a prequalified pool of spot-charter companies.

From our work in the North Sea, we found that some of the shipping companies reviewed already have adequate procedures in place. Others have made improvements to their procedures. For example, one company has undertaken to conduct annual audits of the agencies that recruit and hire their seafarers to check that they comply with our requirements on labour rights. Those who did not meet our requirements are no longer working for us.

## Security and human rights

BP works to protect our people and facilities in a manner that respects human rights.

Providing security for our assets around the world can be complex, especially in locations where there is a higher likelihood of conflict or violent crime. We engage with the security forces that protect our facilities to help them understand and respect the human rights of our workforce and people living in communities near our operations.

### Voluntary Principles on Security and Human Rights

We are a signatory to the Voluntary Principles on Security and Human Rights, which provide a framework for companies to assess whether human rights issues are likely to occur as a result of security activities within local operations, and to allow appropriate precautionary steps to be taken.

Employees accountable for assessing and managing security receive guidance to help them understand BP's approach to implementing the Voluntary Principles. This includes the mechanisms we use to identify and mitigate potential issues, our interaction with public security forces and private security providers, and progress evaluation.

We periodically conduct internal assessments to identify areas where we can improve implementation. For example, a 2016 review of our Tangguh LNG facility in Indonesia identified some training gaps, which we addressed by recruiting a security training lead for the region in 2017.

We provide details of our progress on security and human rights issues in an annual report to the Voluntary Principles plenary, which is available at [bp.com/humanrights](http://bp.com/humanrights).

To share and promote best practice, we work with governments, other companies and non-governmental organizations (NGOs), whether or not they participate in the Voluntary Principles. For example, we have been working with NGO International Alert to update their guidance for extractive businesses on operating in conflict-affected environments.

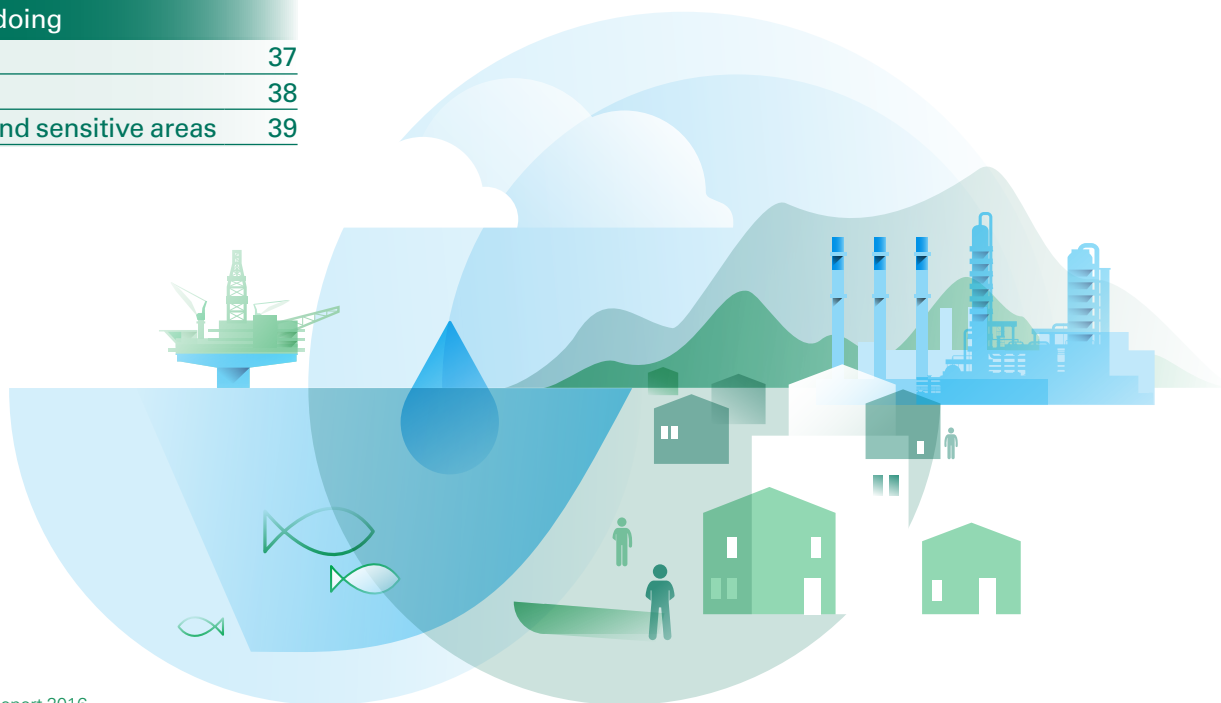


# Managing local environmental impacts

Our goal of achieving no damage to the environment guides our actions. We consider local conditions when determining which issues would benefit from the greatest focus.

## What we are doing

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# Water

## BP recognizes the importance of managing freshwater use and water discharges in our operations.

We use fresh water in our drilling, hydraulic fracturing, upstream production, refining, petrochemicals and biofuels operations. We also use non-fresh water, such as seawater, to support upstream oil and gas production, and treated municipal wastewater at some of our refineries.

The exploration, production and refining of oil and gas accounts for around 1% of global freshwater withdrawals. Locally though this proportion can be higher, so we think it's important to look at local conditions, such as water stress and scarcity, to manage potential impacts.

### How we evaluate water risk

We assess water risks in our portfolio each year. We consider the local environment and quantity, quality and regulatory impacts, using tools such as the IPIECA Global Water Tool and the World Resources Institute Aqueduct Global Water Atlas.

We also conduct detailed assessments using the Global Environment Management Initiative Local Water Tool. We've applied the tool at six of our existing operations and incorporated it into impact assessments for five new projects since 2012. We use the outcomes to develop management plans that are appropriate to local conditions. For example, at our Sangachal terminal in Azerbaijan, we identified freshwater use as a potential issue due to water stress in the local area. We reviewed our water demands and developed actions which have led to a 75% reduction in freshwater withdrawals between 2013 and 2016.

Based on the IPIECA Global Water Tool, we estimate that slightly less than half of our major operations withdraw fresh water in areas where its availability is considered stressed or scarce. These operations are mainly in our downstream business. They account for 21% of our total freshwater withdrawals. We have not identified any significant risks from our withdrawal and consumption of fresh water from our 2016 analysis.

### Water sources

BP withdraws fresh water from rivers, lakes, reservoirs and underground aquifers for our operations. We purchase water from municipal drinking water suppliers and use treated saline water in many areas, such as in our gas operations in Oman.

In 2016 more than 66% of our total freshwater withdrawals were returned to the environment, following appropriate treatment to meet local permitted standards.

The decrease in our freshwater withdrawal in 2016 is primarily due to reduced demand for cooling water when two refineries were taken offshore for planned maintenance, and the divestment of our Decatur petrochemical plant in the US.

In addition to freshwater withdrawals, we report our water consumption – that is, water we use that is not returned to the local water basin. We believe this provides a more comprehensive picture of our potential impacts.

In 2016 the volume of water consumed per unit of production – the consumption intensity – remained at a similar level to 2014 and 2015.

### Managing discharges to water

Our operations manage significant volumes of wastewater, created, for example, when using water to test vessels or pipelines and from cooling water. We also manage what is known as produced water, which comes to the surface during the production of oil and gas. This water is either treated and then returned to the environment, reinjected back into the oil or gas reservoir or disposed of through other permitted means.

At our Khazzan gas development in Oman, we treat wastewater from our sewage treatment plant and reuse it for irrigation, road construction and dust suppression, reducing freshwater demand in an area of water scarcity.



*We've been taking actions to reduce freshwater use in areas of water scarcity for many years. For example, at our Kwinana refinery in Australia, 93% of freshwater demand is instead supplied by treated municipal wastewater and non-potable groundwater. Most of our onshore operations are in places where there is a mature regulatory regime, such as Europe and the US, where allocation of water is well governed.*



#### Alistair Wyness

Group water expert, safety and operational risk, BP

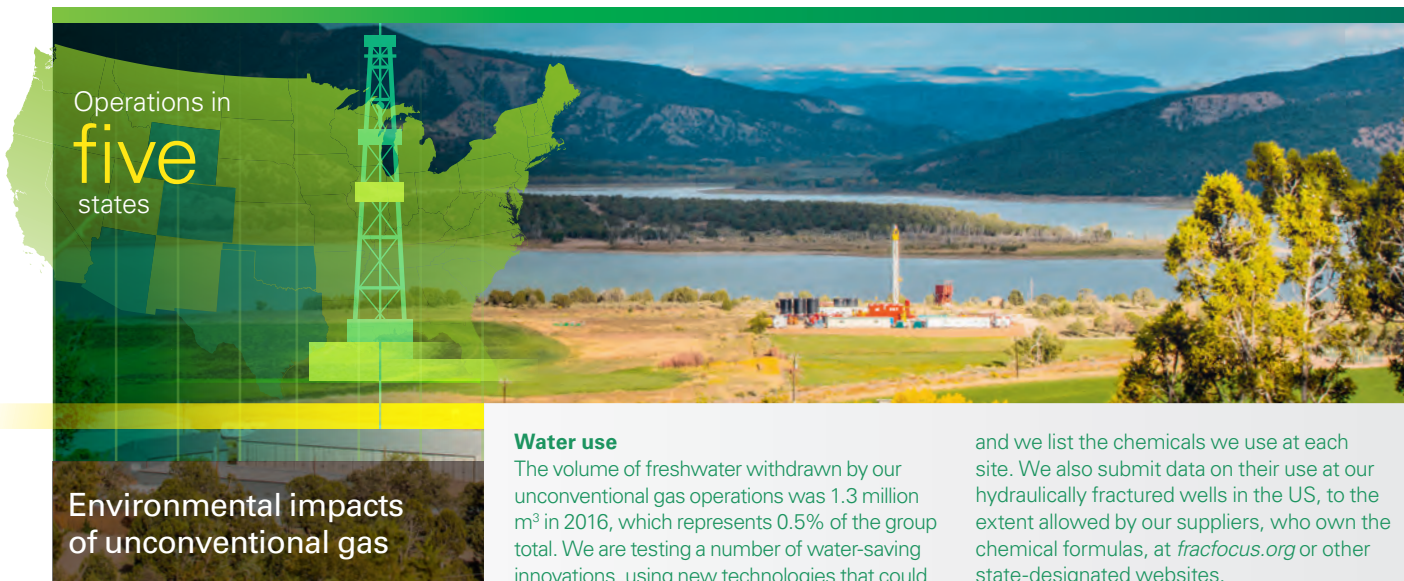
#### More information

See [bp.com/hsechartingtool](http://bp.com/hsechartingtool) for our 10-year water performance data

### Water performance

	2012	2013	2014	2015	2016
<b>Freshwater withdrawal (million m<sup>3</sup>)</b>					
• Group	354	289	280	285	<b>257</b>
• Upstream	9.5	10.3	7.6	6.8	<b>5.7</b>
• Downstream	337	271	263	264	<b>239</b>
• Other businesses and corporate	7.4	7.9	9.9	13.5	<b>12.2</b>
<b>Freshwater consumption (million m<sup>3</sup>)</b>					
• Group <sup>a</sup>	–	106	93	92	<b>87</b>
• Percentage of withdrawal <sup>a</sup>	–	37	33	32	<b>34</b>
<b>Consumption intensity (tonnes water/tonnes production)</b>					
• Group <sup>a</sup>	–	–	0.37	0.38	<b>0.36</b>
<b>Discharges to water</b>					
• Upstream					
– Mass of produced water per unit of production <sup>a</sup>	–	–	0.7	0.6	<b>0.7</b>
• Refining and chemicals					
– Wastewater treatment measured as chemical oxygen demand (mg/l)	49	46	52	40	<b>49</b>

<sup>a</sup> Data for freshwater consumption and percentage of withdrawal was not reported in 2012 and water consumption intensity data was not reported in 2012 and 2013.



Operations in  
**five**  
states

## Environmental impacts of unconventional gas

We have unconventional gas operations in five states in the US and will be producing gas in Oman from 2017. Some stakeholders have raised concerns about the potential impacts of hydraulic fracturing. We provide more information in our issue briefing, which is available at [bp.com/unconventionalgas](http://bp.com/unconventionalgas).

### Water contamination

Our wells are designed, constructed, operated and decommissioned to mitigate the risk of gas and hydraulic fracturing fluids entering underground aquifers, such as drinking water sources.

### Water use

The volume of freshwater withdrawn by our unconventional gas operations was 1.3 million m<sup>3</sup> in 2016, which represents 0.5% of the group total. We are testing a number of water-saving innovations, using new technologies that could make it possible for us to treat water used in fracturing for reuse in our operations.

### Emissions

We are working to minimize air pollutant and greenhouse gas emissions, such as methane, at our operating sites. See pages 15 and 18 for more information.

### Chemicals

The water and sand that make up 99.5% of the injection material used in hydraulic fracturing are mixed with chemicals that help reduce friction and control bacterial growth in the well. We work with service providers to minimize chemical use where possible,

and we list the chemicals we use at each site. We also submit data on their use at our hydraulically fractured wells in the US, to the extent allowed by our suppliers, who own the chemical formulas, at [fracfocus.org](http://fracfocus.org) or other state-designated websites.

### Earth tremors

While small earth tremors caused by hydraulic fracturing are rarely felt at the surface, the underground injection of wastewater may pose a risk of induced seismic activity in certain situations. We identify natural faults in a local area and manage our operations to mitigate this risk.

### Local habitats

We work to avoid impacts to sensitive habitats and threatened species. In the San Juan basin, for example, we monitor potential impacts on bald eagles so that we can better schedule our activities to reduce any impacts.

## Air quality

### The production of oil and gas can contribute to air pollution in surrounding communities.

Tackling local air quality is increasingly of interest to communities, governments, regulators and other stakeholders, driven mainly by public health concerns.

Some of our activities, such as burning fossil fuels at our operations for power generation and operating our shipping fleet, emit air pollutants. We put measures in place to manage these emissions, in line with regulations and guidelines designed to protect the environment and the health of local communities.

**i** See page 20 for how we help our customers reduce emissions from the use of our products.

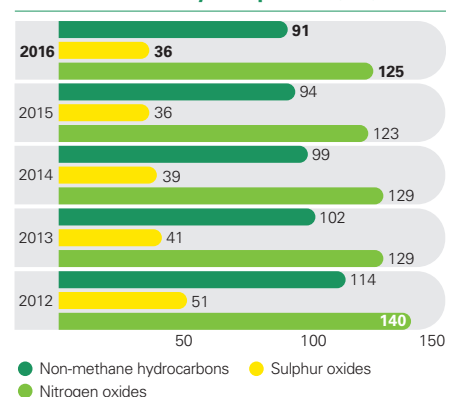
Our Whiting refinery is one of the largest refineries in the US, with the potential to have a significant impact on local air quality. We have reduced our air emissions there by more than 50% over the past five years by minimizing the amount of gas flared and emissions from process equipment. We monitor sulphur dioxide, hydrogen sulphide, benzene and other pollutants at the periphery of the refinery and make this data available on the refinery's website. This forms part of our commitment to provide comprehensive air quality information to the local community.

We are piloting portable air quality monitoring pods that contain real-time technology, designed to measure nitrogen oxides and sulphur oxides in different climates and physical environments. We tested the pods at our Sangachal facility in Azerbaijan, and found that the data provides a better understanding of the impact of our emissions.

The increase in emissions of nitrogen oxide in 2016 is primarily due to operational variability in our upstream business. For example, emissions from increased drilling and well

testing activity in North Africa and the Middle East were partially offset by decreases in drilling activity in the Gulf of Mexico. The decrease in emissions of non-methane hydrocarbons is primarily due to portfolio changes in our downstream business, such as the divestment of our Decatur petrochemical plant in the US. Sulphur oxide emissions have remained even.

Emissions to air by component (kte)





# Biodiversity and sensitive areas

We work to avoid activities in or near protected areas and take actions to minimize and mitigate potential impacts on biodiversity.

Some of our activities occur in places that may have cultural significance, are home to protected species, or are in areas with outstanding biological, geographical or social value. We recognize that some areas may be considered particularly sensitive for oil and gas activities. Decisions to operate in these areas are made only after careful consideration on a case-by-case basis.

## Biodiversity

We work with conservation organizations, including The Nature Conservancy and Fauna and Flora International, to help understand biodiversity trends, issues and threats. We also work with local non-governmental organizations and communities to manage wildlife issues around our sites. For example, in Alaska, we support Polar Bears International and the Wildlife Conservation Society.

In preparation for the expansion of our Tangguh liquefied natural gas plant in Indonesia, we assessed potential impacts on the local habitat, focusing on endangered or native species. To help conserve the biodiversity, we have relocated priority plant species to nearby forests, including orchids and fan palms, and will continue to monitor their health.

And at our Cherry Point refinery in the US, we have created new wetland habitats and established a citizen science programme to monitor amphibian populations.

## International protected areas

Due to the growing number of protected areas, our reporting now focuses on our activities that are in or close to the most sensitive areas, which we refer to as 'international protected areas'. We review the location of our activities in and close to these areas each year, as this can change from year to year as governments update protected area designations.

Four of our major operations have activities in international protected areas. This includes two pipelines in World Heritage sites. Our shipping fleet sometimes passes through protected areas as part of normal operations.

[See bp.com/protectedareas](https://www.bp.com/protectedareas)

### Project screening and impact assessment

We evaluate all new projects to determine whether planned activities could affect international protected areas.

If our screening process shows that a proposed project's planned activities could affect or enter an international protected area, we conduct a detailed impact assessment before activities can take place and identify ways to first avoid, and if needed, minimize and mitigate any potential impact. We then require executive approval before any physical activities can take place.

No new BP project has sought permission for entry into or work in an international protected area since 2006.

## Marine environments

BP has an extensive deepwater portfolio and we work to understand how our operations may disturb marine habitats or sensitive areas. We use technology to collect data on underwater sound and marine mammals. For example, we are investigating the use of a marine autonomous vehicle at our Clair Ridge field in the UK to gather baseline environmental information.

Despite deciding not to progress our exploration drilling programme in the Great Australian Bight, we have committed to continue to support the Great Australian Bight research programme until it concludes in 2017. This research examines the biological and socio-economic importance of the Bight and aims to support any future developments to co-exist with the area's environment, industries and communities.

In the Arctic, we operate nine onshore fields on Alaska's North Slope. Our offshore interests in the Arctic are currently limited to areas for exploration.

[See bp.com/arctic](https://www.bp.com/arctic)



## Assessing the impact of seismic surveys on turtles in Trinidad & Tobago

Our work in Trinidad & Tobago requires great sensitivity, not least because the country is host to one of the world's largest nesting populations of leatherback turtles.

In 2016 we finalized plans for a seismic survey to map and evaluate the potential for new underwater oil and gas reserves. Such surveys involve vessels that emit predominantly low frequency sound pulses by releasing compressed air into the water. The subsequent sound waves are reflected off the geological formations that lie below the seabed and are recorded.

We discussed the potential impact that these sound waves might have on turtles and marine mammals with local marine authorities and the marine scientific community.

We also consulted with local organizations, such as Nature Seekers, and marine mammal observers. These groups work closely with the local fishing community, whose activities provide valuable information on turtle movements.

Because of this collaboration, we were able to plan our seismic surveys to avoid areas located within 30 kilometres of the coastline and considered sensitive for the local turtle population during nesting season. Most importantly, this work will help to inform the future approaches that others take – both inside and outside our industry – when working with turtles in Trinidad & Tobago and elsewhere.



# Foundations for operating responsibly

We work to attract and retain the best talent the world offers. Our code of conduct and values underpin how we work. And we have a clear and consistent framework to help us identify and address the many forms of risks we face.

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# Governance of sustainability issues

The board sets the tone from the top and is responsible for the overall conduct of our business.

## The board and its committees

The board works with management to consider specific issues – from strategy and geopolitical issues, through to safety, environment and reputation. Our board is made up of the chairman, two executives and 11 non-executive directors, and benefits from the diverse balance of background, gender, skills and experience. There are three female directors on the board and two directors from non-UK/US backgrounds.

Six board committees provide oversight on certain activities. One of these, the safety, ethics and environment assurance committee (SEEAC), looks at the processes adopted by BP’s executive management to identify and mitigate significant non-financial risk.

In 2016 SEEAC reviewed the risk of marine, wells, pipelines, explosion or release at our facilities, and major security incidents. Site visits are an important part of SEEAC’s role, allowing direct interaction with operating teams. SEEAC members met with teams at our unconventional gas operations in Colorado, the Geel petrochemicals plant in Belgium and the North Slope facilities in Alaska to see how they were managing safety and other operational matters.

The board has a dedicated committee that monitors the geopolitical landscape and considers the effect that heightened political or social tensions, or changes in key relationships, can have on the economic and operating environment for BP.



**Caption:** A member of SEEAC discusses safety measures at our gas operations in Colorado.

## The executive team and its committees

The executive team is accountable for BP’s overall business, including sustainability performance. It comprises the group chief executive and the heads of businesses and certain functions, such as safety and operational risk and human resources.

Several executive-level committees – such as the group operations risk committee and the group ethics and compliance committee – facilitate the group chief executive’s oversight of sustainability issues.

## Business segments and functions

Our businesses and functions integrate risk assessments into processes such as strategy, planning and performance management.

Our issues management working group identifies and monitors real or potential issues of material importance to BP.

It comprises senior leaders from strategy and policy, upstream, downstream, legal, safety and operational risk, and government and political affairs.

The process for prioritizing these issues is integrated into our assessment of material issues for this report (see page 2).

## Local operations

Management and staff in our operations identify risks and implement BP’s requirements on health, safety, security,

environment, social responsibility, operational reliability and related issues.

## Governance in practice

Oversight of human rights issues goes right to the top of the organization.

SEEAC reviews our human rights performance, including our approach to assessing and managing risks associated with modern slavery.

The group operations risk committee reviews progress on plans to manage potential risks of modern slavery.

Our human rights working group looks at human rights risks of potential group significance.

Business functions and local operations implement actions to help us meet our human rights policy commitments, such as providing channels for local communities to raise concerns.

# Our people

BP's success depends on having a talented and diverse workforce.



*The millennial generation doesn't just want career growth; they also expect to make a positive contribution to society. So we need to do a better job of talking about the prosperity we bring to countries, about the community development projects we deliver, about the work we are leading to address carbon emissions, and about our commitment to the energy transition.*



**Bob Dudley**  
Group chief executive, BP

## Attracting and retaining the right people

We prefer building capability and promoting people from within our organization and we complement this with selective external recruitment for specialist roles.

We provide a wide range of on-the-job learning and mentoring programmes, as well as online and classroom-based courses. Structured leadership courses support employees moving into more senior positions.

Our average expenditure on learning and development was around \$4,000 per person in 2016 (2015 \$4,000).

We continued to invest in graduate and early career recruitment in 2016, albeit at a reduced level. A total of 231 graduates joined BP in 2016 (2015 298, 2014 670). We are working to increase our visibility in the graduate job market and in 2016, students voted us the UK's Most Popular Graduate Recruiter in the energy and utilities sector at the Target Jobs Sector Awards.

## A tough environment

A lower oil price has meant that we have continued to adapt and reshape our organization. This has contributed to a reduction in overall headcount of 10,000 over the past two years. Our focus is on retaining the skills we require to maintain safe and reliable operations.

## Engaging our employees

We recognize that this is a stressful time for our staff, which is why we have increased our communications to help address employee concerns and to explain the business rationale behind the changes. The executive team has



Caption: Graduates of science, technology, engineering and maths at a BP careers event.

held additional face-to-face meetings with employees, and we've provided managers with practical guidance on energizing and motivating their teams.

Our annual employee survey found that perceptions of how changes in the business have been communicated have improved since 2015, with notable rises in positivity in our trading and upstream businesses.

Confidence in the future of BP has also risen to 64% in 2016 (2015 58%, 2014 63%), with solid improvements in pride in working for BP and trust in management. However, scores related to career opportunities, reward and recognition are not as high as we would like them to be and we will review actions to address these areas in 2017.

We were pleased to be named one of the best places to work in the UK at the Glassdoor Employees' Choice Awards 2017.

## Rewarding performance

We offer a competitive reward package, based on what our employees deliver and how they demonstrate behaviour that reflects our values. All employees must set priorities regarding their contribution to safety, compliance and risk management.

We link the remuneration of our executive team to strategy and performance. The structure reflects the long-term nature of our business and the significance of safety and environmental risks. Performance measures for pay related to safety and operational risk include recordable injury frequency, tier 1 process safety events and loss of primary containment.

[See bp.com/remuneration for information on how we reward our board of directors.](#)

## Diversity and inclusion

Our goal is to create an environment of inclusion and acceptance, where everyone is treated equally and without discrimination.

To help foster an inclusive environment, employees have established resource groups in areas including gender, sexual orientation, parenting, disability and ethnicity. BP retained its position as the UK's top energy company in the annual Stonewall Workplace Equality Index in 2016.

Our gender balance is steadily improving, with women representing 33% of BP's population and 22% of group leaders – our most senior managers – at the end of 2016. Our aim is for women to represent at least 25% of group leaders by 2020.

Following the retirement of our executive vice president of corporate business activities in 2016, we are considering how best to increase female representation at executive level.

At the end of 2016, there were three female directors (2015 3, 2014 2) on our board of 14. Our nomination committee remains mindful of diversity when considering potential candidates.

We are committed to increasing the national diversity of our workforce to reflect the countries in which we operate. A total of 26% of our group leaders came from countries other than the UK and the US in 2016 (2015 23%, 2014 22%).

[See page 28 for information on our approach to local workforce development.](#)

### BP employees by gender (% women)

	2014	2015	2016
All staff	31%	32%	<b>33%</b>
Graduate hires	37%	44%	<b>45%</b>
Group leaders	18%	19%	<b>22%</b>
Board directors	14%	20%	<b>21%</b>

# Ethical conduct

We lay out our commitment to high ethical standards in our code of conduct.

Our code of conduct is based on our values and clarifies the principles and expectations for how we work at BP. It applies to all employees and members of the board. We expect and encourage our contractors and their employees to act in a way that is consistent with our code and we take appropriate actions where we believe that they have not met our expectations, or their contractual obligations.

Each year, our employees and our board members certify that they understand the code, have abided by their responsibilities and reported any breaches of which they were aware. We train our employees on applying the code of conduct in their daily work.



Caption: A site manager discusses safety with drilling contractors on our Mad Dog platform in the Gulf of Mexico.

**Our values**

- Safety
- Respect
- Excellence
- Courage
- One Team

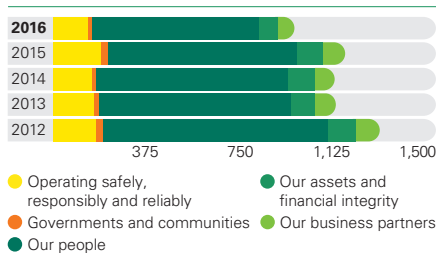
## Speaking up

We want our employees, contractors and other third parties to feel comfortable speaking up whenever they have a question about our code, or see something that they feel is potentially unsafe, unethical or harmful.

Employees are encouraged to discuss their questions or concerns with their managers, supporting teams, works councils (where relevant), or via BP's confidential helpline, OpenTalk.

A total of 956 people contacted OpenTalk with concerns or enquiries in 2016 (2015 1,158, 2014 1,114). The most common concerns related to the people section of the code. This includes treating people fairly, with dignity and giving everyone equal opportunity; creating a respectful, harassment-free workplace; and protecting privacy and confidentiality.

## OpenTalk cases (by code of conduct chapter)



BP has zero tolerance for retaliation against anyone who seeks advice, raises a concern, reports misconduct or participates in an investigation. The consequences for misconduct or retaliation range from coaching and performance management through to dismissal.

Our businesses dismissed 109 employees for non-conformance with our code of conduct or unethical behaviour in 2016 (2015 132, 2014 157). This excludes dismissals of staff employed at our retail service stations.

## Lobbying and political donations

We prohibit the use of BP funds or resources to support any political candidate or party.

We recognize the rights of our employees to participate in the political process. Their rights to do so are governed by the applicable laws in the countries in which we operate. For example, in the US we support the operation of the BP employee political action committee (PAC), which is a non-partisan committee that encourages voluntary employee participation in the political process. All BP employee PAC contributions are reviewed for compliance, comply with the law and are publicly reported in accordance with US election laws.

The way in which we interact with governments depends on the legal and regulatory framework in each country. We engage across a range of issues that are relevant to our business, from regulatory compliance, to understanding our tax liabilities, to collaborating on community initiatives.

We are members of multiple industry associations that offer opportunities to share best practices and collaborate on issues of importance to our sector. Their positions don't always reflect our own – given that they reflect a compromise of the assorted views of the membership.

## Promoting ethical behaviour

Our awareness training on our code and our values is tailored to reflect local conditions. For example, in Brazil a large proportion of our workforce are agricultural employees, with varying levels of formal education and little, or no, access to computers. We designed short, interactive plays covering topics such as health and safety, workplace harassment and how to raise a concern. We also established a nominated ethics and compliance representative at each of our three mills, who helps to resolve any issues promptly through the correct channels.

We held ethics and compliance weeks in various locations, such as Angola, India and Indonesia, in 2016. During these weeks, employees participated in Q&A panels with senior leaders and took part in sessions on ethical dilemmas and legal compliance.

# How we manage risk

We work in a complex industry so we must manage many forms of risks.

We look at strategic, operational and compliance risks across the group.

External market conditions, for example, can impact our financial performance. We actively manage this risk through BP's diversified portfolio, our financial framework, regular reviews of market conditions and our planning and investment processes.

The diverse locations of our operations around the world expose us to a wide range of political developments and consequent changes to the operating environment. We seek to manage this risk through our relationships with governments and stakeholders. In addition, we closely monitor events and implement mitigation plans where appropriate.

Changes in laws and public policies relating to climate change, such as carbon pricing, could impact our assets, costs, revenue generation and demand for our products. We are working to help make sure our business is sustainable – commercially, environmentally and in a lower carbon future.

[See bp.com/annualreport](http://bp.com/annualreport) for more information on our risk management.

## Board oversight

We identify risks for particular oversight by the board in the coming year. For 2017 those include financial resilience, geopolitical risk, security, ethical misconduct, legal and regulatory non-compliance, trading non-compliance, cybersecurity and incidents associated with the drilling of wells, operating facilities and transporting hydrocarbons.

## The three lines of defence

We prioritize the safety and reliability of our operations to protect the welfare of our workforce, local communities and the environment.

**1** Our operating businesses are our first line of defence. They are responsible for identifying and managing risks and bringing together people with the right skills to do this. They verify their own conformance with safety and operating requirements and are also subject to independent scrutiny and assurance.

- 2** The second line of defence is our safety and operational risk team, which works alongside operating businesses. The team is responsible for setting clear requirements, maintaining an independent view of operating risk, providing assurance on how risks are being managed, and intervening when appropriate to bring about corrective action.
- 3** Our group audit team is the third line of defence, visiting sites on a risk-prioritized basis, including third-party drilling rigs, to check how they are managing risks.

## BP's operating management system

Our operating management system (OMS) is a group-wide framework designed to help us manage risks in our operating activities and drive performance improvements.

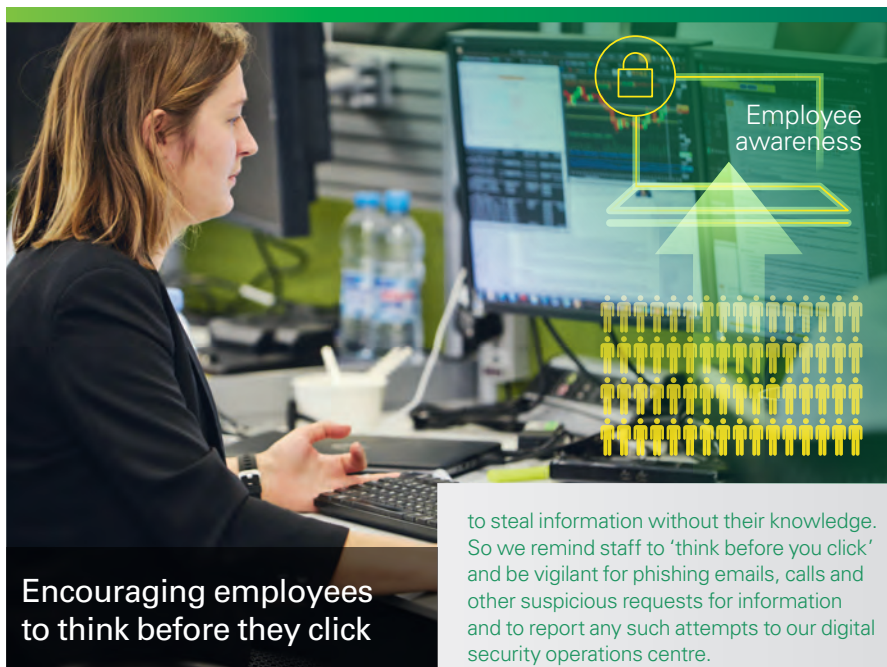
OMS brings together BP requirements on health, safety, security, the environment, social responsibility and operational reliability, as well

as related issues, such as maintenance, contractor relations and organizational learning, into a common management system.

It sets out the rules and principles that govern key risk management activities such as inspection, testing, competency development, as well as business continuity and crisis response planning. OMS also helps us improve the quality of our activities. All businesses covered by OMS undertake an annual performance improvement cycle and assess alignment with the applicable requirements of the OMS framework. Any variations in the application of OMS, in order to meet local regulations or circumstances, are subject to a governance process.

## Our joint venture partners

In joint ventures where we are the operator, our OMS, code of conduct and other policies apply. We aim to report on all aspects of our business where we are the operator – as we directly manage the performance of these operations.



## Encouraging employees to think before they click

We rank cybersecurity as one of our highest priority risks. We deal with attempted cyber attacks on our business every day. Employees are our first line of defence against these attacks and we promote secure behaviours to help mitigate this growing risk.

We focus on practical rules that we promote through films, e-learning and sessions delivered by senior managers and our digital security team. One of our rules addresses 'phishing', which is the attempt to trick people into revealing sensitive information and can involve installing malicious software

to steal information without their knowledge. So we remind staff to 'think before you click' and be vigilant for phishing emails, calls and other suspicious requests for information and to report any such attempts to our digital security operations centre.

We conduct 'ethical phishing' tests to educate our employees in this area. In these tests, we use the same tactics as a real phishing request to see how our employees react, without compromising our people or information in any way. The number of employees who click on the links in the test emails has fallen by more than 70% since 2012. Over the same time, there has been a significant increase in the number of employees reporting the phishing tests.

The programme is driving real change in awareness, and we remain vigilant as the threat continues to evolve.

Where we are not the operator, our OMS is available as a reference point for BP businesses when engaging with operators and co-venturers. We monitor performance and how risk is managed in our joint ventures, whether we are the operator or not. For example, in Canada we have 50% ownership of the Sunrise oil sands venture but it is operated by another company. We benchmark the operator's safety, financial and environmental performance against our expectations. And BP representatives on the venture's governance committee are responsible for confirming that activities are consistent with our investment requirements and code of conduct.

Around 45% of our upstream production and 7% of our refining capacity in 2016 were from joint ventures where BP is not the operator.

We have a group framework to assess BP's exposure related to safety, operational and bribery and corruption risk from our participation in these types of ventures.

## Managing our environmental and social impacts

Our OMS helps our businesses around the world to understand and minimize environmental and social impacts.

We apply internal practices and external standards, such as the ISO 14001 environmental management standard, at different times over the life of an operation to:

- identify and assess potential impacts in the planning stages
- take appropriate steps to mitigate impacts throughout operations
- monitor and mitigate impacts after operations have ended.

We review our management of material issues such as climate change, human rights, air quality, biodiversity, water and how we engage with communities.

### Project planning

We have specific requirements and recommendations governing how we identify and manage potential impacts of projects that carry particular environmental and social risks. These apply to our major projects, projects that involve new access, those that could affect an international protected area and some BP acquisition negotiations.

### Independent monitors

An ethics monitor and a process safety monitor were appointed under the terms of the plea agreement that BP reached with the US government in 2012, following the Deepwater Horizon accident in 2010. The ethics monitor was also appointed under the terms of an administrative agreement reached with the US Environmental Protection Agency in 2014.

Under the terms of both agreements, we are taking additional actions to further enhance ethics and compliance across BP and the safety of our drilling operations in the Gulf of Mexico. The agreements have terms of five years and we are working closely with the monitors who will review ongoing progress until the agreements end.



We carry out a screening process to identify the potential impacts that these projects could have over their lifetime, such as impacts on sensitive or protected areas and water use. For example, we conducted baseline assessments in the Foz Do Amazonas basin, 160 kilometres from the coast of Brazil, ahead of planned exploration activity. This was part of our environmental impact assessment and oil spill response planning, which we did in partnership with other operators in the area. The assessments included water and sediment sampling, monitoring of sea currents, as well as bird, fish and marine mammal surveys.

We also consider social aspects, including prevalence of corruption and bribery in the host country, local employment, security and human rights, resettlement, community health and safety, and the livelihoods of local communities, including indigenous peoples.

The findings help us to design and then carry out impact assessments, identify mitigation measures and implement these in project design, construction and operations.

### Operations

Our operating sites can have a lifespan of several decades and our operations work to manage environmental and social impacts throughout.

Every year, our major operating sites review their environmental performance and set local improvement objectives. These can include measures for reducing flaring, greenhouse gas and air emissions, and waste.

We prioritize our efforts according to local environmental sensitivities and their impact on nearby communities. For example, part of the

Baku-Tbilisi-Ceyhan pipeline runs through an environmentally sensitive part of Georgia. We determined the best way to monitor for potential pipeline leaks while avoiding the need to dig pipeline trenches was to use specially trained 'sniffer' dogs. The dogs' ability to detect gas in the parts per billion range allows us to monitor for pipeline leaks while avoiding disruption to the land.

### Decommissioning and remediation

We work to restore the environment when closing down a site or in response to an unplanned incident. When evaluating and selecting the most appropriate approach, we take into account environmental and social considerations, such as the reuse of materials and the views of local communities. For example, at a former gas plant in Kansas in the US, approximately 97% of the materials from the decommissioning process were recycled or reused, including concrete and building materials.

### Complying with regulations

With operations in more than 70 countries, BP is subject to diverse and complex environmental and social laws and regulations. We manage applicable legal and regulatory health, safety, security, environmental and social requirements through our OMS.

#### [More information](#)

[Engaging with communities](#)  
Page 30

[Our approach to human rights](#)  
Page 33

[Managing local environmental impacts](#)  
Page 36

# Sustainability in action

Our website features case studies on how we are putting our actions into practice around the world.



## Investing in education in Trinidad & Tobago

In 2001, only 7% of young people in Trinidad & Tobago went on to participate in university or tertiary-level education, compared to 30% in the developed world. In response, the government instituted a programme which has seen participation rates increase to more than 60%.

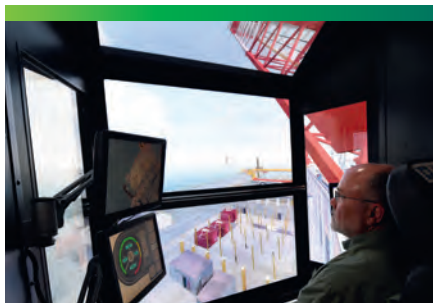
We have supported this government drive in several ways from building capacity through

to the provision of bursaries and technical training. Our Brighter Prospects scholarship programme, for example, specifically targets young people resident in the community in which we operate – Mayaro.

The initiative provides financial assistance to students who gain access to tertiary education at approved institutions, offering academic support covering expenses such as books, travelling and accommodation.

Launched in 2003, the programme has so far provided more than 500 scholarships to students in a myriad of disciplines, and in 2014 we expanded the programme to include postgraduate scholarships.

[See bp.com/trinidadeducation](http://bp.com/trinidadeducation)



## Virtual reality prepares drilling teams

Using state-of-the-art facilities in Denmark and the US, BP staff and contractors can simulate the specific conditions of a drilling operation, including the same rocks, temperatures and pressures – even the same physical impact of the ocean currents – in order to replicate critical jobs on the rig.

This training in the virtual world is helping BP to drill more safely and efficiently in the real world. The hands-on, scenario-based approach goes well beyond traditional classroom training and allows drilling teams to practice events and joint procedures together as an integrated unit.

[See bp.com/maersktraining](http://bp.com/maersktraining)



## Increasing female representation in Brazil

BP became the first international energy company to operate sugar cane ethanol mills in Brazil in 2011. As we expand these mills, we are working with our employees and local communities to encourage women to join our workforce where representation is low.

We are developing specific training programmes so that women can learn the particular skills they need for the job. For example, we have introduced a programme at our Tropical mill to train women who have not worked in the agricultural sector before as tractor drivers.

We are improving infrastructure within the communities surrounding the mills in a number of ways. This includes supporting schools to implement a nationally recognized syllabus that aims to increase the standard of education. We are also establishing partnerships with British language schools to offer employees and their families the opportunity to learn English as a second language at significantly discounted rates.

As part of a pilot programme in the communities around Tropical, our largest mill, we are working to increase the availability of childcare resources by providing training to more than 40 teachers and childcare assistants. The training aims to improve their skills and knowledge in the areas of first aid, teaching and working with children.

We are already seeing positive results, with women's employment in administrative, agricultural, industrial or maintenance roles rising from 8% to almost 13% in three years.

[See bp.com/brazilrepresentation](http://bp.com/brazilrepresentation)



# UN Sustainable Development Goals



The UN Sustainable Development Goals aim to overcome global challenges such as poverty, hunger, inequality and climate change.



**Ensure access to affordable, reliable, sustainable and modern energy for all.**

- 4-5 How we run our business
- 6-7 BP around the world
- 15 Supplying natural gas and managing methane
- 16 Providing renewable energy
- 17 Investing in start-ups and innovation



**Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.**

- 27 Maximizing value to society
- 28-29 Supporting local development
- 30 Engaging with communities
- 31 Fostering transparency and anti-corruption



**Take urgent action to combat climate change and its impacts.**

- 11 Two decades of helping to tackle climate change
- 12-13 BP's role in a lower carbon future
- 14 Calling for a price on carbon
- 15 Supplying natural gas and managing methane
- 16 Providing renewable energy
- 17 Investing in start-ups and innovation
- 18-19 Pursuing efficient operations
- 20 Helping our customers reduce emissions

Our core business of delivering energy to the world contributes directly to goals 7, 8 and 13.

The way we operate supports implementation of many of the other goals, such as those on clean water (p37), industry, infrastructure and innovation (p17), responsible consumption and production (p18-20), and life below water and on land (p39).

We have been working with our industry association, IPIECA, on the role of the goals and implications for our sector. We continue to monitor the goals as they move to international and national implementation.

## About our reporting

This Sustainability Report and [bp.com/sustainability](http://bp.com/sustainability) concentrate on performance and activities from 1 January to 31 December 2016. We aim to report on all aspects of our business, including joint ventures where we are the operator. Where appropriate, we also seek to provide an overview of joint venture activities where we are not the operator, but where we have significant influence on our partners.

We validate the content with our external assurance provider, Ernst & Young, whose remit includes commenting on the prominence given to each topic and identifying any gaps.

We apply the Global Reporting Initiative's G4 guidelines, and we use IPIECA guidance. We also report against the UN Global Compact's 10 principles on human rights, labour, environment and anti-corruption.

**i** See [bp.com/reportingstandards](http://bp.com/reportingstandards)



## Cautionary statement

*BP Sustainability Report 2016* and [bp.com/sustainability](http://bp.com/sustainability) contain certain forward-looking statements with respect to the financial condition, results of operations and businesses of BP and certain of the plans and objectives of BP with respect to these items. In particular, among other statements, BP's outlook on global energy trends to 2035 and its plans in connection therewith, plans relating to the diversity of our workforce, plans and expectations regarding BP's advanced and proprietary technologies and techniques and GHG emissions and intensity, expectations regarding the commercialization and sustainable production of biofuels and use of wind energy, the timing, composition and production of current, planned and future projects, expectations regarding the oil price environment, plans regarding support of labour rights, training, local development and biodiversity and expectations regarding future regulatory developments, are forward looking in nature.

By their nature, forward-looking statements involve risk and uncertainty because they relate to events and depend on circumstances that will or may occur in the future and are outside the control of BP. Actual results may differ materially from those expressed in such statements, depending on a variety of factors, including the specific factors identified in the discussions accompanying such forward-looking statements; the receipt of relevant approvals; the timing and level of maintenance and/or turnaround activity; the timing of bringing new fields onstream; the timing, quantum and nature of certain investments; future levels of industry product supply, demand and pricing; OPEC quota restrictions; PSA effects; operational and safety problems; potential lapses in product quality; economic and financial market conditions generally or in various countries and regions; political stability and economic growth in relevant areas of the world; changes in laws and governmental regulations; regulatory or legal actions; the actions of prosecutors, regulatory authorities and courts; delays in the processes for resolving claims; exchange rate fluctuations; development and use of new technology;

recruitment and retention of a skilled workforce; the success or otherwise of partnering; the actions of competitors, trading partners, creditors, rating agencies and others; the actions of contractors; our access to future credit resources; business disruption and crisis management; the impact on our reputation of ethical misconduct and noncompliance with regulatory obligations; trading losses; major uninsured losses; natural disasters and adverse weather conditions; changes in public expectations and other changes to business conditions; wars and acts of terrorism, cyber-attacks or sabotage; and other factors discussed elsewhere in this document and under 'Risk factors' in our *Annual Report and Form 20-F 2016* as filed with the US Securities and Exchange Commission.

Material is used within this document to describe issues for voluntary sustainability reporting that are considered to have the potential to significantly affect sustainability performance in the view of the company and/or are expected to be important in the eyes of internal or external stakeholders. Material for the purposes of this document should not, therefore, be read as equating to any use of the word in other BP p.l.c. reporting or filings. *BP Annual Report and Form 20-F 2016* may be downloaded from [bp.com/annualreport](http://bp.com/annualreport). No material in this Sustainability Report forms any part of that document. No part of this Sustainability Report or [bp.com/sustainability](http://bp.com/sustainability) constitutes, or shall be taken to constitute, an invitation or inducement to invest in BP p.l.c. or any other entity and must not be relied upon in any way in connection with any investment decisions. BP p.l.c. is the parent company of the BP group of companies. Unless otherwise stated, the text does not distinguish between the activities and operations of the parent company and those of its subsidiaries.

# Independent assurance statement

We have performed a limited assurance engagement on selected performance data and statements presented in the BP p.l.c. ('BP') Sustainability Report 2016 ('the Report').

## Respective responsibilities

BP management are responsible for the collection and presentation of the information within the Report. BP management are also responsible for the design, implementation and maintenance of internal controls relevant to the preparation of the Report, so that it is free from material misstatement, whether due to fraud or error.

Our responsibility, in accordance with BP management's instructions, is to carry out a 'limited level' assurance engagement on selected data and performance claims in the Report ('the subject matter information'). We do not accept or assume any responsibility for any other purpose or to any other person or organisation. Any reliance any such third party may place on the Report is entirely at its own risk.

## What we did to form our conclusions

Our assurance engagement has been planned and performed in accordance with ISAE3000 (Revised).<sup>1</sup>

The Report has been evaluated against the following criteria:

- Whether the Report covers the key sustainability issues relevant to BP in 2016 which were raised in the media, BP's own review of material sustainability issues, and selected internal documentation.
- Whether the health, safety and environment (HSE) data presented in the Report are consistent with BP's Environmental Performance Group Reporting Requirements and HSE Reporting Definitions.
- Whether sustainability claims made in the Report are consistent with the explanation and evidence provided by relevant BP managers.

## Summary of work performed

The procedures we performed were based on our professional judgement and included the steps outlined below:

1. **Interviewed a selection of BP's senior managers** to understand the current status of safety, social, ethical and environmental activities, and progress made during the reporting period.
2. **Reviewed selected group level documents** relating to safety, social, ethical and environmental aspects of BP's performance to understand progress made across the organisation and test the coverage of topics within the Report.
3. **Carried out the following activities to review health, safety and environment (HSE) data samples and processes:**
  - a. Reviewed disaggregated HSE data reported by a sample of 23 businesses to assess whether the data had been collected, consolidated and reported accurately.
  - b. Reviewed and challenged supporting evidence from the sample of businesses.
  - c. Tested whether HSE data had been collected, consolidated and reported appropriately at group level.

4. **Reviewed the coverage of material issues within the Report** against the key sustainability issues raised in external media reports and the outputs from BP's processes for determining material sustainability issues.
5. **Reviewed information or explanations about selected data, statements and assertions** within the Report regarding BP's sustainability performance.

## The limitations of our review

Our evidence gathering procedures were designed to obtain a 'limited level' of assurance (as set out in ISAE3000 Revised) on which to base our conclusions. The extent of evidence gathering procedures performed is less than that of a reasonable assurance engagement (such as a financial audit) and therefore a lower level of assurance is provided.

Our work did not include physical inspections of any of BP's operating assets.

Completion of our testing activities has involved placing reliance on BP's controls for managing and reporting HSE information, with the degree of reliance informed by the results of our review of the effectiveness of these controls. We have not sought to review systems and controls at BP beyond those used for HSE data.

## Our conclusions

Based on the scope of our review our conclusions are outlined below:

### Materiality

**Has BP provided a balanced representation of material issues concerning BP's sustainability performance?**

- We are not aware of any material aspects concerning BP's sustainability performance which have been excluded from the Report.
- Nothing has come to our attention that causes us to believe that BP management has not applied its processes for determining material issues to be included in the Report.

### Completeness and accuracy of Performance Information

**How complete and accurate is the HSE data in the Report?**

- With the exception of BP's share of Rosneft in relation to greenhouse gas (GHG) emissions, we are not aware of any material reporting units that have been excluded from the group-wide HSE data.
- Nothing has come to our attention that causes us to believe that the HSE data has not been collated properly from group-wide systems.
- We are not aware of any errors that would materially affect the data as presented in the Report.

**How plausible are the statements and claims within the Report?**

- We have reviewed information or explanation on selected statements on BP's sustainability activities presented in the Report and we are not aware of any misstatements in the assertions made.

## Observations and areas for improvement

Our observations and areas for improvement will be raised in a report to BP management. Selected observations are provided below. These observations do not affect our conclusions on the Report set out above.

- BP has continued to develop its reporting on climate change, including information on managing methane, pursuing efficient operations and on the increasingly important role of renewables in a low carbon future. Stakeholders, including investors, continue to seek enhanced disclosures in relation to BP's actions to manage climate-related risks and opportunities. There is an opportunity for BP to report further information on how it measures progress made against these actions.
- BP has commitments to increasing both the representation of women in group leadership positions and the national diversity of its workforce to represent the countries in which it operates. However, whilst data is reported for gender and examples are provided of specific locations where local nationals are well represented, it is less clear how successful BP has been in expanding the representation of local nationals in leadership positions.

## Our independence

We have implemented measures to comply with the applicable independence and professional competence rules as articulated by the IFAC Code of Ethics for Professional Accountants and ISQC1.<sup>2</sup> Ernst & Young's independence policies apply to the firm, partners and professional staff. These policies prohibit any financial interests in our clients that would or might be seen to impair independence. Each year, partners and staff are required to confirm their compliance with the firm's policies.

We confirm annually to BP whether there have been any events including the provision of prohibited services that could impair our independence or objectivity. There were no such events or services in 2016. Our assurance team has been drawn from our global Climate Change and Sustainability Services Practice, which undertakes engagements similar to this with a number of significant UK and international businesses.

**Ernst & Young LLP, London**  
6 April 2017

<sup>1</sup> International Federation of the Accountants' International Standard for Assurance Engagements (ISAE3000) Revised, Assurance Engagements Other Than Audits or Reviews of Historical Financial Information.

<sup>2</sup> Parts A and B of the IESBA Code; and the International Standard on Quality Control 1 (ISQC1).

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BP's corporate reporting suite includes information on our sustainability and financial performance, as well as our global energy and technology projections. We also publish issue briefings on oil sands and unconventional gas development.



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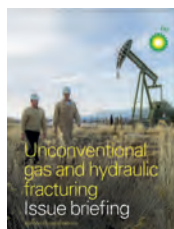
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Information on our approach to developing energy from Canada's oil sands.

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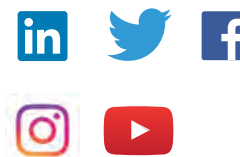
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