
bp
Advancing the
energy transition

Introduction from Bob Dudley

The world is growing like never before, creating opportunity for billions of people. And all this growth requires energy. But as the world demands more energy it also demands that it be produced and delivered in new ways, with fewer emissions.

At BP, we embrace this dual challenge. We have always looked to the future, adapted to change and met challenges like this head on.

In this report, we examine how the energy world is rapidly changing, set out our low carbon ambitions and show how we are helping to advance the energy transition.

Our experience

Two decades ago, BP was one of the first energy companies to address the threat of climate change, pioneering alternatives like wind, solar and biofuels. We invested billions of dollars to make renewable energy a genuine alternative.

Some of our investments worked out – others did not. We were early, but I don't think we were wrong, because we learned valuable lessons along the way.

To deliver significantly lower emissions, every type of energy needs to be cleaner and better. A race to renewables will not be enough. That's why we are making bold changes across our entire business.

Our low carbon ambitions

Here's how we are doing it: by reducing, improving, creating. We're reducing emissions in our own operations; we're improving our products to help customers lower their emissions; and we're creating low carbon businesses.

We are able to do this because of the innovative mindset of our people, our unique global research network, and the potential being unleashed by digital, big data and advanced technologies. This is allowing us to rapidly develop new ways to tackle emissions and improve efficiency, and to deploy these throughout BP.

→ **Reduce**
We have set clear targets for emissions in our operations. So even as our business grows to meet growing demand, our net carbon emissions will not. We'll deliver this through sustainable reductions in our greenhouse gas emissions, by keeping a cap on our methane intensity and, as necessary, with offsets to keep net emissions at 2015 levels. We appreciate that there's more to do – but we see this as a critical next step in our journey to reduce emissions.

→ **Improve**
We're producing more natural gas – a lower carbon alternative to coal and a complement to renewables. And we're working with auto manufacturers to create fuels and lubricants that allow drivers to go further with fewer emissions. ››

→ **Create**
We are also creating low carbon businesses, such as LightSource BP, adding solar to our long-established renewables businesses in wind and biofuels.

And some of our most exciting work is in venturing, where we are making investments in a range of smart technologies and experimenting with new business models. The energy landscape is evolving quickly and no single solution is emerging as yet. But we will be ready to scale up the most promising innovations into viable new businesses as the future becomes clearer.

To validate all these efforts and encourage further action, we are introducing an accreditation programme across BP that we're calling Advancing Low Carbon.

A shared challenge

I am surrounded by people who want to play their part: engineers, scientists, technicians, economists, specialists in energy policy. We are all hungry to do more. But we know that on our own, it is never going to be enough.

The transition to a lower carbon economy requires everyone to be involved, from individual consumers to global corporations, and from local authorities to national governments. When we all work together we can make progress, as happened in Paris in 2015.

We support the ambitions of the historic Paris Agreement, but the pledges made then and the actions taken since will not be enough to prevent a 2°C rise. To help meet the challenge, we believe carbon must be priced – and only governments can do that.

Put a price on carbon and you incentivize everyone to use less energy. You incentivize the use of lower carbon fuels. And you incentivize innovation and the hunt for all kinds of ways to lower emissions. All my experience over the past 40 years in the energy business tells me that when you inspire people, human ingenuity will find solutions.

It won't be easy, true progress seldom is, but BP will never stop working to help the world keep moving and, more importantly, keep advancing.

Bob Dudley
Group chief executive, BP

The changing energy mix

The demand for energy continues to grow – largely driven by rising incomes in emerging economies and a global population heading towards nine billion by 2040. At the same time, the energy mix is changing as technology advances, consumer preferences shift and policy measures evolve.

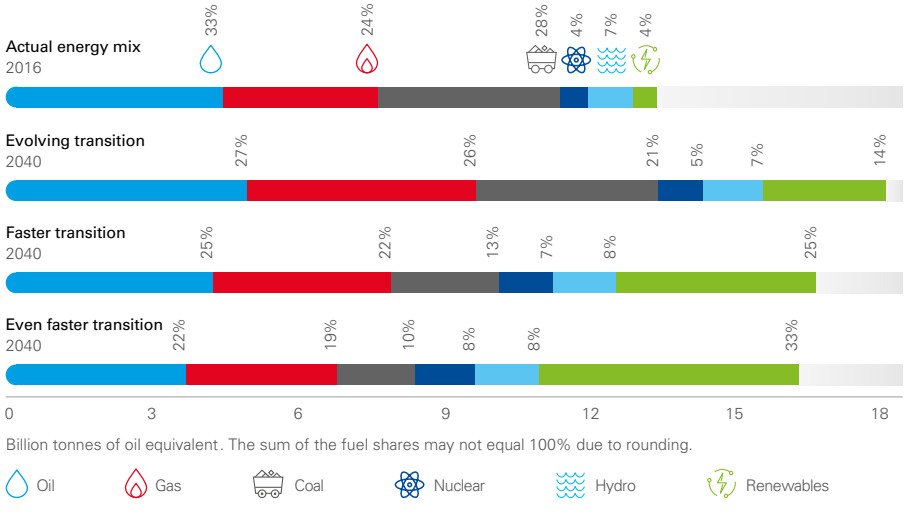
Renewables are now the fastest-growing energy source in history and we estimate that they could account for 14% of all energy consumption in 2040 – if not more. That said, oil and gas could meet at least 40% of the world's energy needs in 2040 – even on a course that's consistent with the Paris goal of limiting global warming to less than 2°C.

Gas offers a much cleaner alternative to coal for power generation and can lower emissions at scale. It also provides a valuable back-up for renewables intermittency, delivers heating at the high temperatures required by industry and is increasingly used in transportation.

Oil is the primary fuel for transport today. We expect its share of the total energy mix will gradually decline as we see more energy efficiency in traditional engines, greater use of biofuels and natural gas, and growth in fully electric and hybrid vehicles in the years ahead.

With oil and gas in high demand for years to come, it's essential that action is taken to reduce emissions from their production and use.

Energy consumption – 2040 projections



Evolving transition
In this scenario, government policies, technology and social preferences evolve in a manner and speed seen in the recent past. The growing world economy requires more energy but consumption increases less quickly than in the past.

Faster transition
This scenario sees carbon prices rising faster than in the evolving transition scenario, with other policy interventions encouraging more rapid energy efficiency gains and fuel switching.

Even faster transition
This scenario matches carbon emissions similar to the International Energy Agency's sustainable development scenario, which aims to limit the global temperature rise to well below 2°C.

Visit
bp.com/energyoutlook for more information on our projections of future energy trends and factors that could affect them out to 2040.

Our strategy for the energy transition

Society is demanding solutions for more energy, delivered in new and better ways for a low carbon future. Our strategy is designed to meet this dual challenge.

Although we can't predict the future, insights from our *Energy Outlook* and *Technology Outlook* help shape our strategic thinking. We consider how policy, consumer behaviour and advances in technology could affect the pace of the energy transition and how we produce and use energy in the coming decades.

All our projections see renewables growing at a fast pace – but with oil and gas continuing to play a prominent role over the next two decades. That's why our portfolio is a balance of advantaged oil and gas, a competitive downstream, the trading of all forms of energy and a wide range of low carbon businesses.

Each year, we reinvest about one tenth of the capital employed in new opportunities. At current rates, we produce our proved reserves over 11 years on average. Our rolling programme of activity gives us significant flexibility to redefine our business as the world's energy needs evolve.

When making strategic decisions, we consider different potential medium-term supply and demand scenarios – including a faster transition to lower carbon sources. To be prepared for uncertainties and opportunities, we test whether a potential investment makes commercial sense using a range of oil, gas and carbon prices.

We believe this approach – actively planning how we can contribute to and be competitive in the energy transition – gives us resilience, whatever the pace and path the world chooses. To reinforce this belief, we base part of our long-term executive compensation on delivery of this strategy.

Embracing the dual challenge

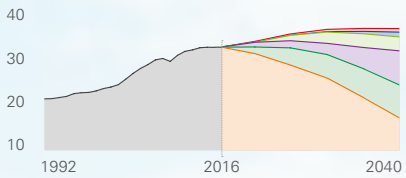
1. How do we think the energy mix could look in 2040?

Energy scenarios

We consider various scenarios, with different assumptions about policy, technology and consumer behaviour.

- Evolving transition
- Faster transition
- Even faster transition
- Ban on sale of cars with internal combustion engines
- Greater policy push for renewables
- Less policy support for a coal to gas switch.

Impact on CO_2 emissions (billion tonnes)



Source: *BP Energy Outlook.*

2. How do we see energy markets evolving?

Market scenarios

We consider various market scenarios, with different assumptions about supply and demand.

Return to oil price volatility
Oil and gas demand rises lead to a supply crunch and higher prices.

Oversupply of oil and gas
Oil and gas remain cheaper in the long term.

Faster energy transition
Driven by policy and advancements in renewables and energy efficiency.

3. What are our strategic priorities?

Our strategy

We pursue a strategy that's resilient to a broad range of energy and market scenarios.

Growing gas and advantaged oil in the upstream
Invest in more oil and gas, producing both with increasing efficiency.

Market-led growth in the downstream
Innovate with advanced products and strategic retail partnerships.

Venturing and low carbon energy
Pursue new opportunities to meet evolving technology, consumer and policy trends.

Modernizing the whole group
Simplify our processes and enhance our productivity through digital solutions.

4. How do our top leaders get rewarded on lower carbon progress?

Progress and reward

We reward based on the delivery of our strategy for the evolving energy landscape.

We base 20% of our longer-term share awards on progress against our strategic priorities. This includes measures on our performance in gas, renewables, venturing and renewables trading.

As an underpin, the board considers progress on issues such as reducing emissions, improving our products and creating low carbon businesses – as well as total shareholder return, safety and other environmental factors – before determining the final vesting outcome for these longer-term awards.

BP's board and executive team annually review our strategy.

Our commitment to advance a low carbon future

The world's rising demand for energy is a real opportunity to expand our business and deliver higher returns for our investors. But as we grow, our net operational emissions won't – and we will help others to curb their emissions.

We will deliver this commitment by reducing emissions in our operations, improving our products and services, and creating low carbon businesses. This is just the latest step in our 20-plus year journey – but a significant one and one we plan to build on in the years to come.

By setting tough targets and aims – and sharing them – others can monitor our progress. We'll review these regularly so we can keep them up-to-date with changes in our portfolio, protocols and other factors.

Our low carbon ambitions

Reducing
emissions in our operations

Zero
net growth in operational emissions out to 2025

3.5Mte
of sustainable GHG emissions reductions by 2025

Targeting methane intensity of
0.2%
and holding it below 0.3%

Improving
our products

Provide lower emissions gas

Develop more efficient and lower carbon fuels, lubricants and petrochemicals

Grow lower carbon offers for customers

Creating
low carbon businesses

Expand low carbon and renewable businesses

$500 million invested in low carbon activities each year

Collaborate and invest in the Oil and Gas Climate Initiative's **$1 billion** fund for research and technology

Advancing low carbon

Our accreditation programme for lower carbon activities

Visit *bp.com/targets* for specifics on these nine goals and *bp.com/energytransition* for information on our wider programme.

Reducing emissions in our operations

Targeting zero net growth in our operational emissions

The International Energy Agency estimates that energy efficiency could contribute around 40% of the emissions reductions needed to stay below the 2°C goal. We are playing our part by improving the efficiency of our existing operations and designing our new major projects to emit fewer greenhouse gases (GHGs).

We have set a sustainable emissions reductions target of 3.5 million tonnes out to 2025. Our operating businesses will deliver this through improved energy efficiency, fewer methane emissions and reduced flaring – all leading to permanent, quantifiable GHG reductions.

We are aiming for zero routine flaring by 2030, as part of an initiative by the World Bank.

And, to ensure that as our business grows, our carbon footprint does not, we'll offset any increase in emissions above 2015 levels that's not covered by our sustainable reductions activity.

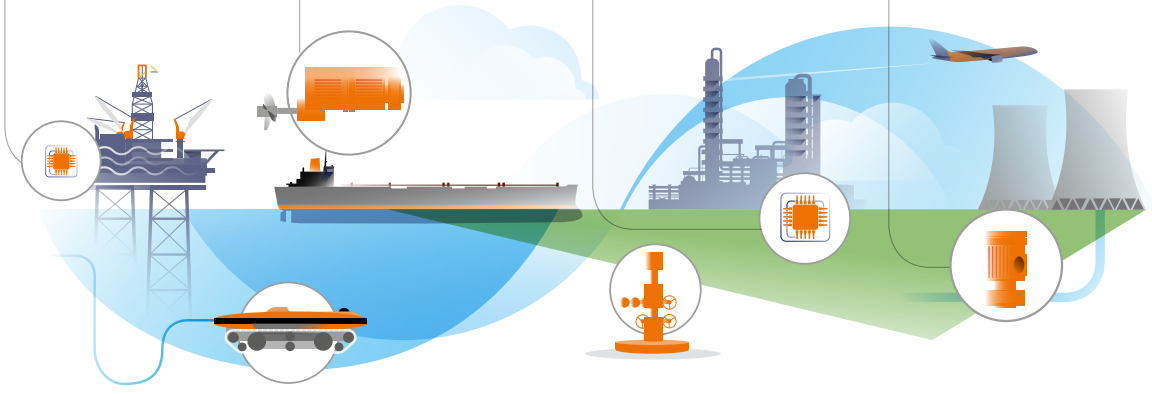
Visit *bp.com/emissions* for the specifics of these targets.

Optimizing process heat
Digital technologies are helping us to reduce energy by improving how we heat seawater for use at our Deepwater Gunashli platform in Azerbaijan.

Reducing fuel consumption
We've introduced oil tankers with more efficient engines and advanced energy management systems.

Retrofitting technology
We upgraded technology at our Cooper River petrochemicals plant in the US, which will significantly reduce the site's energy use and emissions.

Using co-generated power
We now use electricity from our co-generation facility to power the turbines used to pump water to the cooling tower at our Whiting refinery in the US.



Tackling the methane challenge

The Intergovernmental Panel on Climate Change data suggests that methane accounts for around 20% of manmade GHG emissions. Since methane is the primary component of natural gas, BP is committed to taking a leading role in addressing the methane challenge.

Methane has a shorter lifetime in the atmosphere than carbon dioxide, but it has a higher global warming potential. So, we are targeting a methane intensity of 0.2%, and holding it below 0.3%. This includes the methane emissions from our operations where gas goes to market as a percentage of that gas.

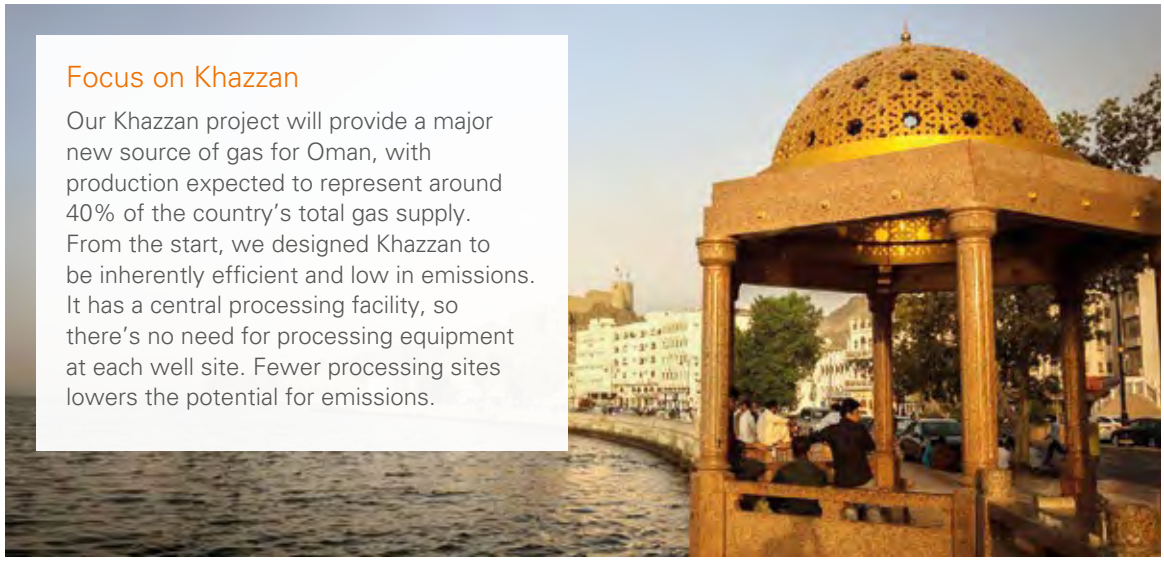
To manage our methane emissions, we use technology like infrared cameras to identify and help prevent small seeps from becoming more hazardous leaks.

Thirteen of our 22 major projects scheduled to be delivered by 2021 are gas, so we're designing them in ways that should reduce methane emissions from the outset.

We're working on this challenge with our industry peers, sharing best practice and investing in potentially breakthrough technologies. For example, we are active in the Oil and Gas Climate Initiative – whose member companies produce more than 25% of the world's oil and gas – in its aim to work towards near-zero methane emissions from the gas value chain.

And, we support research such as Princeton University's work to enhance the scientific understanding of methane and its contribution to global warming.

Visit ***bp.com/methane*** for more information and specifics on our methane target.



Focus on Khazzan

Our Khazzan project will provide a major new source of gas for Oman, with production expected to represent around 40% of the country's total gas supply. From the start, we designed Khazzan to be inherently efficient and low in emissions. It has a central processing facility, so there's no need for processing equipment at each well site. Fewer processing sites lowers the potential for emissions.

Focus on the Lower 48

We are one of the largest natural gas producers in the US. Our Lower 48 business is responsible for around half of BP's total operated methane emissions, so we've made methane reduction here a priority.

We introduced the technique known as green completions, which captures gas that would otherwise be flared or vented during the completion and commissioning of wells. We have also been swapping out high-bleed controllers with ones that emit less methane. And, by drilling horizontal wells, we reduce the number of production facilities, along with their associated emissions.

We periodically remove liquid from our wells so gas can flow. Methane can be emitted during this process, so we're using new technologies, such as enhanced automation, to reduce these emissions.

We are also trialling pumps powered by solar energy rather than gas, as well as the use of drones and truck-mounted laser sensors to detect and quantify methane leaks.

Improving
our products

Producing more natural gas

Gas produces around half the carbon dioxide (CO_2) emissions of coal when burned to generate power. That means gas can make a major difference, as has happened in the US, where abundant use of gas from shale has helped drive the country's CO_2 emissions back down to 1990s levels.

Gas is the ideal complement to renewables as it can be a lower carbon, cost-effective back-up to the variability of wind, solar and hydropower generation.

Emitting fewer pollutants, it is also better for air quality.

Just as importantly, gas is widely used for heating homes and businesses, as well as delivering the high temperatures needed in heavy industries like steel, cement and metals.

And, gas is becoming more accessible and affordable around the world thanks to a growing global gas market connected by ship and pipeline.

BP is active in finding and producing gas, as well as its transport, storage and sale. This puts us in a good position as the gas market grows and becomes increasingly competitive. And, by tackling methane emissions, we are helping to make sure that gas is a major lower carbon resource for years to come.

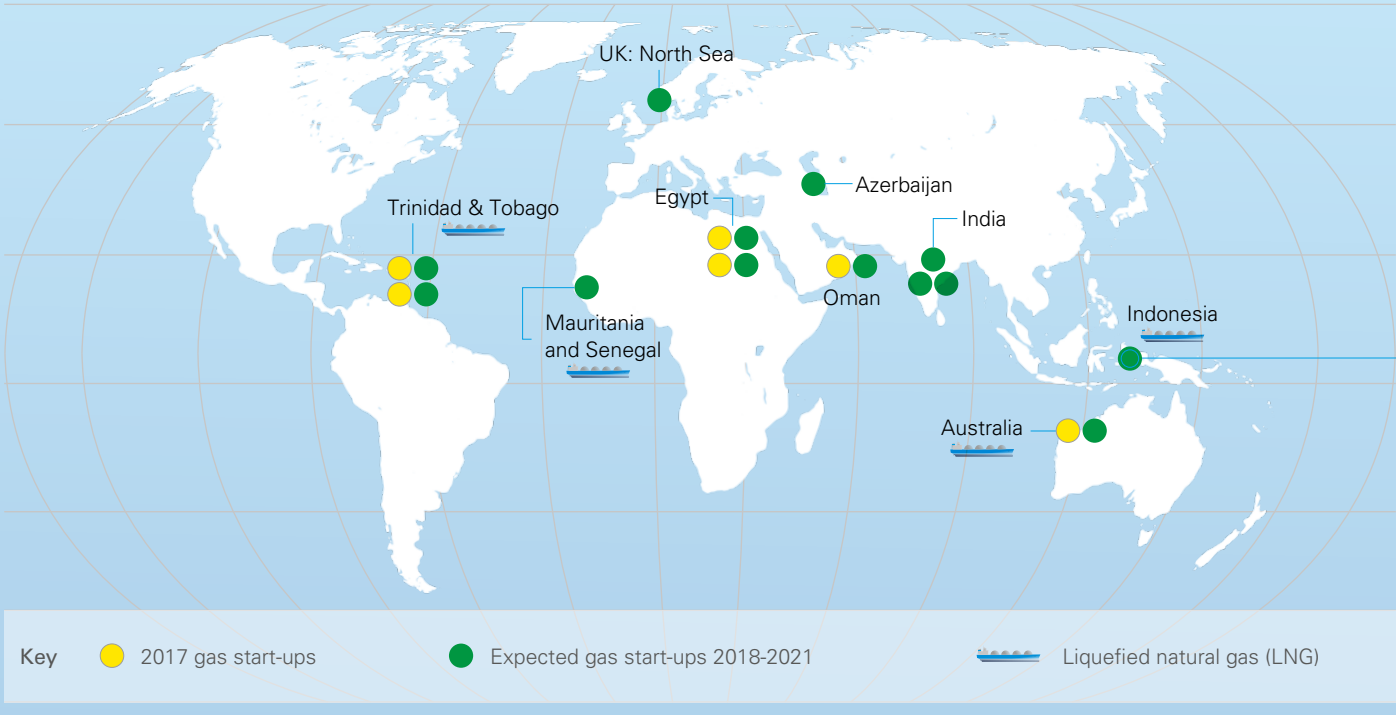
See
page 14 for information on our renewable gas fuel.

Focus on the Southern Corridor

The Southern Gas Corridor, one of the largest projects in BP's portfolio, will connect gas from the Caspian directly to Europe for the very first time. Gas will travel 3,500 kilometres from our Shah Deniz field in the Caspian Sea across five countries to Italy. We plan to deliver gas supplies to Turkey in 2018 and to European markets in 2020.

Once it reaches its peak production, this project will provide enough natural gas to meet the needs of every capital city along the Southern Corridor – more than twice over.

BP's growing natural gas portfolio



Focus on Tangguh

At our Tangguh operation in Indonesia, we convert natural gas into liquid form to make it more practical and commercially viable to transport domestically and to other countries.

This can help countries in the region move more quickly towards gas, rather than using coal. Some of the gas is going to China, where we helped build the country's first LNG import terminal, and some is making its way to South Korea. And, with our latest expansion activity at Tangguh, we'll up the output by 50% – much of which will be for use in Indonesia.

Helping consumers lower their emissions

Around 80-90% of carbon dioxide emissions from oil and gas products are from their use by consumers in transportation, power plants, industries and buildings. So one of the biggest contributions we can make to advance the energy transition is by providing products and services that help consumers lower their carbon footprint.

We provide 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.

Many of our products and services have been accredited with our Advancing Low Carbon programme – see pages 20-21.

We've developed more than 20 carbon neutral products and services through the use of advanced technology and our offsetting programme. And, we offer our customers the opportunity to offset their own carbon emissions.

Carbon neutral lubricants
Our *Castrol Professional* lubricants – supplied to car dealerships for use in servicing cars – are certified as carbon neutral in accordance with PAS 2060.

Reducing plastic in packaging
In the US, we've redesigned some of our *Castrol* engine oil packaging to use less plastic, resulting in a reduction in CO_2 emissions of about 2,000 tonnes a year.

Lower carbon chemicals
Our *PTAir*, used to make items such as clothes and plastic food packaging, has a carbon footprint almost 30% lower than the average European PTA. We are also assessing technologies for producing renewable and recycled PTA.

Supplying biofuel to airports
We make jet biofuel available using existing fuelling infrastructure at Oslo and Bergen in Norway and Halmstad in Sweden.

Working with vehicle manufacturers
In Europe, Ford's EcoBoost engines are engineered with advanced *Castrol* oils, to help improve fuel efficiency.

Renewable gas from food and agricultural waste
We are the largest producer of renewable gas fuel for US transport. This fuel can reduce greenhouse gas emissions by around 70% compared with gasoline or diesel-fuelled vehicles.

Offsetting emissions with our fuel cards
Customers can use our *Aral* and *BP* fuel cards in Austria, Germany, the Netherlands and the UK to offset their carbon emissions.

Jet fuel made from household waste
We are working with Fulcrum BioEnergy to supply biojet fuel at key hubs across North America.

Creating
low carbon businesses

Expanding our renewables business

Renewables are the fastest-growing source of energy today, on course to provide at least 14% of the global energy mix by 2040. BP has been in the renewables business for more than 20 years – we're one of the largest operators among our peers and we're expanding as we see more opportunities.

Biofuels

The ethanol we produce from sugar cane in Brazil has life cycle greenhouse gas emissions 70% lower than conventional transport fuels. And, our joint venture to operate a major ethanol storage terminal with our partner Copersucar will help us expand further into Brazil's large fuels market.

We are working in partnership with DuPont on a technology called Butamax, which converts corn sugar into bio-isobutanol – a biofuel that is more energy rich than ethanol and can be blended with gasoline in higher concentrations and transported through existing fuel pipelines and infrastructure.

2.9m

tonnes of CO_2 equivalent avoided through our renewables business in 2017

Biofuels

Our ethanol production avoided emissions equal to

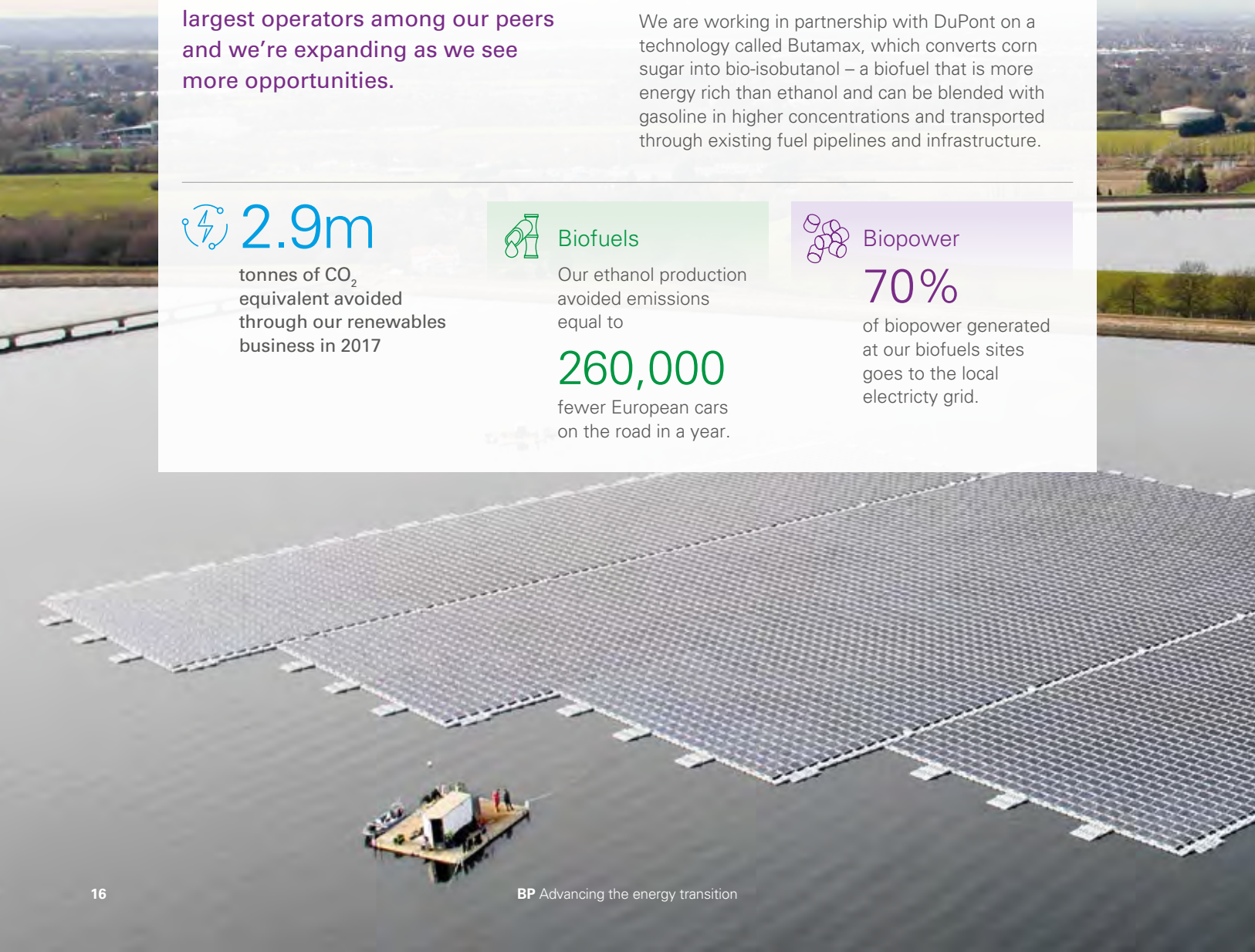
260,000

fewer European cars on the road in a year.

Biopower

70%

of biopower generated at our biofuels sites goes to the local electricty grid.



Biopower

We create biopower by burning bagasse, the fibre that remains after crushing sugar cane stalks. Around 70% of the biopower generated is exported to the local electricity grid.

This is a low carbon power source, with the CO_2 emitted from burning bagasse offset by the CO_2 absorbed by sugar cane during its growth.

Visit
bp.com/renewablereserves to see how we are creating a new way for reserves of renewable energy to be assessed on a like-for-like basis with fossil fuels.

Solar energy

BP is partnering with Lightsource, Europe's largest solar development company, which focuses on the acquisition and long-term management of large-scale solar projects. We are bringing our global scale, relationships and trading capabilities to drive further growth across the world.

Wind energy

BP is one of the top wind energy producers in the US. We operate 13 sites in seven states and hold an interest in another facility in Hawaii.

Solar

$200m

investment over three years in Europe's largest solar development company.

Wind

The net generating capacity from our portfolio is enough to power almost

400,000

homes.

Investing in low carbon ventures and start-ups

Innovation has the potential to disrupt and have big impacts. For example, one company's technology for carbon reduction in concrete could reduce manmade greenhouse gas emissions by 1%, if deployed globally.

That's why BP is investing in this company and many others, so we can learn fast and scale up where we can.

We plan to invest around $200 million every year to help incubate and grow lower carbon solutions. This is all part of our near-term plan to allocate at least $500 million a year for low carbon activities, which also includes our renewables businesses and acquisitions.

We view these activities as core to our strategy – with the potential to make a real contribution to our future.

CO_2 Carbon management

With the world needing oil and gas for much of its energy for decades to come – possibly 40% of all energy used in 2040 – we are investing in ways to reduce the amount of carbon dioxide that is emitted into the atmosphere.

Enabling carbon offsets

We are one of the world's largest carbon traders and we are making investments that help businesses and other organizations offset their carbon footprint through emission-reducing projects.

See page 22 for more on our carbon trading activities.

Turning carbon into concrete

Cement production accounts for 5-7% of total global carbon emissions. We've invested in Solidia, which uses technology to produce lightweight concrete in a way that can reduce its carbon footprint by up to 70%.

Advanced mobility

By 2040 over 30% of kilometres travelled by passenger cars could be powered by electricity. And, we think more and more people will take advantage of ride sharing and car pooling.

Charging points for electric vehicles

We are partnering with FreeWire, which develops smart battery systems for fast charging of electric vehicles. And, we are piloting charging points at retail sites from the US to Europe and New Zealand.

Digitally connected convoys

We're investing in Peloton, whose technology enables two or more trucks to travel closely but safely together. This reduces aerodynamic drag, generating savings in fuel use and carbon emissions.

Bio and low carbon products

There is increasing demand for lower carbon versions of fuels, industrial materials and other products. The aviation industry, for one, expects a growth in air travel but is pledging to cut its emissions in half by 2050.

Aviation fuel from waste

Our partner, Fulcrum BioEnergy, has developed a jet fuel made from household waste that has 20% of the carbon footprint of its conventional equivalent. We will distribute and supply biojet into aircraft at key hubs across North America.

Sustainable building materials

We're working with Tricoya to produce a less carbon-intensive alternative to concrete, metals and plastics. Using acetylation to change the chemical properties of wood, we can create a weather-resistant construction material that does not swell or shrink.

Digital transformation

Artificial intelligence, faster data processing and other digital technologies have great potential for increasing efficiency and driving down emissions.

Castrol's joint venture with Onyx InSight provides engineering and software services to wind farm operators so that they can monitor the condition of wind turbines and avoid breakdowns.

Low carbon power and storage

Nearly two thirds of the projected growth in world energy demand over the coming decades could come in the form of electricity.

BP is looking at ways to meet customers' power and storage needs, for example through developing advanced battery technology.

Accrediting our lower carbon activities

BP's new Advancing Low Carbon accreditation programme is specifically designed to encourage every part of BP to pursue lower carbon opportunities, by providing a framework for us to highlight activities that demonstrate a better carbon outcome.

Qualifying activities range from emissions reductions in our operations to carbon neutral products, from investments in low carbon technologies to our renewables businesses. We undertake these activities through our own businesses as well as in partnership with others.

Deloitte has assessed our programme and criteria and independently assured the activities and their greenhouse gas (GHG) emissions savings or offsets.

Our Advancing Low Carbon programme highlights many, but not all, of BP's actions on low carbon.

Advancing low carbon

Assessment criteria

The activities must:

- Deliver a better carbon outcome by doing one of the following:
  - Reducing GHG emissions
  - Producing less carbon than competitor or industry benchmarks
  - Providing renewable energy
  - Offsetting carbon produced
  - Furthering research and understanding to advance low carbon
  - Enabling BP or others to meet their low carbon objectives.
- Go beyond what is required to meet relevant carbon emissions regulations.
- Be either directly delivered by BP or by a BP partner.
- Be up and running.
- Comply with Advancing Low Carbon programme requirements on GHG calculation methodologies.
- Deliver a carbon outcome that is intended to be irreversible.

Visit *bp.com/advancinglowcarbon* for more details on each activity and our accreditation programme.

33

activities accredited

18m

tonnes of CO_2 equivalent estimated to be saved or offset through **activities delivered by BP**

4.3m

tonnes of CO_2 equivalent estimated to be saved or offset through **activities delivered by BP partners**

Accredited activities in the first year of the programme

Reducing GHG emissions

- Sustainable GHG emissions reductions – actions to improve energy efficiency and reduce methane emissions and flaring in our operations.

Producing less carbon than competitor or industry benchmarks

- BP biojet – jet fuel made with recycled cooking oil.
- Oil tankers – new, more energy efficient ships.
- *Castrol* low viscosity lubricants – which help improve vehicles' fuel economy.
- Onyx InSight – investing in improving the maintenance efficiency of wind turbines.
- *PTAir* – a chemical feedstock with a lower carbon footprint than the average European PTA.

Providing renewable energy

- Brazil biofuels and biopower.
- Wind energy.

Offsetting carbon produced

- Air BP into-plane fuelling services.
- *BP* and *Aral* fuel cards – help fleet customers offset their carbon emissions.
- *PTAir Neutral* – a carbon neutral chemical feedstock.
- *Castrol EDGE Bio-synthetic* and *Castrol MAGNATEC Bio-synthetic* – carbon neutral engine oils manufactured using 25% plant-derived oil compounds.
- *Castrol Optigear* – carbon neutral lubricants for the wind industry.
- *Castrol Professional* – carbon neutral engine oil.
- *Castrol Transmax* – carbon neutral transmission fluids.
- *Castrol VECTON* – a carbon neutral range of lubricants for the commercial trucking industry.

Furthering research and understanding to advance low carbon

- Anhydride – a chemical feedstock with a lower carbon footprint.
- Butamax – a joint venture with DuPont to develop advanced biofuels.
- *Castrol GTX ECO* – a motor oil that delivers a CO_2 reduction over the product's life cycle, compared with *Castrol GTX Diesel* 15W-40.
- NEXCEL – an oil cell that is designed to reduce CO_2 emissions by helping oil to warm up more quickly.
- Solidia – investing in producing concrete with a lower carbon footprint.
- Tricoya Technologies – investing in producing more durable wood products.
- Carbonfree Chemicals – investing in a new technology that captures carbon emitted during cement production.
- Academic partnerships – BP supports independent research programmes at Princeton, Harvard and Tufts universities.

BP's participation in:

- Climate and Clean Air Coalition's Oil and Gas Methane Partnership.
- CO_2 Capture Project.
- Oil and Gas Climate Initiative.
- World Bank's Global Gas Flaring Reduction Partnership and Zero Routine Flaring by 2030 initiative.

Enabling BP or others to meet their low carbon objectives

- BP Global Environmental Products business – investing in forestry projects to reduce emissions and generate carbon credits.
- BP Target Neutral – developing carbon neutral products and services.
- Encourage Capital's EKO Green Carbon Fund – investing in forestry projects that generate carbon offsets.

We estimate the total emissions saved or offset from the accredited activities using a variety of methodologies and baselines. The figures are aimed at illustrating the impact of the programme as a whole rather than a quantification of specific savings made by BP or by BP partners. The scope of accredited activities is wider than, and unaligned with, the scope of activities giving rise to emissions within BP's operational emissions boundary. Therefore, the figures are not directly comparable to BP's reported emissions.

Using carbon offsets to support our low carbon ambitions

With carbon offsets, a reduction in greenhouse gas emissions in one place compensates for emissions made elsewhere. BP is a leader in developing and using offsetting programmes. And, we will use offsets to underpin our low carbon ambitions.

Carbon offsets are created through investment in activities that reduce greenhouse gas (GHG) emissions or absorb carbon dioxide (CO_2). That could be initiatives that provide lower carbon alternatives, like renewable energy or cookstoves to replace open fires. Or it could be projects that protect or enhance natural resources that soak up CO_2 from the atmosphere – such as land and forests.

Carbon offsetting is essential for reaching the Paris goals – and we consider it a valuable supplement to our own emissions reduction activities.

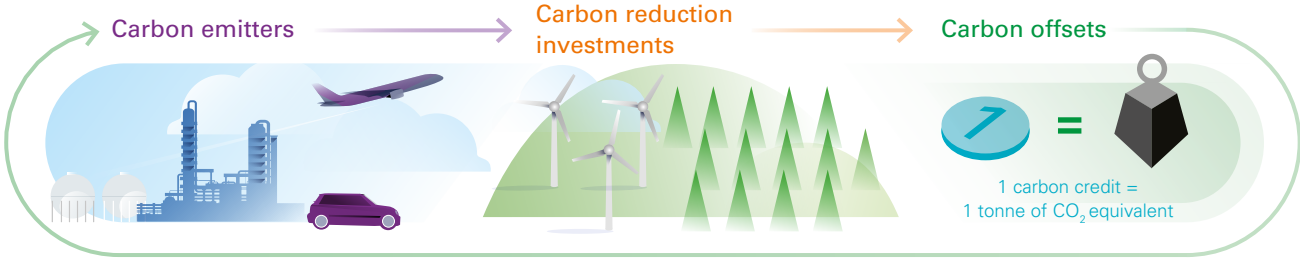
Our Target Neutral programme provides a means for individuals and organizations to reduce their carbon footprint through offsetting. Over the past 10 years, we have built up significant expertise in carbon management projects around the world and have helped our customers offset more than three million tonnes of CO_2 equivalent.

We plan to offset any increase in our operational emissions above 2015 levels that's not covered by our sustainable reductions activity. This means that, out to 2025, we'll have no net increase in our carbon footprint, even as our production grows.

We currently offer more than 20 carbon neutral products and services to our customers, using Target Neutral to offset the emissions.

And, we are helping to grow markets for carbon credits through the sale and purchase of credits and by increasing their overall supply. We are able to use our powerful market insights and innovative platforms to help companies meet their own emissions reduction commitments, while providing income to the people who run the projects. In 2017 alone, we financed low carbon projects that resulted in emissions reductions of more than 12 million tonnes of CO_2 equivalent.

How offsetting works



BP helps people and companies reduce their carbon footprint for:

- Compliance needs
- Corporate responsibility
- Individual choice

BP supports a diversity of projects, including:

- Forest protection
- Biogas initiatives
- Cookstoves

BP uses carbon credits to:

- Offset our own operational emissions growth
- Make some of our products carbon neutral
- Trade with companies to meet their compliance and voluntary needs

Advocating for better policy and clearer incentives

Carbon pricing

We believe that carbon pricing is the most effective way to incentivize everyone – energy producers and consumers alike – to play their part in reducing emissions. It makes energy efficiency more attractive and low carbon solutions, such as renewables and carbon capture, use and storage (CCUS), more cost competitive.

We expect around two thirds of BP's direct emissions will be in countries subject to emissions and carbon policies by 2020.

BP has played a major role in helping governments design their trading systems and we've been active as a trader in the world's current emissions trading systems since their inception.

Pricing carbon adds a cost to our industry's production and our products – but it also benefits the sector by providing a roadmap for future investment and a level playing field for all energy sources.

We are members of the US-based Climate Leadership Council and the international Carbon Pricing Leadership Coalition – two groups that advocate for carbon pricing.

Internal carbon price

To help anticipate greater regulatory requirements affecting our GHG emissions, we use a carbon cost when evaluating our plans for large new projects and ones where there could be material emissions costs. In industrialized countries, our internal carbon price is currently $40 per tonne of CO_2 equivalent, and we also stress test at a carbon price of $80 per tonne.

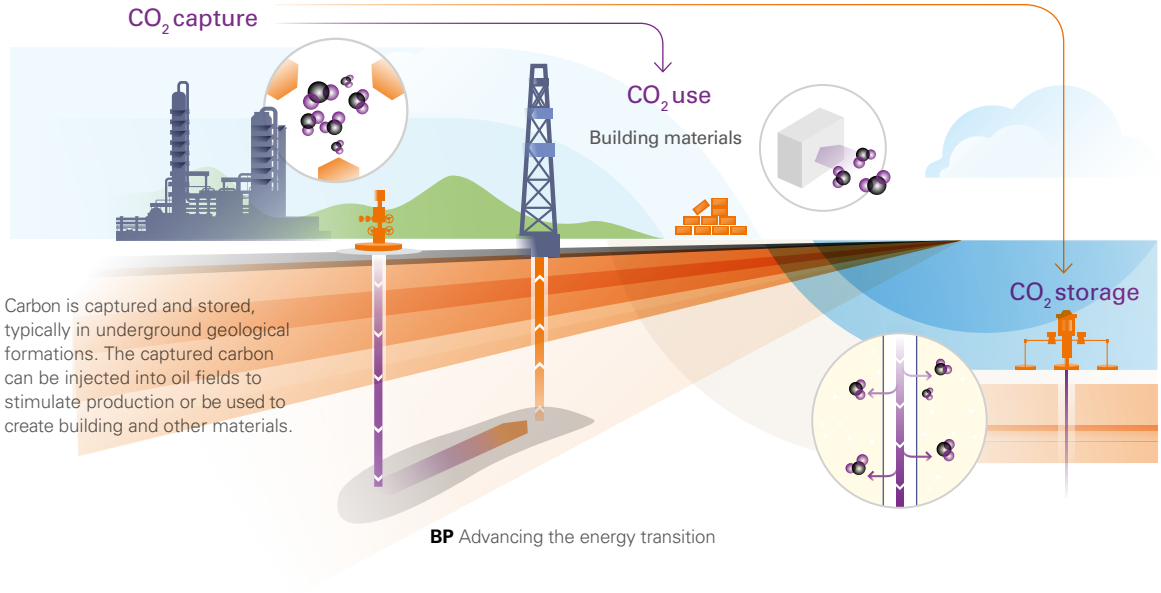
Carbon capture, use and storage

We believe CCUS has a vital role to play in meeting the objectives of the Paris Agreement. It can achieve deep emissions reductions in existing power infrastructure and energy-intensive industries that rely on the use of fossil fuels.

The technology has been in use for more than 20 years, but needs governmental support – through a carbon price and other policy measures – to accelerate its deployment. Through the Oil and Gas Climate Initiative, we are working to identify the policy mechanisms that may best promote the deployment of CCUS on a regional basis.

At BP, we are exploring opportunities to deploy CCUS in our own operations, projects and products. For example, as part of a joint venture in the United Arab Emirates, we are using CO_2 from industrial processes to enhance oil recovery.

How CCUS works



As a business that operates in 70 different countries, what we do keeps millions of people warm, working and on the move all around the world. In this publication, we've set out our commitment to keep doing that while advancing progress towards a cleaner, lower carbon future.

Keys to success

What you have read in these pages applies to every part of our business, from the deep sea to the desert, from rigs to retail. The experience and expertise we have acquired over decades inform our actions, our future plans and our belief that, to meet global climate goals, the world should prioritize:

- **Reducing emissions rather than promoting any one fuel as the answer.** The world will need all forms of energy for a long time to come, so we need to make all fuels cleaner.
- **Improving energy efficiency, where the greatest reductions in emissions can be achieved.** Advances in technology for everyone – from industry to individuals – are creating huge opportunities to achieve gains over the coming years.
- **Carbon pricing as one of the most significant steps that can be made.** The more governments can do to bring about clear, stable pricing frameworks, the greater the incentives for innovation and lower carbon choices.

No one company or sector alone can deliver a low carbon future. Everyone, from consumers to corporations to governments, needs to take responsibility. If we respond collectively, even a challenge as complex as climate change can be met. BP is dedicated to being part of the solution.

Bob Dudley
Group chief executive, BP

Advancing the energy transition

Includes the specifics of our ambitions, and more information about this report.

bp.com/energytransition

Sustainability Report 2017

Covers our sustainability performance with additional information online.

bp.com/sustainability

BP Technology Outlook

How technology could influence the way we meet the energy challenge into the future.

bp.com/technologyoutlook

BP Energy Outlook

Provides our projections of future energy trends and factors that could affect them out to 2040.

bp.com/energyoutlook

Cautionary statement

This document contains certain forward-looking statements – that is, statements related to future, not past events and circumstances – which may relate to the ambitions, aims, targets, plans and objectives of BP – as well as statements related to the future energy mix. 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 of the control of BP. Actual results or outcomes may differ from those expressed in such statements, depending on a variety of factors including those set out in the 'Risk factors' in our *Annual Report and Form 20-F 2017* and other matters referred to at *bp.com/energytransition*.

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