

Environment



Our goal is to understand and sustain the health of the environments in which we operate and respect the resource needs of communities which depend on them.



Q How do you manage environmental impacts at a local level?

A We conduct detailed environmental and social assessments when planning our projects to identify impacts that could arise from our activities. We then take measures to address them. For example, at our Tangguh expansion project in Indonesia, the planned location of a new offloading facility and the route of a nearshore pipeline for our liquefied natural gas plant were identified as being close to mangrove habitat. We therefore took measures such as moving the location to the western side of the site and using horizontal drilling for the pipeline to avoid the habitat.

Kelly Goddard, vice president of environment, social responsibility and HSSE compliance, safety and operational risk, BP



Our environmental and social impacts

We work hard to understand environmental and social sensitivities in the areas where we operate with the aim of avoiding, minimizing and mitigating any potential impacts.

The way in which our operating sites around the world manage their environmental and social impacts is set out in our operating management system (OMS). This includes requirements on consulting with stakeholders who may be affected by our activities.

To continue to improve the way we manage potential impacts and our environmental performance, we are further integrating the requirements of the ISO 14001 environmental management standard into our OMS.

Project planning

During the initial planning stages of our major projects, we complete a screening process to identify potential environmental and social impacts. These may include impacts on sensitive areas and freshwater resources, as well as the prevalence of bribery and corruption in a host country, local employment and community health and safety.

We use the results to identify actions and mitigation measures then and implement these in project design, construction and operations. For example, as part of our exploration activities in São Tomé and Príncipe, we are using underwater sound recorders and an autonomous vehicle to understand the distribution and movement of marine mammals. The outcomes of this can inform planning for potential future activities.

Operations

At our major operating sites, we review performance each year and set local improvement targets. These can include measures on flaring, air emissions and the use of water.

Many of our sites operate for several decades and we aim to manage environmental and social impacts throughout their lifespan. In Indonesia, when we began planning our liquefied natural gas plant in 2002, we set up an independent panel to monitor our progress. The Tangguh Independent Advisory Panel continues to review our performance in areas such as human rights, security and governance.

📄 See bp.com/id for the panel's reports and BP's responses.

Decommissioning

We consider environmental factors, such as the reuse of materials and appropriate disposal, when closing down a site. For example, we undertook the demolition of four tanks weighing 300 tonnes each at a site of a former refinery in the Isle of Grain in the UK. The site was close to a special protected area for bird habitat and we took measures so that the area was not impacted. In addition, nearly 99% of the steel was recovered for recycling.

We are also working with our partners to incorporate environmental factors into decommissioning projects in the North Sea. For example, removal of the Miller platform was completed in 2018, with around 40,000 tonnes of material, mainly steel, moved onshore – enough steel to build the Eiffel Tower four times over. Up to 97% of the materials will be reused or recycled.

North West Hutton

Since the decommissioning of the platform, wells and pipelines in 2009, we have carried out regular assessments of the marine environment. The analysis has shown colonization by cold-water coral on the seabed post-decommissioning that is similar in composition to natural cold-water coral reefs.

Sensitive areas and biodiversity

We support the conservation of sensitive areas that house our planet's rich natural and cultural heritage.

In circumstances where our activities occur in places that have cultural significance, are home to threatened or protected species, or have outstanding biological, geographical or social value, we take action to avoid and mitigate the potential impacts of our work.

Every year we review the location of our operations in and close to the most sensitive areas. This can change from year to year as governments update protected area designations.

We evaluate new projects to determine whether planned activities could affect protected areas. If our screening process shows that a proposed project could enter or affect an international protected area, we conduct a detailed risk assessment to better understand any potential impacts. Executive approval is required before any physical activities can take place.

No new project sought permission to enter an international protected area in 2018.

Biodiversity

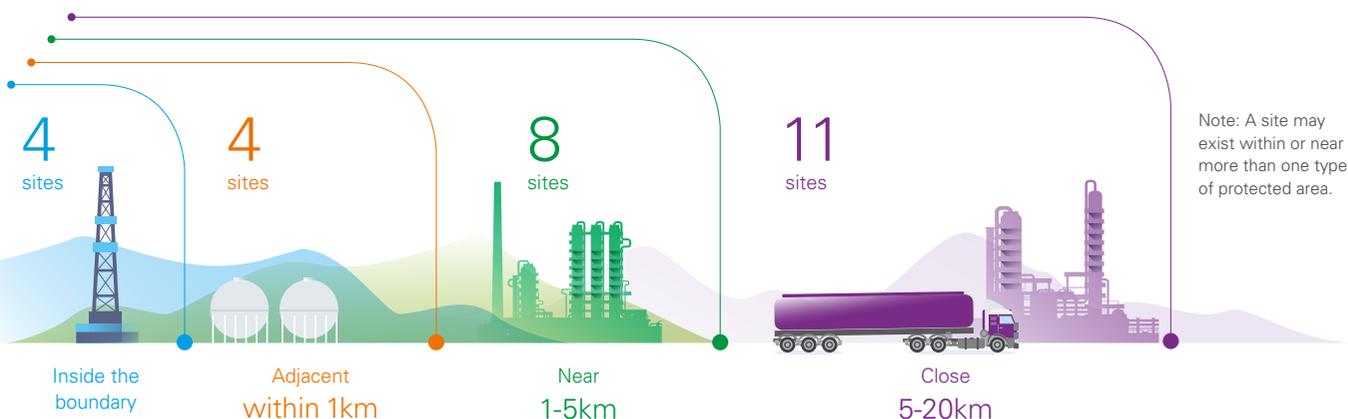
When planning new projects we identify and take action to reduce potential impacts on biodiversity. For example, with the expansion of our liquefied natural gas facility in Indonesia, we are aiming for no net loss in biodiversity and worked with the local university to identify 22 priority tree species for conservation. To support the growth of these species, we are planting saplings and are working to restore degraded forest. We're also using remote sensing technology to detect changes in the habitat so we can monitor our progress.

In Senegal, as part of our commitment to environmental conservation in the region, we have helped train 50 members of the local community in biodiversity monitoring and management. We also provided equipment for wildlife parks in both Mauritania and Senegal.

In Angola, we have supported a sea turtle conservation project in partnership with Agostinho Neto University since 2010. Its aim is to promote environmental research opportunities, help academic and local communities understand the integral role the species plays in marine coastal ecosystems and conserve critically endangered marine turtles.

We work with conservation organizations, such as Conservation International, Fauna & Flora International, the Nature Conservancy, universities and other partners to understand biodiversity trends, issues and threats.

Major operating sites in and around international protected areas



See bp.com/protectedareas for more information on our sites in and close to international protected areas.



The Arctic

We operate the Prudhoe Bay onshore oilfield on Alaska's North Slope. The Arctic offers opportunities to help meet the world's growing energy needs, but there are also specific challenges due to its unique nature. These challenges range from environmental, social and political, to operational, technological and commercial.

We have some investments in the offshore Arctic in Greenland and Canadian and Alaskan Beaufort Sea. There are no physical operations taking place in these locations.

Rosneft

We hold a 19.75% share in Rosneft, Russia's largest oil company and remain committed to our strategic investment, while complying with all relevant sanctions. BP does not currently have operations in the offshore Russian Arctic or directly partner with Rosneft on any of its offshore Arctic licences. BP has one onshore Arctic exploration joint venture in the Yenisey-Khatanga area.



Working safely

Our operations in Alaska have government-approved land, air, waste, wildlife and water use permits and oil spill response plans that consider the sensitivity of the Arctic. We share our knowledge and experience in the Arctic with our partners to help deliver safe and responsible operations in this sensitive environment.

Environmental monitoring

We provide support to a number of environmental studies and monitoring programmes conducted by academics, government agencies, non-governmental organizations, and scientific contractors in and around the Prudhoe Bay oilfield. This includes studies and monitoring on permafrost, air quality, fish and wildlife, tundra vegetation, and freshwater riverine systems. For example, in terms of wildlife monitoring we:

- Sponsor a study to understand typical polar bear behaviour and assess the potential impact from industry in Alaska. We conduct aerial surveys with infrared cameras to detect maternal polar bear dens so that we can avoid, mitigate and minimize any impacts.

- Support research into grizzly bears, which looks at population, habitat use and the potential impact of oil and gas activities. Data from the study helps us to identify and avoid known grizzly bear den locations.
- Sponsor a tundra nesting birds long-term monitoring programme in Alaska. The ongoing monitoring is helping document changes in the nesting bird population in the oilfields over time, while also contributing to a better understanding of:
 - Potential impacts from industry.
 - The relationship between climate change and nest success.
 - The degree to which predator abundance influences nest success.
 - The thousands of migratory birds that return to the Arctic annually for breeding.

Water

Water is one of the planet's most precious resources, which is why we actively manage its use.

We have operations in many different countries and the availability of water in areas where we work can vary greatly. That's why it's important to look at local conditions, such as water stress and scarcity, in order to manage our impact.

Water use

Water is required for drilling, hydraulic fracturing and other upstream production processes and it is an essential component in refining, petrochemicals and biofuels production.

We use non-fresh water, such as seawater, in our oil and gas production and treated wastewater at some of our refineries.

How we evaluate water risk

Each year we review water risks in our portfolio, considering the local availability, quantity, quality and regulatory requirements. We use tools such as the IPEICA Global Water Tool, the Global Environment Management Initiative Local Water Tool and the World Resources Institute Aqueduct Global Water Risk Atlas.

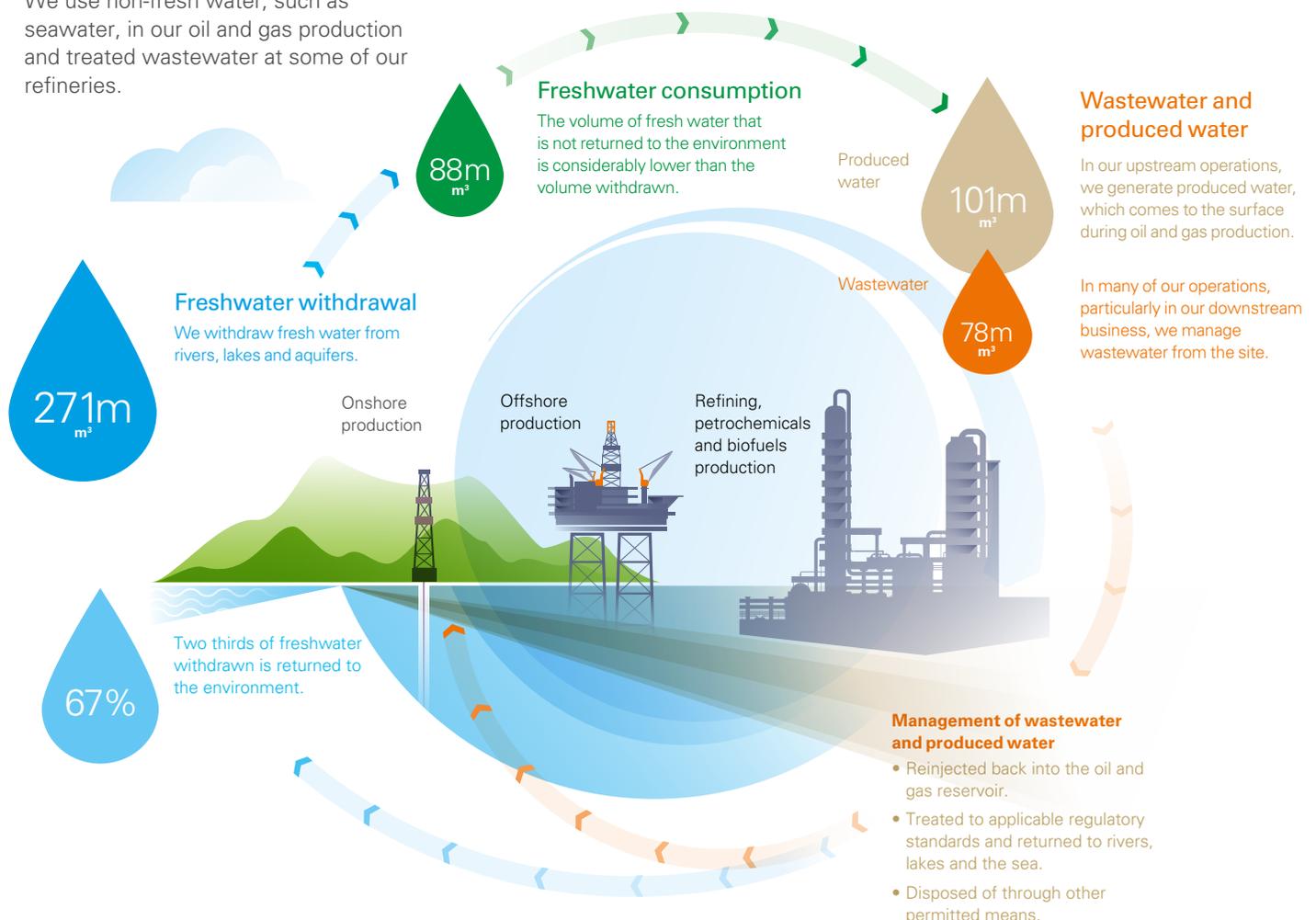
We estimate that around half of our major operations withdraw fresh water in areas where its availability is considered stressed or scarce. These operations account for 23% of our total freshwater withdrawals.

In our gas operations at our Khazzan development in Oman – an area where the availability of fresh water is extremely scarce – we withdraw brackish water

under permit from a local underground aquifer that is only used for industrial purposes. We desalinate the water and use it for drilling and hydraulic fracturing. We completed a modelling study in 2018 to assess the sustainability of this water supply. The results of the study have been incorporated into a long-term water management plan to reduce water demand.

We saw a small decrease in our freshwater withdrawal, consumption and wastewater volumes in 2018 primarily due to operational changes such as maintenance at selected refineries and petrochemicals plants. Overall there was a slight increase in consumption efficiency.

📄 See bp.com/hsechartingtool for water performance data.



Air emissions

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

We monitor our air emissions and put measures in place to reduce the potential impact of our activities on the surrounding community.

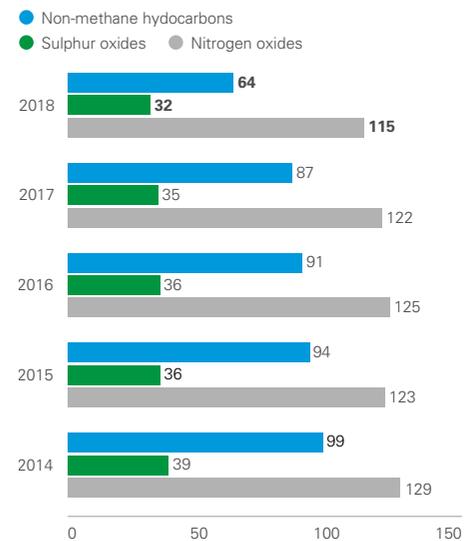
In our unconventional gas operations in the US, we use lower sulphur fuels in our drilling rig engines and hydraulic stimulation equipment, which reduces sulphur dioxide emissions.

In shipping, we are introducing six liquefied natural gas (LNG) carriers with energy-efficiency enhancements. They are designed to use approximately 25% less fuel and emit less nitrogen oxides than our older LNG ships.

The decrease in emissions of nitrogen oxide in 2018 is primarily due to shipping using less fuel and more efficient ships, the removal of several engines at our San Juan South gas operations in the US, and drilling in Egypt using less diesel. We saw decreases in emissions of non-methane hydrocarbon primarily due to North Sea divestments, decreased crude and volatile cargoes in shipping and less pneumatic pump usage at our Wamsutter gas operations in the US. Emissions of sulphur oxide have decreased, mainly due to shipping using less fuel and more efficient ships as well as our Lingen refinery in Germany returning to normal operations after maintenance in 2017.

Air emissions by component

(Kte)





Local impacts of unconventional gas

Almost half of our gas portfolio comes from unconventional resources, including shale gas. We acquired BHP's US unconventional assets in 2018 in a move that significantly upgrades our US onshore portfolio.

Water use

The volume of freshwater withdrawn by our unconventional gas operations was 3.7 million m³ in 2018, which represents 1.4% of the group total. We look at ways to reduce freshwater demand and support industry efforts to identify new water treatment technologies.

Water contamination

We design, operate and decommission our wells in a way that reduces the risk of water contamination. We install multiple layers of steel into each well and cement above and below any freshwater aquifers. We then test the integrity of each well before we begin the fracturing process and again at completion.

Earth tremors

Hydraulic fracturing creates very small earth tremors that are rarely felt at the surface. Before we start work, we assess the likelihood of our operations causing such activity. For example, we work to identify natural faults in the rock. This analysis informs our development plans for drilling and hydraulic fracturing and we seek to mitigate this risk through the design of our operations.

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 bacterial growth in the well. We list the chemicals that we use at each site and, to the extent allowed by our suppliers who own the chemical formulas, submit data on the chemicals used in our hydraulically fractured wells at fracfocus.org or other state-designated websites.

Sensitive habitats

We monitor the impact of new gas development and our operations on species. For example, in the San Juan Basin we monitor potential impacts on the population levels and movement patterns of species such as bald eagles and mule deer. This allows us to schedule our activities and to reduce any impacts.

Noise and community impacts

Drilling and truck traffic can raise concerns over noise and disturbance to the local community. We seek to design facilities and plan road, pipeline and well pad locations to limit disturbances and mitigate noise and other impacts from drilling and truck traffic. To reduce the impacts from traffic, we aim to apply dust suppression techniques, install pipelines to transfer water where practical, and minimize the number of kilometres driven. We work with communities to manage traffic movements whenever possible.