

# Respecting nature

We seek to protect the environment, reducing waste and making a positive contribution to biodiversity.

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## Our approach to respecting nature

Respecting nature is part of our Powering Progress strategy. We recognise there is a growing global urgency to protect and enhance biodiversity, conserve fresh water and use resources more efficiently.

The links between nature and climate are recognised in the UN Kunming-Montreal Global Biodiversity Framework of 2022 and in discussions at the 2023 UN Climate Change Conference (COP28). We will work with governments and others to help implement the framework, which provides a common direction and targets for governments to take action to halt and reverse biodiversity loss.

As a business, we use natural resources such as land, water and materials for our operations. Our activities can have an impact on nature through discharges and emissions to the environment, and through changes to the use of land and water including oceans.

Respecting the environment and local communities has been integral to the way we do business for many years, as set out in the Shell General Business Principles and Shell Commitment and Policy on Health, Security, Safety, the Environment and Social Performance.

Our Executive Committee is accountable for delivery of respecting nature, progress towards which is reviewed by our Board's [Sustainability Committee \(SUSCO\)](#).

### Our progress

For a large global organisation like Shell, implementing a change programme for respecting nature has many elements and is a multi-year journey. Since launch in 2021, we have:

- worked to embed respecting nature into our activities and business processes;
- enhanced our internal performance management systems to track and report on progress; and
- continued to build employees' awareness, knowledge and skills to deepen their understanding of respecting nature.

We are also updating our environmental standards and guidance used by our projects and facilities around the world.

In 2023, we reviewed our progress and performance on respecting nature.

We consolidated our respecting nature ambitions into the following themes: having a positive impact on biodiversity, aiming for zero waste and using water, other resources and materials efficiently.

We have already achieved some of the commitments we set when we launched respecting nature in 2021. Our commitment to reduce fresh-water consumption in highly water-stressed areas by 15% was achieved ahead of the target date of 2025. We have also conducted detailed assessments to inform our approach to fresh water and waste, which will be tailored to local conditions.

We have concluded that the scale of our ambition to use 1 million tonnes of plastic waste a year in our global chemical plants by 2025 is unfeasible due to lack of available plastic waste feedstock, slow technology development and regulatory uncertainty. We continue to work with partners across the plastic waste value chain, such as the waste management industry and pyrolysis oil producers, to help develop a circular value chain globally (see [Plastics](#)).

The remaining commitments announced in 2021 have either been incorporated into our new Safety, Environment and Asset Management (SEAM) Standards, which take effect from mid-2024, or are included in the relevant business objectives and processes.

Our approach, ambition and priorities are shown in the graphic below.

You can read more in the other respecting nature sections and more about our approach at [www.shell.com/sustainability/environment](https://www.shell.com/sustainability/environment).

## Respecting nature

**Our ambition is to have a positive impact on biodiversity, aim for zero waste and use water, other resources and materials efficiently.**

We will work with governments and others to help implement the UN Kunming-Montreal Global Biodiversity Framework, which provides a common direction and targets for governments to take action to halt and reverse biodiversity loss.

We will seek to use relevant common standards and frameworks.

### Biodiversity and ecosystems

- **World Heritage Sites:** We will not explore for, or develop, oil and gas resources in natural and mixed World Heritage Sites.
- **Critical habitats:** Our new projects in areas rich in biodiversity – critical habitats – will have a net positive impact on biodiversity, commencing from 2021.
- **Forest habitats:** We will replant forests, achieving net-zero deforestation from new activities, while maintaining biodiversity and conservation value, commencing from 2022.

### Resource use and circular economy

- **Circularity and waste:** Our businesses are developing local waste management plans. We are exploring ways to improve the application of circular economy principles by developing circularity strategies.
- **Water stewardship:** We are implementing water stewardship principles across our businesses and developing local improvement plans. This includes focusing on the sustainable management of fresh water, including in water-stressed areas.
- **Plastic packaging:** We will work with our suppliers and contractors to help end plastic waste in the environment: By 2030, we will increase the amount of recycled plastic in Shell-branded packaging to 30% and ensure that the packaging we use for our products is reusable or recyclable. [A]

### Supply chain

Our standard contract terms require adherence to the Shell Supplier Principles or equivalent principles that include statements on complying with environmental laws and regulations, using energy and natural resources efficiently, and minimising waste, emissions and discharges. We continue to explore how we can source responsibly in our supply chain. [A]

**Underpinned by our Health, Safety, Security, Environment and Social Performance (HSSE & SP) Commitment and Policy and Control Framework and, from mid-2024, our new Safety, Environment and Asset Management (SEAM) Standards.**

[A] These priorities are delivered through business objectives and processes outside of the SEAM Standards.

**More in this report** [Sustainability at Shell](#) | [Biodiversity and ecosystems](#) | [Social investment](#) | [Respecting human rights](#)

**More on Shell websites** [Our approach](#) | [Biodiversity](#) | [Water](#)

## Environmental collaborations

Collaborations and partnerships are key to implementing respecting nature. They can help us to protect biodiversity, reduce waste, improve circularity of materials and help ensure local communities benefit from our presence.

For instance, we have worked with our global environmental partners, the International Union for Conservation of Nature (IUCN) and Earthwatch for more than 20 years.

In 2023, we continued to collaborate with the IUCN, non-governmental organisations and other energy companies to develop guidance for renewable energy developments and infrastructure.

Together with Earthwatch, in 2023, we trained more than 800 employees in virtual sessions across the world and face-to-face sessions in 10 countries. This year marked 25 years of our formal partnership, which will not be extended in 2024.

We are a founding member of the World Business Council for Sustainable Development, have a seat on the executive committee and on the Energy Pathway Board and participate in several working groups related to nature including biodiversity, plastic waste, circular economy and nature-based solutions.

Shell is a Vice Chair of Ipieca, the global oil and gas industry association for advancing environmental and social performance across the energy transition. Shell chairs Ipieca's Environmental Group and is active in all workstreams on climate, nature, people and sustainability.

We are co-Chair of the International Association of Oil & Gas Producers (IOGP) environment committee, which works to enhance environmental performance and good practice across the oil and gas upstream industry. We also participate in several expert groups and joint industry programmes on topics including water stewardship, biodiversity, and reporting and disclosure.

We are a signatory of the Business for Nature Call to Action.

Working with these organisations and partners helps form and develop our own thinking with respect to sustainability.


### Transparency and standards

We are a member of the Taskforce on Nature-related Financial Disclosures (TNFD) Forum. We are also a member of the Science Based Targets Network Corporate Engagement Program.

Our major installations are certified to independent environmental management system standards, such as ISO 14001 or equivalent systems required by local regulations. Major installations include crude oil and natural gas terminals, gas plants, manned offshore production platforms, refineries and chemical manufacturing facilities. Of these, 89% were certified at the end of 2023. We are pursuing certification for the remainder. See our [2023 Annual Report](#) for more on the certification of our major installations.

More than 45% of our offices and laboratories in our real estate portfolio have been certified as sustainable by Leadership in Energy and Environmental Design (LEED), a leading green building rating system.

 **More in this report** [Sustainability at Shell](#) | [Biodiversity and ecosystems](#) | [Social investment](#)

 **More on Shell websites** [Our approach](#) | [Working in partnership](#) | [Nature](#)

## Biodiversity and ecosystems

- World Heritage Sites: We will not explore for, or develop, oil and gas resources in natural and mixed World Heritage Sites.
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In 2003, we decided not to explore for, or develop, oil and gas resources in natural and mixed World Heritage Sites.

When planning a new project on land or offshore in the marine environment, we apply the mitigation hierarchy, a decision-making framework that involves a sequence of four key actions: avoid, minimise, restore and offset. We assess the potential impact of projects on biodiversity and local communities as part of our impact assessment process (see [Respecting human rights](#) and [Embedding sustainability into our activities](#)).

In 2023, we embedded our biodiversity commitments into our new Safety, Environment and Asset Management (SEAM) Standards, which take effect in mid-2024. We are developing guidance and sharing good practice across the organisation to support implementation (see [Our approach to respecting nature](#)).

### Critical habitats

Potential new projects are screened to determine if they are located in a critical habitat. If we decide to proceed with a project that is in a critical habitat, we develop a biodiversity action plan. This sets out actions needed to follow the mitigation hierarchy and, where there is impact, the actions designed to achieve a net positive impact.

At the end of 2023, 43 of our new projects, which started after we launched Powering Progress in February 2021, were wholly or partly located in critical habitats. Of these, 20 already have a biodiversity action plan in place to work towards a net positive impact, compared with four in 2022.

Achieving a net positive impact on biodiversity can take many years. Examples of activities in development or under way in 2023 include:

- identifying opportunities to restore heathland habitats around the Nyhamna gas processing plant in Norway;
- collaborating with Universiti Malaysia Sarawak to help understand environmental conditions in the region and support turtle conservation; and
- monitoring our annual progress towards achieving a net positive impact at the biodiversity offset sites managed by our QGC business in Australia.

## Nature-based solutions

We set a commitment in 2021 that our nature-based solution projects, which protect, transform or restore land, will have a net positive impact on biodiversity. This commitment is embedded in our new SEAM Standards, which take effect in mid-2024. It applies to all nature-based projects we invest in directly that generate carbon credits.

These projects work to achieve accreditation on net positive impact on biodiversity from a standard or regulation equivalent to the voluntary Climate, Community and Biodiversity Standards (CCB). The CCB standards set out criteria for having a positive impact on climate change, local communities and biodiversity. The projects are audited by independent third parties.

In 2023, all our direct-investment nature-based projects that were certified and produced carbon credits complied with this commitment.

## Forest habitats

We use the definition of forest used by the Food and Agriculture Organization of the United Nations.

Deforestation occurs when forests are converted to non-forest uses. Our aim is to avoid deforestation, in line with the mitigation hierarchy. Where avoidance cannot be achieved, we require our projects and assets to develop and implement reforestation plans that include measures to achieve net-zero deforestation, while maintaining biodiversity and conservation value. We work with partners and stakeholders to develop robust and credible plans unique to each reforestation project.

Between January 2022 and the end of 2023, around 292 hectares had been deforested as a result of our new activities, which occurred largely in Australia, Canada and Nigeria where reforestation plans have been finalised.

 **More in this report** [Sustainability at Shell](#) | [Our approach to respecting nature](#) | [Carbon credits including from nature-based solutions](#)

 **More on Shell websites** [Our approach](#) | [Water](#) | [Circular economy and waste](#)

# Resource use and circular economy

## Managing waste

- **Circularity and waste:** Our businesses are developing local waste management plans. We are exploring ways to improve the application of circular economy principles by developing circularity strategies.

As part of our overall respecting nature ambition, we aim to use water, other resources and materials efficiently, and to increase reuse and recycling. We have been conducting detailed assessments across our businesses to better understand our waste streams and define our approach.

In 2023, we started to embed the findings from the 24 waste and circularity assessments we conducted in 2021 and 2022 into local performance management systems. Our businesses are now developing local waste management plans. We are investigating options to reduce some of the more significant of our waste streams such as biosludge, potentially contaminated soils and drilling fluids.

We are exploring ways to improve the application of circular economy principles and to identify and integrate the risks and opportunities associated with a “rethink, refuse, reduce, reuse, repair, recycle” hierarchy. We also work with our supply chain to help our businesses progress towards our aim of zero waste (see [Supply chain](#)).

## Waste disposal

Thousand tonnes

3,000

1,500

0

14

15

16

17

18

19

20

21

22

23

—●— Non-hazardous

—◆— Hazardous

In 2023, we disposed of 631 thousand tonnes of hazardous waste, compared with 878 thousand tonnes in 2022. The decrease was due, in part, to lower volumes of sour water for deep-well disposal from processing activities at the Shell Scotford Refinery in Canada.

We disposed of 1,619 thousand tonnes of non-hazardous waste in 2023, compared with 1,135 thousand tonnes in 2022. The increase was primarily caused by higher volumes of water from production and maintenance activities that required disposal at the Shell-operated Scotford Upgrader (Shell interest 10%), Canada, and the ramp-up of low-carbon solutions and other project work.

In total, we disposed of 2,251 thousand tonnes of waste, compared with 2,012 thousand tonnes in 2022. We also sent 654 thousand tonnes of residual materials for reuse, recycling or use as a raw material in another process. For example, waste that might otherwise go to landfill can be incinerated to generate energy.

Find out more about waste and our circular economy approach at [www.shell.com/sustainability/environment/circular-economy-and-waste](https://www.shell.com/sustainability/environment/circular-economy-and-waste).

 **More in this report** [Sustainability at Shell](#) | [Our approach to respecting nature](#) | [Plastics](#)

 **More on Shell websites** [Our approach](#) | [Circular economy and waste](#) | [Water](#)

## Plastics

We will work with our suppliers and contractors to help end plastic waste in the environment: By 2030, we will increase the amount of recycled plastic in Shell-branded packaging to 30% and ensure that the packaging we use for our products is reusable or recyclable.

Shell supports the need for improved circularity of the global plastics market and encourages reduction, reuse and recycling of plastics. We are a founding member of the Alliance to End Plastic Waste, which helps governments to assess and improve waste collection and waste management.

### Reducing, reusing and recycling our packaging

We are working with our suppliers and contractors to help end plastic waste in the environment. By 2030, we aim to increase the amount of recycled plastic in Shell-branded packaging to 30% and ensure that the packaging we use for our products is reusable or recyclable.

In 2023, 19% of the plastic packaging for Shell-branded car care, food and drink products globally was made from post-consumer recycled material, compared with 8% in 2022. In Europe, 31% of the plastic used in our Shell Car Care packaging for screenwash, coolant and other products was post-consumer recycled (up from 6% in 2022) and 90% of it was recyclable.

Also in 2023, we launched our first lubricant bottles made from 100% post-consumer recycled plastic for selected premium products produced at our plants in Thailand, India, Indonesia and Malaysia. In Europe, we introduced jerrycans which use around 27% less plastic and have better recycling potential than the alternative of round pails. In China, we introduced a 1-litre label-free bottle for motor oil which uses 3% less plastic by weight compared with the standard alternative. In China and North America, our bag-in-box lubricants use 89% less plastic than 1-litre plastic bottles. And in North America, our pilot campaign to collect and recycle lubricant containers recovered around 4,260 kg of hard-to-degrade plastic which might otherwise have been deposited in landfills.

In 2023, more than 40% of Shell-owned service stations had eliminated unnecessary single-use plastic including cutlery, straws and stirrers, up from 30% in 2022; and almost 60% had completely removed single-use plastic bags, compared with 40% in 2022.

### Recycling plastic waste as chemical feedstock

Shell is helping to develop a viable plastic circular economy. We are working with partners across the plastic waste value chain, such as the waste management industry and pyrolysis oil producers, to help develop a circular value chain globally.

In 2023, we signed several strategic co-operation agreements with partners to unlock access to plastic waste feedstock and enable long-term storage of pyrolysis oil. Work on our new pyrolysis oil upgrader at the Shell Chemicals Park Moerdijk in the Netherlands continues. The plant, which is expected to start production in 2024, will have the capacity to process up to 50,000 tonnes of pyrolysis oil a year.

While Shell sees customer demand for circular chemicals, the pace of growth globally is less than expected due to lack of available feedstock, slow technology development and regulatory uncertainty. As a result, in 2023 we concluded that the scale of our ambition to turn 1 million tonnes of plastic waste a year into pyrolysis oil by 2025 is unfeasible.

Find out more about how we transform [plastic waste into chemical feedstock](#).

Discover more about waste and our circular economy approach at [www.shell.com/sustainability/environment/circular-economy-and-waste](https://www.shell.com/sustainability/environment/circular-economy-and-waste).

 **More in this report** [Sustainability at Shell](#) | [Product stewardship](#) | [Driving innovation](#)

 **More on Shell websites** [Our approach](#) | [Sustainability at our service stations](#) | [Shell Lubricant Solutions](#)

## Conserving water resources

### Water

We are implementing water stewardship principles across our businesses and developing local improvement plans. This includes focusing on the sustainable management of fresh water, including in water-stressed areas.

In 2023, we continued to make progress in reducing our consumption of fresh water in highly water-stressed areas.

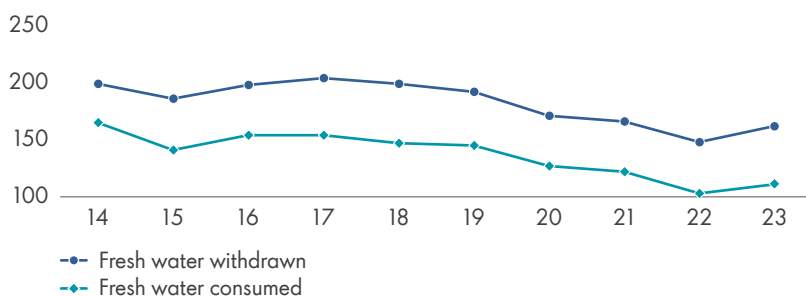
At the end of 2023, four of our major facilities were located in areas where there is a high level of water stress based on analysis using water stress tools such as the World Resources Institute's Aqueduct Water Risk Atlas and local assessments. The facilities are:

- Pearl GTL (gas-to-liquids) plant in Qatar;
- Shell Energy and Chemicals Park Singapore;
- Shell Jurong Island chemical plant in Singapore; and
- Tabangao Import Terminal in the Philippines.

In 2023, these four facilities consumed 17 million cubic metres of fresh water, compared with 18 million cubic metres in 2022. With this reduction, we achieved our commitment to reduce fresh-water consumption by our facilities in areas of high water stress by 15% compared with our 2018 baseline of 25 million cubic metres. The reduction was mainly the result of decreased water use at the Shell Energy and Chemicals Park Singapore following the decommissioning of some processing units, with a smaller reduction at the Pearl GTL facility in Qatar.

#### Fresh water withdrawn and consumed [A]

Million cubic metres

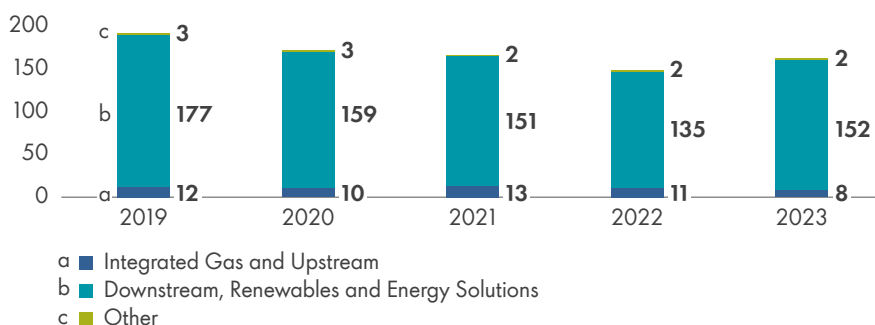


[A] Fresh-water figures do not include once-through cooling water.

In 2023, for all our sites, our overall intake of fresh water increased to 162 million cubic metres from 148 million cubic metres in 2022. The increase was due, in part, to the effects of a fire at the Shell Deer Park chemical plant and increased production at Shell Polymers Monaca in the USA.

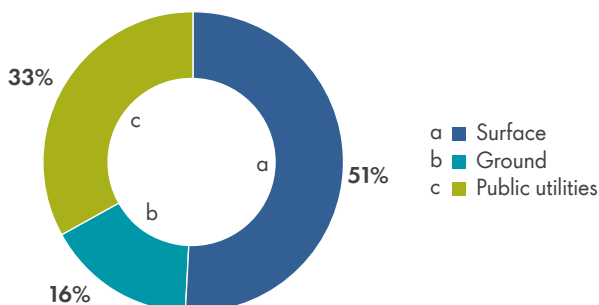
#### Fresh water withdrawn by business

Million cubic metres



## Fresh water withdrawn by source

Percentage



Of our fresh-water intake in 2023, 33% was from public utilities, such as municipal water supplies. The rest was taken from surface water, such as rivers and lakes (51%) and groundwater (around 16%). Around 94% of our fresh-water intake in 2023 was used for manufacturing oil products and chemicals, with the rest mainly used for oil and gas production.

In addition to our Powering Progress commitment to reduce water consumption in water-scarce areas, we also aimed to assess options for further reduction goals. In 2021 and 2022, we conducted detailed water use assessments at six major Shell facilities. The results of these assessments, along with discussions with stakeholders, have moved us towards a more sustainable and holistic stewardship approach. This goes beyond focusing on water use and includes aspects of governance and water quality, involvement of stakeholders and consideration of catchments. We are now implementing water stewardship principles across our businesses and developing local improvement plans.

By the end of 2023, we had completed detailed assessments against these principles at eight of our downstream and upstream facilities to identify opportunities for improvement. We plan to roll out the programme across other facilities and projects in 2024.

## Waste water and produced water

We track low-level concentrations of oil, grease and other hydrocarbons in water returned to the environment from the day-to-day running of our facilities (referred to as “discharges to surface water”). We work to minimise these discharges according to local regulatory requirements and our own standards.

In 2023, the combined total of hydrocarbons discharged to surface water across all our facilities increased to 1.0 thousand tonnes, compared with 0.9 thousand tonnes in 2022, which was due, in part, to discharges at the Shell Energy and Chemicals Park Singapore.

We disposed of 58 million cubic metres of produced water in 2023, which is unchanged from 2022.

Find out more about water use at [www.shell.com/sustainability/environment/water](https://www.shell.com/sustainability/environment/water).

More in this report [Sustainability at Shell](#) | [Our approach to respecting nature](#) | [Managing waste](#)

More on Shell websites [Our approach](#) | [Circular economy and waste](#) | [Nature](#)



## Air quality

Air quality continues to be embedded in our environmental standards. Good air quality contributes to the health of the world's population and the natural world.

We are developing a range of choices for customers – from electric vehicle charge points to hydrogen – to help people and companies reduce their transport emissions.

For heavy-duty road transport, liquefied natural gas (LNG) as a fuel and gas-to-liquids fuel and motor oils help reduce sulphur emissions, particulates and nitrogen oxide compared with oil-based products. For ships, LNG also reduces these emissions and is the lowest-carbon fuel currently available at scale today. We have built up one of the largest LNG bunkering networks on key shipping routes to enable more customers to use LNG as a fuel.

### Sulphur oxide, nitrogen oxide and volatile organic compound emissions

We follow our own standards and those of local regulators to manage airborne pollutants in our oil and gas production and processing, including emissions of nitrogen oxides, sulphur oxides and volatile organic compounds.

Our sulphur oxide (SO<sub>x</sub>) emissions in 2023 decreased to 31 thousand tonnes from 37 thousand tonnes in 2022. The decrease was mainly because of less flaring at the Shell-operated Scotford Upgrader in Canada and divestment of Shell-operated Upstream assets in Tunisia.

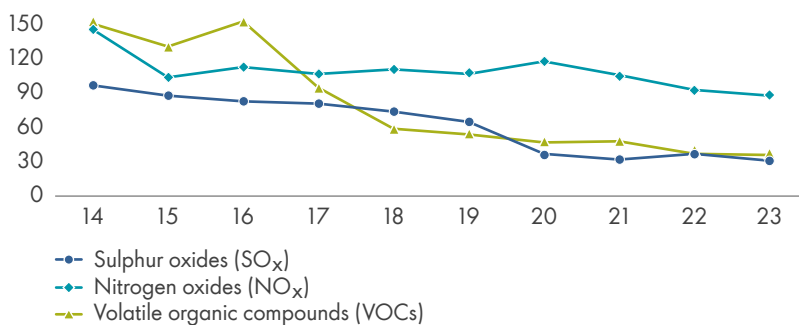
Our nitrogen oxide (NO<sub>x</sub>) emissions in 2023 decreased to 88 thousand tonnes from 93 thousand tonnes in 2022, due, in part, to divestments of Shell-operated Upstream assets in Tunisia and the Philippines and downtime of generators at Shell-operated assets in Trinidad and Tobago.

Our emissions of volatile organic compounds (VOCs) in 2023 decreased to 36 thousand tonnes in 2023 from 37 thousand tonnes in 2022 because of, in part, planned and unplanned production stops at our Shell MDS gas-to-liquids facility in Malaysia.

To find out more about air quality, visit [www.shell.com/airquality](https://www.shell.com/airquality).

### Acid gases and volatile organic compounds

Thousand tonnes



More in this report [Sustainability at Shell](#) | [Our approach to respecting nature](#)

More on Shell websites [Our approach](#) | [Zero routine flaring by 2025](#) | [Decarbonising mobility](#)