



Engaging industry in conserving nature

Case studies of biodiversity actions on non-operational lands and seas of companies



INTERNATIONAL UNION FOR CONSERVATION OF NATURE



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Anglo American is a leading global mining company, with a world class portfolio of mining and processing operations and undeveloped resources, with more than 106,000 people working for us around the world, in 15 countries. We provide many of the essential metals and minerals that are fundamental to the transition to a low carbon economy and enabling a cleaner, greener, more sustainable world, as well as meeting the growing consumer-driven demands of the world's developed and maturing economies. And we do so in a way that not only generates sustainable returns for our shareholders, but that also strives to make a real and lasting positive contribution to society as a whole.

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Executive summary

With 28 case studies from 10 multinational companies, this publication highlights their positive actions, interventions and initiatives contributing to specific conservation and restoration goals. The concrete examples illustrate a pivotal part of their work which have direct impacts on biodiversity and ecosystem on their sites and operations, focused on a variety of additional and proactive biodiversity conservation and restoration actions more commonly within the landscape and seascape. The different case studies seek to present current practices and initiatives that are above and beyond addressing the negative impacts on biodiversity and ecosystem services onsite. While not exhaustive, the case studies seek to be illustrative of current practices and demonstrative of some of the kinds of initiatives that are currently being carried out.

Going beyond addressing negative impacts at site level

It is imperative that companies address negative impacts following strict regulatory requirements (such as in the case of offset policies), lender requirements, such as the International Finance Corporation (IFC) Performance Standard (PS) 6,¹ or voluntary initiatives such as increased demand for supply chain transparency, which generally entail that a specific site or operation achieve No Net Loss (NNL) or Net Positive Impact (NPI). In most cases, these goals are associated with the thorough and sequential application of the mitigation hierarchy (Figure 1), where actions are taken to: i) avoid; ii) minimise; iii) restore; iv) and, where necessary, offset any residual negative impacts on biodiversity. The mitigation hierarchy provides a framework through which companies can both understand their impacts on biodiversity and develop actions to mitigate these impacts throughout their operations.

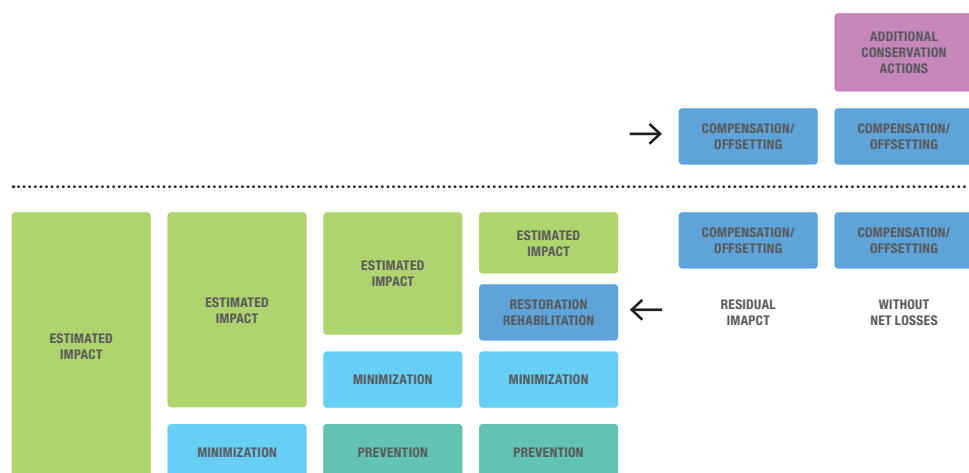


Figure 1 The mitigation hierarchy

Source: Adapted from *The Biodiversity Consultancy* (2015). *A cross-sector guide for implementing the Mitigation Hierarchy*. Cambridge, UK: A Cross Sector Biodiversity Initiative. <http://www.csbi.org.uk/wp-content/uploads/2017/10/CSBI-Mitigation-Hierarchy-Guide.pdf>

¹ The International Finance Corporation (IFC) Performance Standard (PS) 6 requires projects to produce No Net Loss where feasible for nature habitats and Net Positive Impact for critical habitats. IFC PS 6 has also been adapted by the Equator Principles, for which around 90 financial institutions are signatories. (Source: IFC (2012). Performance Standard 6 (PS6) on Biodiversity Conservation and Sustainable Management of Living Natural Resources. <https://www.ifc.org/ps6>)

Towards contributing to positive conservation actions at site and land/seascape level

Achieving NNL or NPI at operational or site levels will not be sufficient to change the overall global trajectory of biodiversity loss, highlighting the need for a holistic approach, where companies, alongside with government and civil society can go beyond impact avoidance and mitigation at the site level to proactively protect and restore biodiversity and ecosystems more broadly. The case studies illustrate proactive intervention approaches that some companies are currently implementing to positively contribute to conservation and restoration goals going above and beyond addressing residual negative impacts. While it remains challenging to quantify, disclose and therefore demonstrate positive impacts on biodiversity from companies' actions and interventions, this report starts building real world examples and shares relevant intervention approaches for practitioners in similar sectors and the conservation community.

Methodology

The following companies have contributed to the case studies, specifically:

- › four energy/oil and gas companies: bp, ExxonMobil, Shell Global Solutions International B.V., TotalEnergies;
- › five mining companies: Anglo American, BHP, Newmont, Teck, Vale; and
- › a chemical company: Solvay.

Their activities mainly have direct impacts on biodiversity and ecosystems from the extraction of natural resources, such as oil, gas, copper, gold, diamonds, iron ore, unconventional oil, limestone, uranium oxide, silver and others, as well as sea-, water- and land-use change through infrastructure developments, such as dams, refineries, chemical and oil and gas complexes, or solar plants. Some of the impacts can include, for example, habitat loss, damage and fragmentation, disturbance, displacement or mortality of species, disruption of breeding and migration events, change in water quality and flow, pollution of soil, air and water and introduction of invasive species. They also (might) have indirect impacts, such as in-migration of people to an area as a result of energy and mining operations, as well as cumulative impacts on biodiversity and ecosystems, such as increase in global greenhouse gas (GHG) concentrations, accumulation of chemicals or heavy metals.

The case studies have been provided by company representatives, with the input of high-level guidance and suggestions from IUCN and technical reviewers to structure each company's contributions:

- › One or more case study per company;
- › The case study should comprise examples from individual sites where non-operational land or sea is being managed for biodiversity outcomes, such as restoration or conservation of species and/or ecosystems, including site description, conservation objectives, achievements to date, lessons learned and future plans – as well as sites which have significant biodiversity values but where management for conservation has hardly taken place;
- › Actions described within non-operational lands and seas with information relating to location, size, duration of management, ecosystem type(s), biodiversity value (if/when known) and conservation targets;
- › Mainstreaming of additional conservation actions in non-operational lands and seas: summary of policies to manage non-operational lands and seas in development or deployed;

- › Summary of key lessons learned from conservation, restoration and related initiatives on non-operational lands and seas.

The origin of all case studies can be attributed to the respective companies, and did not undergo independent verification by IUCN.

Analysis – dimensions of companies’ positive conservation actions

The case studies reveal a number of areas in which the companies have taken action. To inspire and strengthen future action, these areas have been categorised as follows:

1 – Actions during the project cycle

At early planning

Some companies have focused their efforts on identifying early conservation actions parallel to biodiversity management screening and planning activities (pre-ESIA, ESIA development), such as the creation of biodiversity-rich areas, terrestrial micro-habitats and refuges or biodiversity enhancement actions (TotalEnergies case study).

During the project

The case studies highlight additional conservation actions during the lifespan of the projects or the operations.

At the end-of-project

Four case studies focused on conservation actions at project closure, including biodiversity enhancement actions as part of a decontamination process (bp case study), biodiversity survey developments as part of offshore oil rig decommissioning (ExxonMobil case study), remediation and forest restoration as part of the remediation management (Anglo American case study) and biodiversity conservation through the development of a nature reserve (Solvay case study).

2 – Engagement with stakeholders

Some case studies highlighted the engagement with one or multiple stakeholders to develop or manage additional conservation actions, including with Indigenous people and local communities (IPLCs), non-governmental organisations (NGOs), and local and national governmental actors.

Engagement with IPLCs

Teck’s case study emphasised on a joint management agreement with IPLCs to convert areas owned by the company into biodiversity conservation areas, such as wildlife corridors, connectivity and investment in habitat restoration initiatives, while leading a seed collection programme also aimed at complementing Indigenous people’s income. Another case study illustrates how ExxonMobil and Imperial likewise contributed to the establishment of a provincial park managed by the regional government with IPLCs, after voluntarily relinquishing their oil sands in 2018.

State/public actors

Some case studies highlighted companies’ engagement with governmental agencies or directorates to deliver conservation actions at the sea and landscape level (TotalEnergies and Vale case studies).

NGOs

Other conservation actions were developed, supported or implemented by local and/or international NGOs (Solvay, Anglo American, Newmont and TotalEnergies case studies)

Private sector coalitions

Some case studies highlighted how companies collaborated with other peers to develop or implement conservation actions in a given geography, such as the voluntary relinquishment of unconventional oil lease to support the ecological integrity of a National Park (ExxonMobil case study).

Multi-stakeholder approach

Several case studies further highlighted the engagement of multiple stakeholders, such as NGOs, state actors and universities (TotalEnergies, Anglo American, Newmont ExxonMobil and Solvay case studies).

3 – Type and status of areas where conservation actions took place

A diverse range of area-based interventions, which can be identified as protected areas or other effective area-based conservation measures (OECMs), were also highlighted by the case studies. Some highlighted positive contributions to support the creation of several protected areas (Vale and TotalEnergies case studies), while others underscored companies' support in the design, creation or management of OECMs, including privately-governed or IPLCs-governed protected areas (Vale and Anglo American case studies, respectively). Other OECMs also covered conserved areas or actions such as connectivity enhancement (Vale and BHP case studies).

4 – Participation in scientific/innovative initiatives

Six case studies explained how companies funded and/or enhanced research projects around on-site conservation and scientific and technical knowledge improvement (Anglo American, Vale, BHP, Shell and Solvay case studies). Another example is the application of innovative conservation tools or approaches such as the use of environmental DNA (eDNA) (Vale and ExxonMobil case study) or citizen science (bp case study).

5 – Levels of biodiversity actions: ecosystems, species, genetic biodiversity

Ecosystem-level actions

Several case studies featured additional conservation interventions integrating the management of land, water and living resources at the land and seascape levels to promote conservation and sustainable use in an equitable way. For instance, some companies focused their interventions on wetland restoration and forest landscape restoration (Anglo American, Vale, Solvay, Newmont, ExxonMobil or bp).

Species-level actions

Additional conservation actions focused on specific species were underlined in several case studies. Anglo American described conservation efforts in threatened and endangered species conservation against poaching, while Shell highlighted an initiative to protect marine turtles.

Genetic diversity-level actions

Finally, some case studies identified initiatives directed at ensuring the ability of a population to adapt to changing environments. Such genetic level cases included a seed collection programme designed to conserve genetic diversity of select species (Teck case study) and site-level genetic monitoring and surveying using environmental DNA (eDNA) (Vale and ExxonMobil case studies).

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Acronyms

ACA	Additional Conservation Actions
ANPN	Agence Nationale des Parcs Nationaux du Gabon (National Parks Agency of Gabon)
BAP	Biodiversity Action Planning
COI	Communities of interest
EPBC	Environment Protection and Biodiversity Conservation
ESG	Environmental, social and governance
GBCI	Green Business Certification, Inc.
GHG	Greenhouse gas
GMTFCA	Greater Mapungubwe Transfrontier Conservation Area
IAS	Invasive alien species
IBA	Important Bird and Biodiversity Area
ICMBio	Chico Mendes Institute for Biodiversity Conservation
IFC	International Finance Corporation
IPCA	Indigenous Protected and Conserved Areas
IPLC	Indigenous people and local communities
ISO	International Organization for Standardization
IUCN	International Union for Conservation of Nature
IUU	Illegal, unreported, and unregulated fishing
KBA	Key Biodiversity Area
KBV	Key Biodiversity Value
MCFN	Mikisew Cree First Nation
NGO	Non-governmental organisations
NNL	No net loss
NPI	Net positive impact
O&G	Oil and gas
OECM	Other effective area-based conservation measures
PPP	Private-public partnership
PES	Priority Ecosystem Services
R&D	Research and development
RMM	Reactive Monitoring Mission
RNV	Vale Natural Reserve
SBCCA	Silver Bow Creek Conservation
SBF	Significant Biodiversity Features
SEB	Significant environmental benefit
WBNP	Wood Buffalo National Park
WCS	Wildlife Conservation Society

Note from the editors

There is a growing interest and commitment from the corporate sector to actively participate in conservation, with many companies recognising their potential to positively influence the outcome of nature loss and contribute actively to nature conservation.

As evidence² continues to point to the crisis that face nature and biodiversity, including the risk of species loss, irreversible climate change impacts and increasing pollution and waste, companies are increasingly engaging actively in nature conservation. There have been many efforts to reduce negative impacts on nature, but the alarming rates of biodiversity loss continue. More recently, Target 15 of the Kunming-Montreal Global Biodiversity Framework further underlines the significant role of business in halting and reversing biodiversity loss.

This report documents examples of ongoing conservation efforts by mining, energy and other global companies focusing on non-operational lands and seas.

The case studies cover 28 examples from 10 multinational companies with direct impacts on nature and biodiversity. The examples highlight additional and proactive biodiversity conservation and restoration actions, showcasing positive contributions to specific conservation and restoration goals beyond their direct operational footprint within their land holdings. These examples demonstrate that companies can go beyond addressing negative impacts and generate benefits for conservation 'on the ground'. The report emphasises the importance of a holistic approach involving various stakeholders including companies, government and civil society to protect and restore biodiversity and ecosystems.

2 IPBES (2019). *Global assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. Brondizio, E. S., Settele, J., Diàz, S., Ngo, H. T. (eds). Bonn, Germany: IPBES Secretariat. <https://doi.org/10.5281/zenodo.3831673>

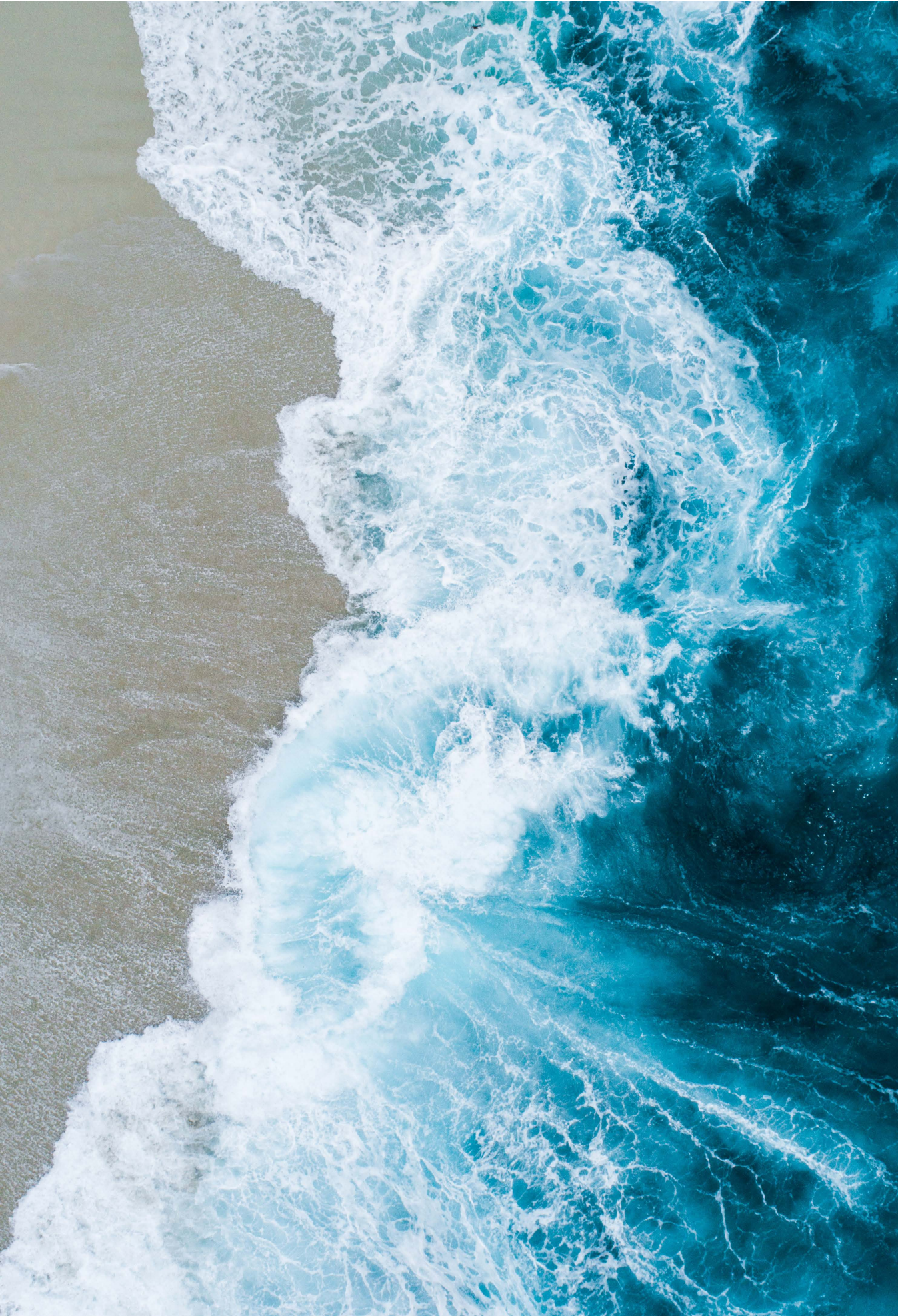


Photo: Shifaaz Shamoan/Unsplash

1

Introduction

Evidence is clear that nature and biodiversity are in crisis.³ As we enter a period of high risk of species loss, high impacts from climate change and a marked increase in pollution and waste, we must find ways to more effectively align economic development with conservation.⁴ Much of the effort in the past several decades has appropriately been focused on finding ways to avoid, reduce and mitigate negative impacts on nature. There have been some encouraging signs in terms of improved knowledge and practices, yet we remain on a negative trajectory with continued alarming rates of biodiversity loss.

At the same time, there has been a marked increase in the level of interest and commitment by the corporate sector to actively participate in generating benefits, while contributing to conservation and helping reduce the threat of climate change, as shown by the active participation of a large number of corporate actors at the 2022 Convention on Biological Diversity's Conference of the Parties, as well as the development of several voluntary initiatives such as the Taskforce for Nature-related Financial Disclosure (TNFD) and Science-based Targets for Nature (SBTN). In addition, the successful adoption of Target 15 under the Kunming-Montreal Global Biodiversity Framework is a testament to the recognition that businesses are instrumental in contributing to halting and reversing biodiversity loss. Target 15 intends to go beyond addressing the negative residual impacts and moving toward approaches beyond their operational footprint that provide benefits for nature.

This report is an initial effort of documenting some examples of these actions and can serve as a step toward elevating the importance for companies to get past addressing their impacts, but rather into generating benefits for conservation 'on the ground'. The case studies presented highlight ongoing work from mining, energy and other global companies on existing conservation efforts in non-operational lands and seas (meaning areas under the effective management control of the company, but not where there are direct impacts, such as mining pits, well pads, quarries, roads, pipelines, infrastructure and others). These include biodiversity action plans and programmes, protected areas, ecological corridors and connectivity, sustainable land and marine management and others. The companies provided the case studies. In the convening power of IUCN to share best practices, this report reflects a work in progress and actions described here will likely become better developed as the community of practice evolves. The methodological approach of how the case studies were prepared is discussed in the previous section on [Methodology](#).

3 IPBES (2019). *Global assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. E. S. Brondizio, J. Settele, S. Díaz, & H. T. Ngo, (eds). Bonn, Germany: IPBES Secretariat. <https://doi.org/10.5281/zenodo.3831673>

4 Idem.

2

The contribution of 10 companies to nature conservation

2.1 Anglo American

Commitment to save nature

Anglo American is a leading global mining company, with a world-class portfolio of mining and processing operations and undeveloped resources, and more than 95,000 people working for us around the world, in 15 countries. We provide many of the essential metals and minerals that are fundamental to the transition to a low-carbon economy, enabling a cleaner, greener, more sustainable world, as well as meeting the growing consumer-driven demands of the developed and maturing economies. We do so in a way that not only generates sustainable returns for our shareholders, but that also strives to make a real and lasting positive contribution to society as a whole.

Anglo American is committed to deliver nature-positive outcomes based on the new global goal for nature, calling on companies to take action now to halt nature loss and ensure that the world is nature-positive by the end of this decade. The World Economic Forum (WEF) recently highlighted “there is no future for business-as-usual – we have to halt and reverse the loss of nature and change the way we do business”, by improving land management practices and enhancing conservation efforts to mitigate the biodiversity impacts of our operations.

Focusing on delivering nature-positive outcomes will support the delivery of Anglo American’s commitments in its Sustainable Mining Plan, launched in 2018. This strategy focuses on three global sustainability pillars – Trusted Corporate Leader, Thriving Communities and Healthy Environment. Each of these pillars encompass global stretch goals that are aligned with the United Nation’s Sustainable Development Goals (UN SDGs).

Our Sustainable Mining Plan is designed specifically to drive business efficiencies, resilience and agility across all seven of our pillars of value. These cover a wide range of aspects, such as safety, environment, social, people, production, costs and margins, and returns and financial value. In particular, the Sustainable Mining Plan focuses on a net-zero mindset of causing zero harm to the environment and delivering net-positive outcomes for biodiversity and a lasting positive legacy for society.

We also look beyond what we can achieve alone, collaborating globally with a diverse range of partners to develop and implement sophisticated solutions that support our sustainability goals. Our commitment to delivering positive outcomes for nature drives us to continuously review and update our approach. Harnessing innovation and digitalisation, we are building a future where we take a holistic approach to how we care for the nature around us, in partnership with our stakeholders. Our approach under the Sustainable Mining Plan is to prioritise nature throughout the lifespan of our mines. We look at the entire ecosystem to understand the intertwining relationships of people, biodiversity, climate, water and the economy as factors interconnected and bound by nature.

Our net positive impact (NPI) target is our commitment to leaving the biodiversity of an area in a better state than when we arrived. NPI acknowledges the role that biodiversity plays in shaping the functioning of the environment and the well-being of people. In our ambitious journey to achieving NPI, we also acknowledge the nature-positive approach which is aimed at ensuring that nature is visibly and measurably on the path of recovery by 2030. Developed in a collaborative partnership with NGOs, the UN bodies and business, the nature-positive approach mandates the inclusion of nature and its role in managing our impacts and dependencies on water, society and climate.

Biodiversity Standard

In 2022, Anglo American updated its Biodiversity Standard that defines the minimum requirements to manage biodiversity in all phases of Anglo American's operations to achieve NPI and maximise contributions to biodiversity to achieve positive outcomes wherever it operates. It lays out the responsibility for every site to have an agreed plan for measuring and delivering on these targets and objectives, considering the local ecosystem in which it operates. The standard is applicable to the entire life cycle of Anglo American sites from site selection and early studies, project design phase, discovery/exploration, commissioning, operational, closure and post-closure phases (decommissioning, remediation, rehabilitation, and final relinquishment), as well as acquisitions and divestments.

The standard sets out the following key objectives and minimum requirements for:

- > Defining and assessing impacts to Significant Biodiversity Features (SBF);
- > Rigorously applying the mitigation hierarchy throughout all phases of our business;
- > Minimising residual impacts to SBF, implementing biodiversity offsets, restoration and rehabilitation activities to achieve NPI;
- > Ecologically compensating for unmitigated historical disturbances to SBF;
- > Maintaining and improving the specific biodiversity features that support and supply the benefits of priority ecosystem services (PES), aligned to The Social Way and in collaboration with the social performance team; and
- > Implementing additional conservation actions (ACA) aligned with relevant local, regional and/or national initiatives/priorities.

Many of Anglo American's planned and ongoing activities fall under the heading of Nature-based Solutions (NbS) – actions to protect, sustainably manage and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits. Anglo American is focusing NbS work on both operational sites and conservation properties/landholdings. Key applications include landscape rehabilitation with native species as part of mining operational closure requirements, improving catchment level water security, enhanced groundwater recharge combined with ecological connectivity and habitat restoration.

To give a sense of some of the ways Anglo American has been developing and implementing its biodiversity work below are three short reports of work in three areas where Anglo American has mining operations – Chile, South Africa and briefly, in Canada.

Chile – Biodiversity in a Mediterranean-type biodiversity hotspot

Anglo American has been working in three regions of Chile since 1980. One of these is the Los Bronces mine located within a biodiversity hotspot in Central Chile near two protected nature sanctuaries, Los Nogales and Yerba Loca. This high-altitude region with glaciers is close to Santiago, the nation's capital with over eight million inhabitants, and features limited freshwater resources being used for urban water, agriculture, nature and mining.

The Los Bronces mine, discovered in 1867, is a large copper mine located in central Chile, on the border of the Santiago Metropolitan Region and the Valparaíso Region with a height of 3,000–4,200 m above sea level. Los Bronces represents one of the largest copper reserves in Chile and in the world, having estimated reserves of 3.13 billion tonnes of ore grading 0.32% copper. The ore is transported via a pipeline 56 km to the flotation plant Las Tórtolas. Anglo American acquired Las Bronces in 2002.

Considering the requirements of sustainable development and biodiversity conservation, and given that the original mining methods practiced for 100 years were no longer appropriate, Anglo American has been changing the way mining is being pursued. Concerns have been raised with the mining operation in the country, including potential impacts on the glaciers, increased use of water, impacts to biodiversity and potential impacts on local communities.

Strengthening partnerships

As part of their efforts to mitigate these negative potential impacts, a partnership was started in 2015 between Anglo American and the Wildlife Conservation Society (WCS) Chile to develop strategic guidelines on conserving and managing biodiversity and contributing to the urgent task of conservation in central Chile. WCS and Anglo American have started a project, "Positive lessons from the business sector for the conservation of Chilean biodiversity", that aims to bring together representatives from the private sector to exchange lessons and experiences, recognising

that shared challenges and collaborating on integrated solutions to conserve Chilean natural heritage is key to delivering positive outcomes. This was one of several partnerships that Anglo American has developed, which now includes more than 10 national and local and over 15 global organisations.

One of the major objectives of the partnerships is to strengthen public-private work on in situ conservation in the endangered Mediterranean-type ecosystems in which the mine is located. Anglo American is involved in five significant efforts, described in detail below, to strengthen stewardship of species and ecosystems in the Andean region where Los Bronces mine is located and improve the livelihoods of residents.

Efforts have focused on protected areas close to the Los Bronces mine, the Yerba Loca Sanctuary and the Los Nogales Sanctuary. Working with partners, Anglo American has been implementing a project **to improve the management of the the Yerba Loca Sanctuary**, including the owners of private land within the sanctuary. Likewise, work is being done in the Los Nogales Sanctuary – although in this case, Anglo American itself is owner of almost 5,000 ha within the sanctuary. The efforts at Los Nogales include an educational centre for mountain and outdoor activities, rehabilitation of wetlands and assessment of the impact of climate change on native species.

A part of the work focuses on the **new Santiago Glaciers National Park**, covering an area of 75,000 ha above 3,600 m, 27.6% of which are glaciers and are vital contributors to the availability and regulation of water for the Santiago Metropolitan Region. To help make this park possible, Anglo American agreed **not to develop more than 8,400 ha of its mining concessions** and will work with the organisations and local authorities to make the park project successful.

The Los Bronces team has also been working on a voluntary plan **to rehabilitate 240 ha of Andean Mediterranean Thorn Forest of *Acacia caven***

and *Baccharis paniculata* as a contribution to the recovery of natural environments in the Chilean Mediterranean zone. The main objective is to recover the functional features and ecosystem services of the habitat through increasing the structural biotic components and re-establishing the resilience of the habitat in a climate change scenario.

Concentrating on land conservation, Anglo American developed the Parque Quilapilún botanical garden in the Santiago Region **to grow and preserve endangered native flora**. The 4.5-ha property is located inside the area of the Los Bronces mine and already includes more than 30,000 native trees and plants of central Chile, some of which are being propagated for use in rehabilitation of degraded lands in the region.

On the basis of Anglo American's carbon neutrality strategy in Chile, including decarbonisation and compensation for emissions that are difficult to reduce through NbS projects, various projects of **conservation and sustainable management of native ecosystems** will be developed in the near future. All of this work is supported by the Sustainable Mining Plan adopted by Anglo American which sets biodiversity targets to deliver NPI within the Biodiversity and Climate Change Management team from the copper business unit in Chile. This milestone was a turning point for the collaborative work between WCS (and other partners) and Anglo American, and has moved from working within the framework of a particular project, such as Los Bronces Integrated Initiative, **to scale up the approach with potential positive impacts** within the broader company.

Conservation of biodiversity, if done with good science, opens spaces for continuous improvement and adaptive management. The

Catholic University of Chile and WCS has recently initiated work aimed at integrating biodiversity conservation management with climate change modelling. The need for such work is rooted in the fact that climate change is causing degradation of both nature and human livelihoods, and the recovery of biodiversity brings with it benefits for mitigation and adaptation to climate change.

Potential impact of climate change on company operations

Anglo American's mining operations are located in the Chilean biodiversity hotspot consisting of arid mountain ecosystems, which are highly vulnerable to climate change. There are already clear signs of increased temperature and decreased rainfall at the regional level. Working in partnership WCS and the Catholic University, Anglo American are evaluating the potential effects of climate change on priority components of biodiversity and local communities in the geographical context of the Los Bronces operation. Based on these results, they have drafted an Action Plan to address these potential effects, while also considering non-climatic threats that are currently affecting the area's biodiversity and human being.

One of the most important goals of biodiversity conservation is to contribute to human well-being, given societies' dependence on nature. However, agencies and companies commonly have poorly articulated social and environmental objectives. In their case, Anglo American's partnerships have been able to promote the integration of nature and local well-being and strengthen collaboration with the Social Development and Communities Management area of the company.

De Beers Group and conservation of biodiversity in Southern Africa

De Beers Group is a leading diamond company, 85% of which is owned by Anglo American and 15% by the Government of the Republic of Botswana. It recovers diamonds from Botswana, Canada, Namibia and South Africa.

De Beers manages nearly 200,000 ha for biodiversity conservation in Botswana and South Africa, which totals five times the amount of land it uses for mining. This contributes significantly to species conservation and the maintenance of ecological health and integrity in landscapes, which are under threat or subject to extreme pressures from climate change, natural events and economic development. Each property provides essential ecosystem services that support land management objectives and, in some cases, mitigate against operational impacts.

The conservation properties protect a host of threatened, keystone and iconic species, providing high quality reference sites for biodiversity and habitat condition in otherwise degraded landscapes and, in some instances, have been restored from a previously degraded state. A number of such properties have played an active role in re-establishing and conserving threatened and endangered species across Southern Africa. For example, several sites were the major contributors to the recovery of black wildebeest and red hartebeest populations

in South Africa at the turn of the last century. Moreover, two properties are designated KBAs, and meet international criteria as Important Bird and Biodiversity Areas (IBAs).

In South Africa, the Venetia Limpopo Nature Reserve borders the Mapungubwe National Park, also an IBA, and part of the buffer zone for the UNESCO Mapungubwe Cultural Landscape World Heritage Sites and the Greater Mapungubwe Transfrontier Conservation Area (GMTFCA). The reserve protects a fertile ecosystem, but this combined with the level of protection from poaching has created a unique challenge – there are too many elephants. The large population exceeded the reserve's carrying capacity, resulting in habitat degradation.

Working in partnership with the Peace Parks Foundation, De Beers began the Moving Giants programme, the longest elephant translocation ever attempted – moving the first 100 elephants over 1,000 miles to a new home at Zinave National Park in Mozambique, where the local elephant population had been depleted following a civil war, which ended in 1992. These translocated elephants are a major contribution to the broader rewilding strategy of Zinave and have settled into the wider habitat within the park area. With another 100 elephants to move in the coming years, the programme continues.

Cooperating in Canada: work with a national park and First Nations

In Canada, the De Beers Group has a 51% interest in, and is the operator of, Gahcho Kué open-pit mine in the Northwest Territories. It began commercial production in 2017 and has an expected mine life to 2030.

Prior to 2019, the closest protected area to the Gahcho Kué mine was the Wood Buffalo National Park, which is approximately 600 km from the site. However, the Thaidene Nene National Park was approved in 2019 and is 52 km away from the Mine. The Thaidene Nënë National Park Reserve is an Indigenous Protected Area covering more than 26,000 km². Thaidene Nënë is co-governed by the

Łutsël K'é Dene First Nation, provincial and federal governments. This culturally rich and spiritually significant area, and the continued relationship between the land and Indigenous people, highlights the importance of the protected area.

De Beers has taken a supportive role to the creation of the newly approved park and is working to establish a collaborative project, which may involve, for example, infrastructure improvements to support tourism and safety in the park, such as cabins or a welcoming centre in Łutsël K'é.

Conclusion

In 2006, at its eighth meeting, the UN Convention on Biological Diversity (CBD) made clear that engagement of businesses was essential in achieving CBD's goals. Subsequent decisions were taken to establish the conditions that facilitate private sector engagement, encouraging businesses to "adopt practices and strategies that contribute to achieving the goals and objectives of the Convention and the Aichi Biodiversity Targets".

In summary, two aspects are of particular relevance to Anglo American:

- > Strengthening of biodiversity consideration in business operations and promote behavioural change through 'mainstreaming';
- > Promotion of business involvement in the development, revision, and implementation of national and international biodiversity strategies and action plans.

The case studies set out some of the ways that Anglo American is working to address these aspects. Through its conservation efforts, the company's objective is to lead progressive, world-class operational sustainability across Anglo American and set new benchmarks for the industry. Towards that end, Anglo American will work to protect what we have already, where possible, within and beyond our fence, as well as helping to protect other landscapes upstream and downstream through conservation, offsets and partnerships, including reducing societal impacts, repairing ecosystem function, partially recovering native ecosystems, improving ecosystem management, initiating native recovery and fully recovering native ecosystems.

Perspectives on biodiversity

bp recognises that the rich biodiversity of our planet is under threat, that transformative change is needed and that there is also an intrinsic link between the need for global action on biodiversity and climate change. As part of our purpose – to reimagine energy for people and the planet – we are taking action to restore, maintain and enhance nature. In 2020, we launched our new biodiversity position, which built upon existing bp practices and requirements. We later embedded the position into bp’s sustainability frame, specifically Aim 16 to enhance biodiversity.

At bp:⁵

- > We commit not to operate any new oil and gas exploration or production activities inside the boundary of officially inscribed UNESCO World Heritage sites. We will consult with UNESCO if we are considering operating any such projects in the buffer zone or adjacent to a World Heritage Site. We will seek to avoid any associated activities that would have a direct residual impact on the value and integrity of a World Heritage Site.⁶
- > We also commit not to operate any new oil and gas exploration or production activities inside the boundary of Strict Nature Reserves (IUCN Ia) or Wilderness Areas (IUCN Ib) as listed on 1 January 2020. If we enter other protected areas, we intend to work with relevant stakeholders and biodiversity experts to help manage any potential impacts and assess opportunities to improve the management of the site.
- > We will aim to achieve NPI on biodiversity in our new projects. From 2022 onwards, new bp operated projects whose planned activities have the potential for significant direct impacts on biodiversity will be required to develop NPI action plans for those activities. This requirement will apply to projects across our portfolio – from oil and gas to renewables – and our business will be required to implement the action plan for as long as we operate the asset. We are now developing the necessary robust methodology to enable us to do this.
- > We will aim to enhance biodiversity around our existing major operating sites. We are also putting measures in place so that from 2022 we can require bp major operating sites to have plans in place to enhance local biodiversity, starting with sites in biodiversity sensitive areas. For example, restoring wetland habitats, conserving threatened species or improving the management of protected areas.
- > We will support biodiversity restoration and the sustainable use of natural resources. In countries where we have existing and growing investments, we will aim to further the conservation and restoration of biodiversity, and the sustainable use of natural resources by local communities.

We are now operationalising this position and embedding biodiversity into the way we work. As part of this, we work with leading conservation organisations, and in 2020 we established a five-year collaborative agreement with Fauna & Flora International to help support the delivery of these activities.

Mainstreaming the value and importance of biodiversity into bp’s practices and decision-making processes has been a key part of the way we work, and we have been integrating biodiversity into our practices and decision making for over 15 years. In addition to the activities detailed in the 2020 biodiversity position, we also require new major projects to:

5 bp (n.d.). *Caring for our planet* [online]. London, UK: bp p.l.c. <https://www.bp.com/en/global/corporate/sustainability/caring-for-our-planet.html>

6 A list of our existing operations near World Heritage sites can be found on [bp.com](https://www.bp.com).

- Apply the mitigation hierarchy.
- Assess the most critical potential pathways for introducing invasive alien species (IAS) related to its planned activities and implement plans to manage the risk of introducing any new IAS.
- Seek to avoid the clearance of high carbon stock ecosystems greater than one hectare, and if this cannot be feasibly avoided, adopt mitigation measures to achieve zero net loss in the size of the area of the ecosystem removed.

bp
Case study 1

Remediation management, United States

In the United States, bp and its subsidiaries own and manage large tracts of land which have been impacted by former operations and are in various states of remediation. Several sites have undertaken biodiversity enhancement activities. Four sites are certified by the Wildlife Habitat Council, including Warm Springs Ponds⁷ and Dutchman, both in Montana.

Prominent biodiversity restoration activities are ongoing at former mining, smelting and mineral processing sites in Montana. Approximately 1 million trees are being planted and 2,000 more acres, or approximately 4,900 ha, will be replanted with native grassland species to provide a biodiverse cover and habitat around a former copper smelter in Anaconda-Deer Lodge County.

In Butte, the 160-acre, or approximately 392 ha, Silver Bow Creek Conservation Area (SBCCA) design has been pre-certified Gold by the SITES programme under Green Business Certification, Inc. (GBCI). The SITES rating system evaluates the sustainability of landscapes and measures their performance to demonstrate the value landscapes have in their communities. As the second project in the world to be pre-certified Gold, SBCCA will collect and treat stormwater impacted by former mining activities in a pond and wetland system that integrates Nature-based Solutions (NbS) into the remedy for impacted stormwater from the surrounding community. Treated water will be returned to the creek for wildlife, habitat and downstream uses. The pond

and wetland system will be part of a larger habitat conservation area open to the public. Together, the water treatment system and conservation area will furnish regulating, provisioning, cultural and supporting ecosystem services.

We are also developing programmes to monitor landscape and biodiversity changes across all our U.S. remediation sites. For example, the Opportunity Ponds is a former tailings impoundment in Montana that has been remediated with an engineered containment system and capped with native grasses. We recently developed a mammal monitoring plan for the Opportunity Ponds site, which includes aerial and on the ground surveys to document the elk, antelope and other wildlife that forage and migrate across the site seasonally.

In addition, bp have an ongoing and robust waterfowl and wetland monitoring programme throughout the entire Butte-Anaconda Basin. More than 300 acres, or approximately 735 ha, of wetlands have been constructed as remedy and natural resource restoration components at the Dutchman wetlands. These wetlands provide habitat for an abundance of native species, offset the potential loss of other wetland habitat undergoing remediation and provide for No Net Loss (NNL) of wetlands with estimated current and future 338 acres, or approximately 828 ha, of accredited Functional Effective Wetlands Area.

⁷ Bonneau, J. (2014). Partnerships and Technology: Key to Success for Warm Springs Ponds Program. *Wildlife Habitat Council* [online article]. <https://www.wildlifehc.org/partnerships-and-technology-keys-to-success-for-warms-springs-ponds-program>

Wetland creation and citizen science at Cherry Point, United States

bp's refinery at Cherry Point has long been a leader in adding value to local biodiversity, creating wetlands and enhancing local wildlife. It has gained a Corporate Wildlife Stewardship Award (from the Wildlife Habitat Council) and several Wildlife at Work certifications and a Citizen Science Project.

The bp Cherry Point refinery owns approximately 3,500-acre (approximately 8,575 ha) of land near Blaine in Whatcom county, Washington State, but only 650 acres, or approximately 1,593 ha, is used for its operations, the remaining land consists of agricultural fields, wetlands, forests and marine shoreline on the Strait of Georgia.

In 2009, the refinery was required to create 22 acres, or approximately 54 ha, of wetlands but

instead agreed to do further enhancements by taking a landscape approach and created both 44 acres (approximately 54 ha) of wetlands and restored 50 acres, or approximately 54 ha, of degraded wetlands. A total of 94 acres, or approximately 54 ha, of wetland areas, which are acting as important habitats for the conservation of locally important bird and amphibian species.

In 2013, the bp refinery established a Citizen Science Project, with local volunteers surveying the ponds in the wetland areas for amphibian egg masses. Surveys will be undertaken each year to help bp and the local science community to appreciate how the wetland habitat creation is adding value to the local biodiversity.

Tanggung operations, Indonesia

The Tangguh operation in Bintuni Bay is situated in a concession managed by bp covering 3,380 ha of lowland tropical forests, of which only about 20% are used for its operations. We are also required to rehabilitate twice the size of land of the release area 6,984 ha.

In 2016, the Tangguh expansion project committed to achieving NNL in biodiversity. To meet this commitment, the project has been undertaking a range of measures to help protect and restore biodiversity on the site, mitigation measures which are tracked through a Tangguh Biodiversity Action Plan for the conservation of

priority species (six plant species, 19 species of bird, five species of mammals and 10 species of reptiles and amphibians). Mitigation measures have included orchid translocation, propagation of endangered tree species, forest restoration and rehabilitation, translocation of ground nesting bird species, allocation of no-go areas and invasive species management.

Collection, translocation and propagation of endangered plant species is part of the Tangguh Expansion Project NNL biodiversity plan.

2.3 Vale's journey towards nature-positive outcomes

Founded in 1942 and headquartered in the city of Rio de Janeiro, Brazil, Vale is one of the leading mining companies in the production of iron ore and nickel, present in more than 20 countries and with more than 213,000 employees (including contractors) worldwide. Vale also operates logistics systems, including railways, maritime terminals and ports, that are integrated with our mining operations and distribution centres to support the delivery of our products worldwide. Either directly or through associates and joint ventures, the company also has investments in energy and steel businesses.

First, and most fundamentally, is that we will never forget the tragedies related to the dam collapse of Brumadinho and Mariana. The immense scale of those events shook all of us to our core. Their impacts, and the critical lessons learned since then, have driven a complete overhaul in our organisation's mindset, approach and governance. The company is committed to making 25 January 2019 an inflection point in its history. As such, we focused completely on the priorities at hand: prompt, adequate and thorough reparations process, continuous improvement in culture, governance, risk management and instilling a sustainable mining operation that takes care of the planet and generates prosperity. We want to walk together with society, with responsibility, transparency and coherence.

We recognise that our businesses impact biodiversity and, at the same time, are highly dependent on the ecosystem services provided by nature. As such, ensuring the future sustainability of the areas where we operate is a necessity. We are committed to acting to reduce and reverse losses and, whenever possible, enhance positive impacts on nature.

Our sustainability policy and performance are therefore based on:

- > generation of nature knowledge and monitoring aspects and impacts in our operational areas;
- > management of risks and impacts by adopting the mitigation hierarchy;
- > promotion of transparency in relation to our practices and performance;
- > contribution to achieving national and global targets such as those of CBS's Global Biodiversity Framework); and
- > ultimately, building a positive legacy for biodiversity in the territories, based on conservation actions.

Focusing on these premises, in 2019 we revised our 2030 agenda in line with the UN SDGs. Our forest goal aims to recover 100,000 ha and ensure the protection of an additional 400,000 ha of native forests beyond our operational borders. With the support of several partners, we are looking for solutions for recovery and protection that can bring gains not only for biodiversity, but also for the climate and for local communities, contributing to the development of positive social and environmental impact businesses and a low-carbon economy.

To meet the 400,000 ha protection goal, we have in the last two years applied the same model in the Amazon and Atlantic Forest the establishment of partnerships with governmental protected areas to help in their conservation actions. Additionally, the Fundo Vale (Vale Fund), an NGO supported by Vale, is responsible for the 100,000 ha forest recovery goal, and to achieve this are building a network of partners and positive social and environmental impact business arrangements. As a result, in the last two years, Fundo Vale has supported the development of five agroforestry businesses that implemented productive recovery models involving agroforestry systems on an area of more than 6,000 ha.

Our path towards NNL and, whenever possible, Net Gain, has been based on scientific research and innovation, which are strengthened in our internal standard with Guidelines and Processes for Biodiversity Management. This standard was published in 2020 and aims to improve the management of risks and impacts on biodiversity at all stages of our projects, from planning to operation and closure, based on the steps of the mitigation hierarchy. In the last two years, we have been focused on implementing and deploying this standard, improving the analysis of biodiversity risks both in new projects and in our operations, working with the prioritisation of attributes, in addition to reviewing and implementing specific action plans for each project and site.

As part of our journey towards positive outcomes for nature, the case studies showcased reflect our strategy from concrete examples of long-term partnerships with government agencies and research institutions that have helped us build a solid knowledge base and effective conservation actions.

Vale Case study 1

Amazon: operating the largest iron mining complex in the world within a mega-diverse forest region

Mining integrated with biodiversity conservation has been one of the premises of our operations for over 35 years in the Carajás region of the Amazon territory.

The Carajás Mineral Complex is located in the municipalities of Parauapebas, Canaã dos Carajás and Curionópolis, in the state of Pará, in northern Brazil. This complex is responsible for the production of around 180 million tonnes of iron ore per year,⁸ integrating a system composed of mines, plants, railroad and port. It is home to one of the largest iron ore mines in the world, S11D Eliezer Batista.

Mining in Carajás began in 1985, when the company was still owned by the Brazilian government. At the time, an advisory group of environmental specialists, formed by scientists from various areas, undertook a study that proposed to delimit an area to guarantee the development of the Mineral Province of Carajás and the protection of the forest and its resources.

The Carajás National Forest was created in 1998 with the premise of reconciling mining operations with biodiversity conservation. Decree 2486 of 2 February 1998 allows mining activities within the national forest and formalises the partnership between Vale and the agency responsible for the protection and management of natural ecosystems. This protected area covers about 400,000 ha with a predominance of Open Ombrophilous Forest and Dense Ombrophilous Forest interspersed on the top of the mountains by the ferruginous rock fields, within which part of the Carajás Mineral Complex is implanted.

The Carajás National Forest is contiguous to five more conservation units – the Tapirapé-Aquiri National Forest, Itacaiúnas National Forest, Tapirapé Biological Reserve, Igarapé do Gelado Environmental Protection Area and Campos Ferruginosos National Park – all of which today make up the Carajás Mosaic of Conservation Units. These protected areas form the largest native forest block in the southeastern region of Pará, which also connects to the protected Indigenous land of the Xikrin do Rio Cateté.

⁸ Iron ore represents our largest production in the Carajás region, the Carajás Mining Complex that is the focus of this case study. In this region, we also produce copper and nickel, which are not represented here.

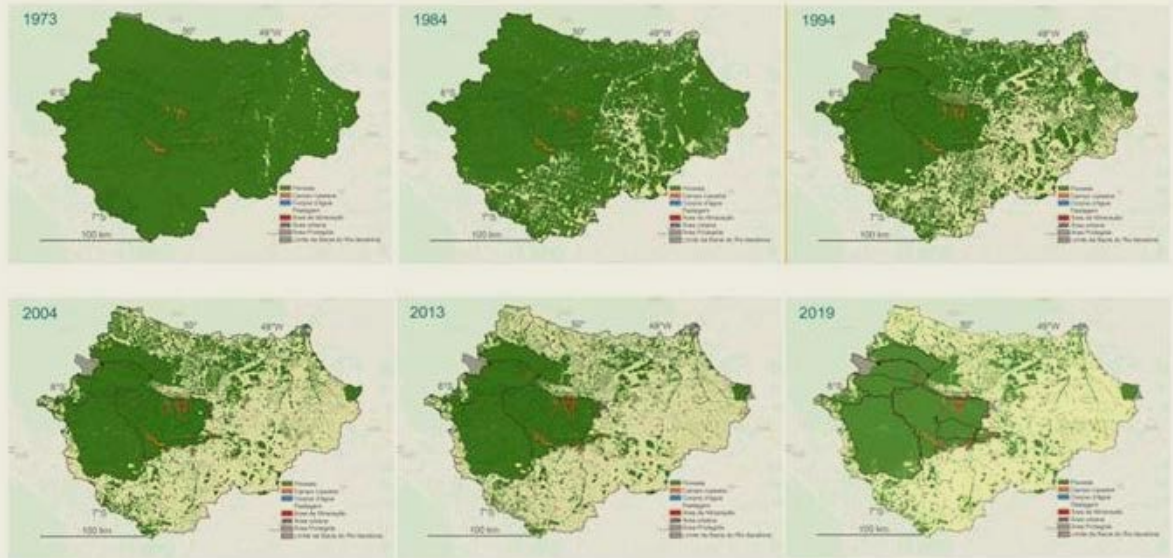


Figure 2 Map of Carajás Protected Areas Mosaic and Xicrin do Cateté Indigenous land in the context of human pressures of more than 40 years in the Itacaiúnas River Basin, state of Pará (Brazil)

Source: Modified from Souza-Filho, P. W. M., de Souza, E. B., Silva Júnior, R. O., Nascimento Jr., W. R., Versiani de Mendonça, B. R., Guimarães, J. T. F., Dall’Agnol, R., & Siqueira, J. O. (2016). Four decades of land-cover, land-use and hydroclimatology changes in the Itacaiúnas River watershed, southeastern Amazon. *Journal of Environmental Management*, 167, 175–184. <https://doi.org/10.1016/j.jenvman.2015.11.039>; and Souza-Filho, P. W. M., Nascimento, W. R., Santos, D. C., Weber, E. J., Silva, R. O., & Siqueira, J. O. (2018). A GEOBIA Approach for Multitemporal Land-Cover and Land-Use Change Analysis in a Tropical Watershed in the Southeastern Amazon. *Remote Sensing*, 10(11), 1683. <https://doi.org/10.3390/rs10111683>

Together, these areas form the Serra dos Carajás KBA, harbouring endangered and endemic species in the region.

In 2000, with the establishment of the National System of Natural Conservation Units (SNUC) by Federal Law No. 9,985 of 18 July 2000, the Carajás National Forest is further strengthened as a Sustainable Use Conservation Unit with the objective of making conservation compatible with the sustainable use of natural resources. This objective reinforced the importance of Vale’s role as a partner in the conservation of all the mosaic’s protected areas, supporting and investing in effective conservation actions that prevent illegal deforestation and fires, common pressures in the surroundings of these protected areas that in many times do not respect their limits. **Figure 2** shows the result of this pressures in Itacaiúnas River Basin for the last 40 years. Strengthening both Vale’s activities and the Brazilian legislation focused on conservation units is even more important within a regional context of strong deforestation pressures in the

southeastern region of the State of Pará, known as the arc of deforestation, where the highest rates of deforestation of the Amazon are found.

Today, Vale has been operating in the Carajás region for over 35 years (approximately 28,000 ha of operational areas⁹) and acting in the conservation of almost 800,000 ha of natural areas (government protected areas where the company fund conservation actions and help to manage the areas) in a partnership with the current government agency that manages protected areas, the Chico Mendes Institute for Biodiversity Conservation (ICMBio). Within the scope of this partnership for conservation, we invest and develop actions for ecosystem protection, prevention of fire and firefighting, prevention and combat against wildlife hunting, environmental education, scientific research, promotion of local development and sustainable business.

With a focus on protecting the habitats of ferruginous rupestrian fields, as well as

9 This includes operations within the limits of the forest mosaic. Vale has additional operations in the vicinity.

conserving associated fauna and flora species and cave environments, in 2017, Vale supported ICMBio in its proposal to create the Campos Ferruginosos National Park mentioned previously. This action is part of the compensation for the impacts of Vale's operations in the region related to the implementation and operation of the S11D Eliezer Batista Complex. Vale has also renounced mining in the mountains that make up the park in favour of conserving specific habitats and endemic and threatened species. The park covers 79,000 ha of rupestrian fields and forests is an integral protection conservation unit, according to the National System of Conservation Units (IUCN category II), specifically focused on the preservation of natural resources, scientific research and education.

Within the context of strong anthropic pressures that have resulted in the encroachment of deforestation around the Carajás Mosaic, Vale and the government needed to act beyond this territory, focusing on connectivity of the protected areas with other protected areas in the surroundings. To meet this goal, in 2020, the partnership with ICMBio for conservation was reinforced with the signing of an agreement for financial and technical support to the Horizontes Project. The project has four pillars: scientific research, strengthening the knowledge management about the region, conservation of water resources and the recovery and sustainable use of the areas around the mosaic through land use diversification and the implantation of agroforestry systems to create corridors. Thus, the recovery of degraded areas not only connects protected areas and reinforces the conservation of regional biodiversity by supporting the resilience of forests, but also fosters income generation for the surrounding communities.

Fostering scientific research

Scientific knowledge and support for research and innovation are essential to support the management of biodiversity in the region, managing impacts and supporting decision-making aimed at the management and

conservation of biodiversity. To this end, Vale invests in partnerships with universities and scientific research institutions in the region, Brazil and the world. Vale Technological Institute (ITV)¹⁰ is a research institute sponsored by Vale that has been working in the Amazon for more than 10 years and in partnership with several research institutions. In the region of Carajás, research is carried out related to the expansion of knowledge about the flora and fauna, geographic distribution of species, the genetic variability of populations, as well as methods, indicators and monitoring of restoration of habitats and populations of these species, eDNA for monitoring the areas, climate change and the consequences for species, sustainable chains, among other lines of research.

Among this ITV research, Flora das Cangas de Carajás stands out as a project developed by 145 researchers from 30 institutions in the country and abroad, such as the Museu Paraense Emílio Goeldi. As a result of this work, the Carajás region now has one of the best-studied floras in the country, with 1,094 distinct species identified in 164 families, which supports impact management and conservation actions. This project also enabled intensive genetic mapping based on DNA barcodes and the construction of a comprehensive library of genetic data that today supports rapid and robust approaches to obtaining eDNA sample-based biodiversity inventories. The results also help to identify the best time to rescue individual species and collection of seeds, areas with restricted populations, quantify the rarity of the species and/or provide subsidies for the recovery of degraded areas.

Creating an immersive Amazon conservation experience

Still focusing on scientific research and conservation of Amazonian biodiversity, both in situ and ex situ, Vale has developed and maintained the Vale Amazon BioPark¹¹ (see photo above) since 1985, with an area of 30 ha of native vegetation that is characteristic of the biome, housing species of Amazonian flora and fauna, including exhibitions immersed in natural

10 ITV (n.d.). *ITV* [website]. <https://www.itv.org/en/home/>

11 Vale (n.d.). Zoo Botanic Park. <https://www.vale.com/w/vales-zoobotanical-park-is-now-biopark-vale-amazonia>



Vale Amazon BioPark

© Vale Image Database

environments and infrastructure for animal rehabilitation.

Guided by the pillars of scientific research, species conservation, environmental education and leisure, the Biopark is a repository of Amazonian biodiversity, housing endemic, rare and threatened species. The ex situ conservation of these species and their genetic material, as well as scientific research focused on genetics, behaviour and reproduction, provide a solid foundation of knowledge that also underpins in situ conservation strategies. The BioPark offers an immersive Amazon experience and aims to raise the awareness of visitors and seeks to transform leisure into important processes of conservation education.

The BioPark is now considered a historical and genetic archive for threatened species, such as the jaguar, the bush dog (*Speothos venaticus*), golden parakeet (*Guaruba guarouba*) and harpy eagle (*Harpia harpyja*). Within the Reproductive Management Program for the Conservation of Endangered Species of Biological Relevance, the park has already achieved important results in the reproduction of these species, in partnership with other institutions in the country. Additionally, it also houses the Herbarium of Carajás, a botanical collection registered and certified by the Index Herbariorum (IH), with a collection of more than 10,000 plants grouped into 173 families.

Avoiding impacts and restoring forests

The S11D Eliezer Batista Complex is one of the largest iron ore mining projects in the world and is located in the Carajás region. Its implementation had impacts on biodiversity, but also brought approaches to avoid and minimise these impacts, as well as to recover and conserve areas with high value for biodiversity. In 2018, we worked in partnership with The Biodiversity Consultancy,¹² evaluating the stages of the impact mitigation hierarchy during the planning and implementation stages of the project, from the analysis

of mine design alternatives and their evolution based on discussions with internal and external stakeholders, passing through the analysis and definition of priority biodiversity features, assessment of residual impacts and the assessment of the existing mitigation strategy and culminating with the preparation of the Biodiversity Action Plan (BAP). The latter consisted of actions focused on neutralising losses and bringing gains for biodiversity.

The joint work of the environment, engineering, planning and environmental agencies teams led to several changes in the master plan that avoided the clearing of more than 1,100 ha of forests. The loss of critical plant species population within the mine footprint was avoided. We considered the area of occurrence of this specific species overlapping the project area as a no-go area because we did not have enough knowledge to evaluate possible measures to guarantee that>NNL would occur. The actions of the Forest Restoration Program included the acquisition of properties around the mine and, since 2016, the recovery of those lands previously used for agriculture and pasture forming wildlife corridors. There are now about 5,000 ha of forests in different stages of restoration, which already have seen the return of native fauna, including endangered species, neutralising the residual impact and bringing gains to forest habitats.

¹² Vale (n.d.). S11D: Lessons learned from applying the mitigation hierarchy to future projects. *Vale & Biodiversity* (pp. 5–9) https://vale.com/documents/d/guest/book_vale-biodiversidade_en-1

All this work allowed the deepening and adaptation of the concepts of international performance standards to our reality and the elaboration of our internal standard with Guidelines and Processes for Biodiversity Management. After its conclusion and based on the lessons learned, the Carajás Biodiversity Management Plan¹³ has prepared a living document that:

- > guides the assessment of biodiversity risks and prioritisation of biodiversity features in each new project and expansion planned for the region;
- > consolidates specific actions to each project to prevent and mitigate risks and negative impacts;
- > provides guidelines and actions focused on research and habitat restoration;
- > consolidates and strengthens the generation of knowledge about endangered and endemic species;
- > proposes route adjustments for already established operations and programmes; and
- > institutes a multistakeholder governance process and integrated management of the territory.

Our biggest challenge in this territory has been to operate the largest iron mining complex in the world within a mega-diverse forest region. Integrating our business with nature has been the greatest learning from this process, and this is essential for us to keep on working. And for that, the establishment of partnerships, scientific knowledge and innovation are essential to overcome challenges and expand opportunities.

Vale was born in the Atlantic Forest, in the city of Itabira (state of Minas Gerais, Brazil), in 1942 and today has an operational footprint in a biome of approximately 29,000 ha, including different types of operations, such as mines, plants, railroad and ports. We also support the conservation of more than 178,000 ha in our own protected areas – such as the Vale Natural Reserve, in Linhares (Espírito Santo), and our Private Natural Heritage Reserves located in Minas Gerais, in the Quadrilátero Ferrífero region – in addition to supporting management and protection of government protected areas.

¹³ For more information, please see: <https://www.vale.com/web/esg/biodiversity>

Vale Case study 2

Atlantic Forest: a legacy of biodiversity conservation and knowledge

The Vale Natural Reserve (RNV)¹⁴ is a protected area owned by Vale with approximately 23,000 ha of Atlantic Forest formations that stands out as a legacy of conservation and knowledge for the biome. Together with the Sooretama Biological Reserve (Rebio Sooretama) – an area with 27,000 ha owned by the government and managed by ICMBio and supported by Vale – it forms the largest continuous remnant of the Atlantic Forest in the southeast of Brazil. Recognised in 2008 as an Advanced Post of the Atlantic Forest Biosphere Reserve by UNESCO's Man and Biosphere Programme, it is an important area for the conservation of the biome's habitats and

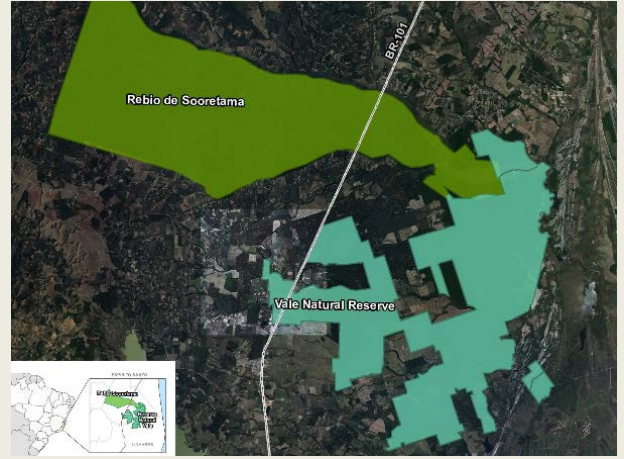
species. RNV is also part of the UNESCO World Heritage Site Reserves of the Atlantic Forest Discovery Coast and also constitutes a KBA (IBA Sooretama/Linhares). This area is home to 3,000 known plant species and 1,500 insect species, 27 species of fish, 59 species of amphibians, 64 species of reptiles, 401 species of birds and 103 species of mammals, including rare, endemic and endangered species.

RNV also plays a fundamental role in ex situ conservation, with an herbarium comprising more than 17,000 samples of Atlantic Forest species. This role is reinforced by having one of the largest

¹⁴ Vale (n.d.). Natural reserve. *Vale* [website]. <https://www.vale.com/vale-natural-reserve>



Vale Natural Reserve and Sooretama Biological Reserve
© Vale Natural Reserve



Aerial view of Vale Natural Reserve
© Ricardo Telles

seedling nurseries in Brazil, a reference in the cultivation of Atlantic Forest species, with a production capacity of up to 2.5 million seedlings per year. One of the objectives of the nursery is to support the conservation of the Atlantic Forest's genetic heritage, with a main focus on endangered species. These initiatives support the reintroduction of these species into their original habitats and can, in the long term, help restore populations and even generate positive change in the face of threats. In addition to Vale's and third-party forest restoration initiatives, the seedlings have also been used for urban afforestation and environmental awareness campaigns. These campaigns help communities feel part of the species conservation process, which can be a first step towards raising environmental awareness.

Vale has been supporting the protection and conservation of the Sooretama Biological Reserve for 23 years through a cooperation agreement signed with ICMBio, the governmental agency responsible for managing the protected area. In December 2021, the agreement was renewed for another five years. Vale made available an Ecosystem Protection Team, composed of Vale employees, which is responsible for the daily monitoring of the Sooretama Biological Reserve, carrying out an active search for hunting equipment and human activities, by traveling on roads, firebreaks and trails within the forest, sharing information obtained in the field with the Environmental Police and ICMBio

agents. Furthermore, all records obtained in the field during the monitoring, both at the Rebio Sooretama and at the Vale Natural Reserve, are entered into the Vale Integrated Management System for Protected Areas (SGIAP), which aims to store, organise and integrate important data for the management of this area.

In 43 years dedicated to conservation and research of the Atlantic Forest biodiversity, the Vale Natural Reserve has developed and supported more than 270 research projects in its area and in the REBio Sooretama. These are projects carried out by partners from universities and research institutes such as the Federal University of Espírito Santo and the University of Vila Velha. The studies culminate in important results and a legacy of knowledge, like the discovery and description of 134 new species of flora, discovery and monitoring of new nests of harpy eagle (*Harpia harpyja*), and the monitoring of the populations of jaguar (*Panthera onca*) and puma (*Puma concolor*), threatened species. In 2021, new partnerships were signed with conservation and research projects, such as the partnership with the Marcos Daniel Institute (IMD) to support the Conservation Programme for *saíra-spunhalada* (*Nemosia rourei*, cherry-throated tanager), a critically-endangered bird species found only in the mountain region of Espírito Santo state.

Vale Natural Reserve also welcomes visitors and works on the development of environmental

education projects, with the aim of bringing neighbouring communities and visitors closer together, offering an opportunity for immersion in nature through targeted visits, specific programmes developed in partnership with the researchers for the public school and providing moments of leisure with family. The awareness of the general public and the surrounding communities are essential for the promotion of biodiversity conservation in the region.

The reserve has been working to establish new partnerships, including replicating its experience in the management and development of actions aimed at protecting large areas. Since 2020, it has been supporting Vale's 2030 Forest Target, focusing on establishing partnerships for the protection of over 400,000 ha by 2030, inspired by the partnership models for management and

protection of government protected areas such as this one with Rebio de Sooretama.

In 2020 and 2021, cooperation agreements were signed with government agencies to support seven more protected areas, including Cunhambebe State Park, União Biological Reserve (Rio de Janeiro state) Serra das Torres Natural Monument, Duas Bocas Biological Reserve, Goytacazes National Forest, Augusto Ruschi Biological Reserve (Espírito Santo) and Mata Escura Biological Reserve (Minas Gerais). These areas add up to over 115,000 ha which will be supported by technical and financial resources for management, ecosystem protection, establishment and maintenance of infrastructure, development of scientific research and education for conservation.

Conclusion

The integration of nature and business is essential. As a large company, we occupy large territorial spaces with our operations, leading to the conversion of natural habitats as well as the recovery and conservation of biodiversity. The results of the assessment of the global biodiversity targets, or the Aichi Targets, and the discussions on the new Global Biodiversity Framework reflect the need and challenge to address not only conservation areas, but also its connectivity and effectiveness for the protection of habitats and species, along with increased involvement of businesses and all components of society.

We need to go further – we need partnerships and models that can be replicated and scaled, and we need science to inform decisions and actions. Based on that, we are planning our future – by investing in scientific research. We want to leave a legacy of knowledge in the territories. We want to share with society and hope they support our decisions and actions, as well as public policies aimed at a positive future for nature. We are strengthening and always looking for new partnerships that can test new management models and expand the results where we operate and reaching new territories.

2.4 ExxonMobil environmental and biodiversity management

ExxonMobil¹⁵ is one of the world's largest publicly traded energy and chemical companies. We develop and apply next-generation technologies to help safely and responsibly meet the world's growing needs for reliable and affordable energy and high-quality products. We operate facilities or market products in most of the world's countries and explore for oil and natural gas on six continents.

ExxonMobil strives to demonstrate leadership in environmental management. 'Protect Tomorrow. Today.' is our guiding principle, focusing our company culture on the need to protect the environment where we operate and support the social and economic needs of the community today and for future generations. This principle underpins our framework of rigorous standards and best practices that drive our environmental performance. Implemented through the Operations Integrity Management System¹⁶ (OIMS) framework in conjunction with our Corporate Environment Policy. This principle provides the environmental expectations and globally accepted industry practices that guide our day-to-day operations, while OIMS outlines rigorous operating practices and facility design requirements to reduce environmental impacts and prevent incidents. OIMS conforms to environmental standards, including International Organization for Standardization (ISO) 14001 and American Chemistry Council Responsible Care[®] requirements.

Reducing impacts to land, habitats and biodiversity

The way we manage land and habitats, and their effects on biodiversity, is critical to the communities in which we operate. ExxonMobil employs a comprehensive process to understand how our activities interact with environmental settings. We operate in locations with a broad range of environmental and socio-economic conditions and use a robust environmental management system¹⁷ to identify, assess, mitigate and monitor impacts on the environment, including potential effects on biodiversity and ecosystem services.

For major projects, we use an Environmental, Social and Health Impact Assessment process to identify and evaluate environmental, social and health risks. We use our Environmental Aspects Guide¹⁸ to identify and evaluate environmental, including biodiversity, and socio-economic risks and potential impacts throughout the life of each asset or project. The process includes direct engagement with stakeholders to help us identify relevant biodiversity and ecosystem services for integration in our project design and operational practices. Based on the assessments, we develop management plans featuring protective measures specific to the location and scale of operations to avoid, reduce or address impacts to land and habitats.

ExxonMobil also has Project Environmental Standards for Land Use and Marine Sound that inform project concept selection and facility design, and aim to:

15 Corporate Separateness Notice: Exxon Mobil Corporation has numerous affiliates, many with names that include ExxonMobil, Exxon, Mobil, Esso and XTO. For convenience and simplicity, those terms and terms such as Corporation, company, our, we and its are sometimes used as abbreviated references to one or more specific affiliates or affiliate groups. Abbreviated references describing global or regional operational organisations, and global or regional business lines are also sometimes used for convenience and simplicity. Nothing contained herein is intended to override the corporate separateness of affiliated companies.

16 ExxonMobil (n.d.). *ExxonMobil Operations Integrity Management System*. ExxonMobil [online article, 7 January 2022]. <https://corporate.exxonmobil.com/Operations/Energy-technologies/Risk-management-and-safety/Operations-Integrity-Management-System>

17 ExxonMobil (n.d.). *ExxonMobil Environmental Management System*. ExxonMobil [online report, 15 December 2022]. <https://corporate.exxonmobil.com/Sustainability/Sustainability-Report/Environment/Environmental-management-system>

18 ExxonMobil (2019). *Sustainability Management: Environmental Aspects Guide. Executive Summary*. Irving, Texas, USA: ExxonMobil. <https://corporate.exxonmobil.com/-/media/global/files/environmental-initiatives/environmental-aspects-guide.pdf?la=en&hash=BC2B472FBF81CC490D30E5DDBFABF580446436B0>

- Avoid and/or reduce adverse environmental and socio-economic impacts related to the permanent or temporary use of land, including land within critical habitat or with high ecosystem value.
- Identify, assess and manage risks associated with marine sound-producing activities and to consistently implement mitigation in a structured manner.

In areas of high biodiversity like critical habitats, as described by the International Finance Corporation (IFC) Performance Standard 6 (PS6) on Biodiversity Conservation and Sustainable Management of Living Natural Resources,¹⁹ we follow the mitigation hierarchy. The mitigation hierarchy²⁰ is a best-practice decision-making process to help avoid, reduce, restore and offset impacts to biodiversity. As part of the mitigation process, our engineering teams consider integrating nature-based solutions, including remediation and restoration, into design decisions throughout the asset life cycle.

ExxonMobil supports land management programmes that enhance wildlife habitats and provide environmental education to local communities.

The following case studies presented here are examples of our efforts in land management, and habitat conservation and enhancement.

19 IFC (2012). *Performance Standard 6 (PS6) on Biodiversity Conservation and Sustainable Management of Living Natural Resources*. <https://www.ifc.org/ps6>

20 The Biodiversity Consultancy (2015). *A cross-sector guide for implementing the Mitigation Hierarchy*. Cambridge, UK: A Cross Sector Biodiversity Initiative. <http://www.csbi.org.uk/wp-content/uploads/2017/10/CSBI-Mitigation-Hierarchy-Guide.pdf>

ExxonMobil Case study 1

Supporting biodiversity through offshore decommissioning: *Lena* Platform, Gulf of Mexico, United States

Decommissioning offshore oil and gas platforms provides a unique opportunity to enhance marine biodiversity. Globally, an estimated 2,000 offshore oil and gas platforms are expected to reach their end of field life by 2040.²¹ The US Gulf of Mexico contains the highest concentration of offshore platforms in the world. The Rigs-to-Reef²² programme was initiated in the mid-1980s and is managed by the US Bureau of Safety and Environmental Enforcement (BSEE). Under the National Artificial Reef Plan, BSEE works with state and federal agencies to convert

decommissioned oil and gas platforms into reefs to enhance ecosystem development, recreational fishing and diving. It is well documented that platforms provide a structure for encrusting organisms, such as corals, which support higher trophic levels such as fish. BSEE has approved over 600 Rigs-to-Reef projects since 1987.²³

The ExxonMobil *Lena* platform was installed in 1983 in the US Gulf of Mexico in 305 m water depth. *Lena*, which operated in Mississippi Canyon Lease Block 280 (MC280), is located

21 Sommer, B., Fowler, A. M., Macreadie, P. I., Palandro, D. A., Aziz, A. C., Booth, D. J. (2019). Decommissioning of offshore oil and gas structures – Environmental opportunities and challenges. *Science of the Total Environment*, 658, 973–981. <https://doi.org/10.1016/j.scitotenv.2018.12.193>

22 Bureau of Safety and Environmental Enforcement (BSEE) (n.d.). What is rigs to reefs. *BSEE* [website]. <https://www.bsee.gov/faqs/what-is-rigs-to-reefs>

23 Bureau of Safety and Environmental Enforcement (BSEE) (n.d.). Rigs to Reefs Program Fact Sheet. *BSEE*. <https://www.bsee.gov/sites/bsee.gov/files/rigs-to-reefs-program-fact-sheet.pdf>

about 100 km southeast of Grand Isle, Louisiana. After 35 years of operations, *Lena* began the decommissioning process in 2017. Under the Rigs-to-Reef programme, ExxonMobil engaged BSEE and the Louisiana Department of Wildlife and Fisheries to propose horizontally reefing²⁴ *Lena* in place (toppled-in-place).²⁵

Prior to decommissioning, in 2013 ExxonMobil conducted two biological surveys of *Lena*: one in January, and a second in September. The objectives of these surveys were to characterise biological conditions on and around the platform. The January survey examined the fish and macro-invertebrate fauna at all depths, while the September survey focused on the biological community within the bottom 50 m of the platform, on the seabed surrounding the platform, as well as conducting comparisons of the community located at far-field control sites at comparable depths.

The survey results showed that *Lena* supported several diverse marine communities that span the warm surface waters where a tropical coral reef associated fauna predominate through a deeper transition zone leading to a lush deepwater coral community. The invasive alien species (IAS) orange cup coral (*Tubastraea coccinea*) was present on all sides of the platform where it dominated the fouling community to a depth of 75 m and was present as deep as 120 m. At 200–305 m, the deepwater coral (*Lophelia pertusa*) was the dominant encrusting organism, where it formed dense thickets, particularly on the north and east sides at 255–300 m.

Based on the January surveys, each of these reef communities separated by a transition zone were associated with unique fish assemblages. At 0–30 m, planktivorous reef fishes – roughtongue bass (*Pronotogrammus martinicensis*), threadfin bass (*Hemanthias vivanus*), yellowtail reef fish (*Chromis enchrysurus*), sergeant majors

(*Abudefduf saxatilis*) and blue tang (*Acanthurus coeruleus*), jacks, snappers and sharks (primarily the silky shark (*Carcharhinus falciformis*) – were abundant. At 30–85 m, the community was similar to the surface zone, although with lower abundances. Invasive lionfish (*Pterois volitans*) were observed within this zone. From 85–160 m, fish diversity declined. Snowy grouper (*Epinephelus niveatus*) were only observed at this depth in January, while greater amberjacks (*Seriola dumerili*) and almaco jacks (*S. rivoliana*) were abundant in this zone. In the two deepest strata (160–225 m and 225–305 m), the fish community was dominated by American barrelfish (*Hyperoglyphe perciformis*), greater amberjacks (*S. dumerili*), American congers (*Conger oceanicus*) and small unidentified schooling pelagics.

The September surveys provided a more comprehensive picture of the community within the deepest stratum (260–305 m).²⁶ The dense *L. pertusa* coral community contains an abundance of large and small fishes, many of which are commercially or recreationally important. Moreover, the biological community around *Lena* is starkly different from the organisms found on the surrounding soft-bottom habitat only a few kilometres distant. A variety of large fish species occur within and adjacent to *Lena* from 260 m to the bottom. These include: American barrelfish, greater amberjack, snowy grouper, misty grouper, Darwin's slimehead and American conger.

As one moves away from *Lena*, the substrate rapidly changes from a complex hard-bottom reef to soft sediments. At a distance of 2–3 km in waters of similar depths, the fish community is dramatically different, orders of magnitude lower in abundance, consisting of far fewer species and dominated by eels (primarily the large and aggressive king snake eel) and small scorpaenid fishes.

24 See Sommer et al. (2019)

25 Bureau of Safety and Environmental Enforcement (n.d.). World's First Cable-Stabilized Platform Becomes Tallest Structure to be Converted to Artificial Reef in the Gulf of Mexico. BSEE [website]. <https://www.bsee.gov/newsroom/latest-news/statements-and-releases/press-releases/worlds-first-cable-stabilized-platform>

26 Benfield, M. C., Kupchik, M. J., Palandro, D. A., Dupont, J. M., Blake, J. A., Winchell, P. (2019), Documenting deepwater habitat utilisation by fishes and invertebrates associated with *Lophelia pertusa* on a petroleum platform on the outer continental shelf of the Gulf of Mexico using a remotely operated vehicle. *Deep Sea Research Part I: Oceanographic Research Papers*, 149, 103045. <https://doi.org/10.1016/j.dsr.2019.05.005>

These survey results suggest that *Lena* provided a critical habitat for deepwater corals, such as *Lophelia pertusa*, and a variety of fish species, such as snowy grouper, misty grouper, greater amberjack, American barrellfish and other species of ecological and recreational/commercial fishery importance. The benefits of horizontal reefing in place for *Lena* were defined as:

- > Conservation of existing, and creation of new *Lophelia pertusa* habitat;
- > Maintenance of population connectivity between pockets of hard-bottom reef in a largely soft-bottom region;

- > Preservation of habitat for snowy and other deepwater groupers;
- > Expansion of recreational angling opportunities for deepwater fishes; and
- > Removal of invasive alien species (for example, orange cup coral and lionfish).

The survey results were shared with the Louisiana Artificial Reefing Council in March 2015,²⁷ who were supportive of the decommissioning option of horizontally reefing *Lena* in place. On 3 July 2020, *Lena* was reefed in place to create the tallest oil and gas platform to become a deepwater reef.

27 Louisiana Department of Wildlife and Fisheries (n.d.). Artificial Reef Council. March 2015 Meeting Minutes Draft. LDWF [website]. https://www.wlf.louisiana.gov/assets/Resources/Publications/Artificial_Reef_Council/2015/artificial_reef_council_minutes_3_10_15.pdf

Supporting Protected area support: Kitaskino Nuwenënë Wildland Park, Canada

Imperial Oil Limited²⁸ is a Canadian-based integrated energy company that explores for, produces, refines and markets products essential to society. Imperial's majority shareholder is ExxonMobil. Imperial is Canada's largest refiner of petroleum products, with two major upstream operations and several undeveloped oil sands mineral leases in the oil sands region of northeastern Alberta, Canada in the boreal forest and on the traditional lands of several Indigenous communities. Land-use and biodiversity are carefully considered in all aspects of Imperial's operations from new development planning to ongoing operations and reclamation. Imperial strives to establish meaningful relationships with Indigenous communities that are built on mutual trust, respect and shared prosperity.²⁹

In 2006, Imperial and ExxonMobil Canada acquired the 9,300 ha, or approximately 23,000 acres, Marguerite oil sands lease in northeastern

Alberta. After determining that Marguerite had limited resource value, a cross-functional team was pulled together in 2017 to assess creative opportunities for the lease. To better understand the biodiversity and cultural significance of the area surrounding the lease, local, national and international knowledge was gathered including:

- > The Marguerite lease is located in the proximity of two established protected areas: the Wood Buffalo National Park (WBNP) and the Marguerite River Wildland Provincial Park. The Marguerite lease is located 40 km southeast of WBNP, which was established in 1922, expanded in 1926 and became Canada's eighth UNESCO World Heritage Site in 1983. It is less than 5 km from the Marguerite River Wildland Provincial Park. WBNP is Canada's largest national park, encompassing 4.5 million ha of forests, wetlands and grasslands.

28 Corporate Separateness Notice: Nothing in this material is intended to override the corporate separateness of individual corporate entities. The terms "company," "companies," "affiliate," "our," "we" and "its" as used in this material may refer to Imperial and the ExxonMobil companies in Canada, and their subsidiaries, affiliates and partnerships. The shorter terms are used merely for convenience and simplicity.

29 Imperial Oil Limited (2021). Sustainability Report 2021. Alberta, Canada: Imperial Oil Limited. https://www.imperialoil.ca/-/media/Imperial/Files/Publications-and-reports/IMP-0020-Sustainability-Report_final_web_March-29.pdf

It protects the largest-free roaming, self-regulating wood bison herd in the world, the nesting ground of the last remaining wild flock of endangered whooping cranes, the biologically rich Peace-Athabasca Delta (PAD), extensive salt plains unique in Canada and some of the finest examples of gypsum karst topography in North America.

- The Marguerite lease is located in the Richardson boreal caribou range and in a protection zone that was identified by the Athabasca Chipewyan First Nations (ACFN) in their 2012 Stewardship Strategy³⁰ for woodland caribou, barren-ground caribou and wood bison. The boreal population of woodland caribou was listed as threatened in Canada's Species at Risk Act in 2003 and a federal Recovery Strategy³¹ was released in 2012, with a recovery goal of achieving self-sustaining local populations. Key components of Imperial's approach to caribou recovery have included restoration; tenure flexibility in caribou range (such as deferred drilling); lease relinquishment to support conservation opportunities; and innovation.
- In 2014, the Mikisew Cree First Nation (MCFN) submitted a petition to UNESCO to have WBNP listed as a World Heritage Site in Danger, leading subsequently to the 2016 Reactive Monitoring Mission (RMM). Key concerns expressed by the MCFN included declining waters in the Peace-Athabasca Delta, approval of the Site C dam in British Columbia and ongoing pressure from oil sands development south of WBNP. An Action Plan³² was subsequently developed by Parks Canada in 2018 to respond to the World Heritage Committee's 2017 decision

requesting Canada Develop an Action Plan be informed by the recommendations of IUCN World Heritage Centre RMM report. A key RMM recommendation was to put in place an effective buffer zone for WBNP.

- Canada's adoption of the 2020 Biodiversity Goals and Targets in 2015, which included Target 1: "By 2020, at least 17% of Canada's terrestrial areas and inland water and 10% of coastal and marine areas, are conserved through networks of protected areas and other effective area-based conservation measures." A pathway to Target 1 was designed to reflect renewed relationships that respect the rights, responsibilities, and priorities of Indigenous peoples. In 2017, Canada convened an Indigenous Circle of Experts (ICE) to advise how Indigenous Protected and Conserved Areas (IPCAs) could be realised and contribute toward achieving Canada Target 1 in the spirit and practice of reconciliation. The ICE report, *We Rise Together*,³³ was released in 2018.

The concept of a Biodiversity Stewardship Area south of WBNP was proposed by MCFN in 2016 to safeguard their way of life and address concerns raised in the UNESCO report on WBNP. In support of the Biodiversity Stewardship Area, Imperial, along with Teck and Cenovus, voluntarily relinquished their oil sands leases in 2018, leading to the establishment of the Kitaskino Nuwenëné Wildland Provincial Park in 2019.³⁴ The 161,880 ha park, which means 'our land' in Cree and Dene, is an area of high biodiversity potential that supports the ecological integrity of WBNP and promotes the long-term stewardship of areas and resources that are critical to the continuation of Indigenous rights and cultures.

30 Athabasca Chipewyan First Nation (2012). An ACFN stewardship strategy for thunzea, et'thén and dechen yághe ejere (woodland caribou, barren-ground caribou and wood bison). *Athabasca Chipewyan First Nation* [website]. https://albertawilderness.ca/wp-content/uploads/20120426_rp_acfn_caribou_stewardship_strategy.pdf

31 Government of Canada (n.d.). Species at Risk Public Registry, Recovery Strategies. *Government of Canada* [website]. <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/recovery-strategies.html>

32 Parks Canada (2019). Wood Buffalo National Park World Heritage Site Action Plan. PCWEB Azureedge. https://pcweb.azureedge.net/-/media/pn-np/nt/woodbuffalo/2021-changes/02_11-action-plan-PDFs/WoodBuffalo-WHS-Action-Plan_EN.pdf

33 The Indigenous Circle of Experts' Report and Recommendations (2018). *We Rise Together*. *Static1 Squarespace*. https://static1.squarespace.com/static/57e007452e69cf9a7af0a033/t/5ab94aca6d2a7338ecb1d05e/1522092766605/PA234-ICE_Report_2018_Mar_22_web.pdf

34 Alberta Parks (n.d.). Kitaskino Nuwenëné Wildland Provincial Park. *Alberta Parks* [website]. <https://albertaparks.ca/albertaparksca/about-parks/public-engagement/archives/kitaskino-nuwen%C3%ABn%C3%A9-wildland-provincial-park/>

It complements a number of other provincial and federal priorities and initiatives pertaining to boreal caribou (protects 200,000 acres, or approximately 80,000 ha, of critical habitat in two boreal caribou ranges), bison (protects 173,000 acres, or approximately 70,000 ha, of the Ronald Lake wood bison range), whooping crane and the Wood Buffalo National Park World Heritage Site Action Plan. Existing rights of Indigenous peoples are respected in all Wildland Provincial Parks, which remain open to hunting, trapping, fishing and other traditional use activities.

The Government of Alberta has committed to working closely with Indigenous communities to identify an approach to cooperatively manage the area. Objectives of that approach could include:

- > Co-development of a park-specific management plan; Maintaining and supporting Indigenous people's constitutionally protected rights and traditional-use activities;
- > Protecting and preserving known traditional use sites, cultural areas and historical resources;

- > Exploring economic opportunities for Indigenous peoples through employment with the Government of Alberta; and
- > Potential Indigenous Guardian Programme opportunities.

The 153,000 ha (approximately 378,000 acres) expansion³⁵ that was approved in 2022 further increases the connectivity between the national and provincial parks and adds to the largest area of protected boreal forest in the world – 17 million acres, or approximately 6.9 million ha. Although Imperial did not have any leases to contribute to this expansion, the company provided technical and mapping support to MCFN for their Phase 2 application to Canada's Nature Fund and discussions with government, letters of support for the expansion and ongoing socialisation of the benefits of the initiative with industry peers.

The establishment of this conservation area was made possible through the historic collaboration between Indigenous peoples, industry and government.

35 Government of Alberta (2022). Kitaskino Nuwenene Wildland Park Expansion Fact Sheet. Alberta, Canada. <https://www.alberta.ca/assets/documents/aep-kitaskino-nuwenene-wildland-park-expansion-engagement-factsheet.pdf>

Mississippi ecological restoration project

ExxonMobil actively looks at opportunities to integrate ecologically appropriate land management techniques to support the soil, water, plants and animals associated with a site. Opportunities to implement these practices are diverse, and can range from planting native plant species to enhance biodiversity, to using green infrastructure for contaminant control, to planning a conservation end use of a property. The Mississippi Ecological Restoration project exemplifies our ongoing effort to integrate more natural land management practices into non-operating sites. The project highlights how we use these opportunities to collaborate on research to advance biodiversity monitoring and restoration efforts.

The project is located in Southern Mississippi, United States, at a site that encompasses over 250 (approximately 110 ha) acres of ponds, wetlands, forests and vegetated caps. The site received waste material from one of our operating facilities for a several years before going through a remediation process that included the installation of a vegetated cap, and has been managed under a post-closure permit for nearly 25 years. Vegetated caps are often used to help control erosion in these types of systems, and it is common for grass species that are hardy, easily managed and that form dense covers to be used as the foundation such as bermuda (*Cynodon dactylon*) and bahai (*Paspalum notatum*).



Prescribed burning conducted in early spring (left photo) and the same plot three months later (right photo)

Photos: B. Jaffe

However, these grasses do not provide the same biodiversity or ecosystems services that plants native to region provide. Since native plants can provide both erosion control³⁶ and more suitable wildlife habitat,³⁷ there has been renewed interest in finding more ecologically appropriate plants to serve as the foundation of remediation systems.³⁸ One of the challenges of transitioning to native plant species is that the existing vegetative cap cover must be reduced or removed. There are several approaches to accomplish this aspect, including: natural succession, over-seeding with native plants, prescribed burning, and herbicide application. Since 2021, in collaboration with the Mississippi state forestry commission, community stakeholders, subject matter experts from local universities and the Natural Resource Conservation Service, and in compliance with guidelines established by the Mississippi Department of Environmental Quality, a management plan was developed to test the effectiveness of various cover transition strategies to improve biodiversity while complying with regulatory requirements.

The land management strategies included in this project are:

- > Prescribed burn
- > Prescribed burn and native plant seeding
- > Prescribed burn, targeted herbicide application, and native plant seeding
- > Reduced mowing schemes

The plant coverage and species composition associated with each of these management strategies are being compared to each other and against originally managed plots. Although the restoration project is still in its early stages, the preliminary outcomes have been positive: we successfully completed a prescribed burning and demonstrated that erosion was not an issue with the management strategies (see photos above).

36 Armstrong, A., Christians, R., Hopwood, J., Kern, J., Kim, T., Kramer, A., Landis, T., Moore, L., Remley, D., Riley, L., Roberts, S., Steinfeld, D., Stella, K., Teuscher, T., White, A., Wilkinson, K. (2017). *Roadside Revegetation: An Integrated Approach to Establishing Native Plants and Pollinator Habitat*. Version 1.2 – September 2017. Washington, DC, USA: U.S. Department of Transportation, Federal Highway Administration. http://www.nativevegetation.org/learn/manual_2017/pdfs/wfl_v1-2_06262020.pdf

37 Harper, C. A., Morgan, G. D., & Dixon, C. E. (2004). Establishing Native Warm-season Brasses Using Conventional and No-till Technology with Various Applications of Plateau® Herbicide. In: *Proceedings Eastern Native Grass Symposium* (Vol. 3, pp. 63–70). <https://fwf.tennessee.edu/wp-content/uploads/sites/24/2020/07/Estab-NWSG-E-Native-Grass-Symp-2003.pdf>

38 US EPA (n.d.). *Revegetating Landfills and Waste Containment Areas Fact Sheet*. Washington, DC, USA: US EPA. https://www.epa.gov/sites/default/files/2015-08/documents/revegetating_fact_sheet.pdf

As we look to undertake more ecological restoration projects, we are interested in better understanding how these efforts impact local biodiversity. To this end, we are collaborating with a local university and a centre for genomic analysis of the environment to develop a biodiversity sampling strategy for monitoring biodiversity on the site. Previous research has shown that traces of plant and animal DNA can be collected from the soil and air and be used to characterise terrestrial diversity. Nonetheless, there is limited research assessing the consistency of the various sampling approaches relative to traditional methods, and in the context of restoration. Our goal is to broadly communicate the results of this study, in the hope of demonstrating the appropriate utility of these approaches for terrestrial biodiversity monitoring.

2.5 Solvay

Introduction

Solvay is a Belgium-based producer of chemicals, plastics and composites. The company has a top-three market position for nearly all its products. Key business segments include materials, chemicals and solutions. High-value products include aerospace composites and specialty polymers, while traditional chemical products include soda ash and hydrogen peroxide. Geographical exposure is relatively balanced, with Europe, North America and Asia each contributing a third of sales. The company was founded in 1862 and has 21,000 employees.

Progress is our integral force, triggered by bonding. Such fundamental ideas have always been purposely guiding Solvay's humanistic and scientific spirit. This provided the foundation on which Ernest Solvay initiated his unique Solvay conferences contributing to the birth of modern physics by bringing together the brightest minds of all time. Furthermore, other disciplines made spectacular progress thanks to his scientific institutes. In chemistry, bonding is what continuously happens when elements connect into molecules, shaping the world we experience every day. Ultimately, people can bond with other people's ideas to share common goals and their collective energy can change the future.

We are a science company, whose technologies bring benefits to many aspects of daily life. The Group's innovative solutions contribute to safer, cleaner and more sustainable products found in homes, food and consumer goods, planes, cars, batteries, smart devices, health care applications, water and air purification systems. We seek to create sustainable shared value for all through our One Planet programme, an initiative crafted around three pillars: protecting the climate, preserving resources and fostering better life.

At Solvay, we believe that finding solutions to humanity's biggest challenges requires scientific breakthroughs that protect our heritage for generations to come. Today, we are using our expertise to help solve some of the world's most pressing issues. Solvay One Planet turns our ambition into concrete actions. It ensures that we focus our efforts on the areas where our innovation and sustainable solutions can have the biggest positive impact, directly and indirectly, in line with the UN SDGs.

Structured around the three major categories – climate, resources and better life – Solvay One Planet is our roadmap towards a sustainable future that provides shared value for all. Underpinned by our Purpose and G.R.O.W. strategy, our sustainability agenda is brought to life by a set of clearly defined programmes and actions. These are organised around 10 key goals and put into practice through a set of concrete actions and projects.

Through Solvay One Planet, we put our expertise at the service of the one planet we share, and pledge to curb our emissions worldwide. To protect the climate and biodiversity, we aim to reduce the environmental impact of our operations at planetary scale by 2030. We will reduce CO₂ emissions worldwide by working closely with our suppliers and customers to find sustainable solutions aligned with global trends. Today, our Sustainable Portfolio Management tool assesses that €1.6 billion of our sales come from solutions that reduce our customers' overall climate impact.

At Solvay, we have developed a way to analyse our impact on biodiversity and have performed product life cycle and eco profile assessments. Our focus is on the pressure our operations and supply chain place on biodiversity: GHG emissions, freshwater eutrophication, marine ecotoxicity and soil acidification represent 90% of our emissions, as well as effluents which also have the potential to affect biodiversity. As part of Solvay ONE Planet, we have committed to reducing

our pressure on biodiversity by 30% in these areas by 2030. We were one of just 30 companies recognised in 2020 by Act4Nature International for our forward-looking approach in support of biodiversity.

A 'sustainable solution' at Solvay is defined as a product that makes a higher social and environmental contribution to our customers' performance, while also having a lower environmental impact. We assess the sustainability profile of all our products, from innovation to end of life, using our Sustainable Portfolio Management (SPM) methodology. This is audited externally and has been recognised by the Harvard Business School. The purpose of the tool is to guide business decisions, ensuring that we always keep sustainability in mind. Our 10-year portfolio evolution towards more sustainable solutions, aligned with key growth drivers, has already demonstrated higher growth potential, and we expect this trend to continue. We strive to develop new sustainable solutions to meet the needs of our customers, but of society in general. Today, €3.2 billion of our sales come from solutions that reduce global resource consumption. By 2030, we will ensure that at least 65% of our revenue come from sustainable solutions.

Solvay Case study 1

Conserving nature in an industrial site in São Paulo, Brazil

One might not associate a thriving tropical environment full of wildlife with the presence of a functioning chemical complex. Yet in Paulínia (see photo below), a Solvay site located about 100 km north of São Paulo, that is precisely the type of cohabitation happening – and successfully so. The Paulínia industrial site is covered with



Paulínia site

Source: Solvay Image Database

typical Atlantic Forest vegetation, planted with thousands of trees and crossed by the Atibaia and Ribeirão Anhumas Rivers. Though it comprises 27 chemical factories in full operation, the area is populated with a rich wildlife of birds, fish,

capibaras, jaguars, snakes and other animals. This is because only 15% of its 16 million m² are occupied by buildings and industrial facilities, including the roads that serve them.

So successful is the site in maintaining biodiversity that in 2021 it was awarded a Gold Certificate by the Wildlife Habitat Council (WHC), an international organisation promoting biodiversity conservation practices in the private

sector (more information here). Due to its good sustainability practices, Paulínia was chosen by the head office to be one of the first Solvay industrial parks to undergo the scrutiny of WHC auditors, and it ended up being the first in the Group to obtain certification. In Brazil, few companies have been awarded this honour.

During the WHC certification process, an inventory of the local fauna and flora was carried out: it identified 83 species of birds, mammals, fish, amphibians and reptiles. Part of these findings came from images captured by security cameras that recorded the transit of these 'site residents'. As for the flora, over 90 plant species were catalogued. Some interesting findings emerged: the site is a shelter for the maned wolf, an endangered species, and is the habitat for the puma, the second largest feline in the Americas.

Last year's report's from a biological monitoring survey conducted in 2022 recorded 254 fauna species, five of them are endangered species: maned wolf, mountain lion (puma), jaguarundi (gato-mourisco), otter (lontra) and anteater (tamanduá-bandeira).³⁹

³⁹ For more information on the Paulínia Site Biodiversity Biodiversity Conservation Program, please see: https://www.youtube.com/watch?v=XNt_R7uGwuE



Socozinho (*Butorides striatus*)



Falcão-de-coleira (*Falco femoralis*)



Japacanim (*Donacobius atricapilla*)



Cachorro do mato (*Cerdocyon thous*)



Capivara (*Hydrochoerus hydrochaeris*)



Onça parda (*Puma concolor*)

Photos: Solvay Image Database (by Maurício Forlani & Fernando Igor de Godoy Pires da Silva, biologists hired by Solvay). All photos were taken in 2022.

Solvay Case study 2

Protection of ecosystems and industrial activity in Rosignano (Tuscany, Italy)

Built by Solvay in Rosignano, Livorno, between 1958 and 1960, the Santa Luce Lake Nature Reserve, aims to optimise the consumption of water resources and to favour the use of surface water over other sources. The lake provides a freshwater reserve used in industrial processes in the nearby Rosignano plant. In 1992, the Santa Luce Lake, still owned by Solvay, initially became a BirdLife International Italy40 Oasis, following an agreement with BirdLife International Italy and subsequently, thanks to agreements with the Province of Pisa, it became a nature reserve within the Natura 2000 network. Solvay and LIPU have been collaborating for over 30 years for environmental and natural habitats protection, together with local authorities.

Sustainability, environment, water resources and biodiversity are the key words of the project. For almost 30 years since it started, the management of this nature reserve has now resulted in the its transformation into a treasure trove of biodiversity, where there are over 2,000 different animal and plant species. Santa Luce Lake is a place of choice for numerous species of water



Santa Luce Lake in 2018

Source: Solvay Image Database

birds – it is an important migratory route site and a strategic node in the ecological network of the territory. The context has the characteristics and potential that make it a site of great importance in the system of provincial and regional protected areas in terms of biodiversity, and of receptive and functional capacity for wide-ranging environmental education.

The Santa Luce Lake Nature Reserve is today a modern protected area, where nature

40 Lega Italiana Protezione Uccelli (LIPU)

conservation activities are integrated with those of environmental education and awareness of local community, promotion and enhancement of the territory. As an important place for the protection of birds and biodiversity, it has a significant contribution to environments, animal and plant species in a national and European context. Finally, it is a pole recognised by the local school system, a qualified place to start and promote compatible forms of naturalistic education, tourism and collaborations with the local realities of the territory.

At the same time, there is a societal challenge linked to the nature reserve: water supply for

industrial activities. The total water intake from the lake for the industrial site was 1.6 mm³ in 2021. Due to climate change and the natural evolution of the lake, the volume of the water became increasingly a point of attention and, consequently, a constantly monitored parameter in agreement with the regional authorities. Since there are some periods in the year when water intake is no longer possible and the production programmes of the industrial site have to be adapted, finding the right balance between securing a water reserve for the plant and preserving the biodiversity in the nature reserve in the context of climate change is the main challenge for this protected area.



Santa Luce Lake in 2022

Source: © Solvay

Solvay Case study 3

Restoration of a quarry in Torrelavega, Spain

Limestone is one of the raw materials used to produce soda ash. This raw material is widely present in the Cantabrian Region of northern Spain. The usual extraction process is by open pit mining. Thus, the quarry of Cuchía, in operation from 1927 to 2006, was the source of limestone to Torrelavega soda ash factory during this period of time. The flora in the coast of Cantabria, including the original vegetation of the 100 ha of the quarry, is typical of the Atlantic coast landscape with meadows and Cantabria holm oak forests.

At the end of life of a mine, Spanish legislation requires the implementation of measures in order to minimise the visual impact and secure the site. Solvay decided to go beyond the requirements and define a more ambitious and comprehensive project than the restoration plan requested by law. The initial restoration project was presented and

approved by the mining authority in 1988. At this stage, in addition to the regulatory requirements, complementary actions were defined, such as: re-vegetation, plantation of 8,000 native trees, geomorphological remodelling and expansion of ponds and lagoons.

In 1995, as part of our engagement for sustainable development, we started the Ecological Recovery Plan. New goals were defined: get a better integration in the countryside and increase biodiversity in the area. At this stage, 12,000 native trees were planted and 146 species of birds were inventoried (Figure 3), in addition to 17 mammalian species, seven species of amphibians, five species of reptiles. Within the group of insects, the presence of 22 species of odonates stands out and an additional 210 plant species were registered.

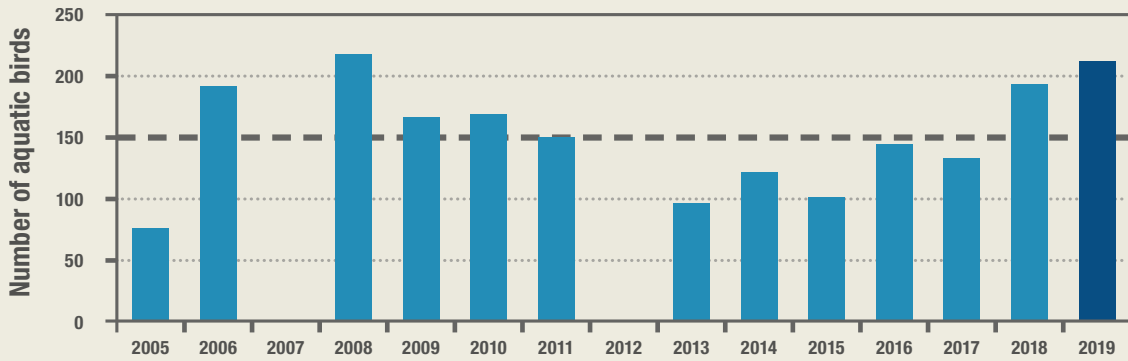


Figure 3 Recording of birds between 2005 and 2019

Source: © Solvay

At the initial stage, the efforts were concentrated on:

- > Geomorphological remodelling in the non-productive areas
- > Re-vegetation and replanting of the area with species originally present in the area.
- > Expansion of ponds and lagoons in order to create areas for reproduction of amphibians and other aquatic species.

In 2015, it was decided to go further and the plan was extended and elaborated in cooperation with Sociedad Española de Ornitología (Spanish Ornithology Society, or SEO BirdLife). Additional actions implemented were:

- > Removal of alien invasive exotic flora;
- > Replanting;
- > Actions to benefit specified native species (wild species, small raptors, bats, sand martin); and
- > Volunteer programmes, interpretative visits, establishment of a Virtual Biodiversity Point.

Another relevant milestone is the collaboration with other third parties, among them authorities and SEO BirdLife, in the framework of LIFE⁴¹ Project of the European Union, in particular in the LIFE Stop Cortaderia project focused on the elimination of invasive species.⁴²

This project is completely consistent with Solvay's Sustainability Plan, Solvay ONE Planet, specifically with one of the objectives linked to climate: "Reduction of pressure on biodiversity".⁴³ In line with our Corporate Social Responsibility Policy, and with the aim of sharing the natural values of the restored quarry and all the work done so far, we are organising interpretative visits with the community.

It is worth highlighting different actions carried out in collaboration with the University of Cantabria, schoolchildren from schools near our site and radio programs, among others. At one of Solvay's 'Citizen Days' celebration, which took place in Cuchía, several workers of the Solvay Torrelavega plant voluntarily planted more than 250 native trees, built and placed several bird nest boxes. This activity was organised jointly with SEO BirdLife, with the participation of more than a hundred school students.

Nowadays, the full recovery of the former anthropogenic area is a reality and it has become a paradise for birds, thanks to the actions driven by Solvay in partnership with SEO BirdLife. It has become a nice area to visit, fully integrated in the countryside, where visitors and neighbours can enjoy co-living in an enriched ecosystem.

41 For more information about the LIFE project, please see: https://cinea.ec.europa.eu/system/files/2021-02/bringing_nature_back_through_life_brochure.pdf

42 Stop Cortaderia (n.d.). *Stop Cortaderia* [website]. <http://stopcortaderia.org/language/en/stop-cortaderia-en/>

43 Solvay (n.d.). Part of the Solution. Biodiversity Day Activity [Solvay's LinkedIn post]. https://www.linkedin.com/posts/solvay_partofthesolution-biodiversityday-activity-6801899450655612928-DLZM

2.6 Newmont biodiversity management – An overview

Newmont is the world’s leading gold company and a producer of copper, silver, zinc and lead. Founded in 1921, Newmont is the only gold producer listed in the S&P 500 Index and is widely recognised for its principled environmental, social and governance (ESG) practices.

Newmont is an industry leader in value creation, supported by robust safety standards, superior execution and technical expertise. Approximately 14,400 employees and 16,600 contractors work on Newmont’s behalf in favourable mining jurisdictions in North America, South America, Africa, and Australia. Among our 12 operating mines and two joint ventures, more than 90% of our attributable gold production comes from top-tier jurisdictions.



¹ As of December 2021. See [cautionary statement](#).

² Yanacocha Sulphides, Pamour and Cerro Negro District Expansions 1 projects are included in Newmont’s outlook but remain subject to approval.

³ Newmont holds a 38.5 percent ownership interest.

⁴ Newmont holds a 40 percent ownership interest.

Figure 4 Newmont’s assets

Source: Newmont (2021, p. 16)

Underpinning our portfolio is a robust foundation of reserves and resources, and an industry-leading project pipeline to sustain production for decades to come (Figure 4). These assets are managed through our integrated operating model, which has a deep bench of experienced leaders with a proven track record of delivering value. In 2021, Newmont continued to operate from a position of strength, delivering strong operational, financial and ESG performance. As we move into our next 100 years of sustainable and responsible mining, Newmont will continue to create long-term value for all our stakeholders and differentiate ourselves through our clear strategic focus, superior operational performance, and unwavering commitment to leading ESG practices.

Biodiversity management

Biological diversity sustains and stabilises ecosystems, while declines in biodiversity threaten the environment, livelihoods and societies. International cooperation related to the conservation and sustainable use of biodiversity is a growing area of interest for stakeholders. We recognise that our activities have the potential to impact natural habitats and ecosystems in significant ways.

Through responsible management during all aspects of the mine lifecycle and collaborating with stakeholders to develop integrated approaches to land use, we aim to minimise impacts and effectively rehabilitate impacted areas.

Newmont's commitment for biodiversity management is to achieve NNL of Key Biodiversity Values (KBVs) impacted by our activities. Our Biodiversity Management Standard sets the minimum requirements for the management of biodiversity at Newmont's owned, operated and/or managed operations and lands to ensure a consistent approach to biodiversity conservation and sustainable stewardship of resources. As a member of the International Council on Mining and Metals (ICMM), we also commit to the organisation's Mining and Protected Areas position statement in which we agree to respect legally designated protected areas and to not explore or mine in World Heritage sites.

Key biodiversity values, impacts and mitigations

Biodiversity management and performance are the responsibility of the Sustainability and External Relations function at each site. At the corporate level, the Global Environmental Director works with and through the four Regional Environmental Performance Directors to ensure sites comply with the Biodiversity Management Standard and achieve the performance objectives stated in site-specific Biodiversity Management Plans. Conformance to the standard, performance metrics and progress on action plan implementation is reported monthly to executive leadership and regularly to the Board of Director's Safety and Sustainability Committee. The Global Environmental Director facilitates collaboration across sites to promote continuous improvement and leading practices, integrate efforts with business planning, and support Newmont's commitments to conservation and biodiversity.

All operating sites must conduct biodiversity and ecosystem impact assessments to determine potential impacts. If a site identifies a KBV, it must develop a biodiversity action plan to achieve site-specific biodiversity objectives that will:

- Seek to avoid and/or minimise impacts to KBVs – Where avoidance and/or minimisation are not sufficient, seek to develop mitigating biodiversity offsets, rehabilitation and/or restoration actions to achieve conservation outcomes.
- Drive engagement with stakeholders – Identify appropriate offsets and develop partnerships that will contribute to improved sustainable long-term biodiversity and land management.
- Integrate long-term goals and measurable targets – Incorporate into the completion criteria developed for the mine closure plan. Many of our operations have KBVs within the relevant area of influence and a biodiversity action plan to mitigate potential impacts.

Currently, four mine sites – Akyem, Boddington, Yanacocha and Merian – require a biodiversity offset to achieve NNL to KBVs. These sites also have regulatory requirements for offsets included in permits.

Each biodiversity action plan includes site-specific objectives that meet specific requirements, as described in Table 1.

All sites have biodiversity management plans to support the monitoring of KBVs. Sites monitor KBVs to evaluate changes resulting from both internal and external factors and to demonstrate progress toward meeting site-specific objectives. Quantitative and qualitative performance data are presented in Newmont's Annual Sustainability Report. We are currently expanding a tracking system to improve the measurement of progress toward NNL at all sites. In 2021, biodiversity offset funding were incorporated into site closure cost estimates to ensure legally required biodiversity offsets were adequately funded.

PROJECT TYPE	REQUIREMENT
Exploration	Develop an understanding of KBVs via desktop and on-the-ground assessments before any ground-disturbing activities to ensure NNL of KBVs.
New projects/expansions	NNL of KBVs as a result of mine-related activities or a Net Gain, when possible, within 10 years post-mine closure
Operations	No additional loss of KBVs as a result of mine related activities by the time of mine closure.
Legacy sites	Seek to enhance the long-term health and resiliency of species and ecosystems in affected areas and/or managed areas in accordance with regional conservation goals and long-term land-use plans.

Table 1 Project types with corresponding biodiversity requirements

Notes:

* Baseline start date is 2016 for the following sites: Yanacocha, Boddington, Tanami, Ahafo, Akyem and Merian; and 2020 for the following sites: Cerro Negro, Penasquito, Porcupine, Eleonore and Musselwhite. Further information is available in the Newmont Standard for Biodiversity Management.

Partnerships and collaboration

Partnerships with universities and research organisations, as well as NGOs, governments, communities and other businesses, are key to improving our biodiversity performance and aligning with SDG 17 to strengthen global partnerships.

We are active members of the ICMM's Biodiversity Steering Committee and the Cross-Sector Biodiversity Initiative, which is a unique collaboration among the mining, oil and gas and banking sectors to develop and share best practices in biodiversity and ecosystem services.

In 2018, we formed a partnership with the IUCN, an organisation composed of both government and civil society organisations supporting conservation and sustainable use of natural resources, to identify additional ways we can achieve NNL for biodiversity, and net gains, where possible. IUCN and Newmont are exploring our onsite and operational management systems, as well as our activities related to mitigation, rehabilitation, restoration and offsets, to ensure better biodiversity outcomes. Under the partnership, IUCN and its experts conduct independent reviews at select mine sites using IUCN Biodiversity Net Gain Protocol. Between 2018 and 2021, IUCN completed reviews at our mine sites in Nevada, USA (specifically on the sage grouse conservation work) and the Boddington operation (looking at the Hotham Farm offset) in Australia. Reports for both reviews were completed, and recommendations were provided to the sites with summaries posted on IUCN's website. In 2022, IUCN completed a technical review for the Akyem (Ghana) offset as well as supported the development of integrated targets that include biodiversity.

The Akyem offset review included an examination of the offset objectives, the ability to meet NNL requirements, stakeholder engagement and alignment with the proposed Ghanaian National Biodiversity Policy (which is currently being finalised). The final summary report was presented during COP-15 in Montreal and published externally in early 2023.⁴⁴

44 IUCN (2023). *Promoting Biodiversity Net Gain in the Eastern Region of Ghana. Lessons and recommendations for the future*. Gland, Switzerland: IUCN. <https://iucn.org/resources/file/promoting-biodiversity-net-gain-eastern-region-ghana>

Notable activities that contribute toward Newmont's commitment to No Net Loss at sites that impact Key Biodiversity Values

Akyem Mine site

We have a memorandum of understanding (MoU) with the Forestry Commission (FC) for a biodiversity offset programme at the Atewa South Extension Forest Reserve (ASEFR). This programme aims to mitigate impacts to KBVs created by the mine's operations in the Ajenjua Bepo Forest Reserve, and the FC has allocated 2,640 ha in the reserve. A steering committee, involving the FC, US Environmental Protection Agency, Minerals Commission and IUCN, oversees the biodiversity offset work activities. In 2021, we advanced pre-feasibility studies on biodiversity offset calculations, vegetation mapping and the biological and socio-economic baseline studies. A validation workshop was held in June. An options evaluation was completed with a single option identified to move forward with management and rehabilitation and progress the project toward feasibility during 2022. In July 2022, IUCN conducted an independent technical review against their Biodiversity Net Gain Protocol and provided recommendations for improvement that are currently being reviewed before publication.

Boddington Mine site

At the Hotham Farm, we conducted planning for activities in support of the Management Guideline of the Conservation Covenant. These activities will include rehabilitation of a gravel borrow pit and installation of black cockatoo artificial hollows for breeding. This work was executed in 2022 along with planning for additional management measures. A monitoring programme of the restoration completed to date identified the need for additional infill planting. Planning was completed for this work, and implementation commenced in 2022.

In 2021, Newmont, South 32 and Alcoa formed the Southwest Biodiversity Partnership, which is aimed at mitigating cumulative biodiversity impacts across the southwest area of Western Australia. The partnership will promote the inclusion of Traditional owners in land management activities that will initially target pest management (feral cats). Our ongoing relationship with the Peel Harvey Catchment Council is continuing with the development of a Hotham and Williams River Action Plan. This plan identifies priority actions and projects to protect and improve the river ecosystem's health and function across eight key locations within the catchment. Implementation and other activities are ongoing.

Yanacocha

A review of the Biodiversity Action Plan commenced to ensure it was current and to validate the effectiveness of the actions to mitigate impact through an analysis of the monitoring completed to date. This review was completed by a third party and included whether additional controls are required for the Yanacocha Sulfides Project. A site visit is planned to field verify the action plan; specifically, the ongoing work in the reclamation areas to enhance habitat characteristics for the frog species.

Further detail on the KBVs, mitigation plan and partnership and collaboration can be found in the Annual Sustainability Report⁴⁵ and in Table 2.

⁴⁵ Newmont (2021). *Leading Change. Focused on Value.* 2021 Sustainability Report. https://s24.q4cdn.com/382246808/files/doc_downloads/sustainability/2021-report/newmont-2021-sustainability-report.pdf

Table 2 Newmont – Overview of key biodiversity values, mitigation plans and partnerships

SITE ^{1,2,3}	KEY BIODIVERSITY VALUES (KBVS)	MITIGATION ACTIONS	PARTNERSHIPS	MULTIPLE BENEFITS
<p>Akyem (Ghana)</p>	<p>Impacts to Ajenjua Bepo Forest Reserve and Cola boxiana (endangered) and Necrosyrtes monachus (critically endangered) species.</p>	<p>Completing pre-feasibility studies for Akyem offset. The team has advanced work on the following:</p> <ul style="list-style-type: none"> > Ground truthing for vegetation mapping completed to develop unsupervised vegetation map. > Completion of a supervised vegetation map for ASEFR and buffer area > Completion of socio-economic and biological surveys on activities at the ASEFR. > Completion of Baseline studies on fauna and flora to characterise the conditions of the ASEFR. > Validation workshop for baseline studies held with all key stakeholders. > Established Technical and Steering Committees to govern the offset project. > Options Analysis and selection to achieve a 'No Net Loss' (NNL) target of 360 QH (Direct, indirect and rehabilitation). 	<ul style="list-style-type: none"> > Partnering with Conservation Alliance to implement critical species management programme and established nurseries to support closure activities. > Have established a Steering Committee with IUCN, Forest Service, EPA and Newmont to review strategy, progress and support long-term management of the offset. 	<ul style="list-style-type: none"> > There is a significant amount of degradation of forests in Ghana. The concession for mining, forestry, and agricultural industry as well as the Galamsey (illegal small-scale mining) has resulted in impacts to forested habitat, reserves, and protected areas. Newmont identified multiple areas to evaluate and moved forward with an extension of the Atewa Reserve to the South. The Atewa Reserve is currently a protected area that is managed by multiple organisations. Extending the reserve to the south allows for increased rehabilitation of forested area, support for ecotourism, increased biodiversity, and long-term management. > There is no current framework for management of biodiversity offsets in Ghana. As part of this project, we worked with Conservation Alliance to provide insight into the developing frameworks to support offsets including governance and performance. <p>A key driver of offset project success will be partnering with local communities to understand their use of the offset area and how those can co-exist with ecological improvement and protection work.</p>

Table 2 continued

SITE ^{1,2,3}	KEY BIODIVERSITY VALUES (KBVS)	MITIGATION ACTIONS	PARTNERSHIPS	MULTIPLE BENEFITS
<p>Yanacocha (Peru)</p>	<p>Tropical Andes (biodiversity hotspot as defined by Conservation International) including forest habitat and habitat for Paramo Andes frog (<i>Pristimantis simonsii</i>), (Critically endangered).</p>	<p>Yanacocha has been implementing a series of biodiversity mitigation measures such as restoration of natural habitat, replanting of <i>Polylepis</i> trees, and addition of habitat features and characteristics to reclaimed areas that will attract threatened amphibians. This will result in NNL.</p>	<ul style="list-style-type: none"> > Collaborating with an external consultant to review the progress to date (including any available monitoring data) and provide a written critique of the effectiveness of these activities in a short report. This will include an evaluation of how well the actions taken to date are offsetting the biodiversity loss, how progress is measured, and the timeline for achieving NNL. > Have worked with multiple universities to understand habitat, planting techniques, and objectives. > Through studies into the Paramo Andes frog distribution, the university was able to document that the range extent of the species is much wider than previously understood and as a result, the threat level on IUCN Red List of Threatened Species[©] was downgraded. The frog remains a protected species under Peruvian law. 	<p>By combining the offset with our concurrent reclamation, there are benefits to our closure programme through reducing long-term liability and enhancing the ecology in the area. This provides erosion and sediment controls across the site and improvements to downstream water quality. The work has involved local suppliers and institutions with the creation of employment opportunities and knowledge development.</p>

Table 2 continued

SITE ^{1,2,3}	KEY BIODIVERSITY VALUES (KBVS)	MITIGATION ACTIONS	PARTNERSHIPS	MULTIPLE BENEFITS
<p>Boddington (Western Australia)</p>	<p>Woodland and shrubland habitat for Carnaby's cockatoo (<i>Calyptorhynchus latirostris</i>) (Endangered), Baudin's cockatoo (<i>Calyptorhynchus baudinii</i>) (Endangered) and Brush-tailed betton (<i>Bettongia penicillate</i>) (Critically endangered)</p>	<ul style="list-style-type: none"> > Established 192-hectare Hotham Farm Conservation Covenant areas over remnant Jarrah Forest > Committed to restoring and improving 470 ha of Hotham Farm > Six management plans that have implications for biodiversity management and conservation at the site and in the broader region. These are: <ul style="list-style-type: none"> – Weed & Disease Monitoring and Management Plan – Ground Water Dependent Vegetation Monitoring Plan – Black Cockatoo Management Plan – Terrestrial Fauna Management Plan Land Offset Plan (along with draft NBG Revised Offset Strategy) – Closure Plan 	<ul style="list-style-type: none"> > Founding partner of SW Biodiversity Partnership to work collaboratively with neighboring mine sites on pest and land management. > Partnering with Peel Harvey Catchment Council on River Action Plan to improve ecosystem health and function. > Working with Murdoch University to support understanding of habitat and migration for black cockatoo. > Support from consulting organisations on the management of the conservation covenant, performance, and management of dieback. 	<ul style="list-style-type: none"> > Stewards of around 30,000 ha of land, of which a significant percentage (approximately 10,000 ha) is high-quality Jarrah Forest that provides habitat for five threatened fauna species, including two small mammals (Chuditch and Woylie) highly vulnerable to the impact of introduced predators (foxes and cats), and many other native fauna. Feral predator control is a critical component of rehabilitation and revegetation strategies. > Has been recommended to establish (potentially with Department of Biodiversity, Conservation and Attractions (DBCA) and Peel-Harvey Catchment Council (PHCC) a systematic approach for feral animal control across the Project's area of nfluence, coordinated with surrounding landscape efforts. > Also been recommended to establish a fenced, free-ranging wildlife sanctuary at the mine site, potentially incorporating the Hotham Farm restoration area. Consultation with the Woylie, Chuditch and Numbat Recovery Teams would be an important early step. (The Northern Jarrah Forests are part of the Numbat's historic range, although it would need to be determined whether local conditions provided suitable Numbat habitat).

Table 2 continued

SITE ^{1,2,3}	KEY BIODIVERSITY VALUES (KBVS)	MITIGATION ACTIONS	PARTNERSHIPS	MULTIPLE BENEFITS
<p>Merian (Suriname)</p>	<p>Upland and lowland ever-humid forest habitat including tree species <i>Virola surinamensis</i> (baboonwood) (Endangered) and <i>Vauacapoua americana</i> (bruinhart) (Critically endangered)</p>	<ul style="list-style-type: none"> > Implemented a process to avoid and minimise vegetation disturbance and unnecessary impacts to natural habitats. > Creating an offset to compensate for biodiversity impacts and completed a pilot for the reforestation of land impacted by artisanal small-scale mining (ASM) with Merian's 	<p>Completed test plot areas and worked to understand vegetation, currently collaborating with external consultant on establishing objectives based on the outcomes of these evaluations to be used to support rehabilitation activities in the future.</p>	<p>ASM is a large-scale issue in Suriname with limited regulatory oversight. The establishment of a rehabilitation programme and technique will be shared on a larger scale with other organisations as well as with the regulatory agencies to enhance future activities and share lessons learned to improve performance. The rehabilitation has an impact on biodiversity (habitat and species), water quality – improved hydrologic condition for the reestablished waterways.</p> <p>The work has involved local suppliers and institutions with the creation of employment opportunities and knowledge development.</p>

Notes:

¹ This only includes sites where KBVs will need to be managed through additional actions to meet our NNL commitment. All the sites identify KBVs, develop risk assessments and have biodiversity management plans.

² Tanami is also completing risk management and impact mitigation strategies through the NTO Biodiversity and Land Management Plan and maintenance through Biodiversity Risk Assessment Tool and are detailed in the operational Mining Management Plan.

³ There are some regulatory-based requirements for offsets of wetlands at Eleonore and future projects expansions may result in requirements for offsets at Musselwhite, Porcupine, Penasquito and Akyem

2.7 Shell

Shell plc⁴⁶ is an international energy company with expertise in the exploration, production, refining and marketing of oil and natural gas, and the manufacturing and marketing of chemicals.

We use advanced technologies and take an innovative approach to help build a sustainable energy future.

We also invest in power, including from low-carbon sources, such as wind and solar, and new fuels for transport such as advanced biofuels and hydrogen.

We aim to meet the world's growing need for more and cleaner energy solutions in ways that are economically, environmentally, and socially responsible.

Powering Progress is our strategy to accelerate the transition of our business to net-zero emissions, purposefully and profitably. Launched in 2021, Powering Progress, has four main goals in support of our purpose – to power progress together by providing more and cleaner energy solutions:

- 1) Generating shareholder value: growing value through a dynamic portfolio and disciplined capital allocation;
- 2) Achieving net-zero emissions working with our customers and across sectors to accelerate the transition to net-zero emissions;
- 3) Powering lives: powering lives through our products and activities, and by supporting an inclusive society; and
- 4) Respecting nature: protecting the environment, reducing waste, and making a positive contribution to biodiversity.

Shell's biodiversity commitment

For many years, Shell has had guiding principles and standards that seek to protect the environment. In 2003, Shell made an industry-leading commitment not to explore for, or develop, oil and gas resources in, natural and mixed World Heritage Sites.

In 2021, as part of its Powering Progress strategy, Shell launched Respecting Nature, a goal which sets out the company's environmental ambitions around biodiversity, water, circular economy and waste and air quality. Respecting Nature steps up our approach to managing the impacts of our operations on the environment.

We have adopted an ambition to have a positive impact on biodiversity. This involves three new commitments:

- 1) From 2021, our new projects in areas rich in biodiversity – critical habitats⁴⁷ – will have a net-positive impact on biodiversity.
- 2) From 2021, our nature-based solutions projects, which protect, transform or restore land, will have a net-positive impact on biodiversity.
- 3) From 2022, we will replant forests, achieving net-zero deforestation from new activities, while maintaining biodiversity and conservation value.

⁴⁶ The companies in which Shell plc directly and indirectly owns investments are separate legal entities. In this report "Shell", "Shell Group" and "Group" are sometimes used for convenience where references are made to Shell plc and its subsidiaries in general.

⁴⁷ <https://www.shell.com/sustainability/environment/biodiversity.html>

We aim to minimise the impact of our projects on biodiversity and ecosystems by applying the mitigation hierarchy. This is 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 as part of our impact assessment process.

Our priority is to avoid impacting biodiversity and ecosystems. For example, by avoiding certain areas and timing our activities so that we do not disturb sensitive species. Where we cannot avoid, we aim to minimise our impact, for example, by designing parts of our operations to reduce their effect on local wildlife. Where our operations have affected biodiversity, we take steps to restore habitats, for example, by planting native vegetation which enhances biodiversity. We also look for opportunities to make a positive contribution to conservation such as taking part in environmental research projects or conservation initiatives.

Shell Case study

Making a net positive contribution in Australia – QGC business

Shell's QGC business is located in Queensland, Australia. Shell QGC is one of Australia's leading natural gas producers, focused on developing Queensland's world-class onshore gas reserves. It produces natural gas from wells drilled into coal seams in the Surat Basin, where operations include more than 3,000 production wells, 25 field compression stations, six central processing plants, two water treatment plants and a two-train LNG export facility on Curtis Island in Gladstone. Environmental obligations and commitments are considered at all stages from desktop planning, construction through to decommissioning and rehabilitation. Before construction, a detailed environmental planning process is undertaken. Mapped data is verified on the ground to make informed decisions about where to locate infrastructure to minimise harm and promote ecologically sound practices whilst meeting technical requirements.

A desktop study reviews the publicly available mapping data to conceptually locate the planned infrastructure. This phase aims to avoid the identifiable high-value environmental constraints, such as wetlands, watercourse and environmentally-sensitive areas, including areas of remnant vegetation and fauna habitat identified in the conditions of relevant environmental permits.

Qualified ecologists undertake field surveys to confirm the ecological significance and condition of all proposed infrastructure locations. These field surveys assist to optimise positioning of infrastructure in accordance with the mitigation hierarchy, primarily avoiding areas of high conservation value.

In developing Shell QGC's operations, clearing some areas of vegetation and habitat could not be avoided. To compensate for these impacts, the Shell QGC team developed a biodiversity plan, which included a range of offsets and additional conservation actions. One of the biodiversity offset measures was the acquisition of a large rural property (the Valkyrie property). This 10,000-ha property offers habitat for many threatened species and contains large areas of eucalyptus woodlands, rivers and wetlands, which are now protected and being enhanced through activities such as feral animal and weed control, fire management and native forest regeneration. Some 1,690 ha were protected to achieve a net-positive gain in biodiversity for the original impact of the project. In 2021, an additional 280 ha of land was secured on the property as an offset for impacts caused by the expansion of the project, providing a protected habitat for three threatened species, including the koala, Southeastern long-eared bat and greater glider.

The property supports a range of endangered ecosystems, including brigalow and eucalypt woodlands, semi evergreen vine thickets, riparian vegetation and wetlands. Implementation of the offsets delivers an overall conservation gain (net positive impact) through the protection of the same type of threatened ecosystems originally impacted by the project activities, including measures to improve the quality, condition and viability of habitat. A successful factor in the design of the offset was to co-locate the protected area next to an existing national park, the Dipparu National Park, to maximise ecological function and connectivity to a network of wildlife corridors. An extensive monitoring programme is in place to measure and verify the management measures and progress of the condition of the protected ecosystems.

Shell's QGC business has also invested significant resources into research and translocation programmes for threatened plant species, including ooline (*Cadellia pentastylis*), Kogan waxflower (*Philotheca sporadica*) and plunket mallee (*Eucalyptus curtisii*). Furthermore, QGC executed a project that provided a net positive conservation gain for the endangered cycad plant (*Cycas megacarpa*). Almost 300 cycad plants were retrieved from the LNG pipeline construction area and cared for in a nursery until they were relocated to their new home on an offset property in 2016. Seeds were collected

from the wild cycad population, propagated and raised in a purpose-built nursery. In 2020, work was completed to plant over 2,000 propagated seedlings into the offset area, resulting in an increase in the overall number of cycads as a result of the project (an offset ratio of at least six plants replanted for every single plant disturbed).

On Curtis Island, Shell's QGC business, in partnership with other LNG industry proponents, contributed to the establishment of a 4,500-ha environmental precinct at the southern end of the island and an additional 25,000 ha environmental offset, comprising World Heritage Value coastal vegetation, which has been converted from former cattle grazing property 'Monte Christo' and associated leases to a national park, with titles transferred to the Queensland State Government.

In addition to funding a range of research and monitoring programmes with various partners, over the life of the project, Shell QGC will contribute US\$ 11 million to the Great Barrier Reef Marine Park Authority for ongoing management of the Great Barrier Reef. In addition, Shell's QGC business is a partner in the long-term turtle management plan which protects marine turtles in the Gladstone region, including nesting and hatchling orientation studies, sky glow assessments, turtle tracking and seagrass health.

2.8 TotalEnergies

Committing to biodiversity and Nature

TotalEnergies is a broad energy company committed to providing energy that is ever more affordable, cleaner, more reliable and accessible to as many people as possible. TotalEnergies promotes renewable, decarbonised energies, produces and markets fuels, natural gas and electricity. TotalEnergies is investing massively (over US\$ 4 billion in 2022) in electricity, solar and wind power to become one of the top five producers of renewable energy by 2030 with 100-gW target (or almost twice the installed capacity of France's nuclear power plant base). We are active in more than 130 countries with 108,000 staff.

Biodiversity ambition

As a major player in the energy transition, TotalEnergies has mainstreamed sustainable development in its company strategy, its projects and operations to contribute to the well-being of society. The company has pledged to contribute to the UN SDGs, including those related to the conservation of biodiversity. Aware of the challenges related to environmental management and the use of Earth's natural resources, TotalEnergies strives to manage the environmental effects of all its projects and operations according to the mitigation hierarchy principle of avoidance, minimisation, restoration and offsetting. In 2020, TotalEnergies reasserted its commitments, ahead of COP-15, to protect biodiversity as a contribution of the UN CBD's post-2020 Global Biodiversity Framework. Thus, the company's new ambition is based on four pillars (Figure 5), namely:

Our Commitments

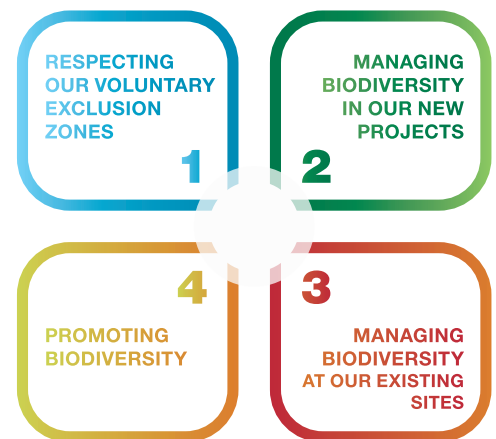


Figure 5 TotalEnergies – Commitments on biodiversity

Source: © TotalEnergies

- 1) Voluntary exclusion zones
- 2) Biodiversity management in our projects
- 3) Biodiversity management in existing sites and for closures
- 4) Promotion of biodiversity
- 5) The ambition is underpinned by Specific, Measurable, Achievable, Relevant and Time-Bound (SMART) public commitments, linked to the Act4Nature International initiative and are publicly reported on for progress.

In January 2022, the company completed its biodiversity commitments by setting a target of zero net deforestation for each of its new projects at new sites. Its biodiversity ambition complements the company's basic requirements to manage biodiversity across all phases of TotalEnergies projects, operations, closures and maximise contributions towards nature-positive outcomes wherever it operates. TTE biodiversity management approach requires systematic:

- > compliance with company biodiversity commitments (such as UNESCO World Heritage Sites and Arctic Sea ice areas and Net Zero Deforestation);
- > biodiversity sensitivity and risk screening, baselines assessments and impact assessments;
- > application of the biodiversity mitigation hierarchy, including offsetting of negative residual impacts (informed through the EIA process or on a case-by-case basis) with NNL/Net Gain outcomes, and implementing additional conservation actions (ACA) in consultation with relevant stakeholders;

- > upscaling of Biodiversity Action Planning (BAP) for environmentally significant sites (i.e. all operated exploration-production sites in production, refineries, petrochemical and polymer sites, gas-fired power plants) at a minimum and opportunities to apply BAPs voluntarily on other sites (for example, at HQ, during training and at research and development (R&D) sites);
- > seeking of contribution opportunities towards becoming nature-positive, including onsite and offsite enhancement actions of biodiversity values;
- > for sites which are ceasing operations, assessing the development of biodiversity rich areas (via enhancement and ecological restoration and other) as a rehabilitation option; and
- > an annually updated biodiversity risk register of company-operated and non-operated portfolios is used for public biodiversity reporting and disclosure purposes.

Several work streams promoting biodiversity complement the Company's operational biodiversity framework:

- > through biodiversity data sharing, e.g. biodiversity baseline and monitoring data shared on the Global Biodiversity Information Facility (GBIF) and of decision support tools such as Marine Local Ecological Footprinting Tool (LEFT);
- > biodiversity-related R&D investments (method for site-based biodiversity footprinting that can be aggregated at company level, biomonitoring technologies, Mitigation Hierarchy and NbS decision support tools, and others);
- > civic engagement of the company's employees in biodiversity related projects; and
- > the TotalEnergies Foundation support of ocean and coastal biodiversity awareness projects.

The company's biodiversity policy extends to its supply chain, by:

- 1) applying UNESCO WHS No-Go and BAP requirements for retaining existing suppliers and selecting new ones;
- 2) conducting compulsory biodiversity-inclusive sustainability training of buyers;
- 3) conducting biodiversity inclusive risk mapping of its circa 100,000 suppliers of goods and/or services;
- 4) integrating biodiversity to contracts; and
- 5) conducting biodiversity inclusive supplier audits.

Pillar 3 of the ambition focuses on existing sites and requires a biodiversity action plan for every environmentally significant site to be defined by 2025 and deployed. There are currently 73 environmentally-significant sites include all exploration and production sites, refineries, petrochemicals sites and gas-fired power stations which are ISO14001 certified. Additional voluntary BAP are planned on sites that are not environmentally significant, such as Marketing & Services petrol station and depots, Research & Development centres, training centres and HQ offices. TotalEnergies reports on its deployment to the various stakeholders. When a site ceases its operations, TotalEnergies is also committed to considering the development of a dedicated area rich in biodiversity, such as rare species habitats, biodiversity sanctuaries and others, as one of the options for its rehabilitation There are currently 14 candidate sites being considered. The combined efforts lead to a total of 78 Biodiversity Action Plans being planned or deployed by 2030, which represents a contribution towards biodiversity and nature positive in 28 countries on six continents.

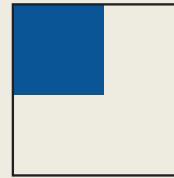
Case studies

To illustrate the ways TotalEnergies has been developing and implementing its biodiversity and nature protection-related work, below are three case studies of work in three areas where TTE has operations, France, Italy and Gabon.

Gabon – Marine protected area

The seascape context

Gabonese waters are home to exceptional tropical Atlantic Ocean marine biodiversity. Gabon’s marine territory is approximately 210,000 km². In 2017, to safeguard its marine environment, Gabon created 20 marine protected areas, including 11 aquatic reserves and nine marine parks, which form the Gabon Bleu network of protected areas (Gabon Bleu also includes a 10,000-km freshwater network). Today, Gabon Bleu protected areas (Figures 6 and 8) encompass 42% of Gabonese territory. This network, which extends over more than 53,000 km², is one of the largest reserves in Africa and protects 28.3% of Gabonese territorial waters (Figure 7), thus far exceeding the 10% 2020 Aichi Target.



28.83%
Coverage

55,721 km²
Marine and coastal area covered

193,292 km²
Total marine and coastal area

PAME

0,73%
Management effectiveness evaluations

1,409 km²
Areas assessed

Figure 7 Area coverage of marine protected area

Source: © TotalEnergies

Through the creation of this set of marine protected areas (MPAs), the Gabonese government has also put in place a sustainable fisheries management plan to fight against illegal, unreported and unregulated (IUU) fishing and overfishing, the consequences of which are disastrous both for aquatic life and for people: it is estimated that between 11 and 26 million tonnes of fish are caught each year worldwide through IUU fishing. Developing countries are particularly vulnerable to IUU fishing: up to 40% of fish caught in West African waters are caught by criminal operators.

MPAs have been set up to allow the oceans to recover and continue their function of absorbing CO₂, so that fish stocks regenerate and the coasts do not suffer (or can reduce) the consequences of climate change.

Through collaborative partnerships, the Gabon Vert team supports innovative projects that aim to contribute to the preservation of Gabon’s fauna and flora, while seeking to restore the balance between endangered ecosystems and populations. This action covers six main themes: i) Green Gabon; ii) Gabon Bleu; iii) climate change; iv) energy transition; v) the environment; and vi) the green economy.

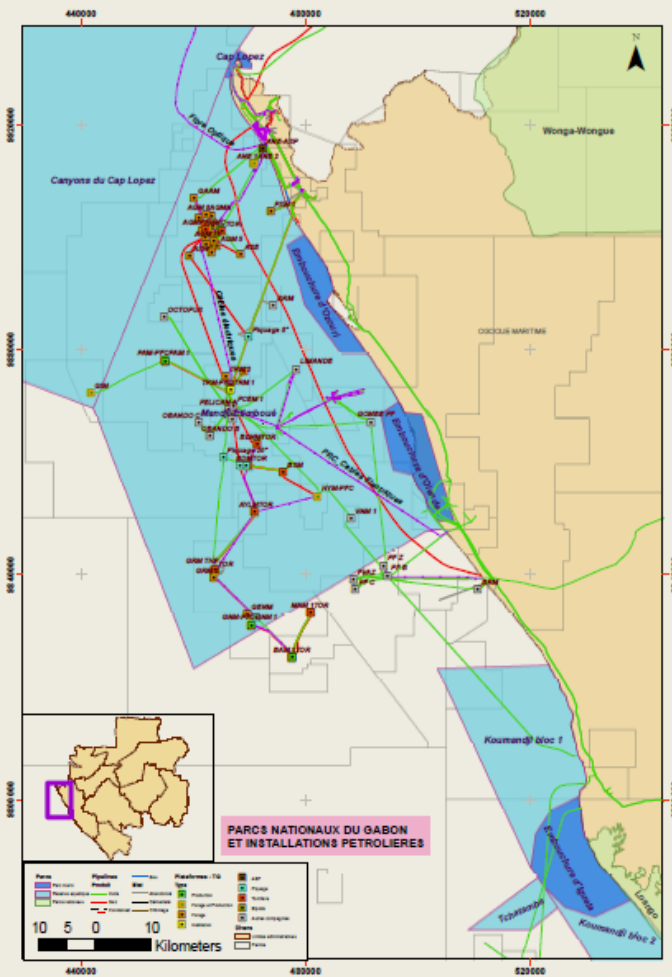


Figure 6 Offshore facilities and surrounding newly-established Gabon Bleu marine protected areas (in light blue)

Source: © TotalEnergies

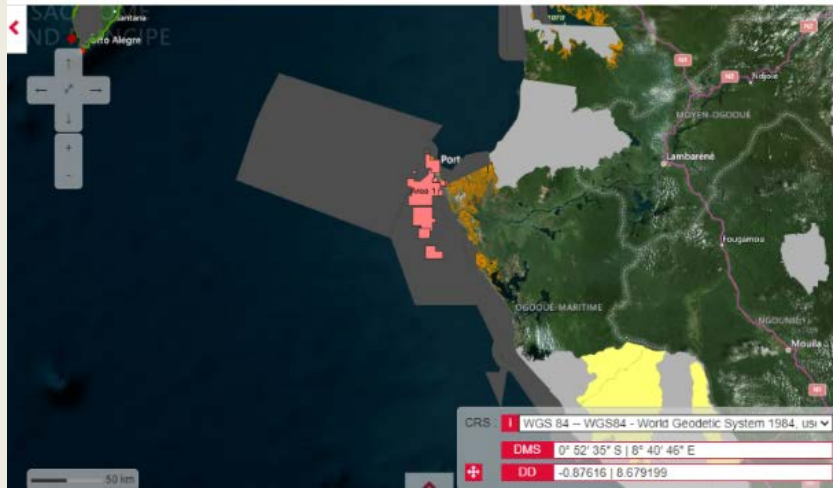


Figure 8 TotalEnergies blocks (in pink) and surrounding marine protected areas (in dark grey) and terrestrial and inland waters protected areas (in light grey)

Source: © TotalEnergies

Conservation objectives

In 2013, TotalEnergies signed an MoU relating to an oceanographic mission and the fight against illegal fishing with the Agence Nationale des Parcs Nationaux du Gabon (National Parks Agency of Gabon, or ANPN).

The oceanographic mission's objective is the preservation and enhancement of aquatic and marine biodiversity, which focuses on six work streams:

- 1) Mapping and assessment of marine biotopes (biophysical benthos and coastal environments habitats, water quality, marine protected area identification);
- 2) Fish stock assessment by echolocation;
- 3) Assessment of biodiversity in oil and gas (O&G) facilities safety exclusion zones (for example, biodiversity on and around offshore platforms); the O&G infrastructure enhanced biodiversity values providing a reef effect and refuge for marine fauna – the Gabonese continental shelf benthos being dominated by debritic and low biodiversity value habitats;
- 4) Assessment of biodiversity in targeted habitats (reefs, platforms);
- 5) Assessment of cetacean populations (whales, dolphins); and

- 6) Assessment of sea turtle populations (four species).

The private-public partnership (PPP) includes TotalEnergies, ANPN, National Geographic, Centre National des Données et de l'Information Océanographiques (National Centre for Ocean Data and Information of Gabon, or CNDIO), Wildlife Conservation Society Gabon, Directorate-General Fishing, Blue Gabon and Mentor Sarl, with a budget of around US\$ 935,000.

The ANPN's surveillance and fight against illegal fishing has two main objectives: preserving Gabon's natural resources; and the surveillance and fight against illegal fishing in the territorial waters of Port-Gentil. It focuses on five work streams:

- 1) Marine monitoring;
- 2) Catch statistic surveillance in protected areas;
- 3) Denunciation of illegal trawling maritime routes;
- 4) Offensive deterrence/race at sea; and
- 5) Information report to the offender's couple and recording (logbook).

The PPP includes ANPN, Mentor Sarl and the Gabonese National Navy, with a budget of around US\$ 188,000



Marine biodiversity colonising offshore facilities of TotalEnergies located in Gabon Bleu marine protected areas

Source: © TotalEnergies

In 2022, TotalEnergies renewed its support and entered a new financing agreement and MoU with ANPN's Gabon Bleu project for the protection, monitoring and management of coastal-marine protected areas in the country. The scope includes:

- 1) Scientific research and monitoring of marine mammals (including humpback whales) and sea turtles populations, and strengthening of the strategy for the preservation of the said species and their habitats.
- 2) Gabon Bleu database enriched with statistical catch data from all Gabonese fisheries.
- 3) Updating development and management plans for marine protected areas and industrial fishing zoning.
- 4) Strategy and management plan for monitoring and combating illegal fishing, involving local communities and fisheries operators, in the management of the marine protected areas

The private-public partnership includes ANPN, with a budget of US\$ 630,000.

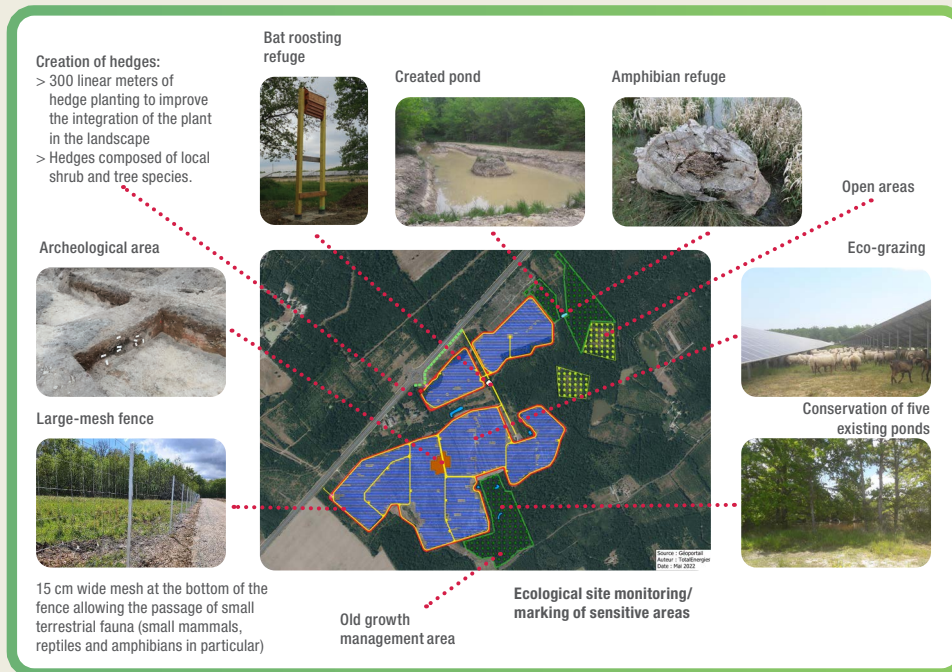
Achievements to date

TotalEnergies, through its long-standing partnership with the ANPN, contributed to the identification of the Gabon Bleu marine protected area (MPA, IUCN Not Assigned⁴⁸ status). The offshore platforms and associated facilities, such as export pipeline rights of way and safety exclusion zones, have been integrated into the Réserve Aquatique des Canyons du Cap Lopez and the Réserve Aquatique du Mandji-Etimboué MPA. The partnership allows for patrols and monitoring of illegal fishing vessel activities, offering strict sanctuary conditions around the offshore platforms' safety exclusion zones. The contributions also include the establishment of reefs on the offshore platform jackets. Work in progress includes support to the updating the MPAs management plans, combatting illegal fishing and biodiversity monitoring.

Lessons learned

PPP has offered a useful vehicle for nature protection in the immediate surroundings of the TotalEnergies offshore platforms and beyond, namely the creation of new MAPs and their long-term management support. The model could

⁴⁸ This category refers to a protected area whereby the data provider has chosen not to use the IUCN management categories. This option refers to when IUCN categories are not meaningful at the site level. For further information, please see: <https://dd.eionet.europa.eu/dataelements/74678>



Key figures of La Métairie site
 > 75 ha
 > 126 000 solar panels
 > 55 MW of installed capacity
 > € 2,2 million of participatory financing
 > 19 000 tonnes per year of avoided CO₂ emissions

Figure 9 Key biodiversity protection measures implemented in La Métairie

Source: © TotalEnergies

be expanded to other jurisdictions, although the role of authorities is key in its success. The Gabonese offshore platforms offer an example of scaling biodiversity protection efforts in a seascape context (Figure 9), and leveraging this as an opportunity to contribute to the national marine protected areas network. The same model could be scaled up and allow industry to support national contributions to the post-2020 GBF Target 3 (30/30). The TotalEnergies and Gabon partnership illustrates how companies can make contributions through their non-operated land/ marine tenure.

Future plans

Pursue collaboration with ANPN under the scope of the 2022 MoU and potentially replicate this model and approach to other TotalEnergies Exploration and Production (E&P) affiliates (for example, Angola and Congo and others) and possibly Offshore Wind Development. The data generated could also offer the opportunity to enhance the sensitivity mapping of Gabonese marine & coastal environments.

France – Renewable solar sites

Summary of the site

The 'La Métairie' 55-mW solar site is TotalEnergies' largest photovoltaic site in France, with 126,000 panels placed over 75 ha. The site's capital expenditure includes € 2.2 million of participatory financing. The site began production in 2022.

Conservation objectives

The site's design and operations biodiversity management plan is based on the mitigation hierarchy:

- 1) Avoidance: the site selected was historically deforested and forest areas and wetlands natural habitats were largely avoided (limited to 18.78 ha of forest and brush clearing). Several ponds were avoided also.
- 2) Mitigation: various mitigation measures were applied, such as large mesh wire fences to maintain small fauna ecological connectivity and the use of targeted light eco-grazing (see photo) onsite allows maintaining a non-ligneous prairie habitat.



Biodiversity actions implemented at the La Métairie solar plan facility of TotalEnergies: (a) eco-grazing; (b) bat rooting refuge; (c) preserved wetland; and (d) created wetland

Source: © TotalEnergies

- 3) Restoration/enhancement: several additional wetlands and micro-habitats were also created onsite to increase Herptile and small mammal biodiversity values. Bat refugia were also created (see photo).

Several offsite protected areas are being considered in partnership with local farmers and landholders (forest).

Biodiversity actions implemented at the TotalEnergies La Métairie solar plan facility: eco-grazing (a), bat rooting refuge(b), preserved wetland (c) and created wetland (d)

Achievements to date

Key achievements to date include:

- 1) The avoidance of existing biodiversity rich features (forest & wetlands);
- 2) The creation of new biodiversity rich habitats (wetlands);



- 3) The creation of terrestrial (herptiles and small mammals) and flying fauna (bats) micro-habitats and refugia;
- 4) The protection of existing forest wetlands (ponds), onsite and offsite; and
- 5) Protection of offsite forest areas, involving land owners (ongoing, challenge of land tenure modalities).

Lessons learned

Positive contributions to the protection and enhancement of biodiversity were successfully integrated into the site's non-developed areas during the design phase and implemented for its operational phase. The mitigation hierarchy has driven this process, offering opportunities

to make contributions at the avoidance step by actively protecting high biodiversity value habitats, such as wetlands onsite, but also to actively create additional wetland habitat. The site's operations are inclusive of biodiversity protection in its non-developed areas. Targeted micro-habitat creation can be applied to further enhance the biodiversity values of the non-developed areas dedicated to onsite conservation. Land tenure agreement modalities for offsetting residual negative impact remain challenging. The La Métairie solar site offers an example of the balance required to address the dual climate-biodiversity crises, where biodiversity integration becomes part of the renewable energy project design and operational management and opportunity for biodiversity enhancement onsite and protection offsite.



La Métairie solar plan facility conservation demarcation ZONE. Source: © TotalEnergies

Future plans

Long-term management and monitoring of onsite and offsite biodiversity features.

TotalEnergies Case study 3

Italy – Gorgoglione onshore conventional oil permit area – Biodiversity Action Plan update

The TotalEnergies Gorgoglione onshore conventional oil permit area is located in the Apennines in Southern Italy (Figure 10). It has a total area of 29,000 ha and overlaps two protected areas.

The site itself has a total footprint of 170 ha, entirely outside the protected areas. It includes

several well pads, oil flowlines and pipelines networks, storage units and processing facility (approximately 50,000 barrels of oil per day) and roads infrastructure.

Examples of priority species of the area

Although the permit area only represents about 0,1% of Italy's total area, it hosts 413 species of flora and 477 species of fauna. Some taxa are very well represented such as bats (24 species out of 36 total in Italy), orchids (over 50 species), and butterflies (over 100 species – twice the species in all the UK). The permit area also includes some threatened and/or iconic species like the Egyptian vulture, the griffon vulture, the black stork, the European otter and the brown bear, and endemic species like the Apennine yellow-bellied toad.

Biodiversity Action Planning

The site has deployed a biodiversity action plan since 2019 and is in the process of updating it. In line with TotalEnergies biodiversity ambition, the updated plan will include actions to contribute positively to biodiversity conservation in the landscape, beyond the onsite mitigation measures.

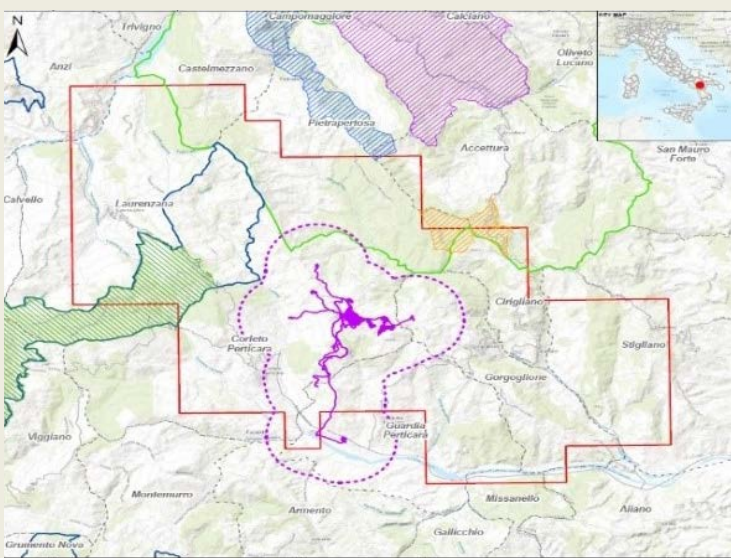


Figure 10 Map of Gorgoglione exploration and production license and surrounding areas

Source: © TotalEnergies

The permit area offers interesting opportunities for biodiversity conservation projects. It hosts a great diversity of habitats and species, as well as rare and threatened species, and benefits from a well-established network of conservation initiatives.

Opportunities identified actions to contribute positively to biodiversity conservation in the landscape

Several opportunities were identified based on the biodiversity of conservation interest, existing conservation projects and existing potential

implementing partners. There can be sorted into three main categories in Table 3.

Achievements to date and next steps

The BAP update is ongoing. Beyond the opportunity to improve the mitigation plan within the fence, one or several projects/implementing partners will be selected and supported by the site, with the objective of contributing positively to biodiversity conservation beyond the fence and increasing the acceptability of operations by local stakeholders.

CATEGORIES	SUPPORT TO EXISTING SPECIES CONSERVATION PROJECT	ESTABLISHING NEW SPECIES AND/OR HABITAT CONSERVATION PROJECT	COMBINATION OF LANDSCAPE LEVEL CONSERVATION INITIATIVES
Description	Punctual support to expand the geographical and/or temporal scope of an active species conservation project involving either the project area or the species of conservation concern identified, building on activities already undertaken and use some of the facilities and practices developed.	Set up and support on the medium term one or more projects for the conservation/enhancement of species or habitat of conservation concern in and around the site.	Landscape-scale conservation working in collaboration with partners to deliver more benefits for the environment and people in a long-term perspective, delivering multiple benefits, not just for wildlife, but also for people, communities and the wider economy. Inspiration could be derived from organisations like Rewilding Europe.
Examples	Support financially local partner for: <ul style="list-style-type: none"> > protection of nesting sites > prevention of electrocution > artificial feeding sites and protection of stopover sites > ex situ reproduction and restocking > prevention of poisoning > communication and outreach 	Support technically and financially the protection of remaining wetlands and the development a network of ponds for the Apennine yellow-bellied toad, through agreements with landowners.	Promote maintenance of traditional agricultural activities to enhance the conservation opportunities for threatened species
<ul style="list-style-type: none"> > Spatio-temporal scale > Conservation outcomes > Ambition/reputational benefits > Cost > Complexity/oversight burden 	+	++	+++
Feasibility	+++	++	+

Table 3 List of actions identified to positively contribute to biodiversity conservation in the landscape

Conclusion and lessons learned

Based on the ongoing work, and having in mind the emerging concept of Nature Positive, the following lessons learnt can be outlined:

- 1) Positive actions for biodiversity offer an opportunity to respond to the increasing concern of our stakeholders for nature conservation and improved local acceptability of operations.
- 2) Positive actions for biodiversity should be medium/long term and be designed and implemented jointly with the local stakeholders and implementing partners to be meaningful.
- 3) While the scrutiny of stakeholders tends to crystallise on a few large green field projects, there is actually a great opportunity for improving the biodiversity performance of the numerous existing production sites, and for implementing positive actions for biodiversity on a voluntary basis.

Such positive actions for conservation are easier to design than biodiversity offsets as they do not claim to quantitatively outweigh negative residual impacts, and are not subject to the same scientific rigor.

2.9 Teck

Teck is one of Canada's leading mining companies, focused on providing products essential to building a better quality of life for people around the globe, with more than 10,000 employees working in operations and projects in Canada, Chile Peru and the United States. Teck is committed to responsible resource development. We are focused on operating sustainably, ensuring the health and safety of our people and building strong relationships with communities. We have internal policies and external commitments that guide and allow us to evolve with emerging sustainability trends and best practices.

Our activities span a range of areas of high biodiversity value. With operations within or adjacent to temperate, arctic, forested, mountain and desert landscapes, land and biodiversity management is a priority for Teck. The Indigenous peoples and other communities of interest (COIs) in the areas where we operate expect us to contribute to the protection, conservation and restoration of biodiversity, and we work collaboratively with them to develop our approach to land use.

We established our first sustainability strategy a decade ago, setting out long-term goals to drive improved sustainability performance across our activities. The strategy is integrated into management standards, compensation and corporate, site and employee annual plans and objectives. Throughout the year, our senior management team and the Safety and Sustainability Committee of the Board review performance against our sustainability strategy and approve future actions. Our strategic priority for biodiversity and reclamation is to work towards securing a NPI impact on biodiversity. By 2025, our goal is for all operating sites to have and be implementing plans to secure net positive impact.

However, since first setting biodiversity goals over 10 years ago, global nature loss and its implications have increased significantly. WEF ranks biodiversity loss and ecosystem collapse as one of the top threats humanity will face this decade and global leaders, including the G7, are calling for the world to become both net-zero and nature-positive. For Teck, working towards a nature-positive future means that by 2030, our conservation, protection and restoration of land and biodiversity will exceed the disturbance caused by our mining activities from a 2020 baseline. In doing so, we will conserve or restore at least 3 ha for every one hectare affected by our mining activities. Working towards this goal builds on our commitment to biodiversity and our Purpose as a company.

We share three examples of how we are using our own land to improve biodiversity outcomes.

Harnessing the regenerative power of fire through traditional knowledge Highland Valley Copper Operations, British Columbia, Canada

As the frequency and severity of British Columbia's wildfire seasons grows, Indigenous traditional knowledge around fire management is increasingly recognised for how it can help to not only manage fires, but also restore landscapes. At Highland Valley Copper (HVC) Operations, we are working with Indigenous peoples to incorporate traditional knowledge into our rehabilitation programmes. In June 2019, prescribed burns were conducted at reclamation sites at HVC to test the effectiveness of these methods on accelerating ecosystem recovery.

For the Nlaka'pamux people, whose territory covers much of central British Columbia, controlled burns have been used for centuries, and were once an important part of their stewardship of the land. Fire was used to manage the build-up of combustible materials, clear land for agriculture, create grazing lands to enable hunting and more. Trees, such as lodgepole pine and aspen, rely on the heat of fire to release their seeds and enable regrowth.

In recent years, post-mining land use goals at HVC have shifted from an emphasis on agricultural and forestry uses towards natural ecosystems, to meet objectives set out by the Nlaka'pamux people and restore pre-mine

ecosystems. Prescribed burning was identified as a way to support the growth of native grasses and cone-bearing trees.

In November 2017, workshops were conducted with Nlaka'pamux community members to learn important aspects about traditional burning practices, many of which have been passed on through generations. HVC's environment team also conducted a review of uses of prescribed fire in mine-site reclamation.

A total of 12 plots, measuring 20x20 m, were established, and in 2019, several variations of prescribed burns were conducted. In designing the trials, we took an approach that brings together scientific and Indigenous knowledge systems, which has helped us develop burning techniques that have the potential to accelerate recovery at our reclamation sites.

The number of cones, trees and species was measured for each plot, before and after the burn. HVC's environment team continues to monitor the longer-term results of the trials to determine their effectiveness. These trials have great potential for modelling the application of Indigenous traditional knowledge to other reclamation practices.

Harnessing Collecting seeds and creating opportunity, Red Dog Operations, Alaska, USA

Unemployment in the northwest Arctic Borough where our Red Dog Operations is located is higher than the state-wide average in Alaska. To help address this challenge and provide economic contributions to communities, Teck and the local Indigenous Iñupiat people started a unique seed collection programme to provide people a local opportunity to supplement their income and share traditional knowledge, while also playing a role in reclamation at the mine. When we work to reclaim an area after mining

has concluded, we seek to create a self-sustaining ecosystem, including revegetating areas using native plants where possible to support traditional land uses and local wildlife. At Red Dog Operations, we have historically purchased plant seeds for environmental reclamation activities from commercial seed providers. However, with no provider of seeds local to the mine's region, we have had to buy seeds harvested further south. Because these seeds are in a different climatic zone, they do not

grow as well as seeds indigenous to the Arctic, so we have been working to find a local source of Indigenous seed varieties to support reclamation. Additionally, many of the Indigenous plant species are not available commercially.

The Noatak Seed Collection programme was initiated in 2014, led by the Alaska Plant Materials Center, in partnership with Red Dog, NANA Regional Corporation and local residents, to look for a way to address this challenge. Local residents, who join the seed project, harvest

local plant seeds, which are then stored by Red Dog for use in future reclamation work. The Noatak Seed Collection has helped create flexible employment opportunities for some residents in the Northwest Arctic region, while also benefiting Teck's reclamation efforts through increased use of native seeds, which have long-term climatic adaptations that will enable disturbed land to be restored as closely as possible to its original state, and protect against invasive species.

Teck Case study 3

Conservation opportunities on managed lands Elk Valley Steelmaking Coal Operations, British Columbia, Canada

In 2021, the Ktunaxa Nation and Teck announced the signing of a Joint Management Agreement for more than 7,000 ha of land purchased by Teck in 2013 for conservation. The lands are located in ʔamakʔis Ktunaxa (Ktunaxa Territory) in southeast British Columbia. Under the Agreement, the Ktunaxa Nation and Teck agree to jointly manage the land for conservation purposes protecting significant fish and wildlife habitat. The agreement also supports the Ktunaxa Nation Stewardship Principles, and Teck's goal to achieve NPI on biodiversity in the areas where we operate. We are now investigating further options for land

conservation, protection and restoration activities in support of sustainable development in the Elk Valley. Generally, these include:

- > converting certain private lands and leases into biodiversity conservation areas;
- > improving wildlife corridors and connectivity;
- > addressing invasive species and access management on Teck-managed lands;
- > investing in habitat restoration initiatives; and
- > supporting other regionally significant conservation priorities.

Conclusion

In all three of the above examples, the critical lesson learned is around the importance of relationship-based, rather than transactional, partnerships. Time invested in listening, seeking to understand, developing shared priorities and creating wins for all involved where possible is

crucial to the success of this work.

2.10 BHP

Contributing to nature-positive outcomes on non-operational land – Olympic Dam, South Australia

Located in South Australia, Olympic Dam Corporation (ODC) (100% BHP ownership) is one of the world’s most significant deposits of copper, gold, silver and uranium. It comprises underground and surface operations, and is a fully integrated processing facility from ore to metal. Ore mined underground is hauled by an automated train system to crushing, storage and ore hoisting facilities or trucked directly to the surface. Olympic Dam has a fully integrated metallurgical complex with a grinding and concentrating circuit, a hydrometallurgical plant incorporating solvent extraction circuits for copper and uranium, a copper smelter, a copper refinery, including an electro-refinery and an electrowinning-refinery, and a recovery circuit for precious metals.

ODC produces refined copper cathode plus associated products of uranium oxide, gold and silver.

Non-operational land management

Olympic Dam has land tenure equating to 2,162,858 ha (Table 4 and Figure 11). The operations at Olympic Dam comprise an underground mine, surface quarrying, a mineral processing plant and associated infrastructure located within the Special Mining Lease (SML), an area of approximately 18,000 ha. Approximately 6,000 ha of this has been cleared for activities since 1987. The remaining 99% of land is non-operational and predominantly pastoral land. Olympic Dam holds the lease for six pastoral properties; three are sub-leased to Traditional Custodians, the Kokatha people, and three properties are sub-leased to pastoralists for beef cattle grazing.

PASTORAL PROPERTY (HA)	YEAR LEASE OBTAINED	MANAGED BY	SIZE
Stuart Creek	1997	Sub-lease to pastoralist	840,479
Etadunna	2009	Sub-lease to pastoralist	604,490
Mulgaria	2009	Sub-lease to pastoralist	211,630
Andamooka	1995	Sub-lease to Kokatha Traditional Owners	242,748
Purple Downs	1996	Sub-lease to Kokatha Traditional Owners	75,237
Roxby Downs	1996	Sub-lease to Kokatha Traditional Owners	174,727

Table 4 Overview of land owned by Olympic Dam

Source: BHP

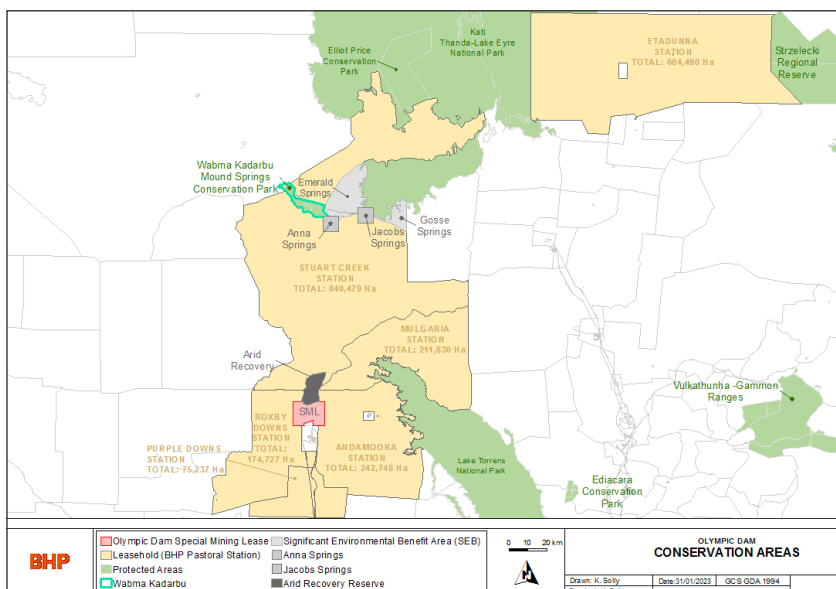


Figure 11 Olympic Dam land tenure with respect to protected areas in the region

Source: BHP

Biodiversity values

Threatened species are known to occur in ODC’s area of influence and species occurrences are reviewed bi-annually. Species are classified as important, based on International Finance Corporation (IFC) Standard 6 criteria. The Olympic Dam biodiversity area of influence includes:

- > 61 IUCN-listed species (Near Threatened, Vulnerable, Endangered, Critically Endangered);
- > 74 Designated Protected Areas/High Conservation Areas with IUCN Management Category;
- > 55 EPBC (National) listed species (Critically Endangered, Endangered, Vulnerable, Migratory);
- > EPBC listed Community (Endangered);
- > 145 NPW (State) species listed (Rare, Vulnerable, Endangered); and
- > 1 NPW community (Vulnerable).

Conservation areas

Olympic Dam has also taken steps to conserve high biodiversity areas. Olympic Dam currently manages 60,200 ha of land for conservation and has previously transferred 10,500 ha of land for

LOCATION	STATUS	CATEGORY	PURPOSE	SIZE (HA)
Gosse & Emerald Significant Environmental Benefits	Existing	Conservation	Legal Obligation	48,000
Arid Recovery	Existing	Conservation	Voluntary	12,000
Jacobs Spring	Underway	Conservation	Voluntary	100
Anna Spring	Underway	Conservation	Voluntary	100
Wabma Kadarbu	Transferred to State Government	Conservation	Voluntary	10,500

Table 5 Land managed for conservation by Olympic Dam

Source: BHP

Wabma Kadarbu (1996)

conservation to the state government of South Australia (Table 5).

Wabma Kadarbu is a 10,500 ha area that was transferred from Olympic Dam tenure and proclaimed a Conservation Park in 1996. The biodiversity importance of Wabma Kadarbu was recognised, leading to the voluntary excision from the pastoral station and conversion to a state Conservation Park. Olympic Dam funded the initial fencing costs and continue to share responsibility for the fence line.

Fourteen fauna and five flora species that are listed as rare or threatened under the National Parks and Wildlife Act 1972 of Australia have been recorded in the park. The park also

contains several important spiders, snails and other invertebrate species. In recognition of their significance and sensitivity, the wetland communities dependent on the water of the Great Artesian Basin (GAB) are also listed as endangered under the Australian Government's Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The park contributes to the unique tourism appeal of outback South Australia as one of a series of stop-off points on the Oodnadatta Track. It also provides an important opportunity to communicate to visitors the ongoing relationship of the Arabana people with their country, the significance of arid zone biodiversity and the relationship between people and the Great



Photos: © Kimberley Solly

The Bubbler and Blanche Cup are two Great Artesian Basin (GAB) springs afforded protection within Wabma Kadarbu.

Throughout the GAB, there are natural discharge points where water percolates to the surface via fracture zones, or from the exposed aquifer. Some springs, such as those in Wabma Kadarbu, have formed pools and prominent mounds.

These mounds are comprised of travertine or tufa – a type of limestone formed when water with high mineral and bicarbonate content has percolated to the surface, depositing minerals on the surface in the vicinity of the spring vent.

Arabana (Traditional owners of the area) are strongly connected to kutha ngarrawa (mound springs) by Ularaka. Ularaka encompasses all that is Arabana; their dreams, knowledge, stories, songs, ceremonies and traditions that underpin the identity of Arabana people. It gives life today, and connects Arabana people to each other and to the Country over which they hold responsibilities and rights (Wabma Kadarbu Mound Springs Conservation Park 2017).

Arid Recovery (1998)

Artesian and Lake Eyre Basins (see photos below).

Arid Recovery is a not-for-profit conservation reserve situated on BHP non-operational land. The 12,300-ha predator-proof fenced reserve helps threatened species thrive. Olympic Dam, together with the state Department for Environment and Water, the University of Adelaide, and community members formed a partnership to create Arid Recovery in 1997. Five native species have been reintroduced into the reserve (Figure 20). The greater bilby (V), Western quoll (V), burrowing bettong (V), shark bay bandicoot (E) and greater stick nest rat (V) – the latter three were extinct on mainland Australia and only existed on islands off mainland Australia. Arid Recovery is currently trialling the reintroduction of the kowari (V), with the success of the trial to be determined in years to come. Arid Recovery’s vision is to return species from threatened to thriving in the arid zone.

Arid Recovery continues to be a pioneer in

applied conservation research, conservation management and education outreach. Beyond the benefits generated from protecting threatened species, Arid Recovery also contributes to:

- > Significant research outputs, with 107 scientific publications;
- > Advancing women in STEM (science, technology, engineering and mathematics), with 65% of papers having women as the lead author;
- > 22 reserves across Australia, protecting 52,200 ha, now use the signature ‘floppy top’ cat-proof fence designed by Arid Recovery; and
- > Training scores of researchers through undergraduate and post-graduate research projects and experiences.

Arid Recovery was initially embedded in the mining company environment team, before moving to a separate not-for-profit entity. BHP’s funding contribution is via BHP’s Social Investment Framework. Currently, BHP



Reintroduced mammal species Top row: greater stick nest rat (V)*; greater bilby (V)*; Western quoll (V)*. Middle row: burrowing bettong (V)*; shark bay bandicoot (formerly Western barred bandicoot (E)*; Kowari (V)* reintroduction is in trial. Lower row: The fence designed at Arid Recovery has been used at other reserves in Australia.

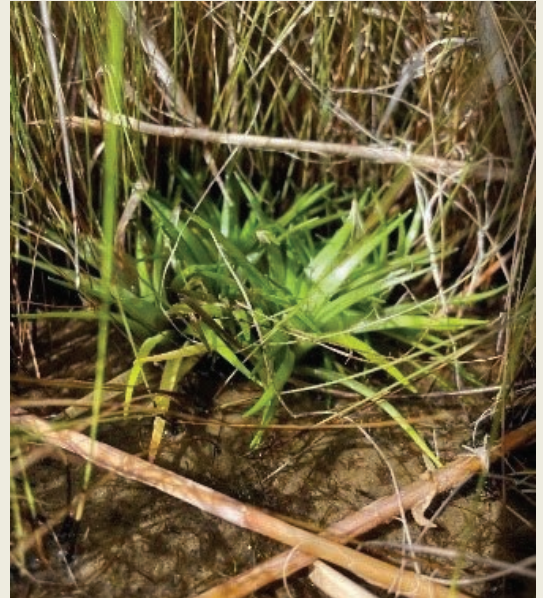
* (E) Endangered; (V) Vulnerable

Photos (from top row, left to right): Arid Recovery; Jasmine Vink; Melissa Jensen; Nathan Beerkens; Ryan Francis; Hugh McGregor; Katherine Tuft



Gosse Springs significant environmental benefit The salt pipewort (*Eriocaulon carsonii* ssp. *carsonii*) occurs within Gosse Springs and is afforded protection from cattle grazing and pugging. Springs with sufficient flow develop a tail where water flows out and creates vegetated wetlands.

Source: BHP



BHP
Case study 3

Significant environmental benefits – Gosse Springs (2010) and Emerald (2019)

contributes 63% of the total income, and between FY12-FY22 contributed AU\$ 4,832,600. Gosse Springs (approximately 11,430 ha) and Emerald Springs (approximately 37,070 ha) significant environmental benefit (SEB) areas are a combined 48,500 ha managed as regulatory offset areas to account for land clearance of the operations. The areas were selected based on their high biodiversity values. Five great artesian basin spring groups (cluster of individual spring vents) occur within the paddocks. The community of native species dependent upon natural discharge of groundwater from the GAB is afforded a national EPBC Endangered listing due to the threats posed by excessive abstraction of artesian groundwater from the GAB, overgrazing/trampling by stock and the extremely small geographic distribution of the springs. The springs hold great significance from a cultural, historical, geological and biological perspective. A significantly large population of the nationally Endangered salt pipewort (*Eriocaulon carsonii* ssp. *carsonii*) occurs in Gosse Springs SEB (see photos above). Other nationally and state listed

species have also been recorded in the SEB areas (Figure 12).

Managing the SEB for positive conservation outcomes involves reducing threats and threatening processes, such as exotic flora species, stock grazing, artificial water points, feral animals, GAB water abstraction and uncontrolled public access. OD has ongoing management and monitoring responsibilities, including: stock exclusion, fence maintenance, feral animal control, pest plant control and management of tourist activities. Monitoring of the GAB springs occurs annually for spring flow and spring flora, while invertebrates are monitored triennially.

Gosse Springs is protected for conservation in perpetuity and Emerald Springs is currently being assessed for permanent protection.

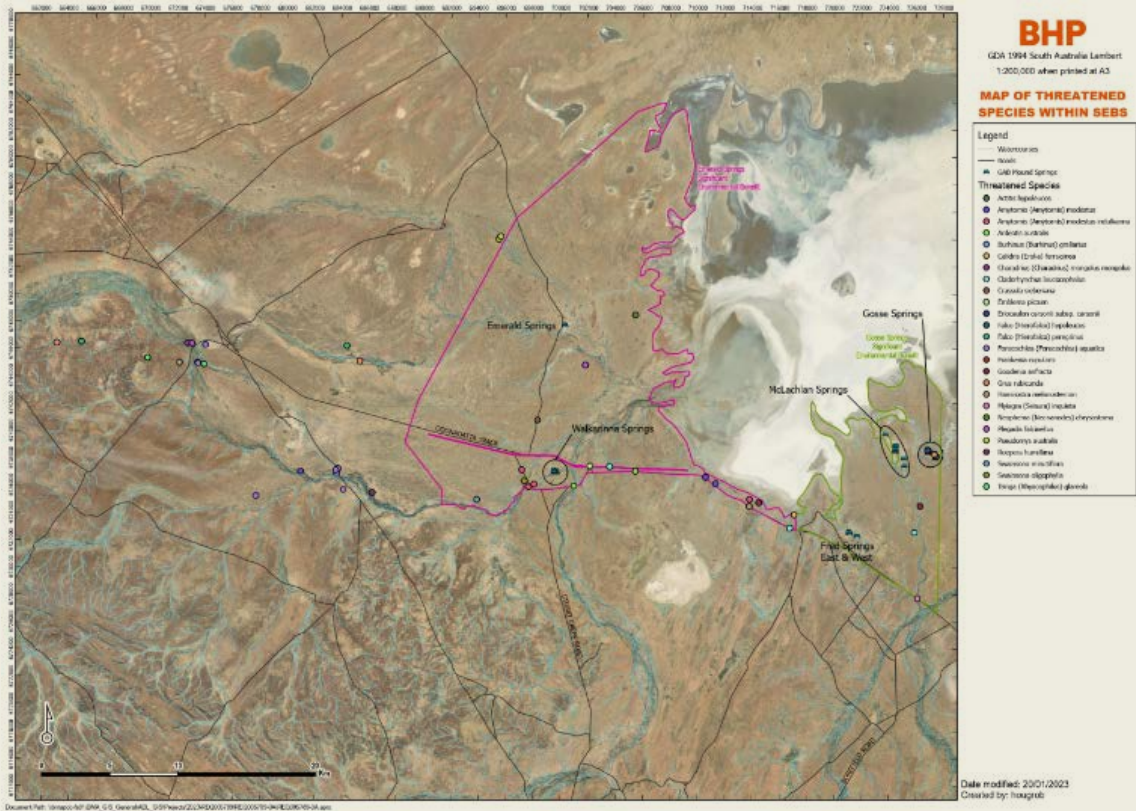


Figure 12 Threatened species protected within the significant environmental benefits areas

**BHP
Case study 4**

Jacobs and Anna Springs (2019)

The Curdimurka paddock, a 103,967 ha of land, was destocked from 2019 to allow protection of springs and SEB boundaries during a drought period. Re-stocking the Curdimurka paddock is expected to recommence in 2023 with consideration given to regenerative practices.

Fences have been erected or maintained around a 100-ha area to protect the EPBC listed springs. The natural recovery of Jacobs spring has been promising and monitoring for vegetation and spring fauna has commenced (see photos below).



Recovery of Jacobs Spring after exclusion of cattle

Source: © Kimberley Solly

Future state of conservation – Contributing to nature-positive outcomes

BHP has publicly released its social value framework and 2030 goals, which includes a pillar for Healthy Environment. The healthy environment goal is to:

“Create nature-positive⁴⁹ outcomes by having at least 30% of the land and water we steward⁵⁰ under conservation, restoration, or regenerative practices. In doing so, we focus on areas of highest ecosystem value both within and outside our own operational footprint, in partnership with Indigenous People and local communities.”⁵¹

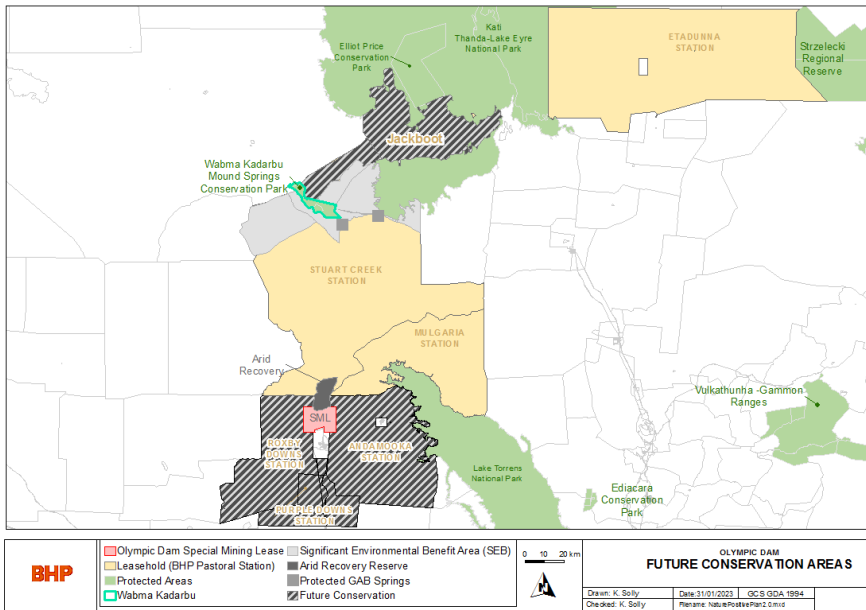


Figure 13 Olympic Dam’s future contribution to positive nature outcomes will include setting aside additional land for conservation

Source: © Kimberley Solly

Olympic Dam is expected to be a significant contributor with an estimated 800,000 ha under nature-positive stewardship (Figure 13). Olympic Dam has commenced developing a Natural Capital Account for the asset, the first of its kind in Australia.

Conservation opportunities
Olympic Dam’s future state will likely include a combination of voluntary and legal obligation conservation opportunities (Table 6). An early assessment of land has indicated areas of high conservation value, or land that is like-for-like for a compensatory offset. Management of the land for conservation will be conducted in conjunction with Traditional Owners.

LOCATION	PURPOSE	SIZE (HA)
Future SEB - One Box	Legal Obligation	45 000
Future SEB - Bedourie	Legal Obligation	17 000
Future SEB – Black Swan	Legal Obligation	59 000
Jackboot	Voluntary	160 000
Andamooka Station	Voluntary/Legal	242 748
Purple Downs Station	Voluntary/Legal	75 237
Roxby Downs Station	Voluntary/Legal	174 727
TOTAL		773 712

Table 6 Olympic Dam’s future contribution to positive nature outcomes

49 Nature positive is defined by the WBCSD/TNFD as “A high-level goal and concept describing a future state of nature (e.g. biodiversity, ecosystem services and natural capital) which is greater than the current state.” It includes land and water management practices that halt and reverse nature loss – that is, supporting healthy, functioning ecosystems.
50 Excluding greenfield exploration licences (or equivalent tenements), which are outside the area of influence of our existing mining operations.
51 BHP (n.d.). Sustainability. BHP [website]. <https://www.bhp.com/sustainability>



**INTERNATIONAL UNION
FOR CONSERVATION OF NATURE**

WORLD HEADQUARTERS
Rue Mauverney 28
1196 Gland, Switzerland
mail@iucn.org

www.iucn.org

www.iucn.org/resources/publications

