TNFD initial assessment

OX2's work in implementing the TNFD Recommendations to identify and consider nature-related dependencies, impacts, risks and opportunities.

October, 2024

About the report

This report summarizes the main steps of OX2's work in implementing the Task Force on Nature-Related Financial Discosure's (TNFD) recommendations and recommended disclosures. OX2 have publicly supported the TNFD recommendations and committed to implementing the recommendations in public reporting by being inaugural TNFD adopters.

Compliance

At OX2, we view the TNFD recommendations as support and guidance to understanding and working proactively with nature-related dependencies, impacts, risks and opportunities (DIROs). The TNFD recommendations will support us in reporting in line with the European Sustainability Reporting Standard (ESRS) focusing on Biodiversity and Ecosystems (E4).

Interative process

We acknowledge that implementing the TNFD recommendations and recommended disclosures is something that takes time and underlying assessments can be iterative. How we scope the underlying assessments, indicators used, and sources we rely on is likely to evolve as we learn more about our nature-related DIROs, or as a result of structural or strategic changes within the company. The level of granularity, scope and focus is likely to change over time, depending on available data and information, as well as what outcomes we find useful.

Public support

Our view is that an early adoption, and transparently sharing our work and learnings, will contribute to wider and quicker adoption within the energy sector. We discuss data, sources, indicators, and systems with others within the research programme MistraBIOPATH, business@biodiversity and industry forums to learn together. These are not mentioned in the report directly, but disclosed as forums for engagement within our sustainability disclosures.

Forward looking statements

This work reflects statements and assumptions about the future.

Content

Picture to the right: Björkskär, Åland, where we conduct research in regards to renewable energy and biodiversity.
Picture on the cover page: Hornamossen, Sweden.

Background

Nature-related DIROs

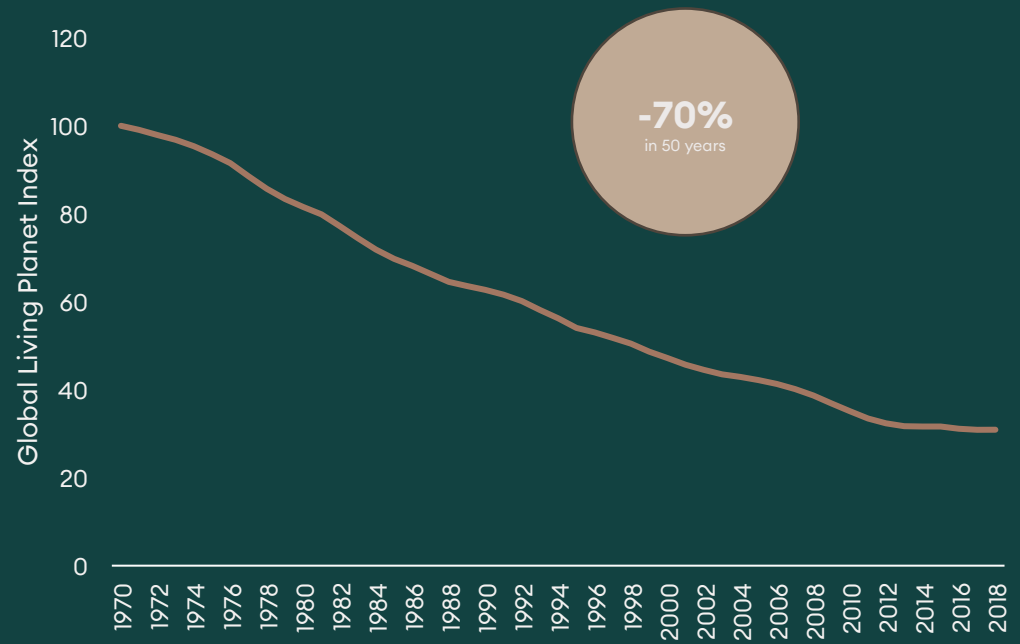
The TNFD recommendations & recommended disclosures

LEAP methodology

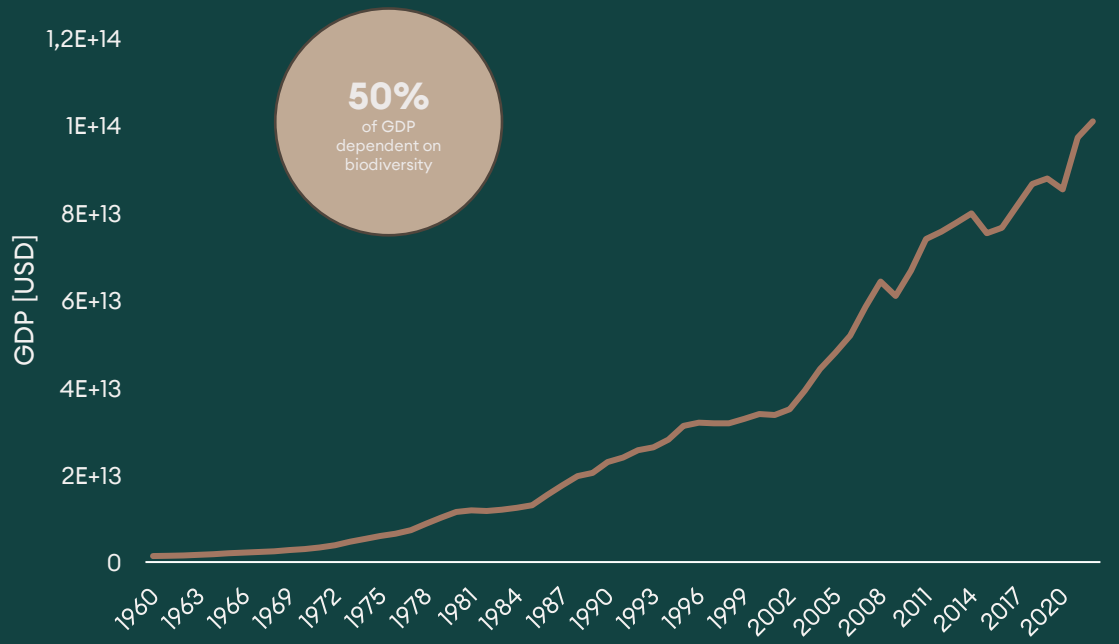
Value chain

Picture: Baltic Sea, Åland

We are losing something that underpins our economy



Source: Our World In Data (2023)



Source: The World Bank (2022)

State of biodiversity

We are experiencing biodiversity loss all over the globe – and some areas more than others. Biodiversity loss entails both the reduction of species and habitats locally as well as species going extinct globally. Since 1970, the World's wildlife has decreased by around 70%, and biodiversity loss continue at an alarming rate[1].

Nature risks

Biodiversity – and thereby also ecosystem services - underpin human well-being and makes up a substantial part of our economy. It is estimated that about half of global GDP is moderately or highly dependent on nature[1]. The destruction of ecosystems on land and sea is estimated to significantly affects the wellbeing of over 3 billion people worldwide[2].

1) World Wide Fund for Nature's (WWF) Living Planet Report 2022
2) United Nations Environment Programme (UNEP)

The TNFD Recommendations

The TNFD Recommendations and Additional Guidance are designed to help organisations to report and act on evolving nature-related issues with the ultimate aim of supporting a shift in global financial flows away from nature-negative outcomes and toward nature-positive outcomes.

Inaugural early adopters

OX2 is an inaugural early adopter, meaning that it was one of 320 companies globally to commit to implementing the TNFD recommendations as the recommendations were released.

TNFD recommendations and recommended disclosures

Governance

Recommendation:

Disclose the organisation's governance of nature-related dependencies, impacts, risks and opportunities.

Recommended disclosures:

A. Describe the board's oversight of nature-related dependencies, impacts, risks and opportunities.

B. Describe management's role in assessing and managing nature-related dependencies, impacts, risks and opportunities .

C. Describe the organisation's human rights policies and engagement activities, and oversight by the board and management, with respect to Indigenous Peoples, Local Communities, affected and other stakeholders, in the organisation's assessment of, and response to, nature-related dependencies, impacts, risks and opportunities.

Strategy

Recommendation:

Disclose the effects of nature-related dependencies, impacts, risks and opportunities on the organisation's business model, strategy and financial planning where such information is material.

Recommended disclosures:

A. Describe the nature-related dependencies, impacts, risks and opportunities the organisation has identified over the short, medium and long term.

B. Describe the effect nature-related dependencies, impacts, risks and opportunities have had on the organisation's business model, value chain, strategy and financial planning, as well as any transition plans or analysis in place.

C. Describe the resilience of the organisation's strategy to nature-related risks and opportunities, taking into consideration different scenarios .

D. Disclose the locations of assets and/or activities in the organisation's direct operations and, where possible, upstream and downstream value chain(s) that meet the criteria for priority locations.

Risk and impact management

Recommendation:

Describe the processes used by the organisation to identify, assess, prioritise and monitor nature-related dependencies, impacts, risks and opportunities.

Recommended disclosures:

A. (i) Describe the organisation's processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its direct operations.

A. (ii) Describe the organisation's processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its upstream and downstream value chain(s).

B. Describe the organisation's processes for managing nature-related dependencies, impacts, risks and opportunities.

C. Describe how processes for identifying, assessing, prioritising and monitoring nature-related risks are integrated into and inform the organisation's overall risk management processes.

Metrics and targets

Recommendation:

Disclose the metrics and targets used to assess and manage material nature-related dependencies, impacts, risks and opportunities.

Recommended disclosures:

A. Disclose the metrics used by the organisation to assess and manage material nature-related risks and opportunities in line with its strategy and risk management process .

B. Disclose the metrics used by the organisation to assess and manage dependencies andimpacts on nature .

C. Describe the targets and goals used by the organization to manage nature-related dependencies, impacts, risks and opportunities and itsperformance against these.

LEAP assessment

Locate

Evaluate

Assess

Prepare

Picture: Sulmierzyce, Poland.

The LEAP methodology

Locate the interface between the OX2 and nature.

- Where are our assets and direct operations located, including supply chain activities?
- What kind of nature have an interface with these activities? What is their
  - Integrity?
  - Importance?
  - Degree of priority for conservation?

Evaluate OX2's nature-related dependencies and impacts.

- What ecosystemic services are we dependent on to conduct our business, and how dependent are we?
- How does our business activities impact nature, and what is the severity, scale and scope of that impact?

Assess OX2's nature-related material risks and opportunities.

- What nature-related risks and opportunities are we exposed to as a company?
- How are we managing these risks and siezing these opportunities?
- Which risks and opportunities should be disclosed?

Prepare the information that should be disclosed and how it is to be presented to the public.

- How do we consider nature in our ways of working?
  - Policies and steering
  - Targets and metrics
  - Monitoring and disclosures
  - Allocated resources

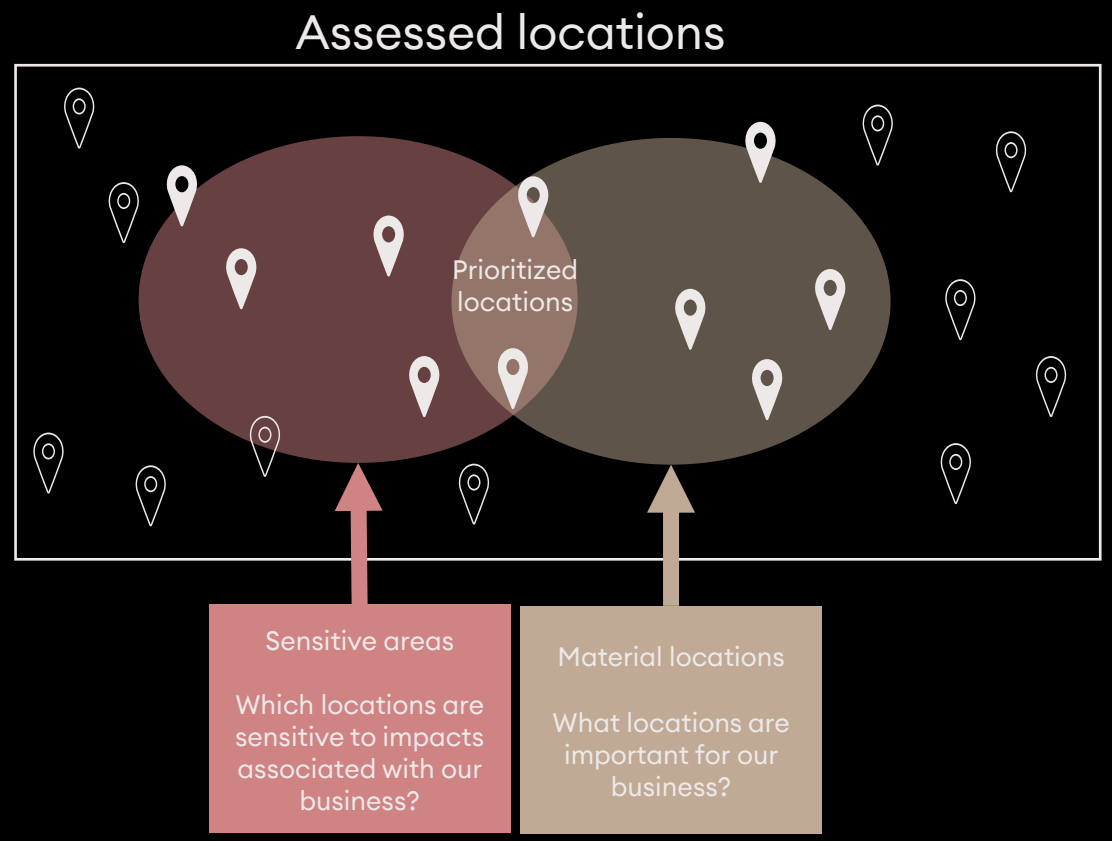
Locate

The purpose of the locate step of the LEAP methodology is to define locations where we prioritize our focus. Prioritized locations are areas that are material for our business and sensitive to impacts associated with our business.

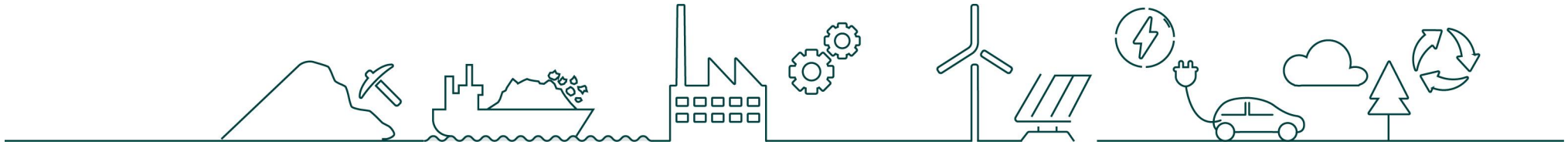
Steps of locate assessment:

- Identify locations to assess in the value chain
- Identify impacts on nature associated with our business
- Identify sensitive areas in our value chain
- Identify what locations are material for our business
- Asses locations to locate prioritized locations

Output: Prioritized locations



Assessed locations



Supply chain

- Material extraction: We look into markets where it is likely that material critical for our technologies are extracted.
- Material refinery: We look into markets where it is likely that material critical for our technologies are refined.

Direct operations

- Development portfolio: We refer our development portfolio as assets. Therefore we look into the markets we develop projects in as a whole, since it is part of our strategy to expand into new projects.
- Offices: We do not include our offices since these are not considered relevant for this assessment.

How we define sensitive areas

Areas of high conservation value

- Protected areas
- Key Biodiversity Areas (KBAs)
- Unique areas
- Red List Index

Areas of higher vulnerability to impacts

- Water stress
- Lacking nature policy coverage

How assessment can be improved

- Look into location within our markets (higher granularity) and apply scenarios, such as business as usual scenario for 2050 from Aqueduct.
- Look into specific content of the nature policies.

How we define material locations

Markets where we develop projects

All markets where we have a development portfolio are considered material. Criteria: development portfolio >0 MW.

Supply chain

The materials considered to determine our supply chain activities' interface with nature are from the IEA's list of critical materials used in wind power, solar power and energy storage that are on Science Based Targets for Nature's High Impact Commodity list.

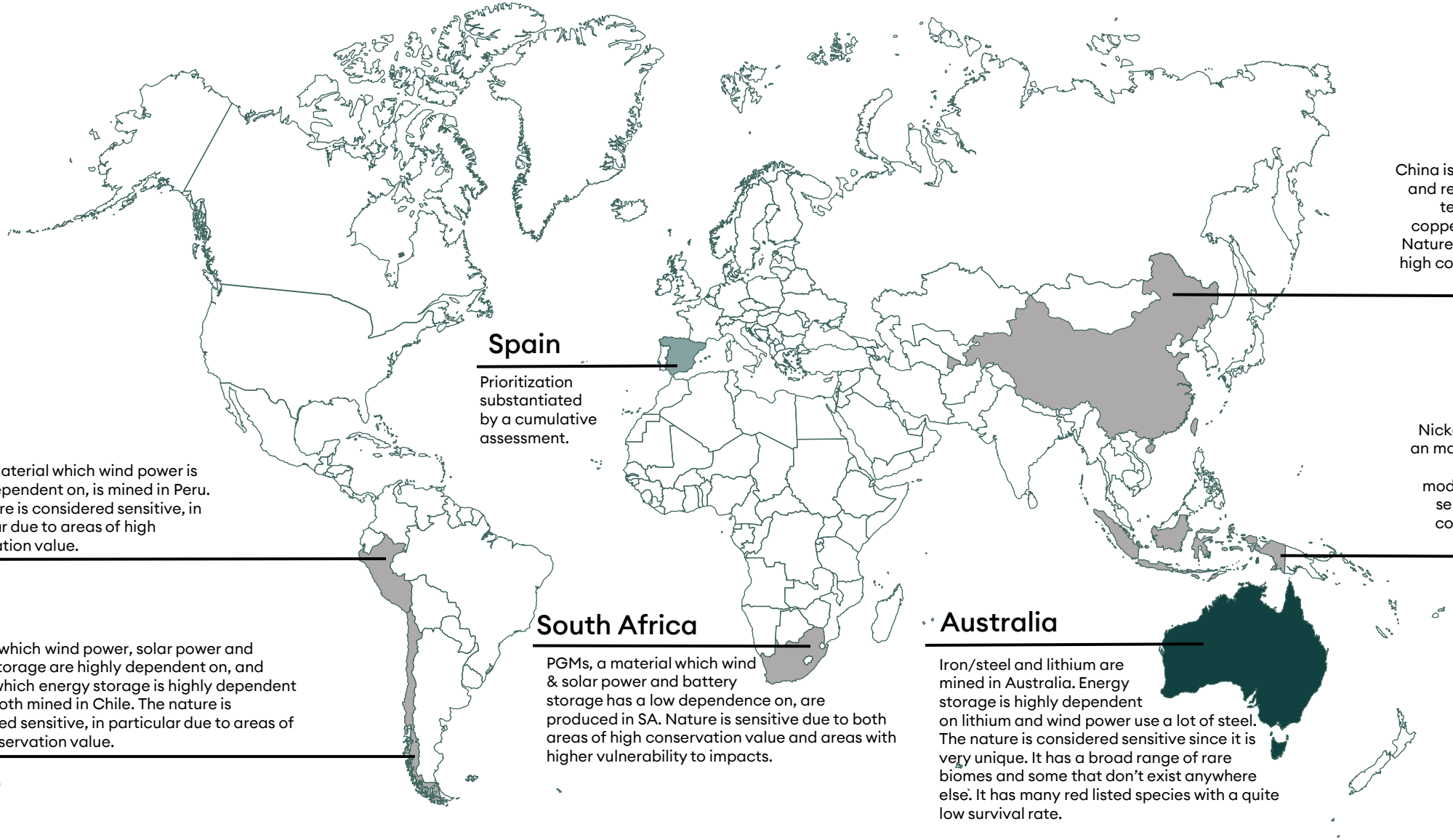
The mining and refinery locations are considered using data regarding a countries' share of World market (2022). Criteria: >20% of World production (mining or refinery) of considered materials.

To further improve the assessment, seek information about origin of material used by our suppliers, and look into more materials excluded from either the HIC list or the IEA report, that could be included in the technologies we work with.

Picture: Finley, Australia

Prioritized locations

Material sensitive locations



Spain

Prioritization substantiated by a cumulative assessment.

China

China is an important market for mining and refinery of material crucial for our technologies (aluminium, cement, copper, iron/steel, lithium and nickel). Nature is sensitive due to both areas of high conservation value and areas with higher vulnerability to impacts.

Peru

Zinc, a material which wind power is highly dependent on, is mined in Peru. The nature is considered sensitive, in particular due to areas of high conservation value.

Chile

Copper, which wind power, solar power and energy storage are highly dependent on, and lithium, which energy storage is highly dependent on, are both mined in Chile. The nature is considered sensitive, in particular due to areas of high conservation value.

South Africa

PGMs, a material which wind & solar power and battery storage has a low dependence on, are produced in SA. Nature is sensitive due to both areas of high conservation value and areas with higher vulnerability to impacts.

Indonesia

Nickel is mined in Indonesia, which is an material which batteries are highly dependent on and wind power moderately dependent on. Nature is sensitive due to both areas of high conservation value and areas with higher vulnerability to impacts.

Australia

Iron/steel and lithium are mined in Australia. Energy storage is highly dependent on lithium and wind power use a lot of steel. The nature is considered sensitive since it is very unique. It has a broad range of rare biomes and some that don't exist anywhere else. It has many red listed species with a quite low survival rate.

Direct operations

Supply chain

Direct operations and supply chain

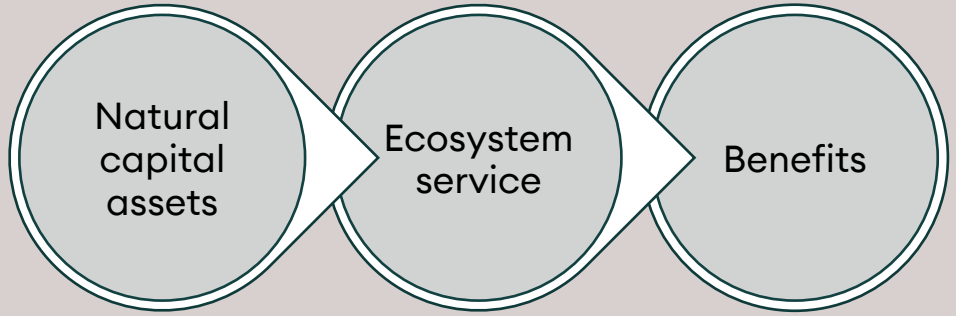
Evaluate

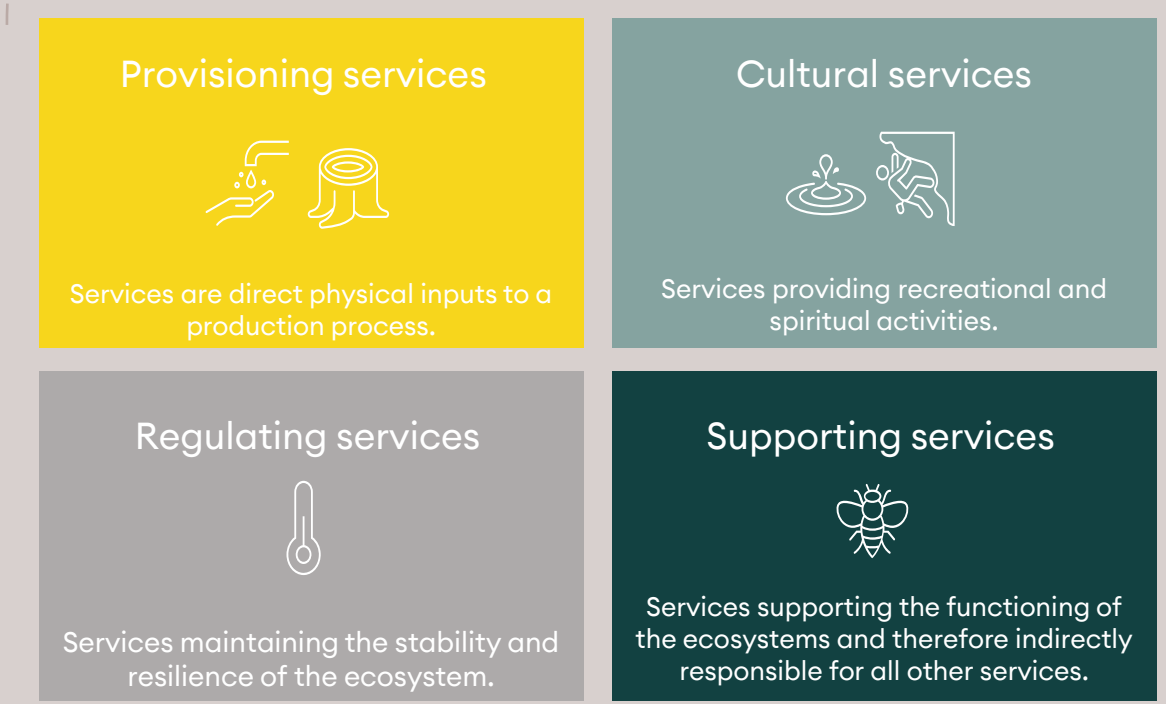
The purpose of the evaluation step of the LEAP methodology is to gain a deeper understanding of our nature-related dependencies and impacts; *What ecosystemic services are we dependent on to conduct our business, and how dependent are we? How does our business activities impact nature, and what is the severity, scale and scope of that impact?*

Steps in the evaluation assessment:

- Define how we quantify magnitude of our impact on the drivers of biodiversity loss
- Identifying the ecosystem services our business is dependent on
- Evaluating how dependent are we on the identifies ecosystem services
- Understanding the correlation between out impacts on nature, and how that impact is associated with our dependencies

Output: an overview of our impacts and dependencies

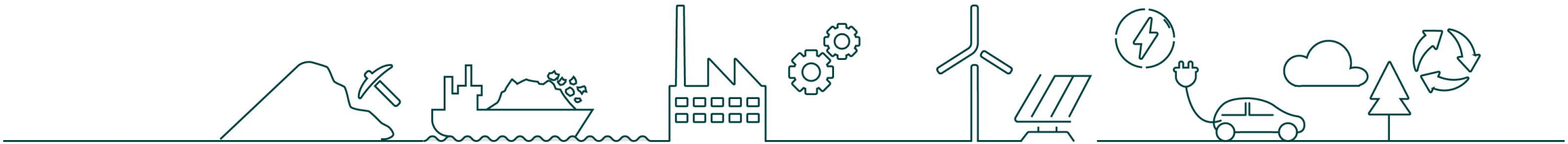




Our dependency on nature

What ecosystem services is our business dependent on, and how dependent are we on them?

Very low or low
Medium
High or very high



- Ground- and surface water
- Water flow maintenance
- Climate regulation
- Mass stabilization & erosion control

- Ground- and surface water

- Flood and storm protection
- Mass stabilization & erosion control
- Noise attenuation

- Climate regulation

Sources: ENCORE, TNFD Additional sector guidance – Electric Utilities and Power Generators
Scope: Encompasses upstream, direct operations and downstream (operational phase only) for solar and wind power.

Drivers of biodiversity loss

Defined by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)

Climate change

The increasing global average surface temperature has increased because of human activities. Warmer temperatures are altering habitats causing stress and mortality amongst species as well as alterations in behavior and interaction.

The energy sector accounts for over 70 percent of global GHG emissions[1]. The transformation of the energy sector is therefore key to reducing greenhouse gas emissions.

<u>OX2's main impacts</u>
Positive: Renewable energy enables the avoidance of greenhouse gas emissions deriving from fossil energy.
Negative: GHG emissions that arise throughout the life cycle of renewable energy projects and our business operations.

Land/freshwater/ ocean use change

Land use has increased significantly as global population has increased and developed. In 2023, land use was 4.91 billion hectares, mainly consisting of grazing and croplands. The built up area was 83.16 million hectares, which considers villages, cities, towns, roads, utilities and other infrastructure. In 2010, the share of and considered as natural habitat was 48%[1].

In a Rapid Transition Scenario which scaling of wind and solar power, the area saved by abandoning coal mining is estimated to be much larger than the increased area that is required to extract materials for the energy transition[2].

<u>OX2's main impacts</u>
Positive: Renewable energy enables repurposing area used for energy mining (coal and nuclear).
Negative: Area (land/sea/ocean) used to establish our projects, and fragmentation of habitats.

Resource use/ replenishment

Many different resourses are used by society, such as wood, minerals and water. Some resources are non-renewable, like minerals and oil, and some can be replenished, for example freshwater flows refilling an aquifer.

Water is used for many things, such as irrigating agricultural land, cooling nuclear power plants, and providing drinking water.

<u>OX2's main impacts</u>
Positive: Conservation and restoration efforts conducted in connection with our projects.
Negative: Water usage throughout the lifetime of our renewable energy projects.

Pollution/ pollution removal

Pollution entails substances being released into nature (soil, water and air) and well as other forms of disturbances (noise and light pollution).

Pollution can be both harmful and harmless. Some forms of pollution can bioaccumulate and grown into a harmful concentration through the food chain.

<u>OX2's main impacts</u>
Positive: Renewable energy enables the avoidance of nuclear waste, and other forms of pollution that occur in larger quantities in the business-as-usual scenario.
Negative: Noise pollution for wind turbines and potential pollution to air, soil and water.

Invasive alien species introduction/removal

Invasive alien species compete with native species for food, water and habitat, which can lead to some species being lost. They can also alter habitats and disrupt ecosystems by causing imbalance in the predator and prey equation and spread diseases.

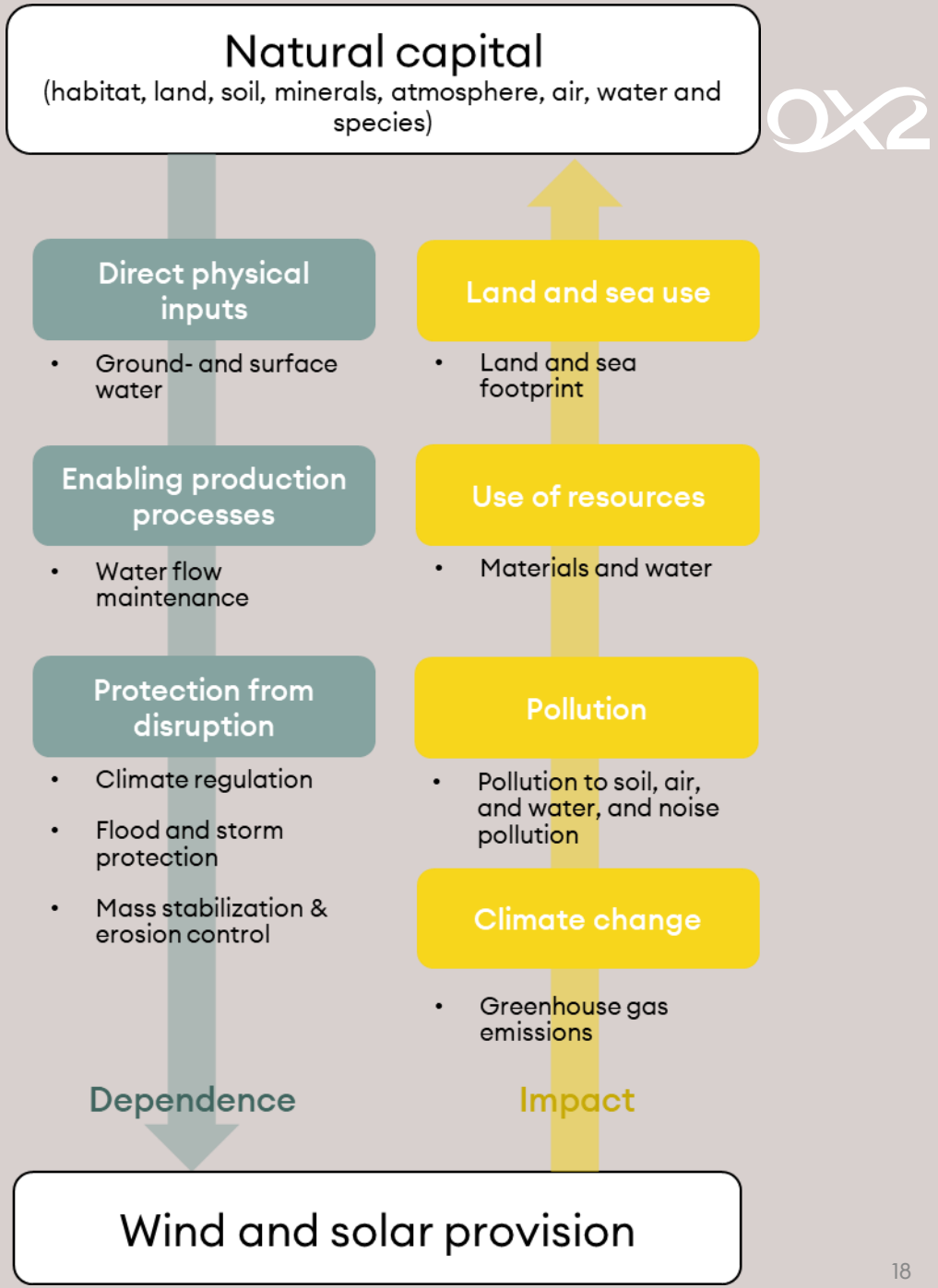
<u>OX2's main impacts</u>
Positive: Efforts to avoid the introduction and spread of invasive alien species during construction.
Negative: All construction activities pose a risk to introducing and spreading invasive alien species.

1) Our World in Data
2) BCG and WWF (2023), Building a Nature-Positive Energy Transformation

Evaluate outcome

The development of renewable energy is dependent on nature, both in terms of quantity and quality. Our business activities benefit from a healthy ecosystems that can provide continuous and foreseeable benefits. The most material dependencies and impacts are located in our supply chain. The most material dependency in our direct operation is climate regulation, followed by access to ground and surface water.

Underlying reports and data focus on standard values and global assumptions, which is why conclusions need to be contextualized and altered to fit our business. Impacts focus on negative impacts on nature and gross impact, not taking into consideration how renewable energy technologies can enable avoided impact from fossil and nuclear energy production which make up the majority of the energy system today. The relative impacts ought to be considered with caution since all negative impacts ought to be avoided. Simply put, renewable energy must not come at the expense of nature, even if it is better than business as usual.



Assess

The purpose of the assessment step of the LEAP methodology is to assess OX2's nature-related material risks and opportunities. The assessment is based on risks and opportunities identified in the sources mentioned below.

Sources:

- WBCSD nature-positive roadmap for utilities
- SBTN assessment (step 1) includen in pilot project for the SBTN framework
- ENCORE's defined reliance on ecosystem services
- TNFD sector guidance

Output: Overview of nature-related risk and opportunities, how we are to manage these, and how these are influenced by different scenarios

Picture: Delivery to Åmot, Sweden

List of identified transitional nature-related risks

	Policy and legal	Technology	Market	Reputation
Description	*Threats from increases policy and legislation aiming to address biodiversity loss*	*Threats to our project portfolio and technological expertise because of technological advancements and adoption.*	*Threats toward OX2's business due to changing market expectations on corporate nature action.*	*Threats towards OX2's business due to reputational damage.*
Identified risks	• Increasingly difficult to comply with due diligence and reporting regulation • Conflicts between carbon and nature focus • Policy favoring other technologies • Failure to ensure compliance in our projects	• Not keeping up with innovation and technical advancements required to integrate and consider nature in line with stakeholders' expectations • Unsuccessful investment in new technologies, initiatives, systems, tools and procedures • Inadequate specialized expertise	• Difficult to balance carbon and nature benefits • Increased competition (funding, land/sea access, talent, supply, etc.) • Market demand and behaviour unpredictable • Increase price of water and land/sea • Increased cost of raw materials	• Stigmatization of sector • Shift in customer preferences • Negative stakeholder concern and negative feedback • Risk of greenwashing
Potential financial impacts	• Increasing compliance cost • Fines for environmental crimes and false green claims	• Increased project costs • Reduced demand for our renewable energy solutions • R&D expenditures (direct or indirect) • Investments in training and education to adopt/deploy new technology, innovation and/or methods	• Increased price on land/sea agreements • Reduced demand for our renewable energy solutions • Increased project costs • Increased resources allocated to attracting and retaining talent, and talent development	• Decreased demand for our renewable energy solutions • Brand damage control

List of identified physical nature-related risks

	Acute	Chronic
Description	*Threats to OX2's short-term targets and strategy*	*Threats toward OX2's long-term targets and strategy*
Potential hazards	• Inadequate access to water • Inability to regulate climate • Increased intensity/frequency/duration of extreme weather events	• Soil erosion and degradation, impacting stability • Increased frequency, duration and magnitude of flooding as a result of activities in surrounding area
Identified risks	• Identification of protected species resulting in need for further investigations, additional permits and construction delay • Increased cost due to importing water	• Disrupt upstream activities, reduce output, and increase rapair and maintenance of facilities.
Potential financial impact	• Reduced revenue due to productivity capacity (transport difficulties and supply chain disruption) • Reduced revenue due to higher costs to ensure safety for protected species	• Reduced revenue due to higher operating costs e.g., higher cost of biodiversity measures for the projects

List of identified nature-related opportunities

	Policy and legal	Technology	Market	Reputation
Description	*Potential benefits from increases policy and legislation aiming to address biodiversity loss*	*Potential benefits to our project portfolio and technological expertise because of technological advancements and adoption.*	*Potential benefits toward OX2's business due to changing market expectations on corporate nature action.*	*Potential reputational benefits for OX2's business as a result of biodiversity work*
Identified opportunity	• Favorable policy environment for nature-centric renewable development	• Favoring low-carbon technologies • Integration so several technologies to generate and balance energy • Localized and low-impact innovation e.g., climbing cranes	• Financial flows directed towards nature-centric renewable development • Demand of combined climate and biodiversity perspectives in business offering • Increased investments in carbon reduction activities, and activities enabling the avoidance of GHG emissions • Access to carbon credit market	• A stronger social license to operate • Improved brand reputation

Driving forces

Political

The Kunming-Montreal Agreement requires countries to update their National Biodiveristy Strategy and Action Plans (NBSAPs) to formalize the political driver to nature action.

Implications for OX2

Nature action will increasingly become a license to operate, in particular in the permitting phase of our projects.

Policy is likely to support the expansion of protected area, potentially making it more difficult to find suitable areas for renewable energy projects.

Economical

Biodiversity work is increasingly valued from a risk management perspective. It is estimated that $44 trillion of economic value generation – over half the world's total GDP – is potentially at risk as a result of the dependence of business on nature and its services.

There are business opportunities in the transition to a nature-positive economy. It is estimated that the transition can bring trillions of dollars of new economic opportunities and creating more than 100 million jobs.

Implications for OX2

Monitor developments and effects on our dependencies in our supply chain and direct operations to manage risks.

Environmental

The World is experiencing biodiversity loss:

- It is estimated that the World has lost 70% of wildlife since the 1970s (LPI)
- As much as 40% of Earth's land surfaces are considered degraded
- More than 1 million species are now threatened with extinction

Implications for OX2

Monitor nature's capacity to deliver on OX2's dependencies, such as access to water.

Social

Society values nature in regards to their cultural, spiritual and recreational needs. The emotional attachement to certain species and locations drives expectations on renewable energy developers to value and consider their impacts on nature.

Implications for OX2

Engage locally to understand their relationship with nature and views of changed land/sea use.

Technological

Technology and innovation enables actors to consider and act on the ambition to reverse biodiversity loss and enhance nature. Examples include technological advancements that can deliver on the same needs with less negative impact on the environment.

Innovation and technology also facilitates inventories, surveys and assessments. The more we know abut nature, the better we can consider it in the development of renewable energy projects.

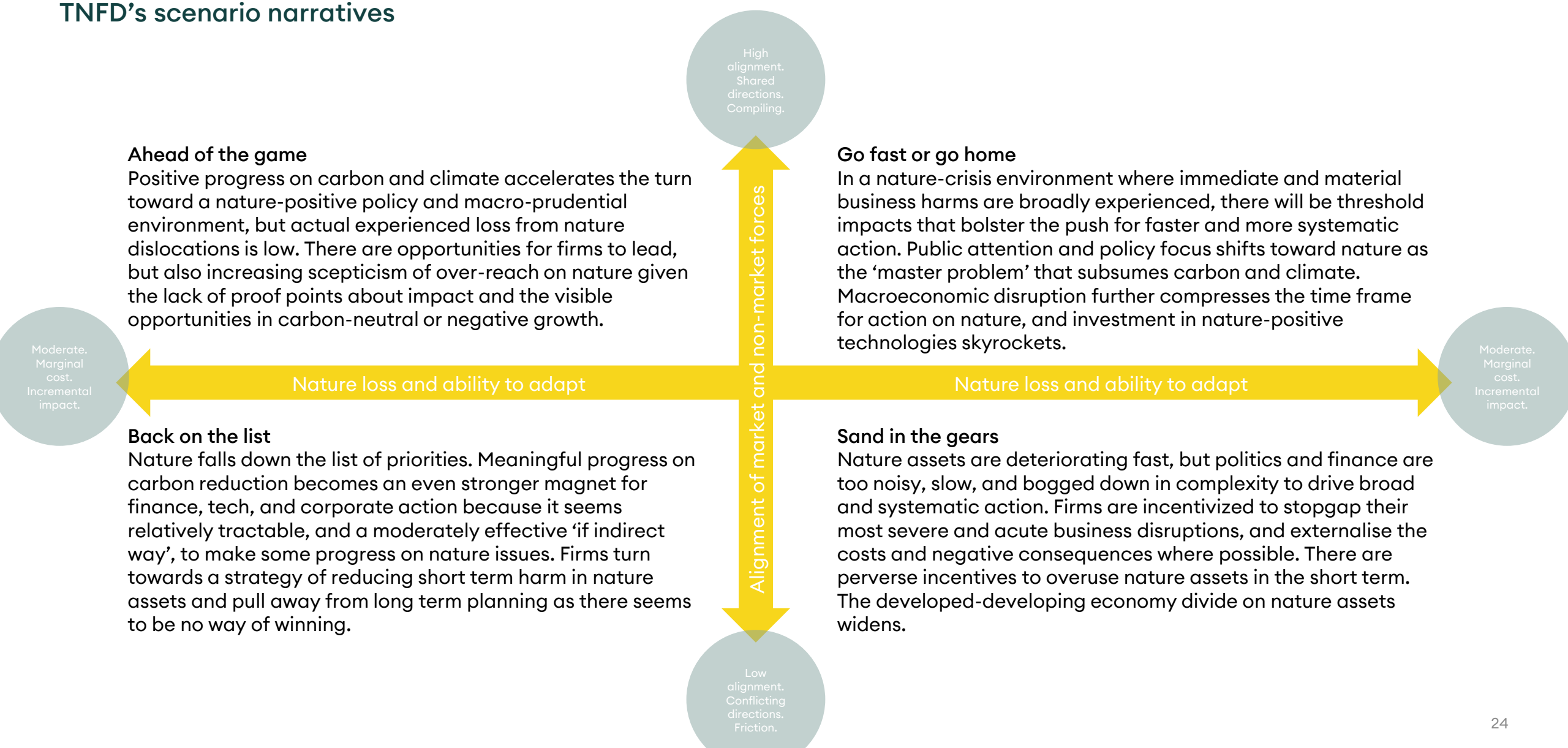
Implications for OX2

Monitor technological developments and innovative solutions to conduct efficient and data-driven work.

1) World Economic Forum, 2023

Nature scenarios

TNFD's scenario narratives



Ahead of the game
Positive progress on carbon and climate accelerates the turn toward a nature-positive policy and macro-prudential environment, but actual experienced loss from nature dislocations is low. There are opportunities for firms to lead, but also increasing scepticism of over-reach on nature given the lack of proof points about impact and the visible opportunities in carbon-neutral or negative growth.

Go fast or go home
In a nature-crisis environment where immediate and material business harms are broadly experienced, there will be threshold impacts that bolster the push for faster and more systematic action. Public attention and policy focus shifts toward nature as the 'master problem' that subsumes carbon and climate. Macroeconomic disruption further compresses the time frame for action on nature, and investment in nature-positive technologies skyrockets.

Back on the list
Nature falls down the list of priorities. Meaningful progress on carbon reduction becomes an even stronger magnet for finance, tech, and corporate action because it seems relatively tractable, and a moderately effective 'if indirect way', to make some progress on nature issues. Firms turn towards a strategy of reducing short term harm in nature assets and pull away from long term planning as there seems to be no way of winning.

Sand in the gears
Nature assets are deteriorating fast, but politics and finance are too noisy, slow, and bogged down in complexity to drive broad and systematic action. Firms are incentivized to stopgap their most severe and acute business disruptions, and externalise the costs and negative consequences where possible. There are perverse incentives to overuse nature assets in the short term. The developed-developing economy divide on nature assets widens.

Nature scenarios

Transitional perspective

Market forces:

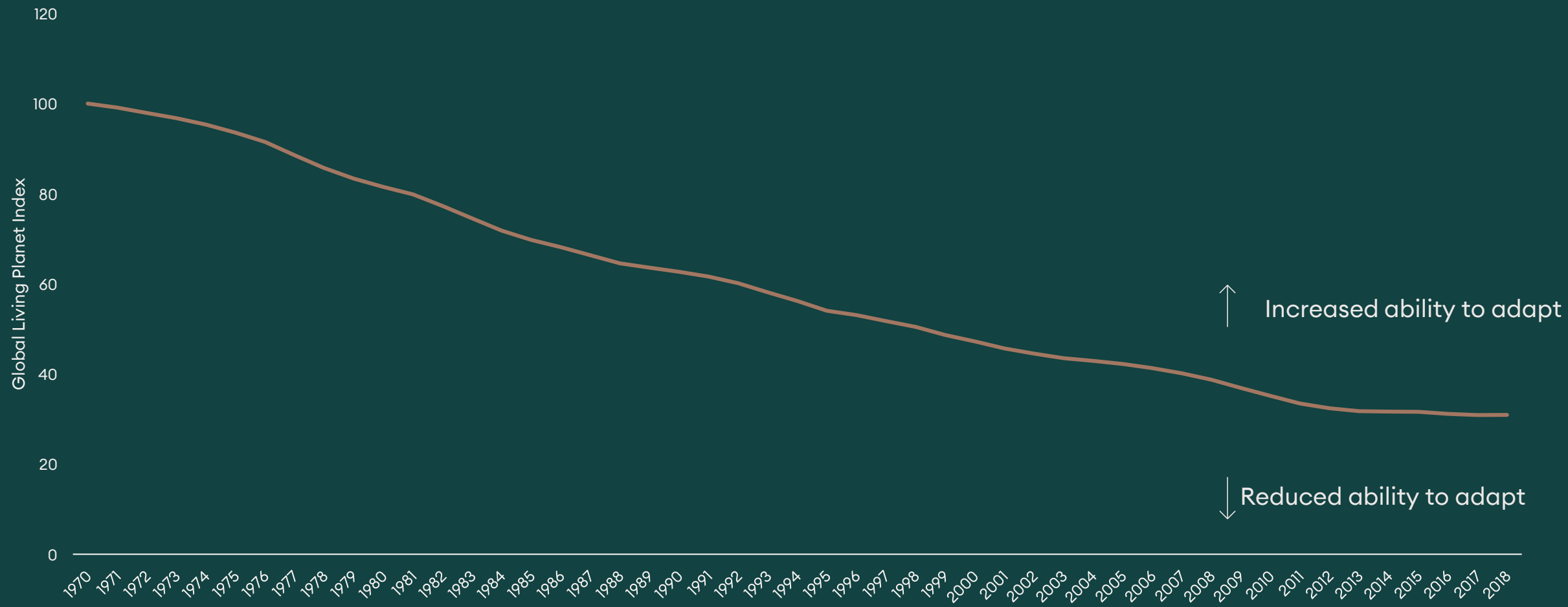
- Consumer behaviour (demand, awareness)
- Risk mitigation (response to anticipated physical effects)
- Pricing mechanisms (taxes, tariffs, trade, credits, linked loans)
- Impact investment trends (criteria)
- Technological advancements (efficiency, scalability)

Non-market forces:

- International policy (Agenda 2030)
- International commitments (Kunming-Montreal Agreement)
- Regional policy (Green Deal, EU taxonomy, CSRD, Green Claims Directive, Restoration Law, CSDDD)
- National legislation
- Cultural and social norms
- Media and information transparency
- Public awareness and social movements
- Academic research and science
- Reputational and brand

Nature scenarios

Physical perspective



Scenario analysis outcome

The demand for companies to further consider impact on and of nature is driven by political, economical, environmental, social and technological factors. The political and social drivers are the most noticed drivers when we develop projects, as it relates to receiving permits and our social license to operate, whilst the economical driver is increasingly noticed in the realization phase and in dialogue with current and potential customers.

OX2's business benefits from an alignment of market and non-market forces. Non-market forces, in particular regulation, is a necessity to deliver on the projects, and the market forces are key to realize the project to our customers.

Regardless of the scenario, credibility and transparency is key. This entails both delivering high-qualitative biodiversity reporting as a company, through ESRS E4, but also communicating to our stakeholder what we do and why. Communication channels are an important tool, but do not replace the ongoing dialogue and contact with the local communities.

The scenario analysis can be improved by increased participation and cases to exemplify risks, opportunities and drivers.

Prepare

The purpose of the prepare step of the LEAP methodology is to take action on the learnings on the locate, evaluation and assessment steps and how we are to publicly disclosure our work and DIROs.

Output (besides this report):

- **Statutory reporting (ESRS E4)**
- **Input to double materiality assessment (FY2025)**

Picture: Wysoka, Poland.

Next steps

- Report on out biodiversity work and nature-related DIROs in the Annual and Sustainability Report (FY2024).
- Communicate outcome to stakeholders.
- Explore how the outcomes of the LEAP assessment gives insights into our business.
- Review and assess the NBSAPs to be presented at COP16, as well as their implementation.
- Expand scope of data for future assessments:
    - Further understand what countries the material in our projects mainly come from.
    - Include decommissioning of our projects in future assessments.
    - Explore data and assessments to further include batteries in our assessment.
    - Find complementary data that is supplier and/or project-specific for a better understanding to our exposure to nature-related DIROs.

Picture: Möckelö, Åland, where we are testing wooden PV-structures.

Lessons learned

There is a lot of available reports and tools. Start with looking into these – it will make the assessment a lot easier!

What you measure matters, and therefore the definition of material and sensitive areas are key for the assessment, as well as criteria applied.

There will be gaps in data and information, but do not let these delay the work to consider nature-related DIROs.

Picture: Åndberg, Sweden

References

TNFD sources

- Recommendations of the Taskforce on Nature-related Financial Disclosures, 2023
- The TNFD's proposed approach to scenario Analysis, 2022
- TNFD sector guidance: Electric utilities and power generators, TNFD, 2024
- TNFD Nature-related Risk and Opportunity Registers, 2022

Other sources

- BUILDING A NATURE-POSITIVE ENERGY TRANSFORMATION: Why a Low-Carbon Economy is Better for People and Nature, WWF & BCG, 2023
- High impact commodities list, SBTN (2023)
- Nature Positive Roadmap for Energy Systems, WBCSD, 2024
- Nature-safe Energy: Linking energy and nature to tackle the climate and biodiversity crises, CLEANaction, 2023
- Energy Transitions Commission, Material and Resource Requirements for the Energy Transition, 2023

Non-public internal sources

- Environment and human rights risk assessments for supply chain for wind, solar and batteries (2022)

Appendix locate

How we locate our interface with nature

Kind of locations	Material locations		How the assessment can be elaborated
	Source used to determine scope	Criteria applied	
Markets where we operate	N/A	Where OX2 holds has a development portfolio >0MW	• More granularity: Look into the actual project sites within the markets where we operate • Expand geographical scope: Look into potential markets based on suitable criteria, for example countries with a RE target.
Raw material extraction sites	• Critical mineral needs for clean energy technologies and their mining and refinery location, IEA 2021 • High impact commodities list, SBTN 2024 (v.1.1) • Mineral commodity summaries, USGS 2024	>20% of World's extraction of HICs that are critical for our technologies	• Expand boundary by considering more materials: Look into additional material excluded from the IEA list of critical materials for renewable technologies, that could possibly be used for our projects. • Validate boundary: Investigate the specific materials used in the models of PV modules, battery cells and wind turbine generators that we use in our projects. • Specify boundary: Consider strategic decisions from us and our suppliers regarding avoidance and phase out of materials. • Specify boundary: Engage with our first tier suppliers to identify the location of their manufacturing sites.
Material refinery sites		>20% of World's refinary of HICs that are critical for our technologies	

Assessed markets – direct operations

Criteria: development portfolio >0MW

Market	Development portfolio (MW, Q1 2024)	Current activity			
		Onshore wind	Offshore wind	Solar power	Energy storage
Sweden	10,177				
Finland	9,471				
France	509				
Poland	3,115				
Italy	724				
Romania	620				
Greece	979				
Estonia	859				
Spain	25				
Åland*	5,225				
Australia	1,402				

**An autonomous region in Finland*

Our supply chain's interface with nature

The materials considered to determine our supply chain activities' interface with nature are determined by IEA's list of critical materials used in wind power, solar power and energy storage that are on Science Based Targets for Nature's High Impact Commodity list.

The mining and refinery locations are considered using data regarding a countries' share of World market. To further improve the assessment, seek information about origin of material used by our suppliers.

Note limitations

- Additional HIC may occur in the technologies we work with, such as chromium, bauxite, and gold, but these are not assessed to be critical by the IEA report.
- There may be materials considered critical in the IEA report but not included on this version of SBTN's HIC list, such as REEs.

Material*	Importance for respective technology (IEA, 2021)		
	Wind power	Solar power	Energy storage
Aluminium	Moderate	High	High
Cement	N/A	N/A	N/A
Copper	High	High	High
Iron	N/A	N/A	N/A
Lithium	Low	Low	High
Nickel	Moderate	Low	High
Platinum group metals	Low	Low	Low
Steel	N/A	N/A	N/A
Zinc	High	Low	Low

**All of these listed materials are on the SBTN HIC list (v1.1).*

Assessed locations - supply chain

Criteria: >20% of World production (mining or refinery) of considered materials

Market	Aluminium		Cement		Copper		Iron/steel[1]		Lithium		Nickel		PGM		Zinc	
Mining (M) or refinery (R), %	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M	R
Australia							~40		40-60							
Chile					20-40				~20							
China	40-60[2]		40-60[2]			~40		~60		40-60		20-40				
Indonesia											20-40					
Peru															~30	N/A
South Africa													60-80[2]			

1. Data for steel and iron is accessed jointly. 2. Stated as producing country, no defining mining and refinery separately.

Impacts arising from our business

Identification of the impacts connected to our business derives from:

- Nature Positive Roadmap for Energy Systems, WBCSD, 2024
- Building a Nature-Positive Energy Transformation: Why a Low-Carbon Economy is Better for People and Nature, WWF & BCG, 2023

Impact

The impacts associated with our business includes the entire value chain: upstream, direct operations and downstream. The categorization of impacts follow the five identified impact drivers of IPBES that drive biodiversity loss.

Understanding of what kind of impact could arise from our business is key to identify relevant indicators for defining sensitive locations.

Land-/water-/sea-use change	Terrestrial ecosystem use
	Freshwater ecosystem use
	Marine ecosystem use
Resource exploitation	Water use
Climate change	GHG emissions
Pollution	Non-GHG air pollutants
	Water pollutants
	Soil pollutants
	Solid waste
Invasive species and others	Disturbances
	Biological alterations/ interferences

The drivers of change as defined by IPBES and the impact drivers that are quantified per technology.

How we assess sensitivity of locations

Sensitivity indicator	Tools and systems used for assessment	Criteria used for assessment	Reasoning for criteria
Water stress	FAO, 2020	Medium, high or critical water stress Water stress defined by freshwater withdrawals as a share of internal (%).	Water stress poses risk for biodiversity.
Coverage of protected areas	IBAT	Protective area coverage <20%	Low coverage indicates a high probability of country protecting new land to meet 30 by 30 target (protect 30% of World's nature by 2030). This could have an effect on our interface with nature could be located within or near nature in newly protected area.
Key Biodiversity Areas covered by protection/OECMs, %	IBAT	Mean percentage coverage of KBAs by Protected Areas and/or Other effective area-based conservation measures (OECMs) <50%	Higher coverage of KBAs by protected areas and/or OECMs implies that valuable nature is protected by respective regulation and assessment processes. Lower share implies a higher risk of activities associated with our business occurs within or near KBAs.
Red List Index	IBAT	RLI < 0,85 Red List Index (RLI) spans between 0 (low probability of survival) and 1 (high probability of survival) Read more about The Red List Index (RLI) here: https://www.iucnredlist.org/assessment/red-list-index	Low probability of species survival implies futher loss of biodiversity. To support the ambition of reversing biodiversity loss and contributing to nature's recovery, negative impacts in areas with low survival rate ought to be avoided. Note! The index does not indicate what is threatening the species survival. It could be climate change caused by activities outside of the country in question.
Occurrence of biomes global coverage	Global Ecosystem Typology	>5 biomes with >25% global occurrence (minor and major) Note that scale is 0-200% due to the combination of major occurrences (0-100%) and minor occurrences (0-100%).	Ecosystems that are unique are crucial to maintain to support the variety of habitats – and therefore variety of species – on this planet. Note! The percentage does not indicate the area of respective biomes occurrence, its concentration in the country, its importance to threatened species or its vulnerability to the impacts associated with our business. For next assessment, consider a more standardized indicator of uniqueness.
Date of latest NBSAP	CBD	The latest National Biodiversity Strategy and Action Plan (NBSAP) was published earlier than 2010.	A country with an recently updated NBSAP indicates it is committing to implementing the Global Biodiversity Framework, which can have implications on permitting processes and other policy.

Sensitivity assessment

Based on vulnerability, uniqueness, integrity, and importance of nature

Country	Direct operations	Value chain	Water stress	Protected Areas	Key Biodiversity Areas	Red listed species	Uniqueness	NBSAP
			Freshwater withdrawals as a share of internal resources, %	Share of protected areas, %	Mean percentage coverage of KBAs by Protected Areas and/or OECMs, %	Red List Index (RLI) 0-1	Number of biomes with global occurrence >25% (scale 0-200)	Latest version (date)*
Australia	x	x	No stress (3,47%)	20,36%	57,31%	0,81	12	v.1 (1996)
Chile		x	No stress (8,98%)	21,05%	33,11%	0,75	1	v.1 (2003)
China		x	Low stress (41,52%)	15,62%	10,06%	0,73	7	v.1 (1994)
Estonia	x		No stress (9,23%)	21,41%	94,89%	0,99	0	v.2 (2012)
Finland	x		No stress (7,11%)	13,40%	71,64%	0,99	0	v.3 (2012)
France	x		No stress (23%)	28,40%	81,10%	0,83	0	v.2 (2011)
Greece	x		No stress (20,48%)	35,22%	87,03%	0,83	0	v.1 (2014)
Indonesia			Low stress (29,7%)	12,06%	25,82%	0,75	3	v.2 (2003)
Italy	x		Low stress (29,81%)	21,58%	76,66%	0,89	0	v.1 (2010)
Peru		x	No stress (7,18%)	22,55%	28,84%	0,73	2	v.2 (2014)
Poland	x		Low stress (30%)	39,57%	88,20%	0,97	0	v.3 (2015)
Romania	x		No stress (6,01%)	24,52%	76,14%	0,86	0	v.1 (2001)
South Africa		x	Medium stress (65,03%)	9,39%	36,60%	0,77	0	v.2 (2015)
Spain	x		Low stress (43,25%)	28,12%	59,39%	0,85	1	v.3 (2011)
Sweden	x		No stress (3,58%)	15,43%	59,68%	0,99	0	v.3 (2014)

*Last updated 2021-07-22
Scale for sensitivity assessent: Red and orange are considered sensitive.
Countries in bold are determined to be prioritized. No green assessments implies a cumulative assessment of sensitivity.

Further developments of TNFD assessment

Focus on downstream

- Operational life of the projects (maintenance, repairs and electricity generation)
- Decommissioning of projects

Focus on value-chain adjacent areas

- Transmission and distribution of electricity

Picture: Karskruv, Sweden

Appendix evaluate

Our business impact on nature

IPBES drivers of change	Impact drivers	Upstream		Direct	Downstream
		Mining[1]	Supply chain[2]	Construction	Operation
Land-/water-/sea-use change	Terrestrial ecosystem use[4]	VH	M	M/L	L
	Freshwater ecosystem use	H	M	L	L
	Marine ecosystem use[3]	H	M	M/L	L
Resource exploitation	Water use	VH	H	L	L
Climate change	GHG emissions	H	H	L	L
Pollution	Non-GHG air pollutants	H	M	ND	ND
	Water pollutants	H	H	L	L
	Soil pollutants	H	H	L	L
	Solid waste	H	M	L	L
Invasive species and others	Disturbances	H	M	L	L
	Biological alterations/ interferences	M	L	M/L	L

1. Assessment of impact from mining refers to the entire utilities sector and therefore includes mining of coal and consumable fuels.
2. Assessment of impact from supply chain refers to the entire utilities sector and therefore includes mining of coal and consumable fuels. Sourcing of equipment and material used for direct operations (processing, production, manufacturing, distribution, logistics and transportation).
3. Only applies to offshore wind for direct and downstream impact.
4. Only applies to onshore technologies for direct and downstream impact.
Brown colour refers to company-specific assessment.

Sources: WBCSD Nature Positive Roadmap Energy Sector, ENCORE, TNFD Additional sector guidance – Electric Utilities and Power Generators

Our impact on the drivers of biodiversity loss

Climate change

Positive impact

- The renewable energy generated from projects we develop enable the avoidance of GHG emissions stemming from fossil fueled energy.
- The work we do with climate change adaptation contributes to securing societies' reliance on renewable energy.
- Measures we do to enhance biodiversity can entail increased carbon sequestration.
- The work we do together with suppliers and customers achieve more circular resource flows contribute to less greenhouse gas emissions occurring in our value chain.

Negative impact

- GHG emissions from upstream, maintenance, repairs and decommissioning of our projects.
- GHG emissions arising from our business operations (business travel, etc).

How we quantify the magnitude of our impact

Climate change

Impact metric	Aspect of magnitude			Magnitude low/medium/high (qualitative assessment)
	Scale	Severity	Scope	
GHG emissions stemming stemming from our projects	Wind: 6-12 gCO_2e/kWh Solar: about 20-40 gCO_2e/kWh* *assumption – not yet measured at OX2	The two planetary boundaries for climate change (CO_2 concentractions and radiative forcing) have both been surpassed. The energy sector accounts for around 75 percent of global greenhouse gas emissions. The transformation of the energy sector is therefore key to reducing greenhouse gas emissions.	Development portfolio >32 GW Q2 2024: Onshore wind power 11,505 MW Offshore wind power 13,768 MW Solar power 6,804 MW Note: Energy storage excluded	Medium
	Share of suppliers (by spend) with set science-based targets. To be measured.			
GHG emissions arising from our business travel	2024 Q1: 231 $kgCO_2e$ per employee from business travel 2024 Q2: 190 $kgCO_2e$ per employee from business travel	Aviation makes up most of our business travel emissions. In 2021, 1.77% of global GHG emissions derive aviation[1].	In Q2 2024 OX2 had around 500 employees.	Low
Enablement of avoided GHG emissions	10-610 gCO_2e/kWh	Enablement of avoided GHG emissions from electricity depends on market. The carbon internsity of electricity varies between the markets where we operate.	Contracts under management in Q2 2024 > 5 GW	High

1) Source: https://ourworldindata.org/grapher/aviation-share-co2

Our impact on the drivers of biodiversity loss

Land/freshwater/ocean use change

Positive impact

- Renewable energy technologies reduces societies dependence on fossil and nuclear forms of energy, both of which require energy mining (continuous mining to be used as input to the electricity generation). Renewable energy therefore enbles coal and uranium mines to be closed, increasing access to land upstream (WWF & BCG, Nature Positive Energy Transition, 2023).
- Our biodiversity efforts include compensation, which has a positive effect of land/freshwater/ocean use.

Negative impact

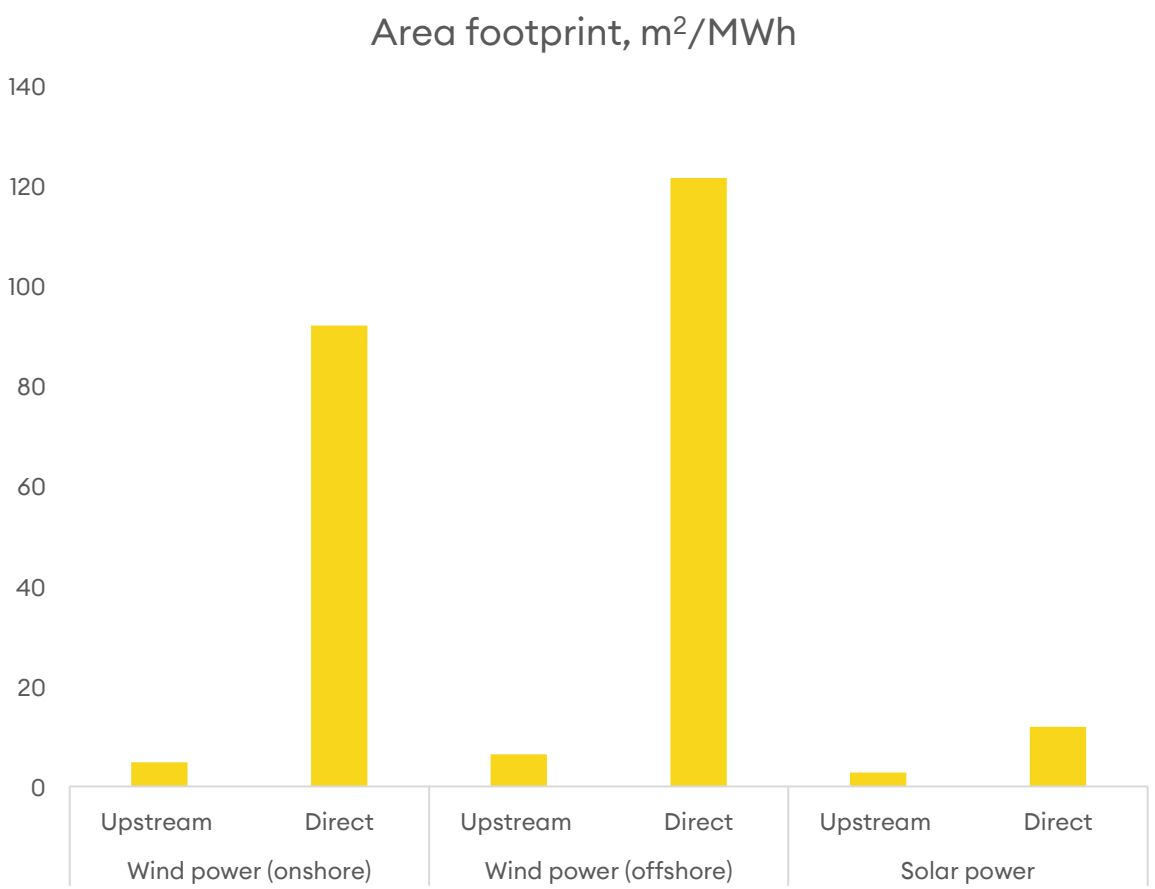
- The construction of our projects and surrounding infrastructure such as access roads requires large areas of land/sea, leading to habitat loss and disturbances on and displacement of living organisms.
- Considering the spacing of wind and solar power, habitats are fragmented.

How we quantify the magnitude of our impact

Land/freshwater/ocean use change

Impact metric	Aspects of magnitude			Magnitude low/medium/high (qualitative assessment)
	Scale	Severity	Scope	
Area intensity deriving form our projects	Onshore wind power 97 m^2/MWh Offshore wind power 128 m^2/MWh Solar power: 14 m^2/MWh Note! Excluding the so-called 'spacing', meaning the area between the wind turbines, the area intensity for wind power is 4 m^2/MWh	The severity of the impact depends on the state of nature in the area used. We can avoid establishing our projects in protected areas, in nature with high biodiversity values, and in habitats for red-listed species. We need more information about what the state of nature is upstream, where the materials we use derive from.	"With poor siting, more than 10 million hectares of natural lands worldwide (an area the size of Iceland) could be cleared for wind and solar development as countries seek to meet their climate commitments under the Paris Agreement." (TNFD Additional Sector Guidance Electric Utilities and Power, 2024)	Medium
Repurposed area due to reduced energy mining	"The Rapid Transition scenario will have 25% less mined area than today." (BCG & WWF Nature Positive Energy Transition Report, 2023)	The benefit or increased access to land depends on how it is used. In Australia we are working with making energy parks in old coal mines, with renewable technologies and ancillary services. We need more information about how former mines are used upstream, where energy-mining used to derive from.	"By 2050, the RT scenario will have 30% less total land area that is actively mined (76,000 km2) and one third less active mines (2,300) compared to BAU (at 108,000 km2 and 3,400 respectively), primarily due to the decommissioning of coal mines." (BCG & WWF Nature Positive Energy Transition Report, 2023)	High
Wind power poses physical barrier for animals, causing collisions	Wind turbines can cause mortalility of birds and bats as a result of collision, but the scale is very small in comparison to cats, traffic, windows and oil leakages.	The severity depends on the placement and remediating factors for birds and bats. For example avoiding placing wind turbined near birds' breeding location, and adapting light for bats.	Q2 2024: Onshore wind power 11,505 MW Offshore wind power 13,768 MW	Small/Medium

Area intensity data and scenarios



The area footprint is consists of area footprint from mining (upstream) and project location (direct operations).

Mining plays a key part in tomorrows energy system

From comparing a Rapid Transition (RT) scenario and a Business as Usual (BaU) scenario, it can be concluded that mining plays a major role in supporting the energy sector in both scenarios. However, the kind of mining varies.

RT: lithium, nickel, graphite, neodymium, copper, cobalt, steel, silicon, silver, aluminum, etc.

BaU: coal, uranium, etc.

By 2050, the RT scenario will have 30% less total land area that is actively mined (76,000 km2) and one third less active mines (2,300) compared to BAU (at 108,000 km2 and 3,400 respectively), primarily due to the decommissioning of coal mines.

The comparison is even more stark when comparing the actively mined land area for primary energy production only, which is 16.4 times higher in a BAU (34,400 km2) than the RT scenario (2100 km2). So, the extent of land spared from decommissioned coal mines will be far greater than the land needed for mining critical minerals for the energy transition.

Placement of the area footprint

Solar and wind power has the majority of its area footprint in the direct operations (85-95%) whereas fossil (oil, gas and coal) and nuclear has most of its area footprint upstream (10-15%).

Source: BCG & WWF Report 2023,

Our impact on the drivers of biodiversity loss

Resource use/replenishment

Positive impact

- Our biodiversity efforts include conservation and restoration which increase the quality and quantity of ecosystem services.

Negative impact

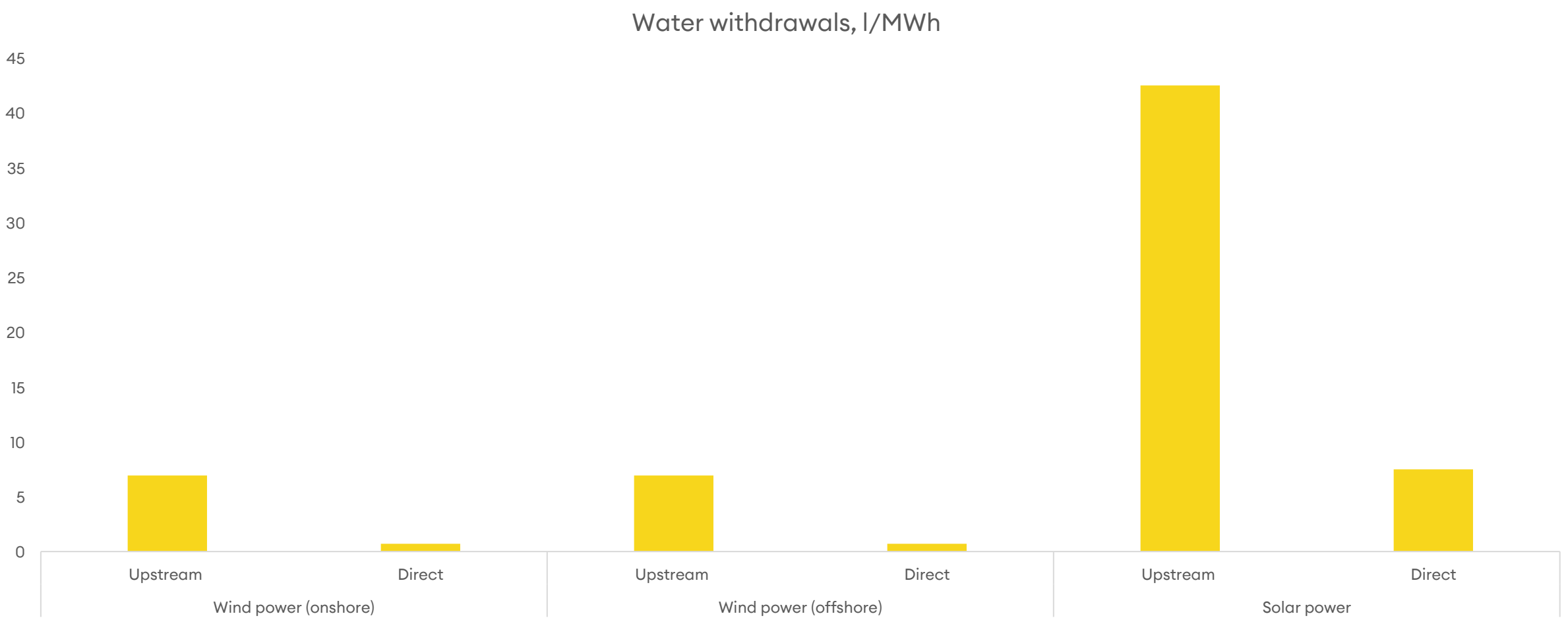
- Raw mining extraction upstream requires water use.
- Water is used in construction to water roads (to avoid dust), to mix concrete and wash components and equipment.
- Water us used in the operationat phase to maintain the efficiency of the facilities. For example washing off dust from solar panels to enable sunlight to reach the panels and generate electricity.

How we quantify the magnitude of our impact

Resource use/replenishment

Impact metric	Aspects of magnitude			Magnitude low/medium/high (qualitative assessment)
	Scale	Severity	Scope	
Water intensity	Wind power 7 l/MWh Solar power: 50 l/MWh Note that fossil and nuclear use more water, about 90-500 l/MWh "(...) without bioenergy the BAU's withdrawals would be four times greater than those of the RT." (BCG & WWF 2023)	Severity depends on whether the water used stems from an area with water stress. Prioritised locations identifified no markets with high or very high water stress.	Development portfolio >32 GW Q2 2024: Onshore wind power 11,505 MW Offshore wind power 13,768 MW Solar power 6,804 MW Note: Energy storage excluded	Medium
Coservation and restoration efforts	Not yet quantified. See GRI 304-3 (Habitats protected) in Annual and Sustainability Report 2023 for more information.	Benefit depends on the impact of the conservation and restoration efforts.	Small scope due to project-specific.	(very) low

Water intensity data and scenarios



Our impact on the drivers of biodiversity loss

Pollution/pollution removal

Positive impact

- Circularity economy principles, that we promote, can reduce pollution up- and downstream.
- Renewable energy enables the avoidance of nuclear waste.

Negative impact

- Potential pollution from upstream mining and manufacturing.
- Mining activities upstream can cause pollution (air-, water- , soil -and noise pollution).
- Construction and decommissioning of renewable energy facilities can cause pollution to nature (air-, water- , and soil pollution) and in all cases cause noise pollution.
- The operational phase causes noise pollution.

How we quantify the magnitude of our impact

Pollution/pollution removal

Impact metric	Aspects of magnitude			Magnitude low/medium/high (qualitative assessment)
	Scale	Severity	Scope	
Pollution to air, soil, and water	LCAs include ecotoxicity potential, a measure of potential pollution into soil, water and air	The potential pollution is associated with the manufacturing phase which occurs in controlled environments, which reduced the likelihood of pollution.	"Pollution [of water] from energy development is reduced significantly in the RT scenario compared to BAU." (BCG &WWF 2023)	Low
Noise pollution from wind turbines	EPDs include noise calculations. Example (SG 6.2) noise level is lower than 106.5 dBA Noise decreases with distance from wind turbine.	The severity depends on the placement. Avoid placing wind turbines too close to communities. Aerodynamic noise relevant (from blades). Mechanical noise (inside the nacelle) is not relevant. Noise restrictions managed by permit.	Q2 2024: Onshore wind power 11,505 MW Offshore wind power 13,768 MW	Low
RE enables the avoidance of nuclear waste	AIB (2023) measures nuclear waste intensity (mg/kWh) in national energy mixes: SE: 0,77 FI: 1,26 FR: 1,77 ES: 0,57 RO: 3,55	Severity depends on the processes in which the radioactive waste is kept and long-term plans for storage of nuclear waste. Due to the long-lasting and irreverseable damage from nuclear waste, it is considered severe.	Q2 2024: Onshore wind power 11,505 MW Offshore wind power 13,768 MW	Low/Medium

Our impact on the drivers of biodiversity loss

Invasive alien species introduction/removal

Positive impact

- Training and raising awareness of IAS for people who work on-site

Negative impact

- All construction implies a risk of introducing or spreading IAS.

How we quantify the magnitude of our impact

Invasive alien species introduction/removal

- We currently do not have an indicator regarding our work in mitigating the accidental introduction or spreading of IAS, or any examples of where we actively remove IAS.

Appendix assess

Approach to nature scenario analysis

Focal question

How could nature-related physical and transition risks plausibly affect our company including logistical and supply chain?

Value chain

Upstream: mining, processing, manufacturing, and transportation
Direct operations: construction and technological installation
Downstream: repairs, maintenance, monitoring, and decommissioning

Time horizon

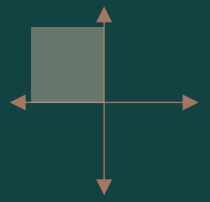
- The short-term perspective (0-2 years) encompasses the financing and development of our projects.
- The medium-term perspective (2-5) encompasses the construction of our projects.
- The long-term (5-40) perspective encompassed the lifetime of our projects.

Assumption

That sector-specific material and assessments are relevant for OX2.

Nature-scenario analysis

Ahead of the game



Scenario description

Positive progress on carbon and climate accelerates the turn toward a nature-positive policy and macro-prudential environment, but actual experienced loss from nature dislocations is low.

There are opportunities for firms to lead, but also increasing scepticism of over-reach on nature given the lack of proof points about impact and the visible opportunities in carbon-neutral or negative growth.

Alignment of market and non-market forces: High

The market and non-market forces have shared directions, support each other in a compiling way.

Nature loss and ability to adapt: Moderate

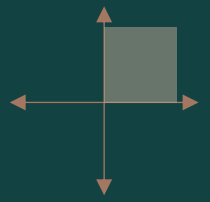
The consequences of nature loss is incremental and has marginal cost for society. As a result, society has a moderate ability to adapt for future developments and impacts.

Potential implications

- **Enhance transparency and credibility:** Increased demand for robust impact measurement capabilities and system support to enable transparent reporting. A transparent track record and experience of measuring activities and performance benefits OX2.
- **Integrate nature into project development:** Following the mitigation hierarchy and beyond becomes common practice. OX2 benefits from being an early adopter with established ways of working and aggregated competence.
- **Resilience is valued:** Nature action is valued as a risk mitigation measure contributing to investor confidence. Practive and integrated ways of working with nature-related risks facilitates realization processes.
- **Stakeholder engagement:** Nature-action is deeply rooted in the social license to operate, where a credible and ambitious approach to biodiversity strengthens relationships with regulators, communities, and investors.
- **Growing scepticism:** Scepticism is polarizing and politicizing the debate regarding how companies are to consider biodiversity going forward, challenging OX2's biodiversity commitments and related actions.

Nature-scenario analysis

Go fast or go home



Scenario description

In a nature-crisis environment where immediate and material business harms are broadly experienced, there will be threshold impacts that bolster the push for faster and more systematic action. Public attention and policy focus shifts toward nature as the 'master problem' that subsumes the topic of climate. Macroeconomic disruption further compresses the time frame for action on nature, and investment in nature-positive technologies skyrockets.

Alignment of market and non-market forces: High

The market and non-market forces have shared directions, support each other in a compiling way.

Nature loss and ability to adapt: Severe

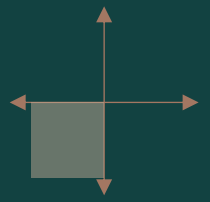
The severe loss of nature causes disruptive cost to society. The experiences impacts surpass thresholds making adaptation difficult.

Potential implications

- **Innovation and adaptation:** Integrated nature-positive practices are increasingly valued by our stakeholders. Incentives to integrate nature accelerates nature-centic innovation available within the energy sector. Ambitious and proactive work with nature could be a competitive advantage for OX2, if successfully applied in our projects.
- **Diversification of revenue streams:** Expanding beyond traditional renewable energy offerings to include nature-based solutions or services (like carbon credits tied to biodiversity) can create new revenue streams and reduce exposure to market fluctuations.
- **Scenario planning:** Given the urgency and potential for macroeconomic disruption, robust risk management and scenario planning will be essential.
- **Stakeholder engagement:** Clear and concise communication about the nature benefits of renewable projects will be critical.
- **Broader engagement:** An accelerated integration of nature-positive practices is materializing in new and creative forms of partnerships with the intention of doing more together.

Nature-scenario analysis

Back on the list



Scenario description

Nature falls down the list of priorities. Meaningful progress on climate change mitigation becomes an even stronger magnet for finance, tech, and corporate action because it seems relatively accessible, and moderately effective indirect way to make some progress on nature issues. Firms turn towards a strategy of reducing short term harm in nature assets and pull away from long term planning as there seems to be no way of winning.

Alignment of market and non-market forces: Low

There is low alignment between market and non-market forces. Incentives and desired outcomes are conflicting, causing friction across industries.

Nature loss and ability to adapt: Moderate

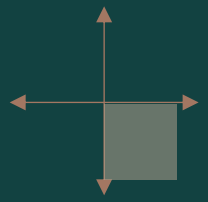
The consequences of nature loss is incremental and has marginal cost for society. As a result, society has a moderate ability to adapt for future developments and impacts.

Potential implications

- **Maximize climate action:** The focus lies on maximizing enablement of avoided GHG emissions and decarbonization activities.
- **Low-carbon innovation:** Investing in low-carbon solution and decarbonization activities is profitable, incentivizing low-carbon innovation.
- **Some focus on nature-positive practices:** Although the focus lies on climate, maintaining a minimal level of ecological consideration can help safeguard against future policy shifts and build resilience against public criticism.

Nature-scenario analysis

Sand in the gears



Scenario description

Nature assets are deteriorating fast, but politics and finance are too noisy, slow, and bogged down in complexity to drive broad and systematic action. Firms are encouraged to discontinue or fundamentally change business activities that harm nature, and incentivized to externalize the costs and negative consequences. The experience of 'the tragedy of the commons' incentivizes the overuse nature assets in the short term. The gap between the developed and developing economy widens.

Alignment of market and non-market forces: Low

There is low alignment between market and non-market forces. Incentives and desired outcomes are conflicting, causing friction across industries.

Nature loss and ability to adapt: Severe

The severe loss of nature causes disruptive cost to society. The experiences impacts surpass thresholds making adaptation difficult.

Potential implications

- **Prioritize resilience:** Investments in resilience measures are key for realization and operation of energy projects. Impacts of nature is increasingly a factor in the site selection process and supplier dialogue.
- **Risk management:** A diverse project portfolio is increasingly important to manage risks as impacts are severe and costly. Integrating nature-based solutions is common practice.
- **Complex regulatory environment:** Developers must be agile, closely monitoring policy changes, and engaging in advocacy to support harmonization of policy.
- **Sustainable innovation:** Increased focus on innovation within the constraints of deteriorating nature assets. Examples include technologies that use less land or water, off-grid renewable solutions, or creating hybrid systems that blend different renewable sources.
- **Leverage finance:** There may be niche opportunities in green bonds, impact investing, or other financial instruments that support more sustainable renewable energy projects. Positioning projects to appeal to these emerging financial products could provide additional funding streams.

BCG and WWF scenarios

Rapid Transition (RT) scenario

The RT scenario limits warming to 1.5°C with limited overshoot through the rapid scale up of renewable energy, electrification (including electric vehicles), and energy efficiency improvements while optimizing delivery of sustainable development outcomes.

2050

- Global temperature <1.5°C with a likelihood >50%
- Global GHG emissions reach 11 $GtCO_2e$/year
- Share of RE in primary energy mix is 84%
  - Solar 41%
  - Onshore wind 14%
  - Offshore wind 3%

Business-as-Usual (BAU) scenario

The BAU scenario continues current policies of a fossil fuel-dependent economy.

2050

- Global temperature 3.2°C with a likelihood >50%
- Global GHG emissions reach 64 $GtCO_2e$/year
- Share of RE in primary energy mix is 16%
  - Solar 3%
  - Onshore wind 3%
  - Offshore wind <1%