

# Recommendations of the Taskforce on Nature-related Financial Disclosures

September 2023

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# Foreword from the TNFD Co-Chairs

The future of all living things on our planet, and our future prosperity, depends on the resilience of nature. Declines in nature compromise the security of our societies and increase the risks to business and investors, including our ability to mitigate and adapt to climate change. Sustained improvements in the resilience of our natural world and its biodiversity are essential to secure the prosperity of current and future generations. Nevertheless, businesses today continue to see nature as an unlimited and free provider of critical inputs into their operations and value chains, from the flow of fresh water to the pollination services of bees and the flood mitigation services of mangroves.

Future cashflows depend on the resilience of the future flow of these ecosystem services from nature. With six of the nine planetary boundaries already breached, it is increasingly clear that nature risk, beyond climate change, is financial risk. Business as usual is no longer a viable option and nature must no longer be seen as a corporate social responsibility issue but a strategic risk management one.

At COP15 of the Convention on Biological Diversity in December 2022, 196 countries agreed to the Kunming-Montreal Global Biodiversity Framework – a bold and ambitious set of practical commitments to halt and reverse nature loss by 2030, and to live in harmony with nature by 2050. The challenge ahead is to make that transition as orderly as possible and to unleash the full potential of all segments of society, including business and finance, to contribute to nature-positive outcomes.

The Taskforce on Nature-related Financial Disclosures (TNFD) is one initiative among many required across public, private and civil society. The TNFD was established to encourage and facilitate a shift in the mindset and behaviour of companies and financial institutions through enterprise and portfolio risk



management and mainstream corporate reporting. Building on the market's experience with climate-related reporting over the past decade and the work of the Task Force on Climate-related Financial Disclosures (TCFD), the TNFD recommends 14 disclosures to promote the provision of clear, comparable and consistent information by companies to investors and other providers of capital. The Taskforce provides a set of metrics for measurement and a suite of guidance to help organisations get started on nature-related assessment and disclosure.

By building on existing frameworks and standards, including those of the International Sustainability Standards Board (ISSB) and the GRI, and by using an open innovation approach, market participants and other stakeholders have played a critical role in the development of these recommendations. Of the organisations that are already starting to use these recommendations, many are seeing the advantages of taking an integrated approach to nature and climate assessment.

We would like to thank the dedication and commitment of the 40 Taskforce members, the TNFD Secretariat team and the TNFD Forum member organisations, including our knowledge and piloting programme partners. Collectively, we have endeavoured to strike the best possible balance between respecting the complexity of the science of nature and enabling practical, concrete and cost-effective action by business and finance, within the constraints of conventional annual corporate reporting cycles and subject to third-party assurance.

The Taskforce now shifts its focus to encouraging market adoption, supporting knowledge and capacity building efforts across the market, and working with standard-setting partners as they look to develop nature-related disclosure standards that draw from the TNFD recommendations.

Nature risk is sitting in the cashflows, balance sheets and capital portfolios of organisations across sectors and geographies today. That represents clear and present physical, transition and systemic risks to companies and the providers of their financial capital. While there are many factors to consider and behavioural changes required across stakeholder groups to address the global nature crisis, barriers to taking action are progressively being removed. We believe that the publication of the TNFD recommendations is an important step forward to help market participants address nature-related risks and to redirect global financial flows towards outcomes that are better for the planet and our future prosperity.

**Elizabeth Maruma Mrema**  
Co-Chair

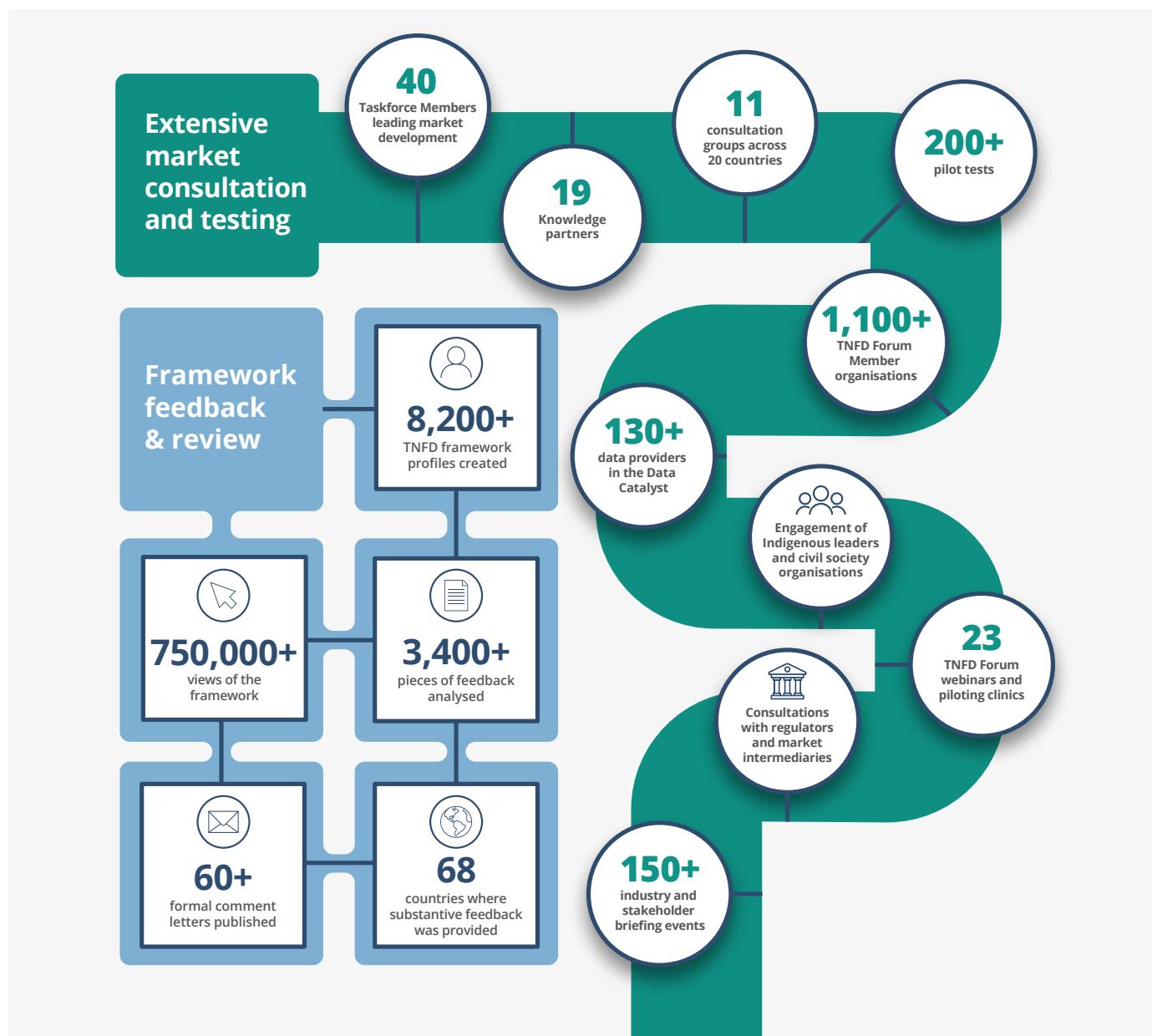
**David Craig**  
Co-Chair



# Acknowledgements

The recommendations in this report are the product of a unique two-year open innovation process. At the outset, the Taskforce recognised that the central challenge to design a set of nature-related recommended disclosures was to strike the best possible balance between the complexity of the science and the creation of practical recommendations that enable cost-effective action by

business and finance within an annual corporate reporting cycle that is subject to third-party assurance. Drawing on the wisdom of scientists, conservation experts, standards experts, market participants and Indigenous leaders across professional disciplines, across cultures and across geographies has been vital. The level of engagement has been energising for the Taskforce



and has helped build the confidence of many market participants to get started, notwithstanding remaining knowledge, skill and data challenges that the Taskforce is committed to work further on with partner organisations.

The Taskforce is deeply grateful to all the organisations and individuals who have contributed to this effort. They are detailed in the acknowledgements in Annex 6. In particular:

- The TNFD Forum has crowded-in market interest, built awareness and provided a sounding board for consultation;
- Our knowledge partners, including the world's leading science and conservation organisations, multilateral institutions and standard-setting organisations, have provided a wealth of technical advice;
- National and regional Consultation Groups, led by convening organisations in each market, have helped the Taskforce to engage a breadth of stakeholders from business executives and portfolio managers to Indigenous community and civil society leaders;
- Industry business associations and consulting firms that led pilot testing programmes with companies and financial institutions across all major sectors, geographies and biomes have provided detailed and practical user experience insights that informed the development of the TNFD's recommendations and guidance;
- Dialogues with Indigenous Peoples and civil society groups have ensured these important voices have been listened to and their expertise and experience incorporated in the TNFD's guidance;

- A number of consulting firms, business associations and scientific organisations provided considerable pro bono consulting and secondment contributions to the TNFD Secretariat.

Finally, I would like to thank the Green Finance Institute (GFI) for its generous support in administratively hosting the TNFD Secretariat. I would also like to acknowledge the leadership and generous financial support of the TNFD's founders and funders, convened as the TNFD Stewardship Council. They have been a consistent source of inspiration and insight, based on their collective knowledge, experience and relationships globally. The Stewardship Council includes the governments of Australia, France, Germany, the Netherlands, Norway, Switzerland and the United Kingdom; the Global Environment Facility (GEF), the United Nations Development Programme (UNDP), the United Nations Environment Programme Finance Initiative (UNEP-FI), the Children's Investment Fund Foundation (CIFF) and the Macdoch Foundation.



**Tony Goldner,**  
Executive Director, TNFD



# Executive summary

**Our society, economies and financial systems are embedded in nature, not external to it.** The prosperity and resilience of our societies and economies depend on the health and resilience of nature and its biodiversity. Healthy ecosystems are a prerequisite for the sustained flow of ecosystem services that communities need to survive and flourish, and that business and finance depend on to generate cashflows and returns.

**The science is clear. Nature is deteriorating globally and biodiversity is declining faster than at any time in human history.** The majority of the vital ecosystem services on which business and society depend, and which provide the foundation for every economy, are in decline. The global economy is already operating outside the safe zone for six of the nine planetary boundaries – processes that are critical for maintaining the Earth's stability. Ecosystem services are not being appropriately priced by business and financial markets today.

**There is growing evidence that this poses risks for businesses, capital providers, financial systems and economies, and that these risks are increasing in severity and frequency.** Critical global supply chains, from agribusiness to semiconductors, are

facing disruptions from water shortages and water stress. The degradation of forests is threatening the availability and long-term security of valuable commodities on which some sectors rely, such as cosmetics. The degradation of land and soil has

**The TNFD recommendations provide companies and financial institutions of all sizes with a risk management and disclosure framework to identify, assess, manage and, where appropriate, disclose nature-related issues.**

been found to adversely impact the market value of companies and increase credit risk to associated lenders. The loss of pollinators is adversely impacting agricultural production, with the growing demand for pollination services becoming increasingly difficult to meet in some countries. Companies in a range of sectors, from agrochemicals to mining, that have not managed their nature-related impacts have experienced permit refusals and lawsuits, with associated deteriorations in credit ratings and market valuations.

**Central banks and financial supervisors are increasingly recognising nature loss as a source of systemic risk to financial systems and economies.** In March 2022, the Network for Greening the Financial System (NGFS), a network of over 125 central banks and financial supervisors, concluded that nature-related risks could have significant macroeconomic implications, and that failure to account for, mitigate and adapt to these implications is a source of risks for individual financial institutions as well as for financial stability. In September 2023, the NGFS encouraged all central banks and supervisors to assess and act on economic and financial risks stemming from stemmin from nature loss.

*“As central banks and supervisors, we have every reason to be concerned because it’s an illusion to think we can preserve financial stability if this degradation continues.”*

Klaas Knot, Chairman of the Financial Stability Board and President, De Nederlandsche Bank.

**Governments are also mobilising through policy and fiscal action.** In December 2022, almost 200 governments committed to ambitious goals and targets under the Kunming-Montreal Global Biodiversity

Framework (GBF) to halt and reverse nature loss by 2030. Target 15 of the GBF calls for businesses to monitor, assess and transparently disclose their risks, dependencies and impacts on biodiversity, to ensure business, society and nature exist in harmony. Governments from Australia, Brazil, China, the European Union, the United States and elsewhere are providing substantial new funding and incentives to mobilise private sector innovation and financial capital behind green transition plans, nature markets and bioeconomy investment strategies.

**Despite the risks and opportunities, most companies and capital providers remain unprepared.** According to the World Economic Forum, climate and environmental risks are now the most significant risks identified by global executives for the next decade, but they are also the risks for which we are seen to be the least prepared. Most companies, investors and lenders today do not understand their nature-related dependencies, impacts, risks and opportunities and are inadequately accounting for nature in their strategies and capital allocation decisions. Data released by CDP suggests that nearly 70% of companies disclosing data through CDP did not assess the impact of their value chain on biodiversity in 2022.

*“Encourage and enable business [to]... Regularly monitor, assess and transparently disclose their risks, dependencies and impacts on biodiversity, including with requirements for all large as well as transnational companies and financial institutions along their operations, supply and value chains, and portfolios.”*

Target 15, Kunming-Montreal Global Biodiversity Framework

**Nature is no longer a corporate social responsibility issue, but a core and strategic risk management issue alongside climate change.** It needs to be brought into the strategy, risk management and capital allocation decisions of business and finance, with fully integrated climate and nature considerations.

Investing in the health and resilience of nature is good business practice, as sound risk mitigation but also as a source of business opportunities. Corporate and investor stewardship of, and investment in, nature is a transformational opportunity for companies who innovate and financial institutions who finance the solutions needed at scale.

**The TNFD recommendations help organisations meet this challenge.** The Taskforce on Nature-related Financial Disclosures (TNFD) is a global, market-led, science-based and government-supported initiative to help companies and financial institutions incorporate nature into their decision making. The Taskforce consists of 40 senior executives from companies and financial institutions globally representing over \$20 trillion in assets under management with operations and value chains in over 180 countries.

The TNFD recommendations provide companies and financial institutions of all sizes with a risk management and disclosure framework to identify, assess, manage and, where appropriate, disclose nature-related issues. It includes **14 recommended disclosures** covering nature-related dependencies, impacts, risks and opportunities (Figure 1).

The recommendations have been designed to:

- **Be consistent with the language, structure and approach of both the Task Force on Climate-related Financial Disclosures (TCFD) and the International Sustainability Standards Board (ISSB)** to enable integrated climate- and nature-related reporting, replicating the four disclosure pillars and all 11 TCFD recommended disclosures, which have now been incorporated into the ISSB Standards and thus its global sustainability reporting baseline;
- **Accommodate the different approaches to materiality** now being applied in jurisdictions around the world, through two materiality lenses – meeting the material information needs of capital providers, consistent with the ISSB's IFRS Standards and TCFD recommendations, and meeting the material information needs of stakeholders focused on impacts, aligned with a broader materiality approach, consistent with the GRI Standards;

- **Be aligned with the global policy goals and targets** in the GBF, including Target 15 on corporate reporting of nature-related risks, dependencies and impacts; and
- **Leverage the best available science**, including assessments of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and the climate science from the Intergovernmental Panel on Climate Change (IPCC).

**Nature is no longer a corporate social responsibility issue, but a core and strategic risk management issue alongside climate change.**

*"An entity's ability to generate cash flows over the short, medium and long term is inextricably linked to the interactions between the entity and its stakeholders, society, the economy and the natural environment throughout the entity's value chain."*

**IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information**

**The TNFD recommendations are structured to allow companies and financial institutions to get started**, building on their climate reporting capabilities over the past decade, and to provide a path to increase their disclosure ambition over time consistent with Target 15 of the GBF.

**Figure 1: TNFD's recommended disclosures**

Governance	Strategy	Risk & impact management	Metrics & targets
<p><b>Recommended disclosures</b></p> <p><b>A.</b> Describe the board's oversight of nature-related dependencies, impacts, risks and opportunities.</p> <p><b>B.</b> Describe management's role in assessing and managing nature-related dependencies, impacts, risks and opportunities.</p> <p><b>C.</b> 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.</p>	<p><b>Recommended disclosures</b></p> <p><b>A.</b> Describe 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.</p> <p><b>B.</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.</p> <p><b>C.</b> Describe the resilience of the organisation's strategy to nature-related risks and opportunities, taking into consideration different scenarios.</p> <p><b>D.</b> 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.</p>	<p><b>Recommended disclosures</b></p> <p><b>A(i)</b> Describe the organisation's processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its direct operations.</p> <p><b>A(ii)</b> 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).</p> <p><b>B.</b> Describe the organisation's processes for managing nature-related dependencies, impacts, risks and opportunities.</p> <p><b>C.</b> Describe how processes for identifying, assessing, prioritising and monitoring nature-related risks are integrated into and inform the organisation's overall risk management processes.</p>	<p><b>Recommended disclosures</b></p> <p><b>A.</b> 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.</p> <p><b>B.</b> Disclose the metrics used by the organisation to assess and manage dependencies and impacts on nature.</p> <p><b>C.</b> Describe the targets and goals used by the organisation to manage nature-related dependencies, impacts, risks and opportunities and its performance against these.</p>

To support adoption and the provision of consistent, comparable and decision-useful information for report users, the Taskforce has developed:

- A **set of recommended indicators and metrics** for assessment and to support disclosure; and
- A **suite of additional guidance** covering:
  - [How to get started with TNFD](#), with practical steps, considerations and insights from pilot testing;
  - The [identification and assessment of nature-related issues](#) (the LEAP approach), building on, and integrating the use of, existing market-leading frameworks, tools and datasets;
  - [Specific sectors](#) and [types of ecosystem \(biomes\)](#);
  - [Scenario analysis](#); and
  - [Engagement of Indigenous Peoples, Local Communities and affected stakeholders](#).

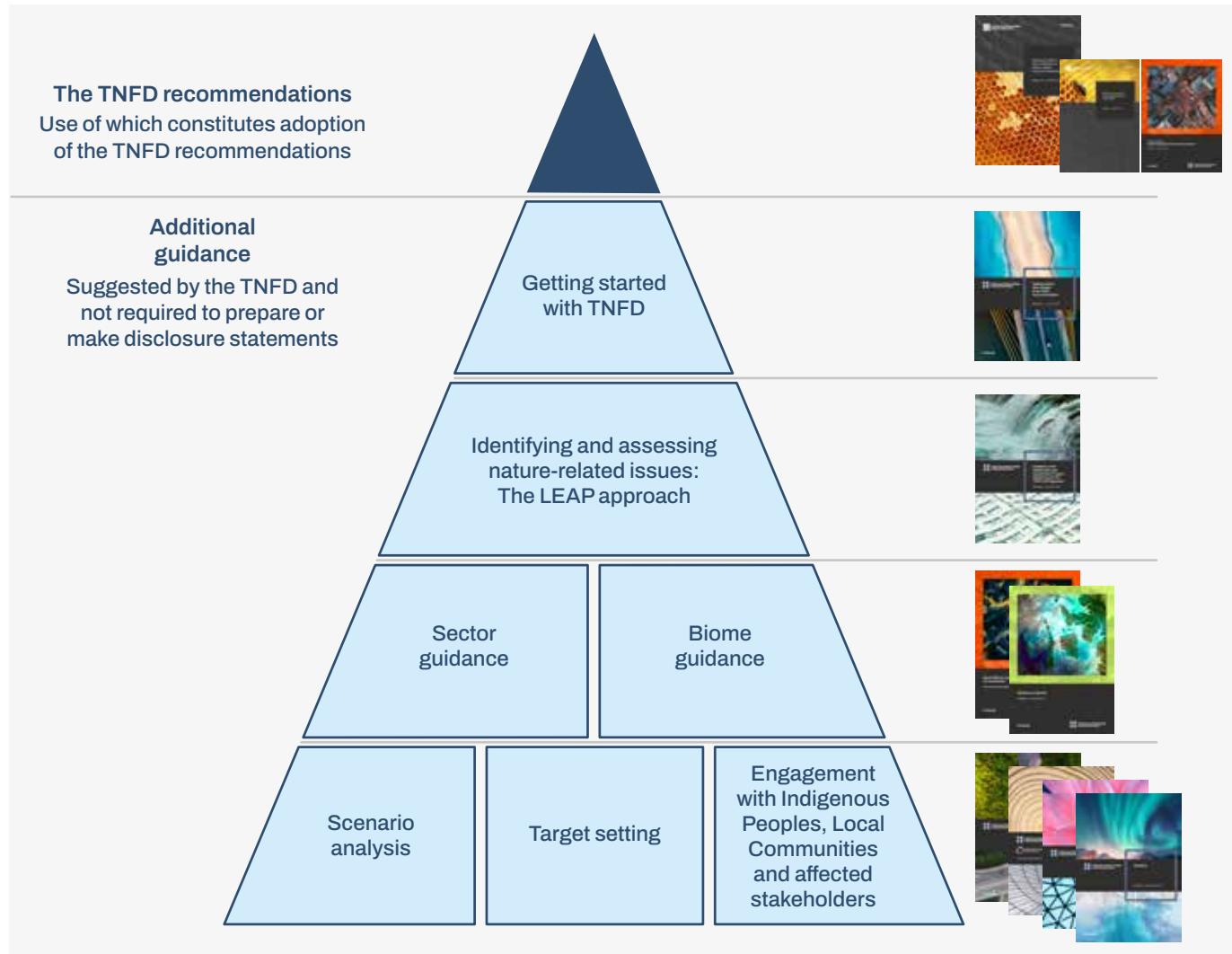
As with mainstream financial reporting and national economic reporting, the **TNFD proposes a leading indicators approach to measurement, leveraging the best available science and cross-referencing metrics already in use** by market participants through organisations such as SASB (which is now part of the IFRS Foundation), GRI, CDP and EFRAG. They incorporate both cross-sector and sector-specific metrics to provide a flexible approach for report

preparers and a basis for comparative analysis by report users.

**The recommendations and accompanying additional guidance are built on extensive market feedback and pilot testing.** They are consistent with the recommendations of the TCFD, the ISSB and GRI Standards and the global policy goals and targets in the GBF. Throughout this process, the Taskforce has worked closely with leading global scientific and conservation organisations to ensure the TNFD's recommendations draw on authoritative and consensus-based definitions as the foundation of a market-accessible language system for understanding nature and managing nature-related issues.

**The time for action is now and the TNFD recommendations are ready for adoption.** To address the declining productivity and resilience of nature and, by extension, the declining prosperity and resilience of our societies, economies, financial systems and business models, nature-related issues must now be incorporated into enterprise and portfolio risk management processes. Failure to do so leaves business, finance, financial systems and the whole of society with a major risk management blind spot in the face of accelerating nature loss.

Figure 2: TNFD recommendations and additional guidance



# 1. Introduction

## 1.1. Background

**Our society, economies and financial systems are embedded in nature**, not external to it.<sup>1</sup> The prosperity and resilience of our societies and economies depend on the health and resilience of nature and its biodiversity. Healthy ecosystems are a prerequisite for the sustained flow of ecosystem services that communities need to survive and flourish, and that business and finance depend on to generate cashflows and returns.

**The science is clear. Nature is deteriorating globally and biodiversity is declining faster than at any time in human history.** The majority of the vital ecosystem services on which business and society depend, and which provide the foundation for every economy, are in decline.<sup>2</sup> The global economy is already operating outside the safe zone for six of the nine planetary boundaries – processes that are critical for maintaining the Earth's stability (Figure 3).<sup>3</sup> Ecosystem services are not being appropriately priced by business and financial markets today.

**There is growing evidence that this poses risks for businesses, capital providers, financial systems and economies, and that these risks are increasing in severity and frequency.** Critical global supply chains, from agribusiness to semiconductors, are facing disruptions from water shortages and stress. Degradation of forests is threatening the availability and long-term security of valuable commodities on which some sectors rely, such as cosmetics.<sup>4</sup> The degradation of land and soil has been found to adversely impact the market value of companies and increase credit risk to associated lenders.<sup>5</sup> The loss of pollinators is adversely impacting agricultural production, with the growing demand for pollination services becoming increasingly difficult to meet in some countries.<sup>6</sup> Companies in a range of sectors, from agrochemicals to mining, which have not managed their nature-related impacts, have experienced permit refusals and lawsuits, with associated deteriorations in credit ratings and market valuations.<sup>7</sup>

1 Dasgupta, P. (2021) [The economics of biodiversity: The Dasgupta Review](#)

2 Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2019) [Summary for policymakers of the IPBES global assessment report on biodiversity and ecosystem services](#)

3 Rockström et al. (2009) [A safe operating space for humanity](#), Wang-Erlandsson, L. et al. (2022) [A planetary boundary for green water](#), Persson, L. et al. (2022) [Outside the safe operating space of the planetary boundary for novel entities](#)

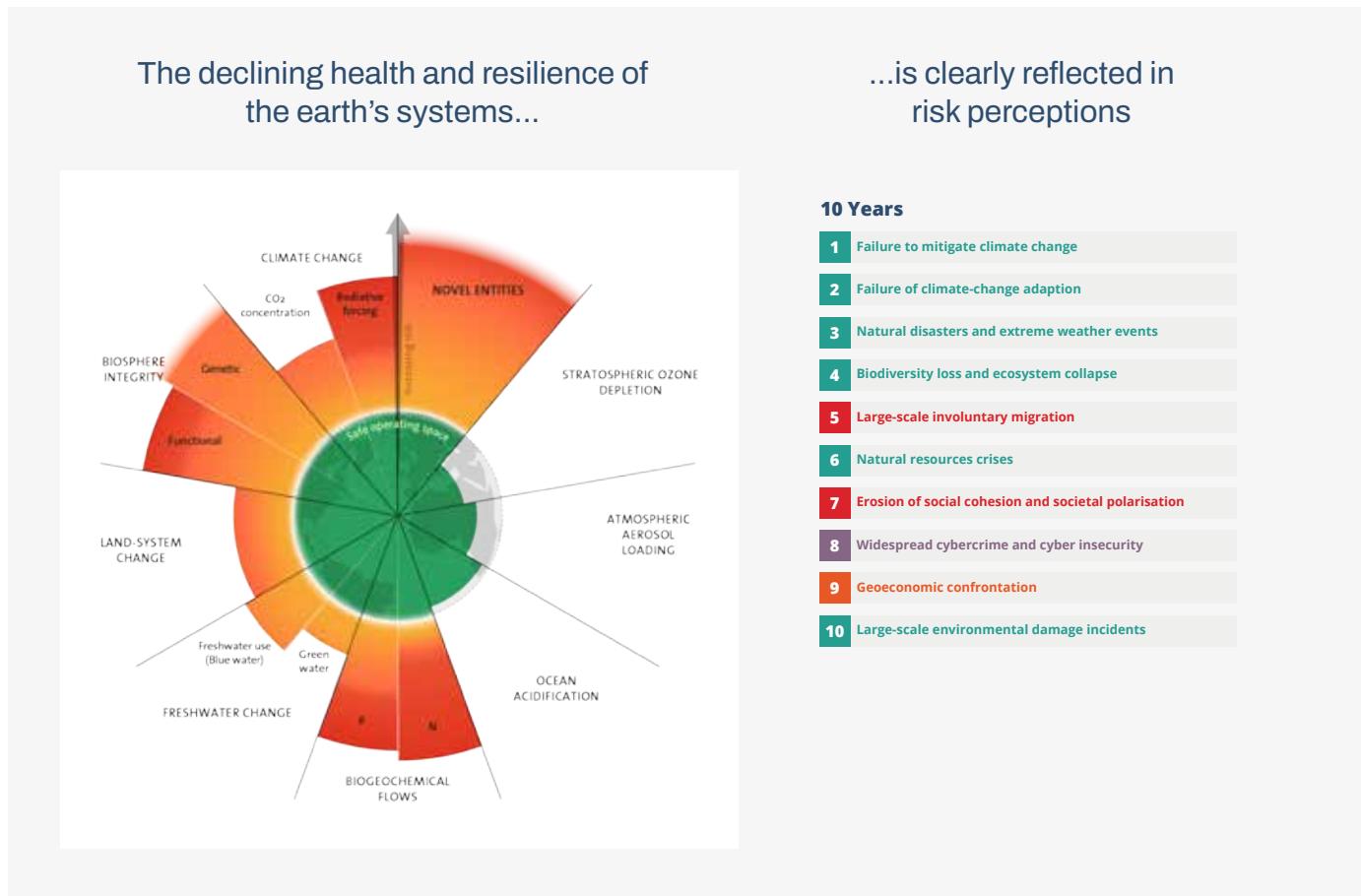
4 Dasgupta, P. (2021) [The economics of biodiversity: The Dasgupta Review](#)

5 CISL (2022) [Integrating Nature: The case for action on nature-related financial risks](#)

6 Inside Climate News (2021) [California's almond trees rely on honey bees and wild pollinators, but a lack of good habitat is making their job harder](#)

7 Dasgupta, P. (2021) [The economics of biodiversity: The Dasgupta Review](#)

Figure 3: The declining health and resilience of the earth's systems is clearly reflected in risk perceptions



Source: Azote for Stockholm Resilience Centre, based on analysis in Richardson et al. (2023) and WEF Global Risks Report (2023).

### Central banks and financial supervisors are increasingly recognising nature loss as a source of systemic risk to financial systems and economies.

In March 2022, the Network for Greening the Financial System (NGFS), a network of over 125 central banks and financial supervisors, concluded that nature-related risks could have significant macroeconomic implications, and that failure to account for, mitigate and adapt to these implications is a source of risks for individual financial institutions as well as for financial stability.<sup>8</sup> In September 2023, the NGFS encouraged

all central banks and supervisors to assess and act on economic and financial risks stemming from nature loss.<sup>9</sup>

**Governments are also mobilising through policy and fiscal action.** In December 2022, almost 200 governments committed to ambitious goals and targets under the Kunming-Montreal Global Biodiversity Framework (GBF) to halt and reverse nature loss by 2030. Target 15 of the GBF calls for businesses to monitor, assess and transparently disclose their risks, dependencies and impacts on biodiversity, to

8 Network for Greening the Financial System (2022) [Statement on nature-related financial risks](#)

9 Network for Greening the Financial System (2023) [Nature-related financial risks: A conceptual framework to guide action by central banks and supervisors](#)

ensure business, society and nature exist in harmony. Governments from Australia, Brazil, China, the European Union, the United States and elsewhere are providing substantial new funding and incentives to mobilise private sector innovation and financial capital behind green transition plans, nature markets and bioeconomy investment strategies.

**Despite the risks and opportunities, most companies and capital providers remain unprepared.** According to the World Economic Forum's Global Risk Perceptions Survey, climate and environmental risks are not the most significant risks for the next decade. They are also the risks for which we are seen to be the least prepared. Most companies, investors and lenders today do not understand their nature-related dependencies, impacts, risks and opportunities and are inadequately accounting for nature in their strategies and capital allocation decisions.

**Nature is no longer a corporate social responsibility issue, but a core and strategic risk management issue alongside climate change.** It needs to be brought into the strategy, risk management and capital allocation decisions of business and finance, fully integrating climate and nature considerations. Investing in the health and resilience of nature is good business practice both as sound risk mitigation but also as a source of business opportunities. Corporate and investor stewardship of, and investment in, nature is a transformational opportunity for companies who innovate and financial institutions who finance the solutions needed at scale.

The GBF highlights that businesses and financial institutions have a critical role to play. Specifically, Target 15 of the GBF calls on parties of the Convention on Biological Diversity (CBD) to:

*'Take legal, administrative or policy measures to encourage and enable business, and in particular to ensure that large and transnational companies and financial institutions, regularly monitor, assess, and transparently disclose their risks, dependencies and impacts on biodiversity, including with requirements*

*for all large as well as transnational companies and financial institutions along their operations, supply and value chains and portfolios.'*

**Making nature-related reporting a reality is challenging, but feasible, building on work already done in response to climate-related risks.** While a nature corporate reporting target now exists in the GBF, significant work must be done to build the understanding and capacity of businesses and financial institutions of all sizes and across all sectors and geographies to enable them to take action. The fact that many organisations – both with public disclosure requirements and small and medium sized enterprises across supply chains – have increased their awareness and capacity to assess the implications of climate change provides a strong platform on which to build. Climate change is one of five drivers of nature change and is inextricably linked in cause and effect to the other four drivers. Companies and financial institutions need to take an integrated approach to identifying, assessing and responding to climate and nature-related dependencies, impacts, risks and opportunities. In a global survey of 240 report preparers, 86% of respondents thought that they would be able to start disclosures aligned with the TNFD recommendations by the financial year 2026.

**However, it is important to recognise that the identification, assessment and management of nature-related issues is necessarily different to climate.** Climate change is a global process within one shared atmosphere. That essential character has led to the concept of a global carbon budget, which is central to the global policy and business response to address climate change. Nature-related impacts and dependencies, by contrast, are location specific, and therefore require local, context-specific assessment and responses. Understanding where interactions with nature occur is of paramount importance to the identification, assessment and management of nature-related issues.

## 1.2. The Taskforce and its design and development approach

Launched in 2021, the Taskforce on Nature-related Financial Disclosures (TNFD) is a global, market-led, science-based and government-supported initiative with the mission to develop and deliver a risk management and disclosure framework for organisations to report and act on evolving nature-related issues.

The launch of the Taskforce was preceded by a preparatory phase from September 2020 until June 2021. An Informal Working Group – comprising 75 members, including 49 financial institutions and corporates, eight governments and regulatory and supervisory bodies, and 18 think tanks and market consortia – prepared a technical scope and workplan for the TNFD and established seven principles for the design and development of its recommendations:

- Ensure market usability;
- Take a science-based approach;
- Focus on impacts and dependencies on nature as well as risks and opportunities to organisations across business and finance;
- Be purpose-driven with a bias towards enabling organisations to take action sooner rather than later;
- Provide an integrative and adaptive design to work with existing risk management processes in business and finance;
- Reflect the inherent connectedness of climate and nature challenges and the importance of nature-based solutions; and
- Ensure the framework and approach is relevant, just, valuable, accessible and affordable worldwide, including in emerging and developed markets.

The Informal Working Group was supported by an Informal Technical Expert Group and a Founding Partner Group consisting of Global Canopy, the United Nations Development Programme (UNDP), the United Nations Environment Programme Finance Initiative (UNEP-FI) and WWF.

Reflecting the importance of the initiative, the TNFD was included in the [Sustainable Finance Roadmap of the G20](#) in 2021, with a request to deliver the recommendations within two years. The TNFD has been funded by a group of government and philanthropic funding partners represented in the TNFD Stewardship Council, alongside other organisations that founded the TNFD initiative. They are the Australian, Dutch, French, German, Norwegian, Swiss and UK governments, UNDP, UNEP FI, the Global Environment Facility (GEF), the Childrens' Investment Fund Foundation (CIFF), Global Canopy, the Macdoch Foundation and WWF International.

*"We look forward to the publication of the Taskforce on Nature-related Financial Disclosure's (TNFD's) market framework and urge market participants, governments and regulators to support its development."*

G7 Hiroshima Leaders' Communiqué, 20 May 2023

*"We recognise the important work of the Taskforce on Nature-related Financial Disclosures (TNFD) in developing a framework for businesses and organizations to report and act on evolving nature-related financial risks, and for the investors to better evaluate nature-related financial risks. We invite market participants to engage in the TNFD's framework and commit to support its development. We continue working with Finance Ministers in this area."*

G20 Bali Declaration, 15-16 November 2022

### *The target audiences for the TNFD recommendations*

The TNFD recommendations and guidance are useful both for report preparers developing their internal understanding of nature-related issues and putting in place plans to manage them, and report users, including capital providers and other stakeholders.

The TNFD recommendations are designed for organisations of all sizes, across all sectors and along value chains. The Taskforce aims, over time, to help all organisations to identify and assess their nature-related issues and provides recommendations on what to disclose on these issues to capital providers, regulators and other stakeholders, where organisations have such disclosure requirements. The recommendations and guidance are relevant to a wide range of market participants and market enablers:

1. **Corporates:** Applying the recommendations can help inform better corporate strategy, governance and risk management decision-making, and the incorporation of nature-related risk assessments alongside, and ideally integrated with, climate-related risk reporting.
2. **Investors and financial institutions:** The information disclosed can support more informed and robust capital allocation decisions and stewardship activities based on clarity, confidence and trust in data relating to nature-related issues. Large asset owners, asset managers, lenders and development finance institutions can play a significant role in driving nature-related financial disclosures and strengthening the management of nature-related issues in the organisations they finance. Corporates are more than twice as likely to disclose across climate, forests and water themes when financial institutions request them to do so.<sup>10</sup>

3. **Regulators:** The recommendations and guidance can support existing and new disclosure mechanisms, standards and other jurisdiction-specific regulatory requirements.
4. **Stock exchanges:** The recommendations can inform consideration of new voluntary and mandatory listing requirements linked to nature-related risks, as well as nature-related opportunities for new listed equity offerings.
5. **Assurance and accounting firms:** The disclosure guidance can inform audit and assurance of nature-related corporate reporting and help to enhance the internal risk management functions of client organisations.
6. **Data providers, credit rating agencies and financial service providers:** The recommendations and guidance can provide data providers, credit rating agencies and financial service providers with criteria for consistent and robust data and insights on an organisation's nature-related issues and how they are managed.

The TNFD guidance and recommendations are also relevant for small and medium-sized enterprises (SMEs). In many cases, SMEs are closer to the source of nature-related dependencies, impacts, risks and opportunities and may have fewer options to diversify their exposure or shift sourcing. Their assessment of nature-related issues will also enable them to respond to nature-related information requests from their suppliers and downstream customers. Nevertheless, the TNFD recognises that some SMEs may need further support in applying the recommendations in a proportionate way to the size of their activities and the resources they have available. In recognition of this, the Taskforce intends to work on additional guidance for SMEs.

## Developing the framework – An open innovation approach

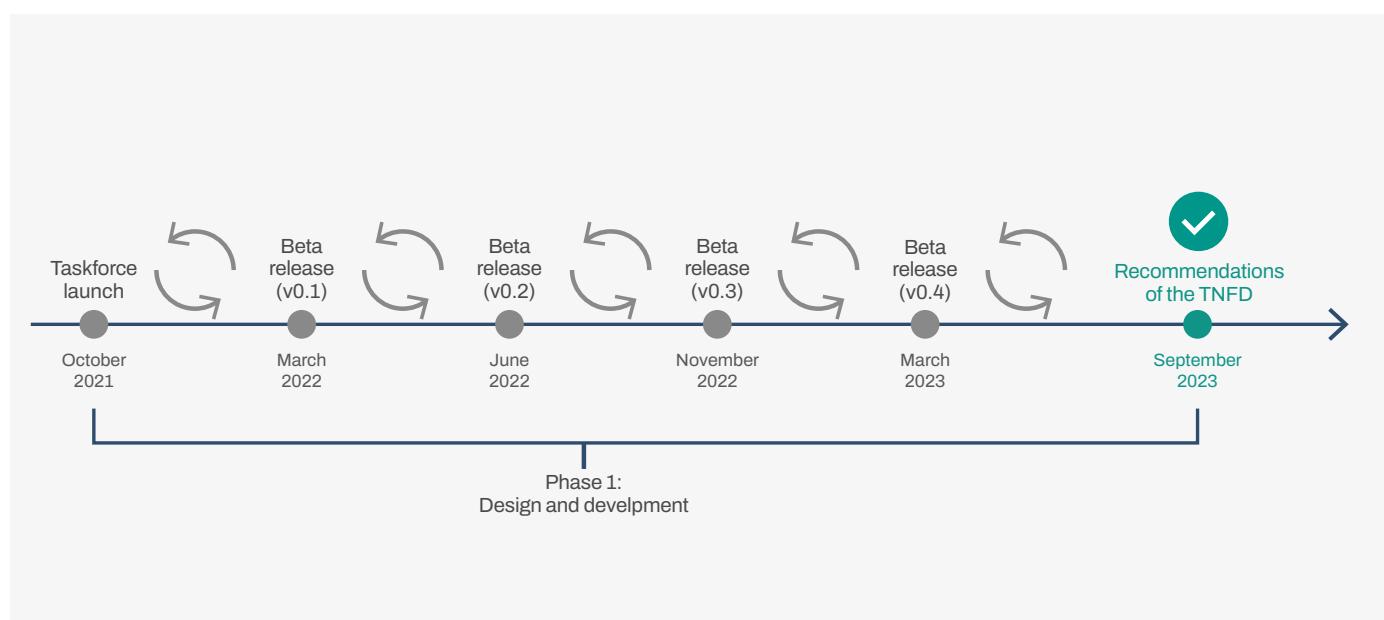
The Taskforce started work in October 2021. It consists of [40 senior executives](#) from corporates, financial institutions and market intermediaries across sectors and geographies, with over \$20 trillion in assets under management and a footprint across 180 countries. It is led by co-chairs Elizabeth Mrema and David Craig, and supported by over 1,200 TNFD Forum member organisations, representing all 24 business sectors identified by the World Economic Forum (WEF) as having the highest nature-related risks, impacts or dependencies. A network of [19 knowledge partners](#), including leading global scientific and conservation organisations and standards development bodies, actively contributed.

From the outset, the Taskforce sought to develop the framework with maximum transparency and participation from scientific, standards and corporate reporting organisations, market participants, NGOs and civil society organisations, and representatives of Indigenous Peoples. Over two years, the TNFD followed an open innovation approach, which involved the

release of four ‘beta’ releases of a prototype framework for feedback and pilot testing (see Figure 4). The open innovation approach is described in full in Annex 4. In summary, it included:

- Pilot testing by over 200 institutions ranging from global multinational corporates and financial institutions to Indigenous-led enterprises, across sectors and biomes;
- Over 750,000 page views of the beta versions on the online platform from over 45 countries and territories;
- Over 150 presentations, webinars and focus group meetings globally with a wide range of stakeholders;
- A year-long process of dialogue with the International Indigenous Forum on Biodiversity (IIFB) and consultations with a wide range of civil society organisations;
- [Consultation groups](#) in eight countries and three regions; and
- A community of over 130 data providers who formed the [Nature-related Data Catalyst](#) to help identify data solutions, following the publication of the [TNFD data landscape assessment](#) in March 2022.

**Figure 4: Timeline for development of the TNFD’s recommendations**



### *Alignment with global policy goals and the global sustainability reporting baseline*

The TNFD takes its inspiration and approach from the Task Force on Climate-Related Financial Disclosures (TCFD) and builds on the significant developments in sustainability corporate reporting since the release of the TCFD's recommendations in 2017. The International Sustainability Standards Board (ISSB), the GRI and other standards and reporting organisations have worked closely with the Taskforce as knowledge partners. The TNFD has worked to draw from, and feed into, these relevant standards that are already established and emerging as the new global baseline for sustainability reporting.

Most notably, the TNFD recommendations have been designed to align and support the nature-related policy and disclosure landscape (Figure 5). In particular, they are designed to:

- **Be consistent with the language and structure of both the TCFD and ISSB.** The TNFD recommendations retain all four pillars of the TCFD, as do the ISSB's IFRS Standards' and the jurisdictional regulations of the EU's Corporate Sustainability Reporting Directive (CSRD). The TNFD replicates all 11 TCFD recommended disclosures for nature-related issues, only adding additional recommended disclosures where there is a clear rationale to do so.

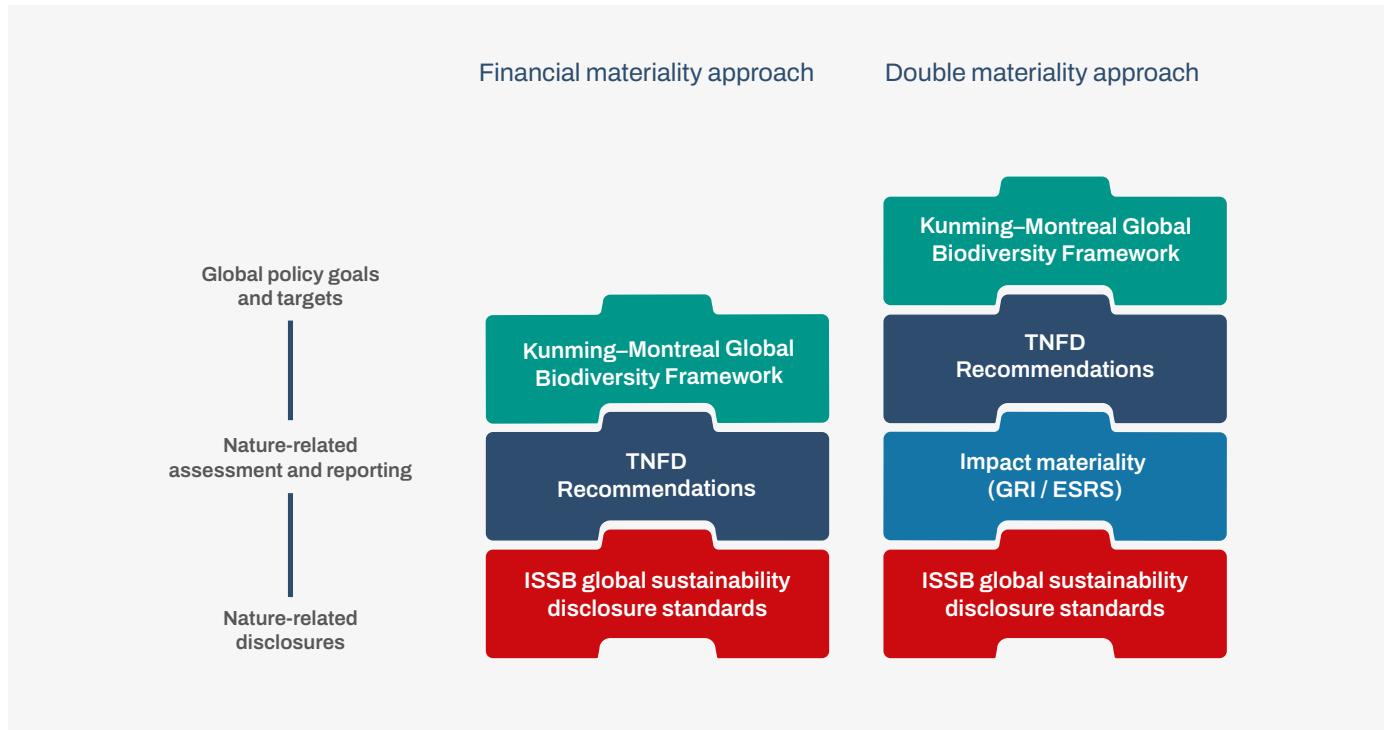
• **Accommodate the different approaches to materiality** now being applied in jurisdictions around the world. The TNFD recommendations can be interpreted through two materiality lenses:

- Meeting the material information needs of capital providers consistent with the ISSB's IFRS Standards' and the TCFD recommendations, with a focus on risk management and how dependencies and impacts on nature create risks and opportunities for an organisation's financial position and prospects; and
  - Meeting the material information needs of stakeholders focused on impacts, aligned with a broader materiality approach, reporting against both the ISSB and the GRI standards.<sup>11</sup>
- Align with the **global policy goals and targets** of the GBF, agreed by almost 200 countries in December 2022, and enable corporate reporting as required by Target 15 of the GBF.

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<sup>11</sup> With respect to impact materiality, the TNFD has aligned its recommendations (and supporting additional guidance) with the language and approach of the GRI Sustainability Reporting Standards.

Figure 5: Alignment with global goals and the global reporting baseline



The outcome of the TNFD's approach to alignment is as follows:

- While building on the TCFD structure, the TNFD goes beyond the TCFD in incorporating nature-related issues across the realms of nature – ocean, freshwater, land and atmosphere – and drivers of nature change beyond climate change, as identified by the IPBES. This provides a comprehensive approach to environmental corporate reporting aligned to both the Paris Agreement and the GBF.
- Like the TCFD and ISSB, the TNFD enables the disclosure of decision-useful material information from companies (report preparers) to investors and other capital providers (the primary users of sustainability reporting) to enhance the resilience of organisations to climate and nature-related risks.
- Like GRI and the ESRS in the European Union, the TNFD also enables the disclosure of decision-useful impact-related information.

#### *Adoption pathway*

Based on the experience of the TCFD, the TNFD anticipates its recommendations being used along three related pathways to shift the corporate reporting landscape:

- 1. Influence the voluntary standards landscape:** Both the ISSB and the GRI have been knowledge partners of the TNFD over the two-year design and development phase of these recommendations. Their existing standards and market guidance have played an instrumental role in shaping the TNFD's recommendations. In turn, the TNFD hopes its recommendations will shape the further development of specific nature-related disclosure standards. The ISSB signalled in December 2022 that it intends to draw on the work of the TNFD as and when it develops specific nature-related disclosure standards following the release of its IFRS S1 General Requirements and S2 Climate-related

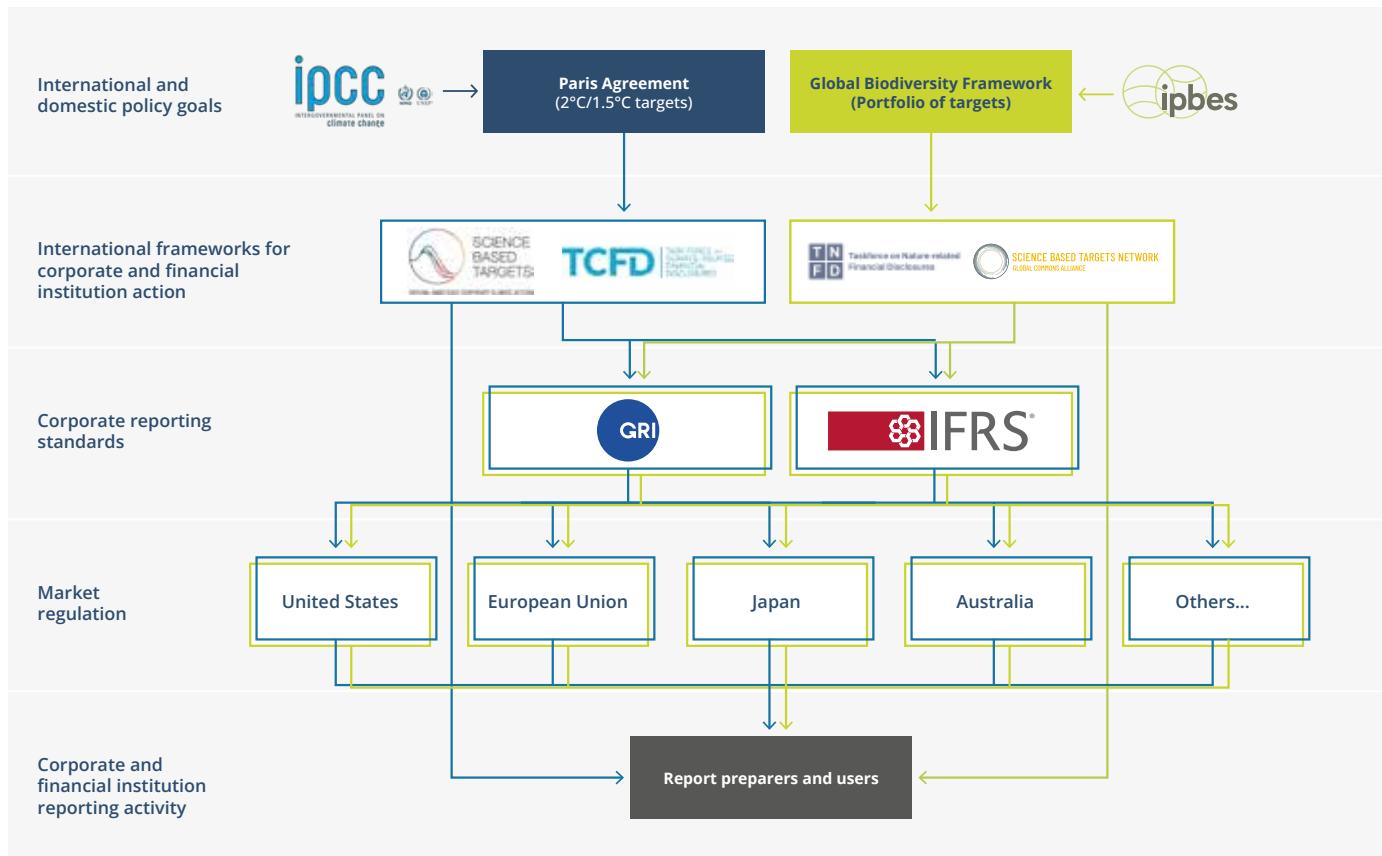
Disclosure Standards in June 2023. The Taskforce stands ready to support the ISSB in its future efforts on nature-related disclosure standards.

2. **Shape the emergence of government corporate reporting regulation:** As with the adoption of TCFD's recommendations, a number of governments have signalled their support for the TNFD and their intention to consider the recommendations of the Taskforce. The GBF's Target 15 calls on governments to put in place requirements for corporate reporting of nature-related risks, dependencies and impacts by 2030. The intentional alignment of the TNFD recommendations with the four goals and 23 targets of the GBF should assist governments around the world in delivering on Target 15.

**3. Direct voluntary adoption by companies:** While the voluntary and regulatory reporting landscape continues to evolve, companies and financial institutions are already signalling their intention to begin adopting the TNFD recommendations, in line with their mission and values as an organisation, in readiness for regulatory requirements and to respond to growing demands from their investors and lenders for more nature-related information. With the publication of these recommendations, the Taskforce will encourage and support voluntary adoption of its recommendations by companies and financial institutions around the world, in coordination with a range of partner organisations.

Figure 6 shows the emerging global architecture for nature-related corporate reporting, in parallel with what has emerged for climate-related reporting.

**Figure 6: Where TNFD fits in the emerging reporting architecture**



### *Context for the development of the TNFD metrics architecture*

For nature-related issues, metrics and targets (and the data that support them) are needed at three levels: global (the level of coordinated international policy); national (the level of national regulation and law); and local (the level of specific ecosystems and business dependencies and impacts on nature). This global and corporate reporting measurement architecture is already in place for climate change. The publication of the Greenhouse Gas Protocol in 2001 stimulated decades of research and methods development for corporate greenhouse gas accounting. International agreements such as the Paris Agreement and the development of data solutions have further enabled and accelerated reporting of Scope 1, 2 and 3 emissions.

The global and corporate measurement and reporting architecture is still in development for the other drivers of nature loss (Figure 7). The GBF indicator framework is in the process of finalisation, the UN System of Environmental-Economic Accounting – Ecosystem Accounting (UN SEEA) is increasingly applied at a national level and the Science Based Targets Network (SBTN) has recently released methods for the first science-based targets for nature. Nevertheless, there is no universally agreed global architecture for measurement and reporting for nature comparable to the Greenhouse Gas Protocol.

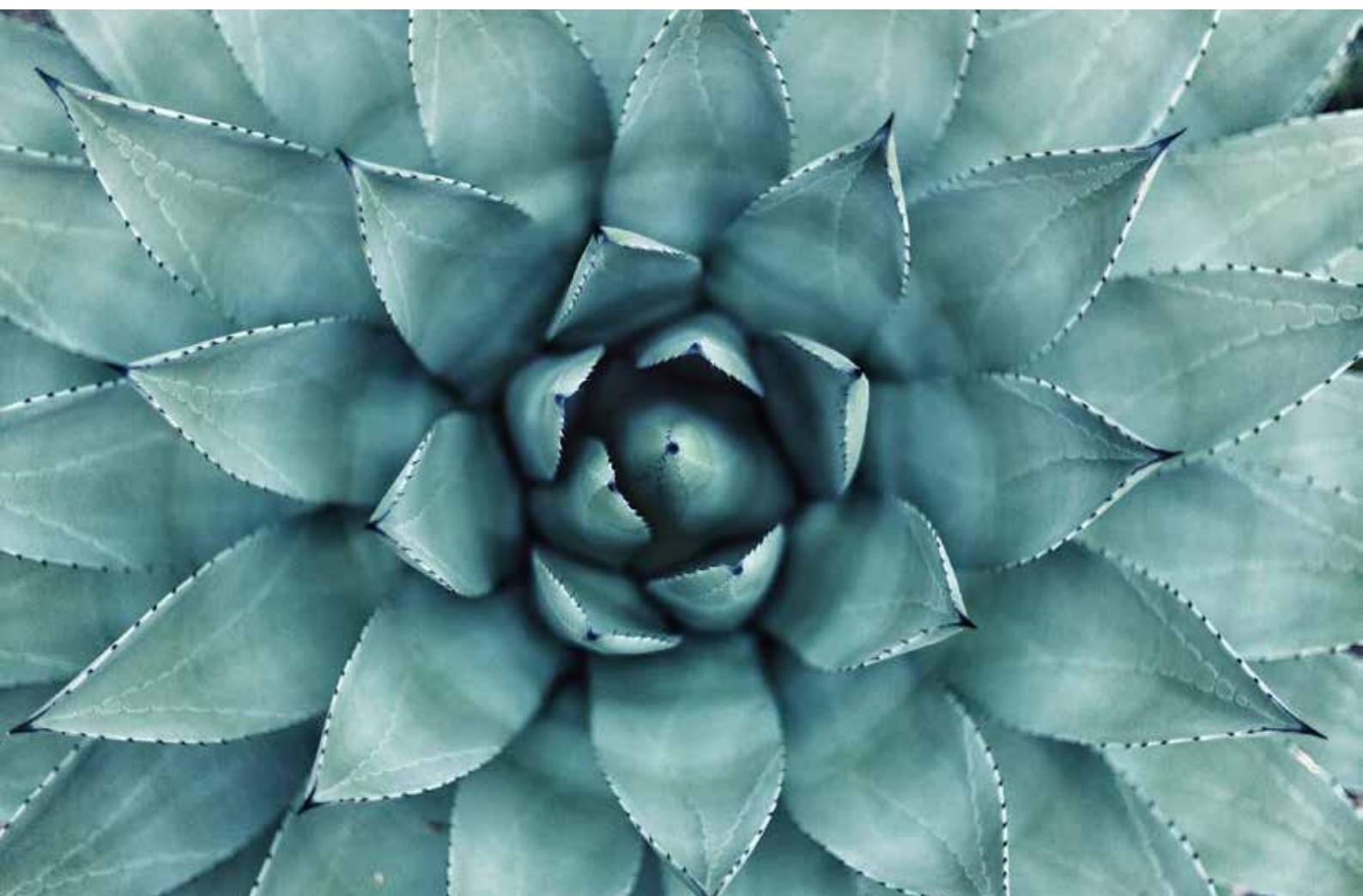
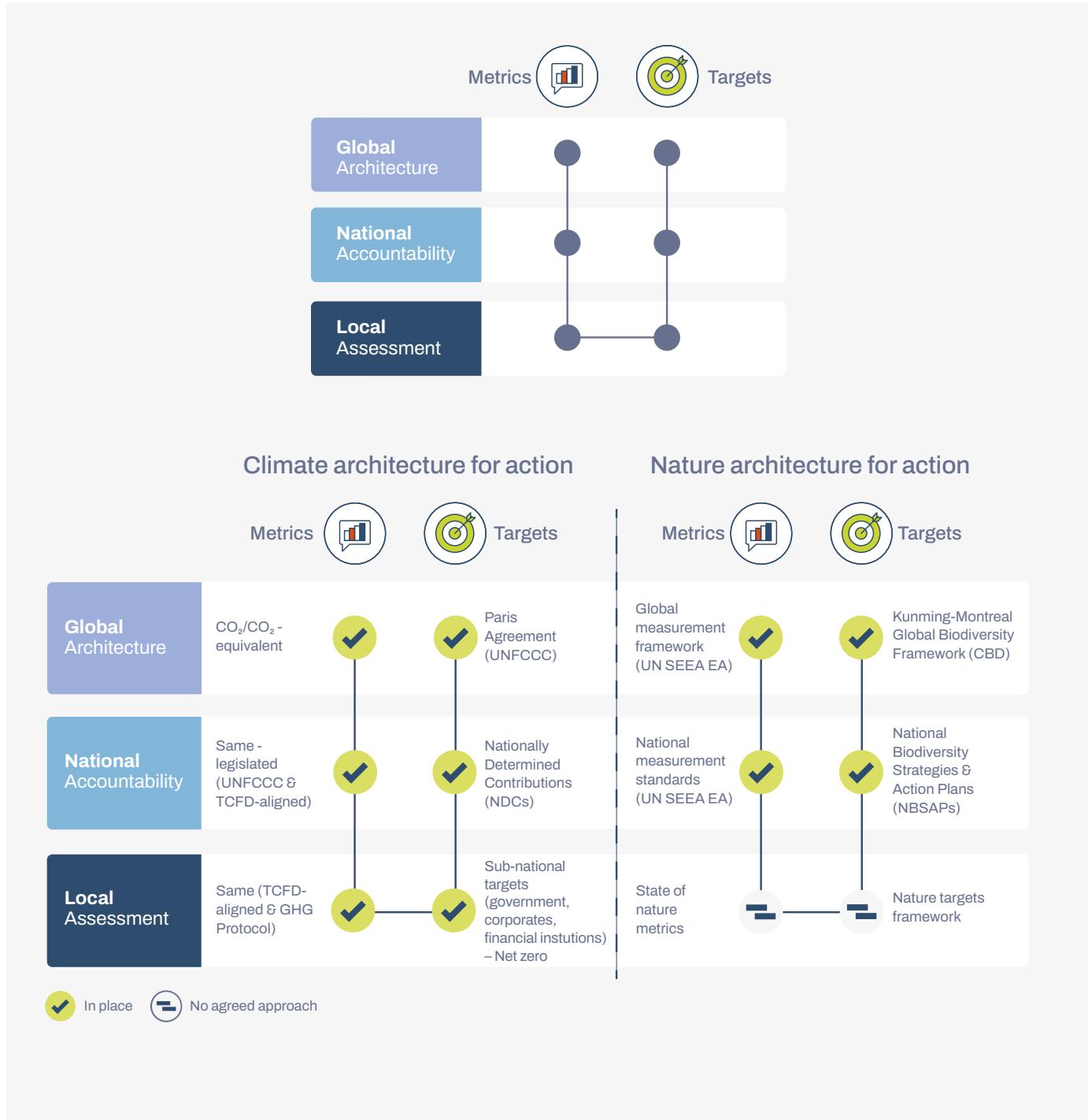


Figure 7: The architecture for measurement and target setting – Climate and nature



The absence of a widely adopted framework has presented the Taskforce with a significant challenge in making recommendations on metrics and targets, comparable with the TCFD recommendations and ISSB's IFRS-S1 General Requirements and the expectation of GBF Target 15. The Taskforce has worked with a wide range of science partners and corporate reporting organisations, such as the UN Statistics Division, SBTN, GRI, the International Organization of Standardization (ISO) and CDP, over the two-year design and development phase to try to address this challenge and support companies looking to undertake quantitative reporting. The metrics architecture recommended by the Taskforce – a leading indicators approach much like that used in mainstream financial reporting and national economic reporting – is described in Section 4 and the TNFD disclosure metrics are provided in Annexes 1 and 2. The Taskforce has also developed additional guidance on target setting in the LEAP approach and co-developed with the SBTN [summary guidance on SBTN's methods for setting science-based targets for nature](#).<sup>12</sup> Akin to how the TCFD and the Science Based Targets initiative enabled action to tackle climate change, TNFD and SBTN guidance can be used to address nature-related issues.

*[Additional guidance to help organisations get started and build disclosure over time](#)*

The Taskforce set about designing its recommendations at pace, given the urgency of addressing nature loss globally. The TNFD hopes to catalyse early action by market participants and encourage learning and continuous improvement over time. As with climate-

related reporting, and as familiarity with nature grows, management of nature-related issues will improve and disclosure ambition will increase over time.

The Taskforce has prepared additional guidance to support that adoption pathway:

- [Getting started guidance](#) with practical steps, considerations and insights from pilot testing to help organisations initiate their nature-related disclosures aligned with the TNFD recommendations;
- Suggested 'how to' [guidance on the identification and assessment of nature-related issues \(the LEAP approach\)](#), building on existing market-leading frameworks such as the Natural Capital Protocol and SBTN target setting methods, and signposting to analytic tools and datasets from a range of leading science-based organisations, including IUCN, UNEP WCMC, WWF and many others;
- Supplementary guidance by sector and [types of ecosystem \(biome\)](#) to support organisations in their particular economic and geographic contexts; and
- Additional guidance on two cross-cutting components of the LEAP approach: [scenario analysis](#) and [engagement with Indigenous Peoples, Local Communities and affected stakeholders](#).

The TNFD will continue to work with a range of partners to develop additional guidance materials to help to increase voluntary market adoption. This will also include market knowledge, training and capacity building initiatives to accelerate progress on a number of the challenges to nature-related assessment and corporate reporting. Section 6.2 provides further details.

<sup>12</sup> When corporates apply TNFD's recommendations to set targets, TNFD recommends they use methods developed by the SBTN to set science-based targets for nature.



## 2. Foundations for understanding nature and business

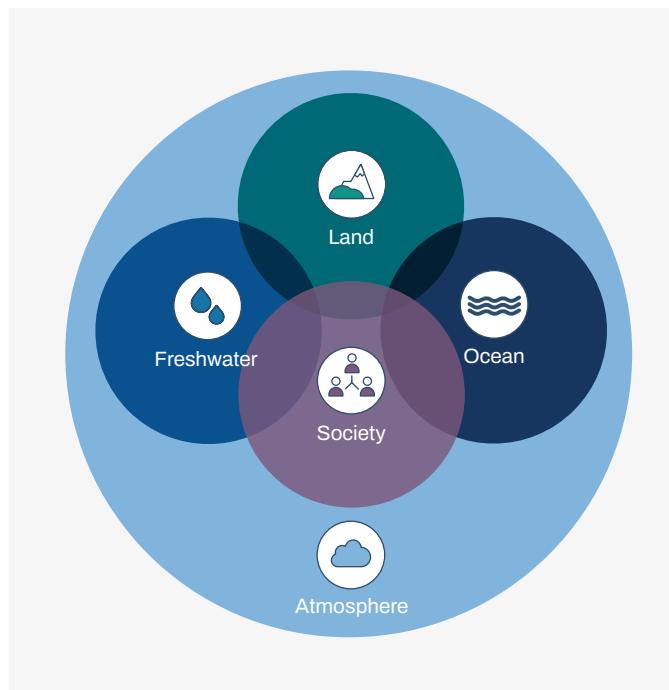
The Taskforce has worked closely with the world's leading scientific and conservation organisations to ensure the TNFD's recommendations draw on authoritative and consensus-based definitions as the foundation of a market-accessible language system for understanding nature. The definitions have been refined based on feedback. The main definitions are provided in the glossary in Annex 5.

### Understanding nature

**Nature** refers to the natural world, emphasising the diversity of living organisms, including people, and their interactions with each other and their environment.<sup>13</sup> It is made up of four realms: land, ocean, freshwater and atmosphere (Figure 8).<sup>14</sup> These are major components of the natural world that differ fundamentally in their organisation and function. The four realms provide an entry point for understanding how organisations and people depend, and have impacts, on nature. The TNFD's biome guidance is organised around the four realms.

While it has become common among some policy makers, regulators and market participants to use the words 'nature' and 'biodiversity' interchangeably, they are in fact distinct concepts. **Biodiversity** refers to the variability among living organisms across these realms. It is an essential and integral characteristic of nature that enables ecosystems to be productive, resilient and able to adapt.<sup>15</sup>

**Figure 8: Nature's four realms – Land, ocean, freshwater and atmosphere**



**Society** lies at the centre of the framework, interacting with and across all four realms. This includes people, corporates and financial institutions, all of whom depend and have impacts on nature. Members of society contribute to, and are affected by, nature loss. This reflects that people are part of nature, not separate from it. The interactions of **Indigenous Peoples and Local Communities** with nature are particularly significant (see Box 1).

13 Díaz, S et al. (2015) The IPBES Conceptual Framework – connecting nature and people

14 Science Based Target Network (2022) SBTN Glossary. The inclusion of atmosphere reflects the importance of air quality and the close association between climate- and nature-related risks and opportunities, while acknowledging that links with climate mitigation and adaptation occur across all realms.

15 Dasgupta, P (2021) The economics of biodiversity: The Dasgupta Review

### Box 1: The importance of Indigenous Peoples and Local Communities

Indigenous Peoples and Local Communities have proven highly effective in the protection of ecosystems through their knowledge, community-led practices and institutions. Indigenous Peoples and Local Communities make up less than 5% of the world's population and manage less than half of terrestrial landscapes and a third of inland waters,<sup>16</sup> yet they have succeeded in protecting 80% of our global biodiversity.<sup>17</sup> Biodiversity declines 30% less and 30% slower in Indigenous lands than in lands not managed by Indigenous Peoples.<sup>18</sup> At the same time, Indigenous Peoples and Local Communities' close relation with nature – for cultural, social and spiritual reasons, for their well-being, and for access to food, shelter and water – makes them particularly susceptible to adverse impacts from nature loss.

In recognition of this, the TNFD has developed [additional guidance on engagement](#) by companies and financial institutions with Indigenous Peoples, Local Communities and affected stakeholders for the assessment, management and disclosure of nature-related dependencies, impacts, risks and opportunities. The TNFD's recommendations also include a general requirement and recommended disclosure on engagement and human rights, as described in Section 3.

The TNFD defines **natural capital** as the stock of renewable and non-renewable natural resources, such as plants, animals, air, water, soils and minerals, that combine to yield a flow of benefits to people.<sup>19</sup> Natural capital consists of stocks of **environmental assets** – naturally occurring living and non-living components of the Earth, such as forests, wetlands, coral reefs and agricultural areas.<sup>20</sup> Ecosystem assets are a sub-set of environmental assets that relate to diverse ecosystems.

An **ecosystem** is a dynamic complex of plant, animal and microorganism communities and the non-living environment that interacts as a functional unit.<sup>21</sup> Ecosystems are organised into **biomes**,<sup>22</sup> which can be thought of in simple terms as types of ecosystem. They are global-scale zones, generally defined by the type of plant life that they support in response to average rainfall and temperature patterns.<sup>23</sup> Examples are tundra, coral reefs and savannas.

<sup>16</sup> WWF, UN Environment Programme-World Conservation Monitoring Centre (UNEP-WCMC), et al. (2021) [The State of Indigenous Peoples' and Local Communities' Lands and Territories: A technical review of the state of Indigenous Peoples' and Local Communities' lands, their contributions to global biodiversity conservation and ecosystem services, the pressures they face, and recommendations for actions](#). Gland, Switzerland.

<sup>17</sup> Garnett, S. T., et al. (2018) [A spatial overview of the global importance of Indigenous lands for conservation](#). Nature Sustainability, 1(7), 369-374.

<sup>18</sup> Purvis, A., et al. (2019) [IPBES Global assessment on biodiversity and ecosystem services – Chapter 2.2 Status and Trends – Nature](#).

<sup>19</sup> Capitals Coalition (2016) [Natural Capital Protocol](#). The TNFD framework focuses on the renewable – or living – elements of nature. Non-living resources, including energy and minerals, are only considered in the TNFD framework to the extent that they affect the health of living nature.

<sup>20</sup> The TNFD aligns with the UN System of Environmental-Economic Accounting Ecosystem Accounting (UN SEEA EA) in its definitions and list of environmental assets and ecosystem assets. United Nations (2021) [System of Environmental-Economic Accounting – Ecosystem Accounting](#)

<sup>21</sup> Adapted from United Nations et al. (2021) [System of Environmental-Economic Accounting](#)

<sup>22</sup> According to the International Union for Conservation on Nature (IUCN) Global Ecosystem Typology, which is the basis for UN SEEA Ecosystem Accounting.

<sup>23</sup> Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2019) [Global assessment report on biodiversity and ecosystem services](#)

Ecosystems produce flows of benefits to people and the economy, or **ecosystem services**. Ecosystem services form the basis for understanding corporate dependence on natural capital and are crucial for corporate risk management. Any depreciation in natural capital will have a negative effect on **ecosystem services**.

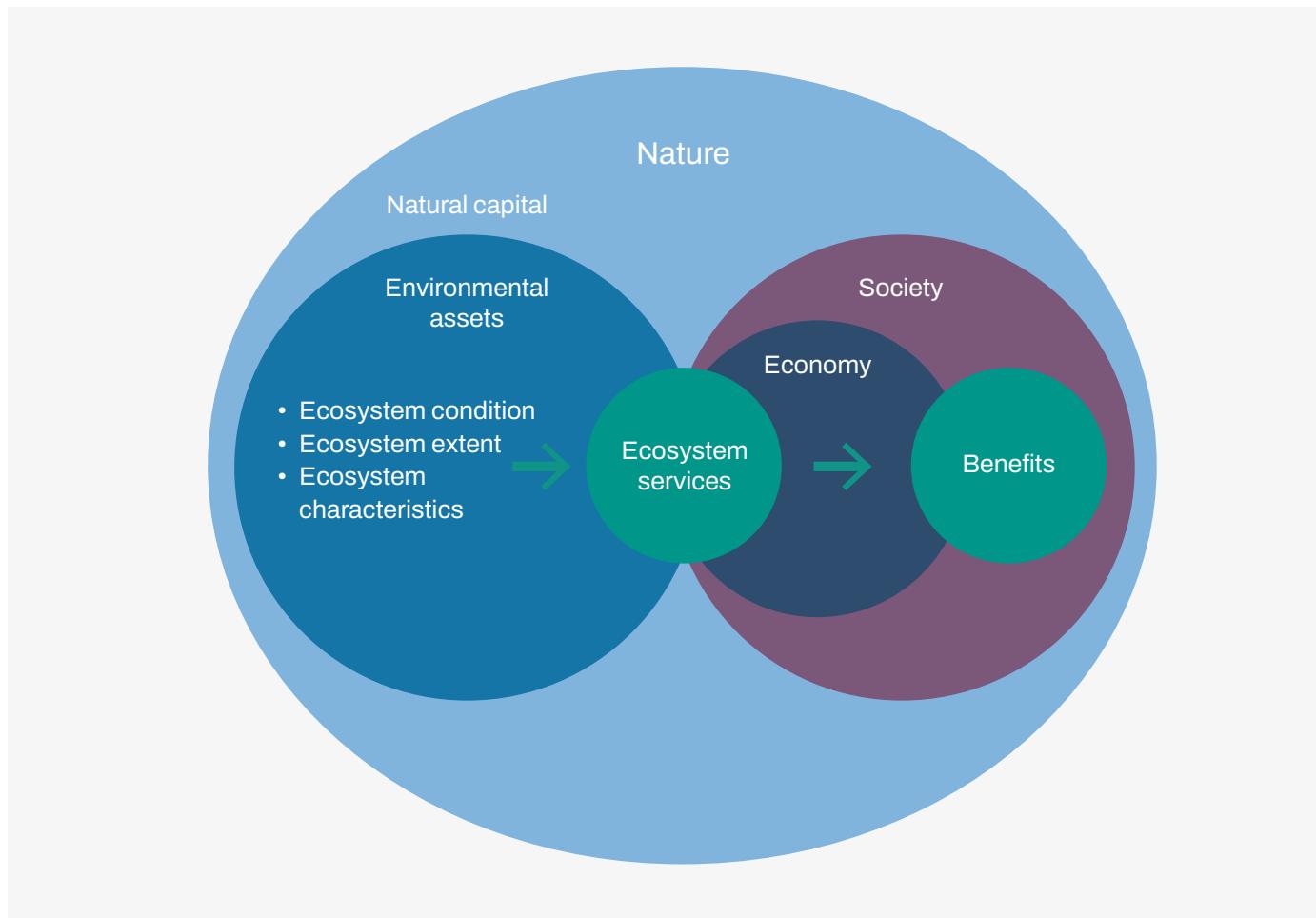
### *Ecosystem services*

Ecosystem services are the contributions made by ecosystems that benefit economic and other human activity. For example, the provision of timber and fuel wood in a forest, freshwater from a river, the recreational and tourism opportunities of a forest or coral reef, the mitigation of flood and the pollination of crops.

Ecosystem services fall into three categories: provisioning services, such as the provision of crops, wood or water; regulating and maintenance services, such as water flow regulation and climate regulation services; and cultural services, such as recreation and tourism opportunities. See TNFD [additional guidance on the LEAP approach](#) for further details.

How nature, society and the economy fit together, with environmental assets providing ecosystem services that benefit business and wider society, is illustrated in Figure 9. Box 2 provides more detailed definitions of key concepts for understanding nature.

**Figure 9: Nature, business and society**



## Box 2: Definitions of concepts for understanding nature

**Nature:** The natural world, emphasising the diversity of living organisms, including people, and their interactions with each other and their environment.<sup>24</sup>



**Realms of nature:** Land, ocean, freshwater and atmosphere. These are major components of the natural world that differ fundamentally in their organisation and function.

**Biodiversity:** The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. This includes diversity within species, between species and of ecosystems.<sup>25</sup>

**Biome:** Global-scale zones, generally defined by the type of plant life that they support in response to average rainfall and temperature patterns. Examples are tundra, coral reefs or savannas.<sup>26</sup>

**Ecosystem:** A dynamic complex of plant, animal and microorganism communities and the non-living environment, interacting as a functional unit.<sup>27</sup>

**Environmental assets:** The naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity.<sup>28</sup>

**Natural capital:** The stock of renewable and non-renewable natural resources such as plants, animals, air, water, soils and minerals that combine to yield a flow of benefits to people.<sup>29</sup>

**Ecosystem services:** The contributions of ecosystems to the benefits that are used in economic and other human activity.<sup>30</sup>

Additional terms are defined in the [TNFD Glossary](#).

24 Díaz, S. et al. (2015) [The IPBES Conceptual Framework – connecting nature and people](#)

25 Convention on Biological Diversity (1992) [Convention on Biological Diversity, Article 2 Use of Terms](#)

26 Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2019) [Global assessment report on biodiversity and ecosystem services](#)

27 Convention on Biological Diversity (1992) [Convention on Biological Diversity, Article 2](#); Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2019) [Global assessment report on biodiversity and ecosystem services](#)

28 United Nations et al. (2021) [System of environmental-economic accounting – Ecosystem accounting](#)

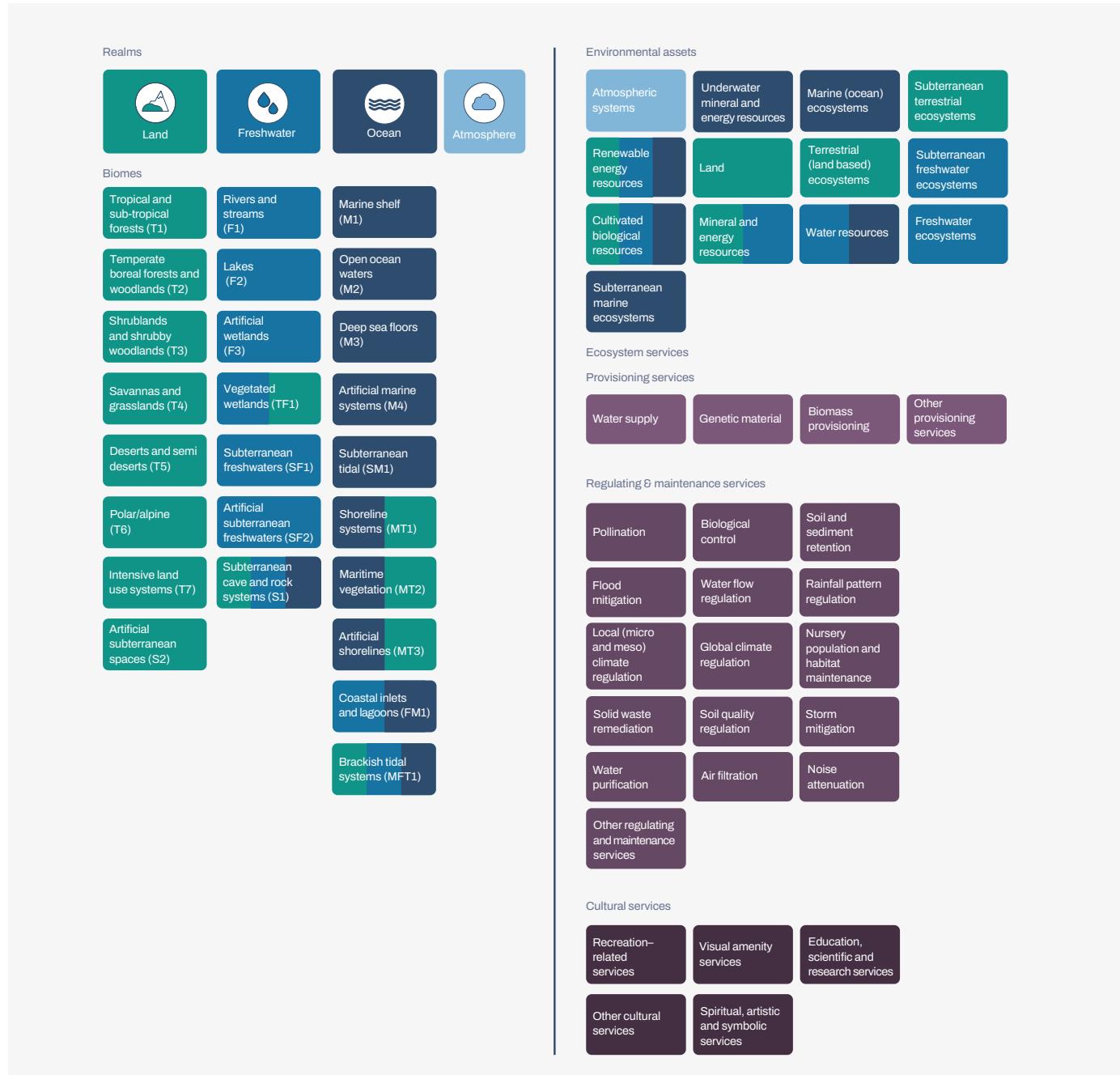
29 Capitals Coalition (2016) [Nature Capital Protocol](#)

30 United Nations et al. (2021) [System of environmental-economic accounting – Ecosystem accounting](#)

A comprehensive typology of realms, biomes, environmental assets and ecosystem services is provided in Figure 10, building on the IUCN Global Ecosystem Typology and UN SEEA Ecosystem Accounting. Nature can be understood through a set of biomes, categorised into four realms. Nature can also

be understood as a set of assets that provide ecosystem services. The TNFD additional guidance by sector and biome is structured around these fundamental core concepts.

**Figure 10: Fundamental concepts for understanding nature: Realms, biomes, assets and services**



## 2.1. Nature-related issues

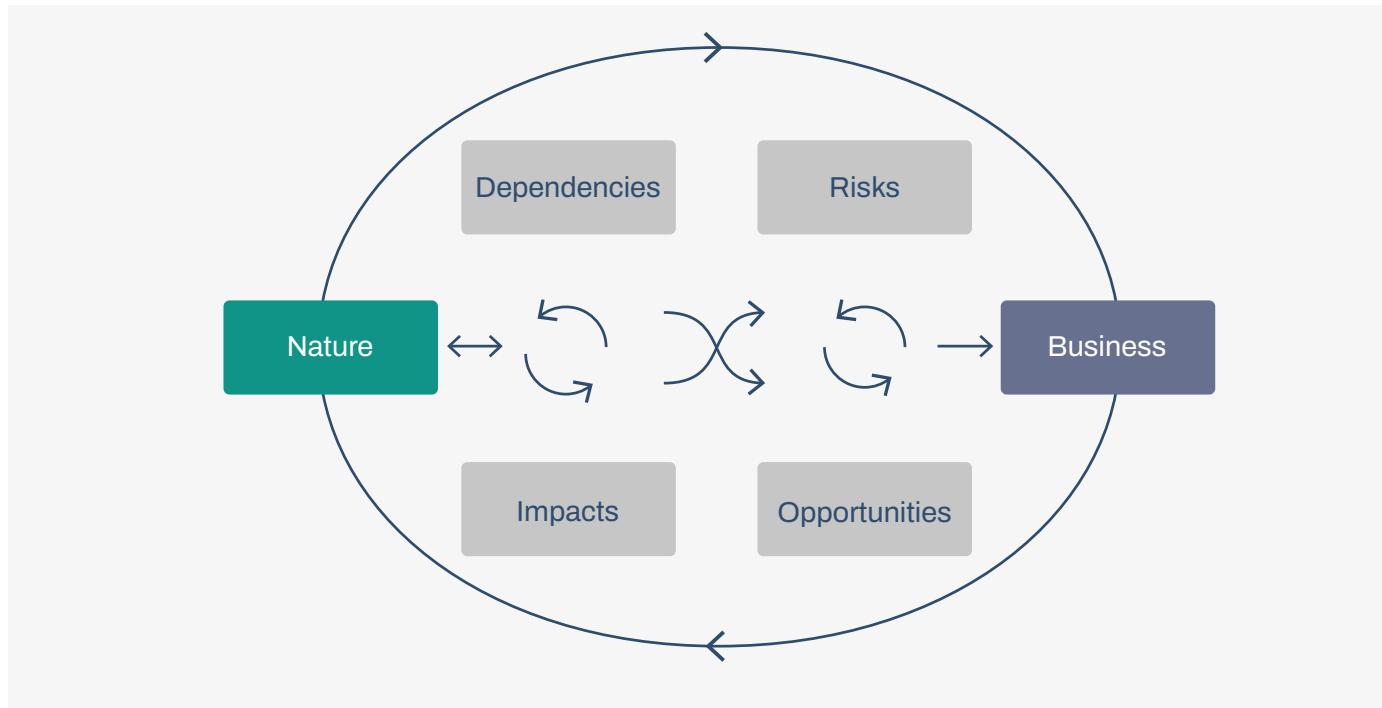
Organisations have dependencies and impacts on nature. These give rise to nature-related risks and opportunities (Figure 11). These four concepts are collectively referred to by the TNFD as nature-related issues and include:

- Dependencies – of the organisation *on nature*;
- Impacts – *on nature caused*, or contributed to, by the organisation;

- Risks – *to the organisation* stemming from their dependencies and impacts; and
- Opportunities – *for the organisation* that benefit nature through positive impacts or mitigation of negative impacts on nature.

It is essential to evaluate dependencies and impacts on nature to assess the risks and opportunities to an organisation. Disclosures should cover all four types of nature-related issue, as well as an organisation's responses to them.

**Figure 11: Nature-related dependencies, impacts, risks and opportunities**



## 2.2. Nature-related dependencies and impacts

Organisations' business activities depend on reliable and cost-effective access to ecosystem services. This dependence in turn affects investors' perceptions of the business's value. Organisations also have impacts on ecosystems and their provision of ecosystem

services. These impacts may be positive or negative. Dependencies and impacts interact and compound over time, as negative impacts undermine the availability of ecosystem services on which organisations may also depend. Box 3 provides more detailed definitions of impacts and dependencies.

### Box 3: Definitions of impacts and dependencies

#### Dependencies

Dependencies are aspects of environmental assets and ecosystem services that a person or an organisation relies on to function. A company's business model, for example, may be dependent on the ecosystem services of water flow, water quality regulation and the regulation of hazards like fires and floods; provision of suitable habitat for pollinators, who in turn provide a service directly to economies; and carbon sequestration.<sup>31</sup>

#### Impacts

Impacts refer to a change in the state of nature (quality or quantity), which may result in changes to the capacity of nature to provide social and economic functions. Impacts can be positive or negative. They can be the result of an organisation's or another party's actions.<sup>32</sup>

Impacts may be:

- Direct – a change in the state of nature caused by a business activity with a direct causal link;
- Indirect – a change in the state of nature caused by a business activity with an indirect causal link (e.g. indirectly caused by climate change generated by greenhouse gas emissions); and/or
- Cumulative – a change in the state of nature (direct or indirect) that occurs due to the interaction of activities of different actors operating in a landscape or freshwater/marine area.

31 Science Based Targets Network (2023) [SBTN Glossary of Terms](#)

32 Science Based Targets Network (2023) [SBTN Glossary of Terms](#), Climate Disclosure Standards Board (2021) [Application guidance for biodiversity – related disclosures](#)

Consistent with the [Natural Capital Protocol](#), the TNFD recommends that dependencies and impacts are identified and measured using **dependency and impact pathways** that consider:

1. **Impact drivers and external factors;**
2. Changes to the **state of nature**; and
3. Changes to the availability of **ecosystem services**.

A **dependency pathway** describes how a particular business activity depends upon ecosystem services and specific features of natural capital (stocks of environmental assets). It identifies how observed or potential changes in natural capital (caused by specific business activities and external factors) affect the costs and/or benefits of doing business.

An **impact pathway** describes how, as a result of a specific business activity, a particular impact driver can lead to changes in natural capital (stocks of

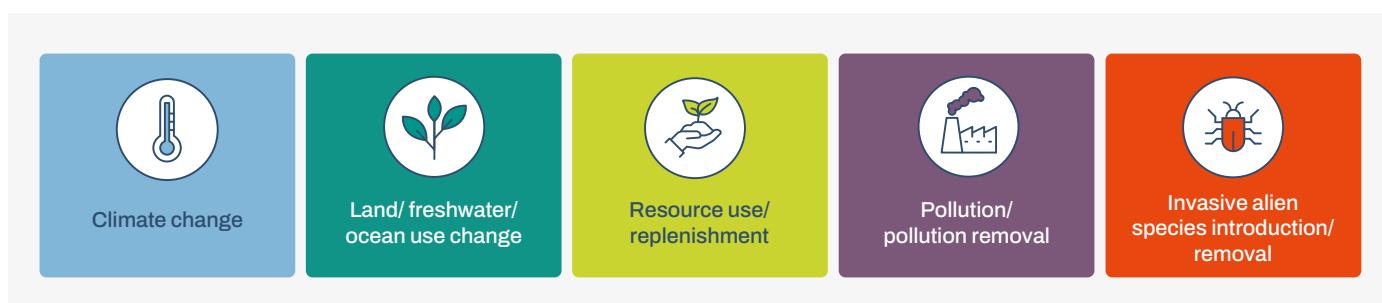
environmental assets) and flows of ecosystem services, and how these changes affect different stakeholders.

Organisations can refer to the TNFD [additional guidance on the Evaluate phase of the LEAP approach](#) and the Natural Capital Protocol for further details of dependency and impact pathways.<sup>33</sup>

**Impact drivers** are measurable quantities of a natural resource that are used as an input to production and measurable non-product outputs of a business activity that affects nature.

Impact drivers are categorised into the five drivers of nature change (Figure 12). Impacts can be positive or negative. A single impact driver may be associated with multiple impacts (changes to the state of nature). For example, greenhouse gas emissions affect multiple ecosystems.

**Figure 12: The five drivers of nature change**



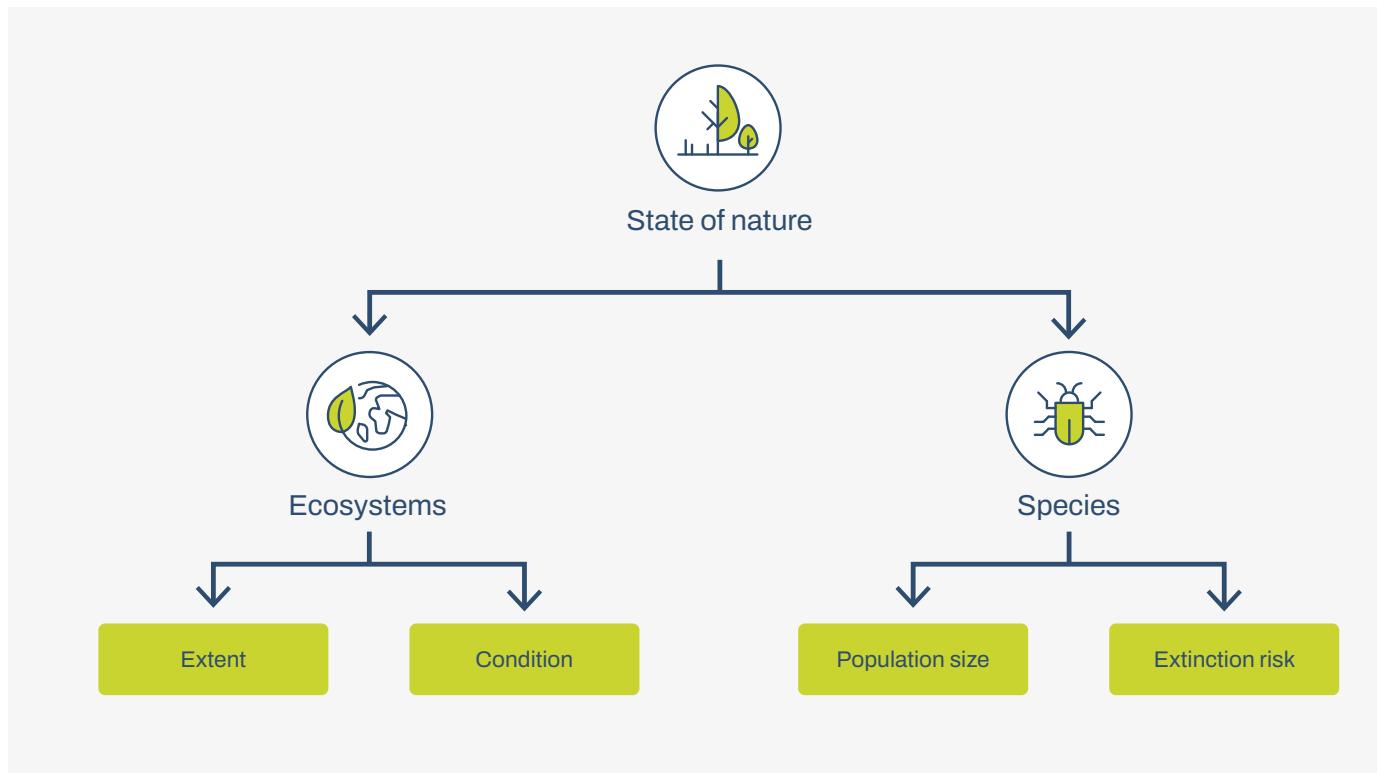
<sup>33</sup> Capitals Coalition (2016) [Natural Capital Protocol](#)

**External factors** include both natural forces and human activities outside the organisation that affect the state of nature. These could include a natural disaster or the pollution released by another organisation.

As outlined in Figure 13, **changes to the state of nature** can be positive (enhancement) or negative (degradation), and refer to changes to:

- The condition and extent of ecosystems; and<sup>34</sup>
- Species population size and extinction risk.

Figure 13: Components of state of nature measurement



<sup>34</sup> Adapted from United Nations et al. (2021) [System of environmental-economic accounting – Ecosystem accounting](#)

## 2.3. Nature-related risks and opportunities

Nature-related risks and opportunities arise from an organisation's dependencies and impacts on nature (Figure 14).

The TNFD's risk and opportunity definitions align with the International Organization for Standardization (ISO) 31000 Risk Management Standard, according to which risk is the 'effect of uncertainty on objectives' and an effect is a positive or negative deviation from what is expected.<sup>35</sup>

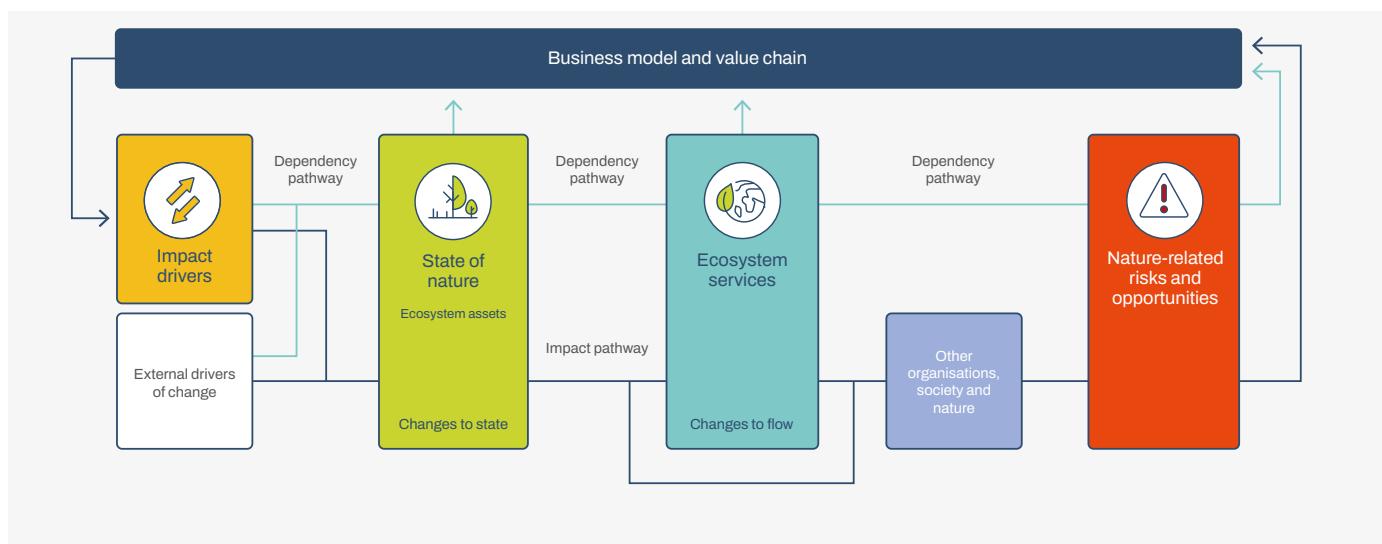
### Nature-related risks

Nature-related risks are potential threats posed to an organisation that arise from its and wider society's dependencies and impacts on nature.<sup>36</sup> Risks can be physical risks, transition risks or systemic risks.

#### Nature-related physical risks

Nature-related physical risks are risks to an organisation that result from the degradation of nature and consequential loss of ecosystem services. These risks can be acute or chronic (Table 1). Nature-related physical risks arise as a result of changes in the biotic (living) and abiotic (non-living) conditions that support healthy, functioning ecosystems. These risks are usually location specific.

**Figure 14: Connections between nature-related dependencies and impacts and risks and opportunities – Impact and dependency pathways**



35 International Organization for Standardization (2018) [ISO 31000, Risk Management – Guidelines](#)

36 Climate Disclosure Standards Board (2021) [Application guidance for biodiversity-related disclosures](#); Task Force on Climate-Related Financial Disclosures (2017) [Recommendations of the Task Force on Climate-related Financial Disclosures](#); Network for Greening the Financial System (2023) [Nature-related Financial Risks: A Conceptual Framework to guide Action by Central Banks and Supervisors](#); Financial Stability Board (2022) [FSB Supervisory and Regulatory Approaches to Climate-related Risks Final report](#); International Association of Insurance Supervisors (2021) [Application Paper on the Supervision of Climate-related Risks in the Insurance Sector](#)

**Table 1: Categories of nature-related physical risks**

Category	Description
Acute risks	Occurrence of short term, specific events that change the state of nature. For example, oil spills, forest fires or pests affecting a harvest.
Chronic risks	Gradual changes to the state of nature. For example, pollution stemming from pesticide use or climate change.

**Table 2: Categories of nature-related transition risks**

Category	Description
Policy	Changes in the policy context due to new (or enforcement of existing) policies to create positive impacts on nature or mitigate negative impacts on nature.
Market	Changing dynamics in overall markets, including changes in consumer preferences, which arise from changing physical, regulatory, technological and reputational conditions and stakeholder dynamics. For example, the market value of a company is affected by assets that have decreased in value because there is insufficient freshwater for the production process, or the value of the business' production process is reduced by the emergence of new technologies that require less water to operate.
Technology	Substitution of products or services with a reduced impact on nature and/or reduced dependency on nature. For example, the replacement of plastics with biodegradable containers.
Reputational	Changes in perception concerning an organisation's actual or perceived nature impacts, including at the local, economic and societal level. This can result from direct company impacts, industry impacts and/or impacts of activities upstream and/or downstream in a value chain.
Liability	Liability risks that arise directly or indirectly from legal claims. As laws, regulations and case law related to an organisation's preparedness for nature action evolves, the incident or probability of contingent liabilities arising from an organisation may increase. <sup>37</sup>

<sup>37</sup> Adapted from [Implementing the Recommendations of the TCFD](#), Appendix Table A1.3

### Nature-related transition risks

Nature-related transition risks are risks to an organisation that result from a misalignment of economic actors with actions aimed at protecting, restoring and/or reducing negative impacts on nature. These risks can be prompted, for example, by changes in regulation and policy, legal precedent, technology or investor sentiment and consumer preferences. Categories of nature-related transition risks include policy risk, market risk, technology risk, reputational risk and liability risk (Table 2).<sup>38</sup>

### Nature-related systemic risks

Nature-related systemic risks are risks to an organisation that arise from the breakdown of the entire system, rather than the failure of individual parts. These risks are characterised by modest tipping points combining indirectly to produce large failures, where one loss triggers a chain of others, and prevents the system from reverting to its prior equilibrium (Figure 15).<sup>39</sup>

There are two categories of nature-related systemic risk:

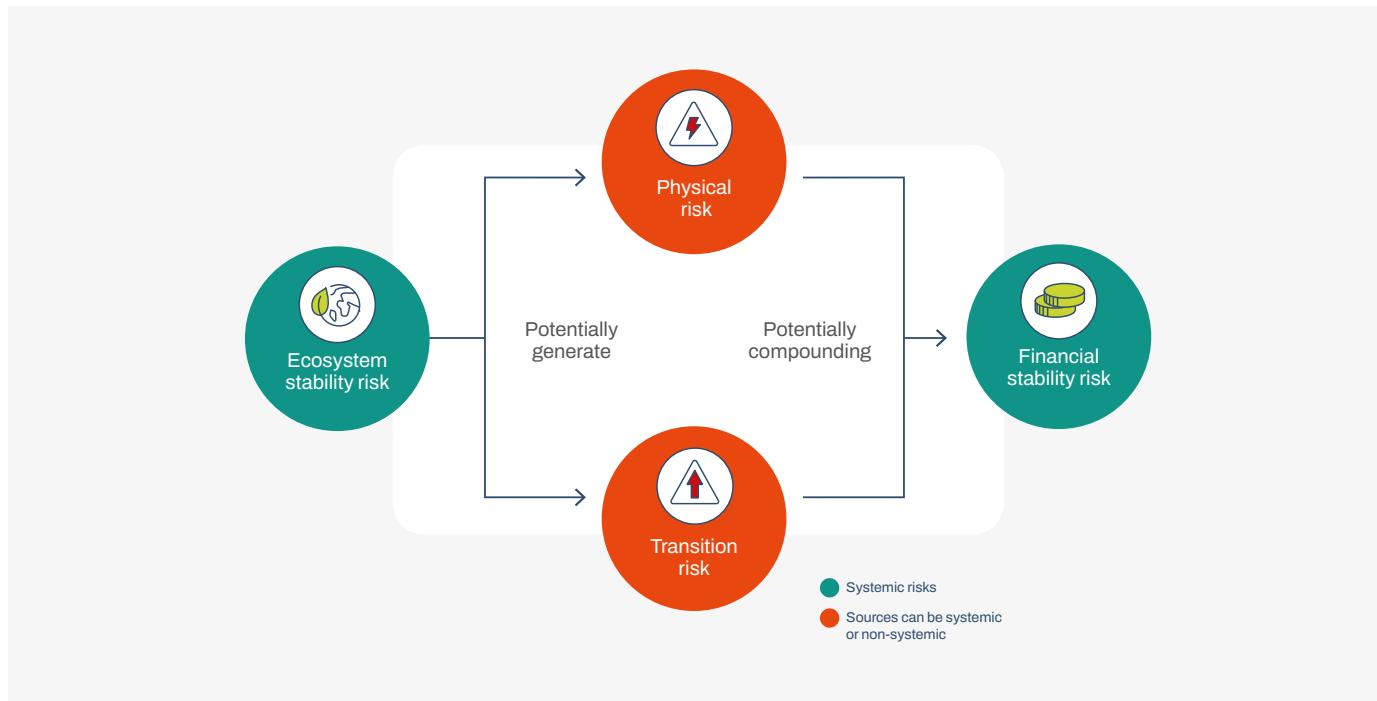
- Ecosystem stability risk: Risk of the destabilisation of a critical natural system, so it can no longer provide ecosystem services in the same manner as before. For example, tipping points are reached and regime shifts and/or ecosystem collapses occur that generate forms of physical and/or transition risk.
- Financial stability risk: Risk that a materialisation and compounding of physical and/or transition risks leads to the destabilisation of an entire financial system.

Systemic risks are of significant interest to policy makers and market regulators because of their potential to cause sudden disruption to societies, economies and the functioning of financial markets. But they also need to be considered by businesses and financial institutions given the potential for them to have unforeseen and significant financial implications.

38 Consistent with the TCFD, liability risk is included as a sub-category of transition risk. That is, potential financial losses stemming directly or indirectly from legal claims. A recent body of work has suggested that the specific characteristics of liability risk – as both a consequence of transition-related actions and a driver of transition – may mean it warrants separate consideration for organisations. Other work has suggested liability risk is associated with both transition and physical risks and could be a sub-set of both physical and transition risk categories. See Network for Greening the Financial System (2019) [A call for action: climate change as a source of financial risk](#); Network for Greening the Financial System (2021) [Climate-related litigation: raising awareness about a growing source of risk](#)

39 Goldin, I & Mariathasan, M. (2014) [The Butterfly Defect: how globalisation creates systemic risks and what to do about it](#); International Risk Governance Council (2018) [IRGC Guidelines for the governance of systemic risks](#); Kaufmann, G. & Scott, K. (2003) [What is systemic risk, and do bank regulators retard or contribute to it?](#)

**Figure 15: Nature-related risk categories**



Nature-related risks can result from both dependencies and impacts on nature through:

1. Changes to the state of nature itself, caused by business impact drivers or external factors;
2. Changes to the flow of ecosystem services associated with the changes to the state of nature; and
3. Impacts to society resulting from business impacts on nature that may affect the organisation, for example, through lack of access to land due to damaged stakeholder relations, or damage to reputation following the release of pollutants that affect the health of local communities.

#### *Nature-related opportunities*

Nature-related opportunities are activities that create positive outcomes for organisations and nature through positive impacts or mitigation of negative impacts on

nature. TNFD opportunity categories are split into those related to business performance and those related to sustainability performance (see Figure 16). These two categories are not mutually exclusive.

Nature-related opportunities can occur:

- When organisations avoid, reduce, mitigate or manage nature-related risks, for example, connected to the loss of nature and its associated ecosystem services that the organisation and society depend on; or
- Through the strategic transformation of business models, products, services, markets and investments that actively work to halt or reverse the loss of nature, including the implementation of conservation, restoration and nature-based solutions, or support for them through financing or insurance.<sup>40</sup>

<sup>40</sup> The International Finance Corporation (2023) [Biodiversity Finance Reference Guide](#) provides an indicative list of investment activities that contribute to protecting, maintaining, or enhancing biodiversity and ecosystem services and sustainably managing living natural resources through the adoption of practices that integrate conservation needs and sustainable development.

**Figure 16: Nature-related opportunity categories**

**Responding to nature-related risks and opportunities:**  
**The mitigation hierarchy**

In responding to risks and opportunities, business actions that avoid or minimise negative impacts on nature should be prioritised over pursuit of restoration efforts or mitigation of existing damage through reconstructive or compensatory measures. This is in line with mitigation hierarchy principles such as the SBTN AR3T framework (Figure 17).<sup>41</sup>

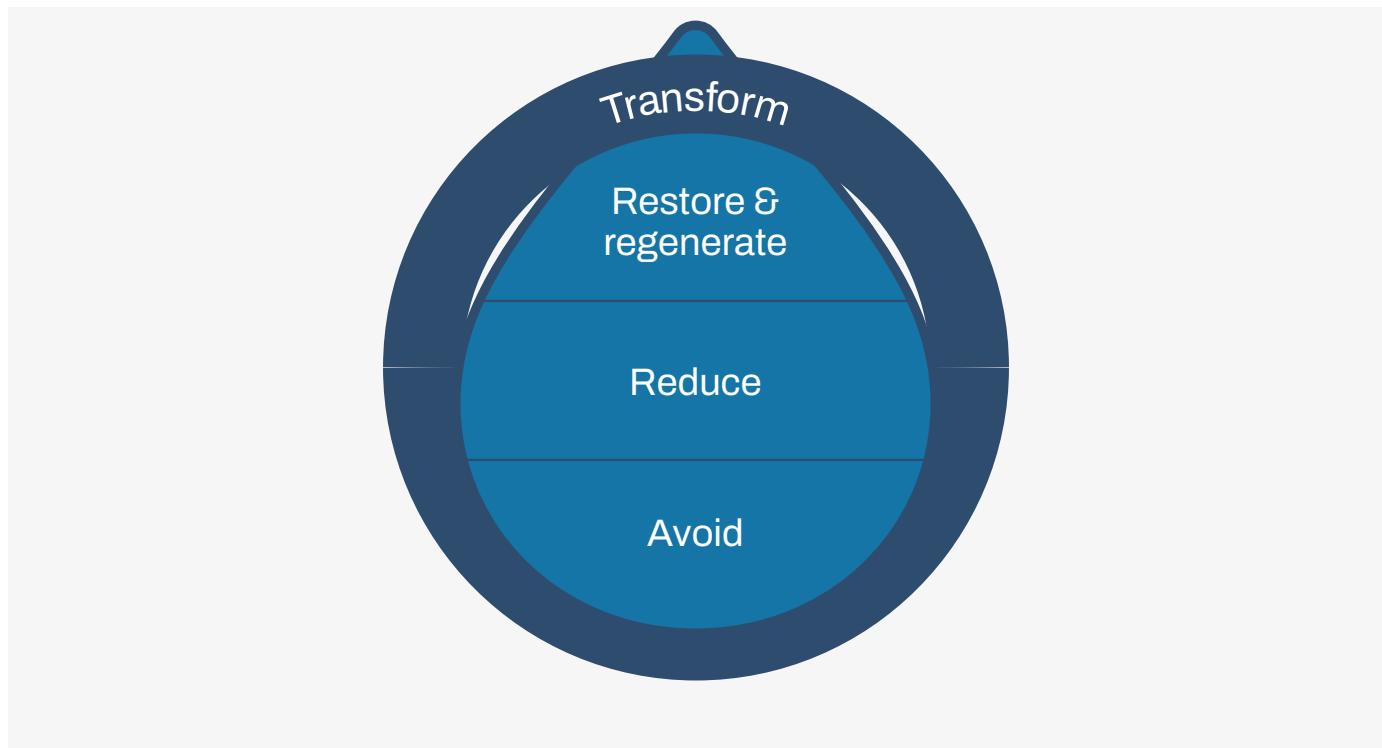
The AR3T framework includes four types of actions that should be followed sequentially:

- **Avoid:** Prevent negative impacts from happening in the first place; eliminate negative impacts entirely;

- **Reduce:** Minimise negative impacts that cannot be fully eliminated;
- **Restore:** Initiate or accelerate the recovery of an ecosystem with respect to its health, integrity and sustainability, with a focus on permanent changes in state; and
- **Regenerate:** Take actions designed within existing land/ocean/freshwater uses to increase the biophysical function and/or ecological productivity of an ecosystem or its components, often with a focus on a few specific ecosystem services.

It further includes **transformative action**, which covers the ways organisations can contribute to needed systemic change inside and outside their value chains.

**Figure 17: The SBTN AR3T Action Framework Mitigation Hierarchy**



SBTN (2023) [Step 4. Act](#)

41 Adapted from: WWF (2022) [A biodiversity guide for business](#); SBTN (2023) [Step 4. Act](#)

## 2.4. Financial effects

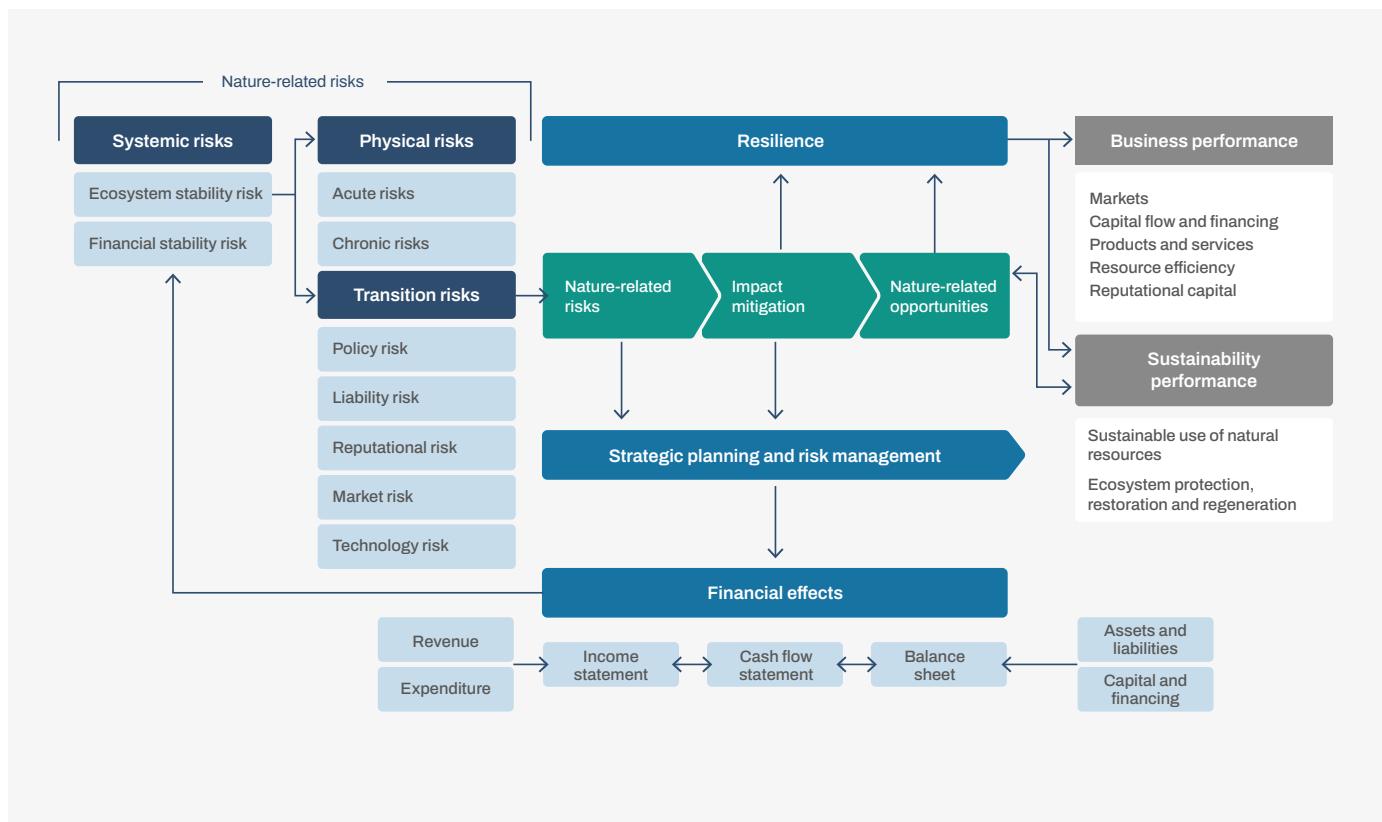
Nature-related risks and opportunities have financial effects for an organisation through changes to:

- Revenue, expenses and capital expenditure;
- Access to and cost of capital (through, for example, re-ratings of its credit risk or insurance premiums); and

- Carrying amount of assets and liabilities on the balance sheet.

These transmission channels can have a positive or negative effect on credit, operational, market, liquidity, liability, reputational and strategic risk (Figure 18).

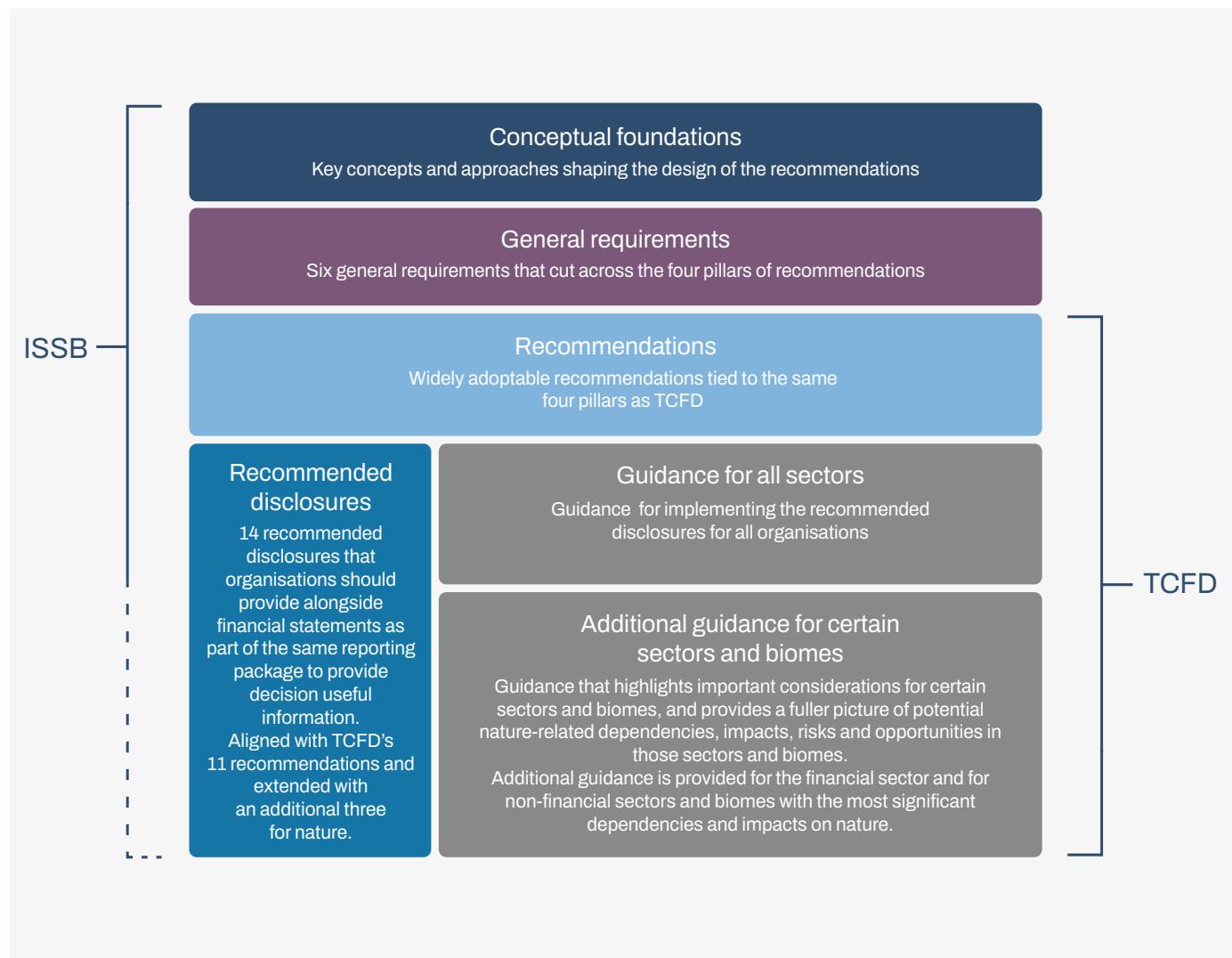
**Figure 18: Links between nature-related risks and opportunities, business performance and financial effects for an organisation**



# 3. Recommendations & guidance

The TNFD disclosure framework consists of **conceptual foundations** for nature-related disclosures, a set of **general requirements**, a set of **recommended disclosures** structured around the four recommendation pillars of governance, strategy, risk and impact management, and metrics and targets (Figure 19). This draws from, and is consistent with, the approach of TCFD and the ISSB.

**Figure 19: Architecture of the TNFD recommendations and alignment with ISSB and TCFD**



## At a glance – the TNFD's recommended disclosures

### Highlights

- Four disclosure pillars, building on TCFD recommendations and consistent with ISSB's IFRS Sustainability Disclosure Standards.
- 14 recommended disclosures.
- All 11 TCFD recommended disclosures included to encourage and support integrated climate and nature reporting.
- Incorporation of dependencies, impacts, risks and opportunities.
- Fully aligned with the Global Biodiversity Framework Target 15 requirement to disclose dependencies, impacts and risks.

### 3.1. Conceptual foundations for disclosure

#### *Core content for disclosure*

Building on the approach developed by the TCFD and incorporated into the ISSB's IFRS-S1 General Requirements, the TNFD has organised its recommended disclosures around the four pillars of:

- Governance;
- Strategy;
- Risk and impact management; and
- Metrics and targets.

At the core of the TNFD recommendations are four closely related principles:

1. **Support for increasing the breadth and depth of disclosure ambition over time, consistent with both the ISSB Standards and its global sustainability reporting baseline, and the global policy goals and targets in the GBF:** Organisations, in particular large and transnational corporates and financial institutions, should seek to expand and improve the quality of their corporate reporting over time in order to align with Target 15 of the GBF.

This calls for regular monitoring, assessment and disclosure of risks, dependencies and impacts along organisations' operations, supply and value chains, and portfolios.

2. **Materiality as the basis for disclosure:**

Organisations should disclose material information about their nature-related dependencies, impacts, risks and opportunities.

3. **Recognition of different approaches to materiality:**

The TNFD's recommendations have been designed to accommodate the different materiality preferences and requirements of a range of report preparers across jurisdictions. The TNFD recommends that organisations apply the ISSB's approach to identifying information that is material for users of general purpose financial reports as a baseline. Report preparers who want or need to report to a different materiality approach may apply an impact materiality approach to identify information in addition to the ISSB's baseline. Report preparers should use the definitional guidance regarding materiality provided by the regulatory authorities for their reporting jurisdiction(s). Organisations seeking to align with Target 15 of the GBF will want to consider the application of an impact materiality lens to identify information that is incremental to the global baseline.

4. **Comprehensiveness in identification and assessment of nature-related issues:**

Understanding an organisation's dependencies and impacts on nature is essential to inform a robust understanding of its potentially material risks and opportunities. The TNFD therefore strongly recommends, irrespective of the approach to materiality taken by the report preparer, the identification and assessment of all four types of nature-related issues – dependencies, impacts, risks and opportunities. When reporting, organisations should delineate the four types of issue and explain the links between them.

## Materiality

As noted above, report preparers should use their jurisdiction's regulatory approach to materiality. In the absence of such guidance, the TNFD recommends that report preparers:

- Provide information consistent with meeting the material information needs of capital providers as a baseline, consistent with the ISSB and the TCFD, with a focus on risk management and how dependencies and impacts on nature create risks and opportunities for an organisation's financial position; and
- Should they need or choose to do so, provide information consistent with meeting the material information needs of stakeholders aligned with a broader materiality approach, reporting against both the ISSB global sustainability reporting baseline and the impact materiality approach of GRI.<sup>42</sup>

The information that the ISSB requires an entity to provide to meet the needs of primary users of general purpose financial reports (sometimes referred to as 'financial materiality') is set out in its IFRS-S1 General Requirements (paragraphs 17–18) as follows:

*An entity shall disclose material information about the sustainability-related risks and opportunities that could reasonably be expected to affect the entity's prospects.*

*In the context of sustainability-related financial disclosures, information is material if omitting, misstating or obscuring that information could*

*reasonably be expected to influence decisions that primary users of general purpose financial reports make on the basis of those reports, which include financial statements and sustainability-related financial disclosures and which provide information about a specific reporting entity.*<sup>43</sup>

The two most widely cited impact materiality definitions are those of the GRI and the ESRS:

**GRI:** *The organisation prioritises reporting on those topics that represent its most significant impacts on the economy, environment and people, including impacts on their human rights.*<sup>44</sup>

**ESRS:** *Information that pertains to an organisation's material actual or potential, positive or negative impacts on people or the environment over short, medium and long term.*<sup>45</sup>

The TNFD recommends the impact materiality definition from GRI for report preparers who want or need to apply an impact materiality process in the absence of any regulatory guidance that may be relevant to the organisation.

## *Other conceptual foundations*

The TNFD recommends that report preparers adhere to the conceptual foundations in the ISSB's IFRS-S1 General Requirements,<sup>46</sup> in relation to:

- Fair presentation;
- Reporting entity; and
- Connected information.

<sup>42</sup> With respect to impact materiality, the TNFD has aligned its recommendations (and supporting additional guidance) with the language and approach of the GRI Sustainability Reporting Standards.

<sup>43</sup> International Financial Reporting Standards (2023) [IFRS-S1: General Requirements for Disclosure of Sustainability-related Financial Information](#)

<sup>44</sup> GRI (2021) [GRI 1: Foundation 2021, Section 2.2](#)

<sup>45</sup> Commission Delegated Regulation supplementing Directive 2013/34/EU of the European Parliament and of the Council as regards 'sustainability reporting standards', Annex 1, p. 7, as adopted by the Commission by means of [delegated act on 31 July 2023](#). The ESRS word 'undertaking' has been substituted with the word 'organisation' for consistency of terminology in this document.

<sup>46</sup> International Financial Reporting Standards (2023) [IFRS-S1: General Requirements for Disclosure of Sustainability-related Financial Information](#)

### 3.2. TNFD general requirements

The TNFD recommendations include six general requirements that are additional to the general requirements and other provisions of the ISSB's IFRS-S1 Standard. Report preparers publicly stating their use of, and alignment with, the TNFD's recommendations are expected to apply the general requirements to create consistency in the information disclosed. The general requirements apply to all four pillars of the recommended disclosures: governance; strategy; risk and impact management; and metrics and targets. They describe:

1. The application of materiality;
2. The scope of disclosures;
3. The location of nature-related issues;
4. Integration with other sustainability-related disclosures;
5. The time horizons considered; and
6. The engagement of Indigenous Peoples, Local Communities and affected stakeholders in the identification and assessment of the organisation's nature-related issues.

#### 1. Application of materiality

To ensure clarity and transparency for primary users of general purpose financial reports and other stakeholders, the organisation should clearly state the materiality approach taken, following the recommendations above.

**The TNFD recommends that report preparers use ISSB's definition of material information as a baseline and an impact materiality definition in addition should they choose or need to do so.**

The organisation should apply the same materiality approach for all the nature-related disclosures made in its reporting, with reference to standards and frameworks whose defined primary users are consistent with the intended primary users of the nature-related disclosures.

#### 2. Scope of disclosures

The ISSB's IFRS-S1 calls for organisations to "present fairly all sustainability-related risks and opportunities that could reasonably be expected to affect an entity's prospects". It also acknowledges that corporate reporting requires a "balanced consideration of the costs and efforts for the entity".<sup>47</sup>

The TNFD recognises that many important nature-related issues will occur upstream and downstream from an organisation's direct operations, but also recognises the complexities that have been experienced with Scope 3 climate-related reporting. There are also data constraints with nature-related reporting, with reliance on the provision of data across value chains. Corporates will need to rely on data from suppliers, while financial institutions will require data from their customers and investees.

The organisation should therefore describe the scope of its nature-related assessment and disclosures and the process followed in determining that scope, including:

- The activities and assets in the organisation's direct operations and upstream and downstream value chain(s) assessed for nature-related dependencies, impacts, risks and opportunities, ideally in relation to the entirety of the organisation's business operations, for example, by percentage of total revenue contribution;
- The activities and assets in the organisation's direct operations and upstream and downstream value chain(s) covered in these disclosures, if different from the above;

<sup>47</sup> International Financial Reporting Standards (2023) [IFRS S1: General Requirements for Disclosure of Sustainability-related Financial Information](#)

- The process followed in determining the scope of what to assess and consequently disclose; and
- Whether some parts of the direct operations or upstream and downstream value chain(s) were included or excluded from assessment and the resulting disclosure statement, and why.

In doing so, the organisation should also describe:

- Which of the TNFD's recommended disclosures it has made disclosures against; and
- Whether any extension to the scope of disclosures is planned for future reports, including whether the organisation aims to disclose material risks, dependencies and impacts aligned with Target 15 of the Global Biodiversity Framework. If so, a brief description of the proposed future disclosures should be included.

The TNFD disclosures should clearly identify information that is relevant to the organisation's:

- Direct operations;
- Upstream value chain(s); and
- Downstream value chain(s).

Analysis of downstream value chains for financial institutions should include financed, facilitated, investment and insured activities and assets.

**This statement of the breadth and depth of the organisation's scope of disclosures is important because it will provide context for the report user on how to interpret the disclosures, including any quantitative information (i.e. data in tables and charts) relative to the scope of the whole business and its value chain(s).**

### **3. Location of nature-related issues**

Consideration of the geographic location of the organisation's interface with nature should be integral to the assessment of nature-related issues, recognising that dependencies and impacts on nature occur in specific ecosystems. In some cases, nature-related

issues will cover multiple ecosystems and locations, as both nature and impact drivers are mobile, for example, in the case of migratory species or the spreading of pollutants. The organisation's risks (such as acute physical risks) and opportunities will also largely occur in – and vary by – specific geographic locations. The risks associated with water withdrawal will vary by the degree of water stress in each location, for example.

*“Changes in the natural environment are not linear and characterised instead by compounding effects and ‘tipping points’.”*

Network for Greening the Financial System (NGFS), 2023

Consideration of the geographic location of the organisation's interfaces with nature – through direct operations as well as upstream and downstream value chain(s) – should therefore be central to the organisation's assessment of its nature-related issues, and where material, to its disclosure statements. This is an important difference from the analysis of climate through Scope 1, 2 and 3 emissions.

The location-specific character of nature-related issues underscores why it is important that report preparers provide material information in a manner that enables primary users of general purpose financial reports and other stakeholders to understand the connection between assessed dependencies, impacts, risks and opportunities.

*“Nature is spatially explicit ... Therefore efforts to identify and prioritise risks should take into account the geographical location of impacts and dependencies.”*

NGFS, 2023

### *Level of aggregation and disaggregation of reported nature-related data*

When disclosing information about material nature-related issues by geographic location, the organisation should disaggregate information to the extent possible. Organisations are encouraged to improve the level of geolocation precision over time as data and traceability improve. However, organisations should not aggregate or disaggregate locations where doing so would obscure material information, consistent with the ISSB's IFRS-S1 Application Guidance on aggregation and disaggregation (B29).<sup>48</sup>

Information should only be aggregated if it has shared characteristics and should not be aggregated if it does not have shared characteristics. In particular, and where separate presentation would provide material information, organisations should not aggregate information across sites with different relevant natural characteristics, such as water extraction across areas of water stress and non-water stress, or dependencies on a highly intact ecosystem and a highly degraded one.

Where an organisation has many locations in a similar geographic area with similar nature-related dependencies, impacts, risks or opportunities and disaggregated location-based reporting does not provide additional material information, the organisation may report aggregated data.

### **4. Integration with other sustainability-related disclosures**

Nature-related disclosures should be integrated with other business and sustainability-related disclosures whenever possible, to provide report users with an integrated and holistic picture of the organisation's financial position and prospects. Integration of climate- and nature-related disclosures is of particular importance.

The organisation should ensure that any alignment, synergies, contributions and possible trade-offs between actions and targets for climate and nature are clearly identified. In particular, the organisation should connect information on nature-related issues that is already included in climate-related disclosures to nature-related disclosures.

### **5. The time horizons considered**

The organisation should describe what it considers to be the relevant short, medium and long term time horizons, considering the useful life of the organisation's assets or infrastructure and the fact that nature-related risks and opportunities often manifest themselves over the medium and long term.

### **6. Engagement with Indigenous Peoples, Local Communities and affected stakeholders**

Effective and meaningful engagement with people is an important aspect of any robust identification, assessment and management of nature-related issues (see Box 1 above). Indigenous Peoples are stewards of 80% of the world's remaining biodiversity and a source of traditional knowledge about the planet's ecosystems, giving them a uniquely important role in halting and reversing nature loss. Their knowledge, including traditional knowledge and experience, can also be a valuable input into an organisation's identification, evaluation, assessment and management of its nature-related dependencies, impacts, risks and opportunities.

The organisation should describe its process for engaging Indigenous Peoples, Local Communities and affected stakeholders about their concerns and priorities with respect to nature-related dependencies, impacts, risks and opportunities in its direct operations and value chain.

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<sup>48</sup> International Financial Reporting Standards (2023) [IFRS S1: General Requirements for Disclosure of Sustainability-related Financial Information](#).

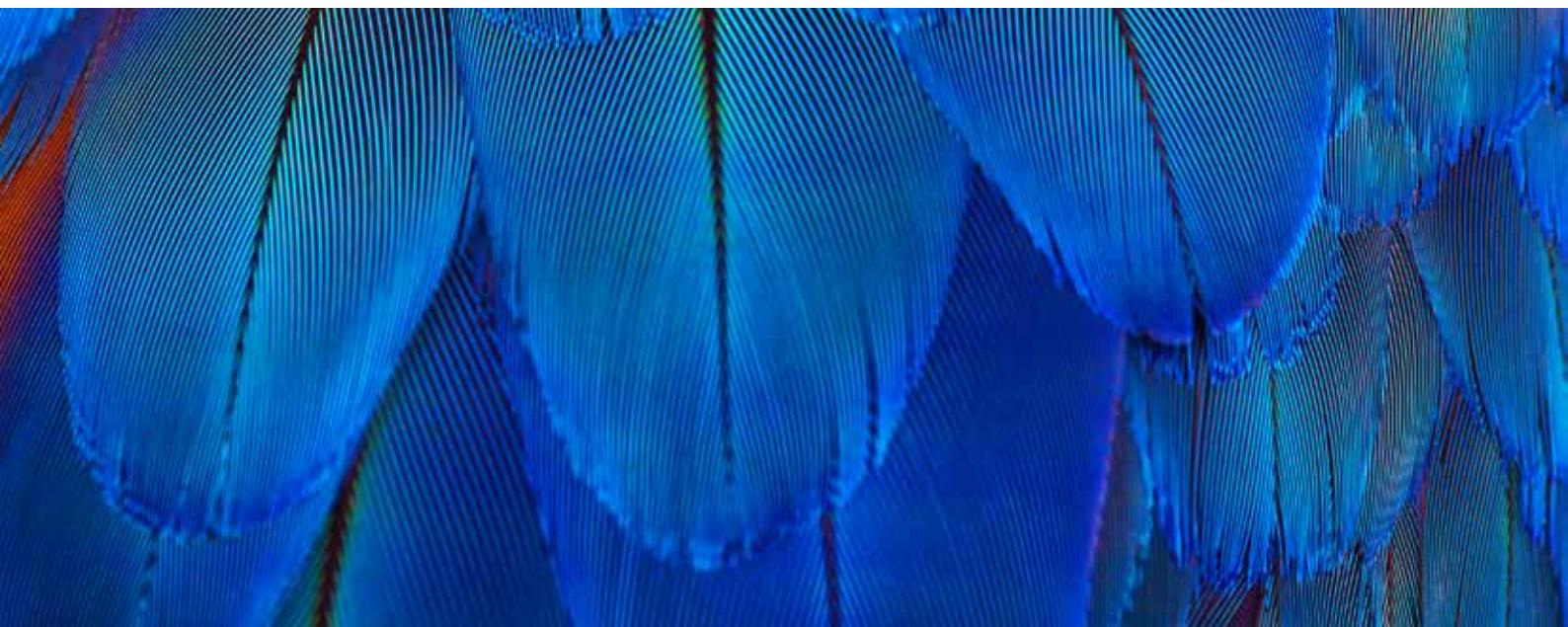
*“An entity’s sustainability-related risks and opportunities arise out of the interactions between the entity and its stakeholders, society, the economy and the natural environment throughout the entity’s value chain ... These interactions take place within an interdependent system in which an entity both depends on resources and relationships throughout its value chain to generate cash flows and affects those resources and relationships through its activities and outputs—contributing to the preservation, regeneration and development of those resources and relationships or to their degradation and depletion. These dependencies and impacts might give rise to sustainability-related risks and opportunities that could reasonably be expected to affect an entity’s cash flows, its access to finance and cost of capital over the short, medium and long term”*

ISSB's IFRS-S1, paragraph B2

### **3.3. Recommended disclosures and guidance for all sectors**

The recommended disclosures (Figure 20) for all sectors are structured around four pillars: governance, strategy, risk and impact management, and metrics and targets.

1. **Governance:** The governance processes, controls and procedures the organisation uses to monitor and manage nature-related issues;
2. **Strategy:** The approach the organisation uses to manage nature-related issues;
3. **Risk and impact management:** The processes the organisation uses to identify, assess, prioritise and monitor nature-related issues; and
4. **Metrics and targets:** The organisation’s performance in relation to nature-related issues, including progress towards any targets the organisation has set or is required to meet by law or regulation.



**Figure 20: TNFD's recommended disclosures**

Governance	Strategy	Risk & impact management	Metrics & targets
<p>Disclose the organisation's governance of nature-related dependencies, impacts, risks and opportunities.</p>	<p>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.</p>	<p>Describe the processes used by the organisation to identify, assess, prioritise and monitor nature-related dependencies, impacts, risks and opportunities.</p>	<p>Disclose the metrics and targets used to assess and manage material nature-related dependencies, impacts, risks and opportunities.</p>
Recommended disclosures	Recommended disclosures	Recommended disclosures	Recommended disclosures
<p><b>A.</b> Describe the board's oversight of nature-related dependencies, impacts, risks and opportunities.</p> <p><b>B.</b> Describe management's role in assessing and managing nature-related dependencies, impacts, risks and opportunities.</p> <p><b>C.</b> 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.</p>	<p><b>A.</b> Describe the nature-related dependencies, impacts, risks and opportunities the organisation has identified over the short, medium and long term.</p> <p><b>B.</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.</p> <p><b>C.</b> Describe the resilience of the organisation's strategy to nature-related risks and opportunities, taking into consideration different scenarios.</p> <p><b>D.</b> 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.</p>	<p><b>A(i)</b> Describe the organisation's processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its direct operations.</p> <p><b>A(ii)</b> 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).</p> <p><b>B.</b> Describe the organisation's processes for managing nature-related dependencies, impacts, risks and opportunities.</p> <p><b>C.</b> Describe how processes for identifying, assessing, prioritising and monitoring nature-related risks are integrated into and inform the organisation's overall risk management processes.</p>	<p><b>A.</b> 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.</p> <p><b>B.</b> Disclose the metrics used by the organisation to assess and manage dependencies and impacts on nature.</p> <p><b>C.</b> Describe the targets and goals used by the organisation to manage nature-related dependencies, impacts, risks and opportunities and its performance against these.</p>

## Governance

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

Investors, lenders, insurance underwriters and other users of nature-related financial disclosures are interested in understanding the governance processes, controls and procedures the organisation uses to monitor and manage nature-related issues. They are specifically interested in understanding the role an organisation's board plays in overseeing nature-related issues, as well as management's role in assessing and managing those issues.

Such information supports evaluations of whether nature-related issues receive appropriate board and management attention and whether the organisation's governance body/bodies have an appropriate level of skill and competence available to do so. The governance disclosures therefore cover the organisation's governance of nature-related dependencies, impacts, risks and opportunities.

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

In describing the board's oversight of nature-related dependencies, impacts, risks and opportunities, the organisation should include a discussion of:

- The processes and frequency by which the board and/or board committees (audit, risk or other committees) are informed about nature-related dependencies, impacts, risks and opportunities across the organisation's direct operations and upstream and downstream value chain(s);
- Whether and how the board and/or board committees consider nature-related dependencies, impacts, risks and opportunities when:

- Reviewing and guiding strategy, major plans of action, risk management policies, annual budgets and business plans;
- Setting the organisation's performance objectives, monitoring implementation and performance; and
- Overseeing major capital expenditures, acquisitions and divestitures;
- How the board monitors and oversees progress against goals and targets to address nature-related dependencies, impacts, risks and opportunities;
- The main features of board-level oversight of the sustainability reporting processes, including risk management processes and use of internal and external audit and assurance resources; and
- Whether and how performance metrics for nature-related issues are incorporated into remuneration policies.

The organisation should consider reporting the following indicators to support this disclosure:

- Number (absolute and proportion of total) of members of board with competence on nature-related issues;
- Use, if any, of external expert advisers and subject matter experts, such as scientific advisers, to support board deliberations; and
- Frequency that nature issues are discussed during board meetings.

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

In describing management's role in the assessment and management of nature-related dependencies, impacts, risks and opportunities, the organisation should include the following information:

- Whether and how the organisation has assigned nature-related responsibilities to management-level positions or committees, whether such management positions or committees report to the board or board

- committee, and whether those responsibilities include assessing and/or managing nature-related dependencies, impacts, risks and opportunities;
- The associated organisational structure(s); and
  - The controls and procedures by which management is informed about and monitors nature-related dependencies, impacts, risks and opportunities.

The organisation should consider reporting the following indicators to support this disclosure:

- Highest level of responsibility and accountability for nature policies, commitments and targets; and
- Frequency of communication of performance and progress in priority locations to management.

**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.**

The organisation should describe its human rights policies and engagement activities related to its assessment and management of nature-related dependencies, impacts, risks and opportunities. This should cover all relevant stakeholders, with a priority on Indigenous Peoples, Local Communities and affected stakeholders. It should do so with reference to, and implementation of, the UN Declaration on the Rights of Indigenous Peoples, the UN Guiding Principles on Business and Human Rights and internationally recognised human rights as applicable to affected stakeholders.

This description should include:

- A summary of the organisation's commitments regarding:
- International standards of responsible business practice as set out in the UN Guiding Principles

on Business and Human Rights and the OECD Guidelines for Multinational Enterprises on Responsible Business Conduct;

- Respect of the rights of Indigenous Peoples as reflected in the UN Declaration on the Rights of Indigenous Peoples, ILO Convention 169, the Convention on Biological Diversity; and
- The UN General Assembly Resolution 76/300 on rights to a healthy environment;
- A description of how human rights due diligence processes, including but not limited to those covering the rights of Indigenous Peoples and Local Communities, are embedded in an organisation's strategy, policies, codes of conduct, governance structures and best practices;
- The processes adopted to enable the monitoring, management and remediation of any adverse human rights impacts caused by the organisation or to which it significantly contributes through its business activities, supply chains and business relationships, including organisational grievance mechanisms;
- A summary of the organisation's governance on nature-related advocacy and lobbying, and the organisation's approach to engagement with public authorities on nature-related initiatives, policies and/or regulation;
- A summary of the organisation's key nature-related advocacy and lobbying priorities and positions. This should be complemented, where relevant, with a summary of the main direct advocacy and lobbying activities undertaken by the organisation associated with nature-related regulation and public policy development;
- A description of the organisation's involvement in any ongoing cases, or cases concluded in the reporting year, that concern nature-related dependencies or impacts that are brought to National Contact Points under the OECD Guidelines for Multinational Enterprises on Responsible Business Conduct;
- The engagement process(es) undertaken including:

- A description of the Indigenous Peoples, Local Communities and affected stakeholders engaged in the assessment and management of nature-related dependencies, impacts, risks and opportunities, how they were identified, and a confirmation that this description has been agreed with those engaged;
- A statement of the purpose of the engagement and whether it takes place in relation to assessment, solution-finding, monitoring and/or evaluation of nature-related issues;
- A description of the approach to and process of engagement, whether engagement is one-off, periodic or ongoing, and whether it is through formal or informal structures;
- A description of whether engagement has been based on free, prior and informed consultation and participation and how Free Prior and Informed Consent (FPIC) has been obtained;
- A statement of how equitable Access and Benefit Sharing has been attained, particularly as it relates to Indigenous Peoples and Local Communities; and
- A description of the results of the engagement processes with Indigenous Peoples, Local Communities and affected stakeholders, including how these are incorporated or otherwise addressed in the organisation's materiality assessment, decision-making and responses to nature-related issues and their societal dimensions; and
- A statement of whether and how senior management and the board are informed about engagement processes with Indigenous Peoples, Local Communities and affected stakeholders, and their results.

The organisation should consider reporting the following indicator to support this disclosure:

- Proportion of locations identified with material nature-related issues and/or in sensitive locations that have active engagement with Indigenous Peoples, Local

Communities and affected stakeholders on nature-related issues.

## Strategy

***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.***

Investors and other stakeholders are interested in understanding the approach the organisation uses to manage nature-related issues and how nature-related issues may affect an organisation's business model, strategy and financial planning over the short, medium and long term. Such information is used to inform expectations about the future performance of an organisation.

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

### Dependencies and impacts

The organisation should describe the material nature-related dependencies and impacts the organisation has identified in its direct operations and upstream and downstream value chain(s).

The organisation should disclose the following information for material impacts and dependencies:

- A description of the material impact on nature, including:
  - The location of the impact with reference to the location(s) identified in Strategy D and whether the impact relates to the organisation's direct operations, or upstream or downstream value chain(s);
  - The impact pathway(s), including:

- The organisation's impact driver(s) and any external factors that are affecting the state of nature;<sup>49</sup>
  - How these impact drivers and external trends lead to changes in the state of nature in these location(s); and
  - How the availability of ecosystem services is affected; and
- Reference to the relevant metrics disclosed in Metrics and Targets B;
- A description of the material dependency on nature, including:
- The location of the dependency, with reference to the locations identified in Strategy D and whether the dependency relates to the organisation's direct operations, or upstream or downstream value chain(s);
  - The dependency pathway, including:
    - The environmental asset(s) and ecosystem service(s) the organisation depends on; and
    - The associated impact driver(s) and external factors that are affecting the state of nature and availability of ecosystem services; and
  - Reference to the relevant metrics disclosed in Metrics and Targets B; and
- A description of any interconnections between the organisation's dependencies and impacts.

The disclosures should distinguish between dependencies and impacts in the organisation's direct operations and upstream and downstream value chain(s).

### Risks and opportunities

An organisation should describe the material risks and opportunities it has identified that could affect its business model, value chain, strategy and financial position and how these arise from its dependencies and impacts on nature.

The organisation should disclose the following information:

- A description of each nature-related risk and opportunity identified by the organisation across each time horizon (short, medium and long term), with reference to the relevant metrics disclosed in Metrics and Targets A; and
- The TNFD risk and opportunity category to which the risk or opportunity belongs, including whether a risk is a physical or transition risk.

***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.***

The organisation should describe how the nature-related dependencies, impacts risks and opportunities identified in Strategy A have affected its business model, value chain, strategy and financial position.

### ***Business model, value chain and strategy***

The organisation should describe the current and anticipated effects of the identified risks and opportunities on its business model and value chain and where these risks and opportunities are located in its business model and value chain.

The organisation should describe the processes and actions it has put in place to respond to the material dependencies, impacts, risks and opportunities it has identified, including:

<sup>49</sup> State of nature encompasses ecosystem condition and extent, and species population size and species extinction risk.

- How the organisation makes and implements decisions to avoid and reduce negative impacts on nature, regenerate and restore ecosystems and transform business practices, following the mitigation hierarchy and principles of extended producer responsibility;<sup>50</sup>
- Current and anticipated changes to business practices, investments in new technologies or research and development, decisions about the location of business operations, and collaboration with other partners and stakeholders;
- Current and anticipated changes to upstream sourcing practices and interactions with downstream entities, such as the adoption of improved tracing, certification practices, collaboration with suppliers, customers and other stakeholders, or extended producer responsibility schemes;
- Current and anticipated changes to the organisation's engagement through multi-stakeholder planning processes, such as landscape approaches, watershed management and marine and coastal spatial planning; and
- Any other current and anticipated policies or efforts to mitigate nature-related risks, manage nature-related issues and/or contribute towards the goals and targets in the GBF.

#### *Financial position and performance*

The organisation should describe the current and anticipated effects of nature-related risks and opportunities on its financial position, performance and cashflow, including:

- How the nature-related risks and opportunities have affected the financial position of the organisation in the reporting period;<sup>51</sup>

- The anticipated effects on revenues, expenses, cashflows, asset and liability values and funding sources over the short, medium and long term;
- Whether the organisation anticipates any significant investments or asset disposals as a result of the nature-related risks and opportunities identified; and
- How nature-related risks and opportunities serve as an input to their financial planning processes.

#### *Target setting and transition plans*

Organisations that have made nature-related commitments, set nature-related targets and/or made nature transition plans to address nature-related dependencies, impacts, risks and opportunities should describe their commitments, how they will achieve them and how they are aligned to GBF goals and targets.

A non-exhaustive list of indicators and metrics that demonstrate the response of organisations to nature-related dependencies, impacts, risks and opportunities is provided in Annex 2.

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

The organisation should disclose information on the resilience of its strategy, business model and value chain to nature-related changes, developments and uncertainties, taking into consideration the organisation's nature-related risks and opportunities identified in Strategy A. The organisation should use nature-related scenario analysis to assess its strategy resilience, using an approach that is commensurate with the organisation's circumstances.

<sup>50</sup> These terms are defined in the TNFD glossary. The TNFD uses the Science Based Targets Network's Action Framework for the mitigation hierarchy: AR3T (Avoid, Reduce, Restore, Regenerate, Transform). The TNFD uses the OECD definition of extended producer responsibility (see glossary).

<sup>51</sup> In line with ISSB's IFRS-S1 – General Requirements for Disclosure of Sustainability-related Financial Information: "when identifying sustainability-related risks and opportunities that could reasonably be expected to affect an entity's prospects, reasonable and supportable information includes information about past events(...)." (B8, Appendix B).

The organisation should describe:

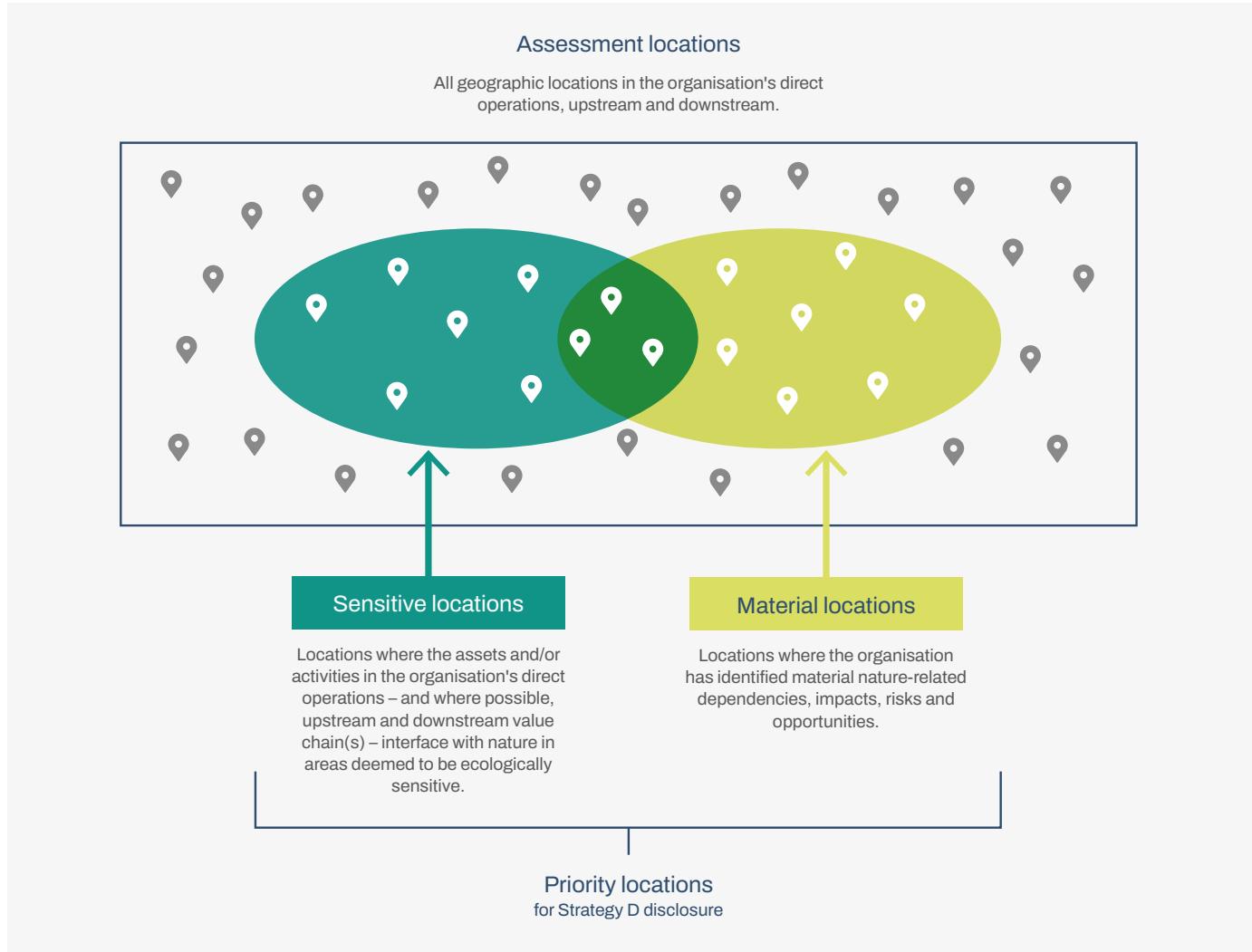
- The ways in which it believes its strategy, business model and value chain may be affected over the short, medium and long term by key trends and critical uncertainties regarding physical risks associated with nature loss and possible tipping points in locations material to its business model and value chain (as identified in Strategy D);
- The ways in which it believes its strategy, business model and value chain may be affected over the short, medium and long term by key trends and critical uncertainties regarding a range of transition risks, such as changes in government policy and regulation, litigation risk and shifting consumer expectations, and the degree of alignment or misalignment of those transition risk uncertainties;
- How its strategies might change to address such potential trends and uncertainties, including a description of how the organisation took into consideration location specificity;
- The potential effects, if assessed, of an increased level and/or increased rate of change of nature-related risks and opportunities on financial performance (i.e. revenues and expenses) and financial position (i.e. assets and liabilities) over the short, medium and long term;
- The resources and capacity the organisation has, or plans to put in place, to adapt and make identified changes to its strategy to address future changes in the potential effects of nature-related risks and opportunities; and
- Its use of scenario tools and methodologies, if any, to inform its thinking about the resilience of its strategy, including a brief description of the scenario narratives used, the time horizons considered and the key insights gained.

**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.**

As illustrated in Figure 21, **priority locations** are locations that are:

- **Material locations:** Locations where an organisation has identified material nature-related dependencies, impacts, risks and opportunities in its direct operations and upstream and downstream value chain(s); and/or
- **Sensitive locations:** Locations where the assets and/or activities in its direct operations – and, where possible, upstream and downstream value chain(s) – interface with nature in:
  - Areas important for biodiversity; and/or
  - Areas of high ecosystem integrity; and/or
  - Areas of rapid decline in ecosystem integrity; and/or
  - Areas of high physical water risks; and/or
  - Areas of importance for ecosystem service provision, including benefits to Indigenous Peoples, Local Communities and stakeholders.

**Figure 21: Assessment of priority locations – sensitive and material locations**



An organisation should provide:

- A list and/or spatial map of the locations where the organisation has assets and/or activities:
  - In its direct operations and upstream and downstream value chain(s), where material nature-related dependencies, impacts, risks and opportunities have been identified, and whether any of these locations meet the criteria for sensitive locations; and

- In its direct operations and, where possible upstream and downstream value chain(s), that are in sensitive locations as defined above.
- A description of how the organisation has defined sensitive locations, with reference to the tools, data sources and indicators and metrics used;
- A description of the process followed to identify priority locations for disclosure;
- A description of the level of geographic specificity achieved, if and how locations have been aggregated,

- and the rationale for any aggregation, with reference to general requirement 3; and
- The organisation's intentions to improve or expand its location assessment activities over the short, medium and long term.

## Risk and impact management

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

Investors and other stakeholders are interested in understanding how an organisation's nature-related dependencies, impacts, risks and opportunities are identified, assessed, prioritised and monitored, and whether those processes are integrated into existing risk management processes. Such information helps users of nature-related financial disclosures to evaluate the organisation's overall risk processes and risk and impact management activities.

A non-exhaustive list of response indicators and metrics that may help organisations to demonstrate the process used to identify, assess, prioritise and monitor nature-related dependencies, impacts, risks and opportunities is provided in Annex 2.

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

The organisation should describe its processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its direct operations.

The description should include:

- How the organisation identifies existing and emerging nature-related dependencies, impacts, risks and opportunities that may be material to the organisation, including factors such as:

- The materiality definitions and application guidance used with respect to the organisation's materiality assessment;
  - The degree of location-specificity used (e.g. site-specific, local, sub-national), taking into account the differences in dependencies, impacts, risks and opportunities across locations;
  - The timescales considered;
  - Whether and how ecological thresholds and tipping points were considered;
  - The frequency of assessment; and
  - Whether and how existing and emerging policy changes and regulatory requirements related to climate change and nature loss were considered (e.g. restrictions on water or land use).
- How the organisation assesses nature-related risks and opportunities for the magnitude of potential effects on the organisation, including processes for assessing the potential size and scope of identified nature-related risks and opportunities and the likelihood of the effects of those risks, based on its understanding of how nature-related risks and opportunities originate from the identified dependencies and impacts.
  - How the organisation determines the relative significance of nature-related risks and opportunities in relation to other risks and opportunities and prioritises risks and opportunities to inform risk and opportunity responses and risk and opportunity management decision-making.

The organisation should disclose:

- An assessment of the quality of the data used and the implications for the analysis;
- A description of any improvements made to data quality since the previous disclosure period and plans to improve data quality over time;
- The methodology and information sources used for key data not obtained directly from the organisation's operations; and

- Definitions of the risk terminology used, or references to existing risk classification frameworks used, where appropriate and relevant to understanding the process followed.

**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).**

The organisation should describe its processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its upstream and downstream value chain(s).

The description should include:

- How the organisation defines the value chain(s), its scope and constituent elements;
- The scope of the value chain(s) considered;
- How the organisation determines which elements of the value chain(s) are to be assessed (e.g. based on the TNFD's additional guidance; the commodities used; products, locations, processes; and/or degree of influence over the issue);<sup>52</sup>
- The elements of the value chain(s) selected for assessment using this process;
- How the organisation reviews its approach to identifying elements of the value chain(s) for assessment to reflect new, emerging and changing risks and opportunities that may affect the organisation;<sup>53</sup>
- How the organisation assesses dependencies, impacts, risks and opportunities associated with its value chain(s);
- The materiality definitions and application guidance used with respect to the organisation's materiality assessment;
- The timescales considered for the assessment;
- Whether and how ecological thresholds and tipping points have been considered;
- The degree of location-specificity achieved and the implications for the analysis, including:
  - An assessment of the quality of the data used and the implications for the analysis;
  - The improvements in data quality, traceability and location-specificity achieved since the disclosure in prior periods;
  - Which data are obtained directly from suppliers or customers and which are estimated;
  - The methodology and data sources used when data are not obtained directly from suppliers or customers, including the use of proxy data; and
  - The strategy to increase data quality, traceability and location-specificity over time, the barriers to such improvements and the approach to overcoming those barriers.
- How the organisation assesses nature-related risks and opportunities in its value chain(s) based on the magnitude of potential effects on the organisation, including processes for assessing the potential size and scope of identified nature-related risks and opportunities and the likelihood of the effects of those risks, based on its understanding of how nature-related risks and opportunities originate from the identified dependencies and impacts; and
- How the organisation determines the relative significance of nature-related risks and opportunities in its value chain(s) in relation to

<sup>52</sup> To identify priorities, an organisation may want to follow processes such as those outlined in the Organisation for Economic Cooperation and Development's (OECD) [Due Diligence Guidance for Responsible Business Conduct](#) or [GRI 3: Material Topics 2021](#).

The organisation may also want to refer to the Science Based Targets Network's (SBTN) High Impact Commodity List and Materiality Screening Tool and the ENCORE tool to identify which activities and assets upstream and downstream may warrant assessment.

<sup>53</sup> For example, how existing and emerging regulatory requirements related to nature loss are considered, which could result in water or land use restrictions.

other risks and opportunities, including processes for prioritising risks and opportunities to inform risk and opportunity responses and risk and opportunity management decision-making.

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

The organisation should describe its processes for managing nature-related dependencies, impacts, risks and opportunities.

This should include information about:

- The inputs and parameters the organisation uses (for example, information about data sources and the scope of operations covered in the processes);
- The risk management tools the organisation uses to assess the organisation's overall risk profile in light of those risks; and
- How the organisation monitors nature-related risks.

**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.**

The organisation should describe whether and how its processes for identifying, assessing, prioritising and monitoring nature-related risks are integrated into its overall risk management process.

### Metrics and targets

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

Investors and other stakeholders are interested in understanding an organisation's performance in relation to nature-related issues, including progress towards any targets the organisation has set and how an organisation measures and monitors its nature-related dependencies, impacts, risks and opportunities.

Disclosure of the metrics and targets used by an organisation to identify, evaluate, assess and manage material nature-related dependencies, impacts, risks and opportunities helps investors and other stakeholders to assess an organisation's current and prospective risk-adjusted returns, its ability to meet current and future financial obligations, its general exposure to nature-related issues, and its progress in managing or adapting to those issues. Disclosure of metrics and targets on a consistent basis helps investors and other stakeholders to compare organisations within a sector or industry.

The TNFD intends to increase the specificity of methodologies in its guidance over time, as practices and standards further develop.

In preparing the disclosures for this pillar, organisations should refer to Section 4, Annex 1 (TNFD core global disclosure metrics), Annex 2 (TNFD additional global disclosure metrics) and Annex 4 (TNFD glossary of terms).

Where organisations do not align to TNFD terminology for a disclosure metric, or where the TNFD terminology is not yet specified for a particular term used in disclosure metrics, organisations should disclose the definition used.

**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.**

An organisation should disclose the indicators and metrics used to measure and manage the material nature-related risks and opportunities described in Strategy A.

To achieve this, an organisation should disclose the metrics that are most relevant to and most accurately represent the nature-related risks and opportunities on which it is reporting. The metrics disclosed should include:

- **All core global and core sector risk and opportunity metrics** listed in Annex 1 reported at the organisational level; and
- **Any other relevant metrics**, drawing on the TNFD additional disclosure indicators and metrics listed in Annex 2 and the organisation's own assessment metrics as appropriate, reported at the appropriate organisational level (e.g. site, product, service, region or organisation) to reflect most accurately the magnitude of risks and opportunities described in Strategy A.

Where possible, these should cover:

- **Financial information** about the effects of nature-related risks and opportunities on the organisation, with reference to effects reported in Strategy B; and
- **Insight into how the organisation monitors actions, policies and strategies to manage risks and opportunities**, with reference to Strategy B and Risk and Impact Management B.

Indicators and metrics should also be disclosed for historical periods, including prior year comparisons to allow for trend analysis. When appropriate, the organisation should disclose forward-looking nature-related indicators and metrics, consistent with its business or strategic planning time horizons.

The organisation should describe the methodologies and assumptions used to calculate or estimate nature-related indicators and metrics, including any limitations.

An organisation should provide a short explanation where any core metrics are not reported. A core metric may be omitted where it has:

- Not been identified as relevant or material to the organisation; or
- Been identified as relevant and material, but the organisation is unable to measure it due to limitations with methodologies or access to data. In this case, organisations should explain how they plan to address this in future reporting periods.

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

The organisation should disclose the indicators and metrics used to measure and manage the material nature-related dependencies and impacts described in Strategy A.

To achieve this, an organisation should disclose the metrics that are most relevant to and most accurately represent the nature-related dependencies and impacts on which it is reporting. This should include, for each dependency and impact described in Strategy A:

- **All core global and core sector metrics** for dependencies and impacts listed in Annex 4 and in relevant sector guidance; and
- **Any other relevant metrics**, drawing on the TNFD additional disclosure indicators and metrics listed in Annex 2 and the organisation's own assessment metrics as appropriate.

These metrics should cover the organisation's **impact drivers** associated with each material dependency and impact identified in Strategy A, indicating what the impact driver is (i.e. the type of pollutant emitted), the magnitude (i.e. the quantity of pollutant) and the location in which the impact driver occurs, with reference to Strategy D.

It is also recommended that the organisation consider covering in its disclosure, for the location of each dependency and impact described in Strategy A, with reference to Strategy D:

- Other elements of the dependency and impact pathway (qualitatively if quantitative metrics are not yet available) including:
  - Changes in the **state of nature** (e.g. ecosystem condition and extent, and species population size and extinction risk); and
  - Changes in the availability of **ecosystem services**;

- **Actions, policies and strategies** to manage these impacts and dependencies, as disclosed in Strategy B; and
- **Aggregated impact drivers** for the organisation's direct operations, and upstream and downstream value chain(s) to the extent possible, and by product or service line if material, using the core global and core sector metrics listed in Annex 1 and in relevant sector guidance. Where organisations are not able to report metrics for the full value chain, organisations are encouraged to report metrics at the stage of the value chain that is most representative of their material nature-related issues. For metrics focused on the use of natural commodities, this is likely to require reporting on upstream activities.

An organisation should provide a short explanation where any core metrics are not reported explaining whether it has:

- Not been identified as relevant or material to the organisation; or
- Been identified as relevant and material, but the organisation is unable to measure it due to limitations with methodologies or access to data. In this case, organisations should explain how they plan to address this in future reporting periods.

Metrics should be reported:

- Against a clear and transparent baseline and/or reference condition where possible;<sup>54</sup>
- Separately for negative and positive impacts, not on a net basis;
- With reference to whether they relate to the organisation's direct operations, upstream value chain(s) or downstream value chain(s);
- With an absolute figure, the rate of change, and an intensity/efficiency ratio. The TNFD disclosure metrics contained with Annexes 1 and 2 are mostly listed at the absolute level. Organisations are encouraged to use the best practice intensity/

efficiency ratios for their sectors, describing the rationale for selection of ratios.

The organisation should also disclose:

- **If and how metrics have been aggregated**, in line with general requirement 3 and including the scientific justification for aggregating metrics and/or locations (e.g. ecological equivalency or industry best practice with references), the methodologies used and any limitations or assumptions;
- A description of the **methodologies, tools and data platforms** used to obtain key data; the assumptions, tools and data platforms used to calculate or estimate nature-related indicators and metrics; and any limitations, including a lack of data or the use of proxy data and industry averages; and
- When appropriate, **forward-looking nature-related indicators and metrics**, consistent with its business or strategic planning time horizons.

**C. Describe the targets and goals used by the organisation to manage nature-related dependencies, impacts, risks and opportunities and its performance against these.**

The organisation should describe the targets and goals it has established to manage its nature-related dependencies, impacts, risks and opportunities, and disclose performance against these targets and goals.

Disclosures for each target should include:

- The strategy or risk management objective the target seeks to address, including any anticipated regulatory requirements, market constraints, limitations or other contextual information relevant to understanding the target;
- The metric used to quantify the target and monitor performance;
- The targeted value of the metric;
- The baseline year and level of the metric;

54 See section 5.

- The timeframe for achieving the target;
- Short and medium term interim targets or target trajectory for the metric;
- The methodology used to set the target and baseline, including whether the organisation has used any external standards when setting the target and whether these use a science-based approach;
- Performance against the target relative to the baseline or reference condition on a historical and current year basis, updated annually, and expected performance against targets for the following year, where appropriate;
- If the organisation exceeded or fell short of the target trajectory or is projected to do so, an explanation of the reasons and disclosure of any resulting adjustment or resetting of targets from the prior period; and
- Whether and how the target aligns with or supports the targets and goals of the Kunming–Montreal Global Biodiversity Framework,<sup>55</sup> the Paris Agreement on climate change,<sup>56</sup> the Sustainable Development Goals,<sup>57</sup> Planetary Boundaries<sup>58</sup> and other global reference environmental treaties, policy goals and system-wide initiatives.

Targets in scope include:

- Targets for changes to impact drivers;
- Targets to improve or maintain the flow of ecosystem services;

- Targets to halt and reverse nature loss and improve or maintain the state of nature;
- Targets for changes to business activities and processes correlated with dependencies and impacts;
- Enterprise-level targets directly or indirectly affecting nature-related dependencies, impacts, risks and opportunities. For example, direct operations changes that increase the circularity of the business or the traceable or certified share of the supply chain; and
- Other targets to address nature-related dependencies, impacts, risks or opportunities.

In all cases, targets should be specific and time-bound, quantified with metrics that can be suitably measured and are relevant to the organisation's strategy or risk management plans, including the pursuit of opportunities.

Organisations should consider reporting the:

- Proportion of targets that address short term, medium term and long term risks and opportunities;
- Proportion of targets that are time-bound and quantifiable; and
- Proportion of geographical sites/priority locations that are covered by targets.

<sup>55</sup> Convention on Biological Diversity (2022) [The Kunming-Montreal Global Biodiversity Framework](#)

<sup>56</sup> United Nations (2015) [The Paris Agreement](#)

<sup>57</sup> United Nations (2015) [Transforming our world: the 2030 Agenda for Sustainable Development](#)

<sup>58</sup> Stockholm Resilience Centre (2015) [Planetary Boundaries](#)



## 4. Measuring nature-related dependencies, impacts, risks and opportunities

An initial survey by the Taskforce of the existing nature-related indicators and metrics in use for corporate reporting revealed over 3,000 unique metrics, with different definitions used for similar indicators, inconsistencies and uneven coverage across nature-related issues, and a focus on negative impact drivers. There were also concerns about data gaps and decision-usefulness for investors.

The Taskforce's approach is anchored in the principles that metrics should be:

- **Science-based** and provide insights into the consequences of business and finance activities;
- Be sensitive enough to **reflect change** on an annual basis;
- **Relevant to the business model and value chain of report preparers**, recognising that issues within sectors, business models and value chains can vary significantly;
- **Proportionate**, reflecting the practical capacity and cost constraints of report preparers to assemble, assess and report information on an annual reporting cycle basis;
- **Decision-useful** to the primary users of corporate sustainability reports, including providing current insights and comparability within and across sectors;
- **Subjectable to independent limited assurance** in the medium term; and

- **Aligned to global and national policy goals and targets**, such as the indicators and metrics in the GBF measurement framework and other international treaties – as organisations are now aligning to the Paris Agreement and net zero targets with respect to their climate-related corporate reporting – as well as other standards and target setting frameworks.<sup>59</sup>

The TNFD's approach centres on impact driver metrics, but also acknowledges the importance of understanding changes to the state of nature and ecosystem services, and supports progress and alignment in this measurement area.

The TNFD recognises that the scope, consistency and accessibility of some nature-related data currently available to market participants means that it is challenging to achieve all of these principles simultaneously.<sup>60</sup> Nevertheless, rapid innovation in nature-related data, analytics and technology is underway. The [Nature-related Data Catalyst initiative](#) established by the TNFD is one effort to accelerate such solutions, and the TNFD has started an evaluation of the [case for a global public nature-related data facility](#) with a range of partner organisations.

<sup>59</sup> Including the GBF, IBB IFRS-S1 and S2 standards; TCFD; Carbon Disclosure Standards Board (CDSB) and Sustainability Accounting Standards Board (SASB), which are now part of the IBB; GRI, CDP and the European Financial Reporting Advisory Group (EFRAG); and corporate target setting methods developed by the Science Based Targets Network (SBTN).

<sup>60</sup> Taskforce on Nature-related Financial Disclosures (2022) [A landscape assessment of nature-related data and analytics availability](#)

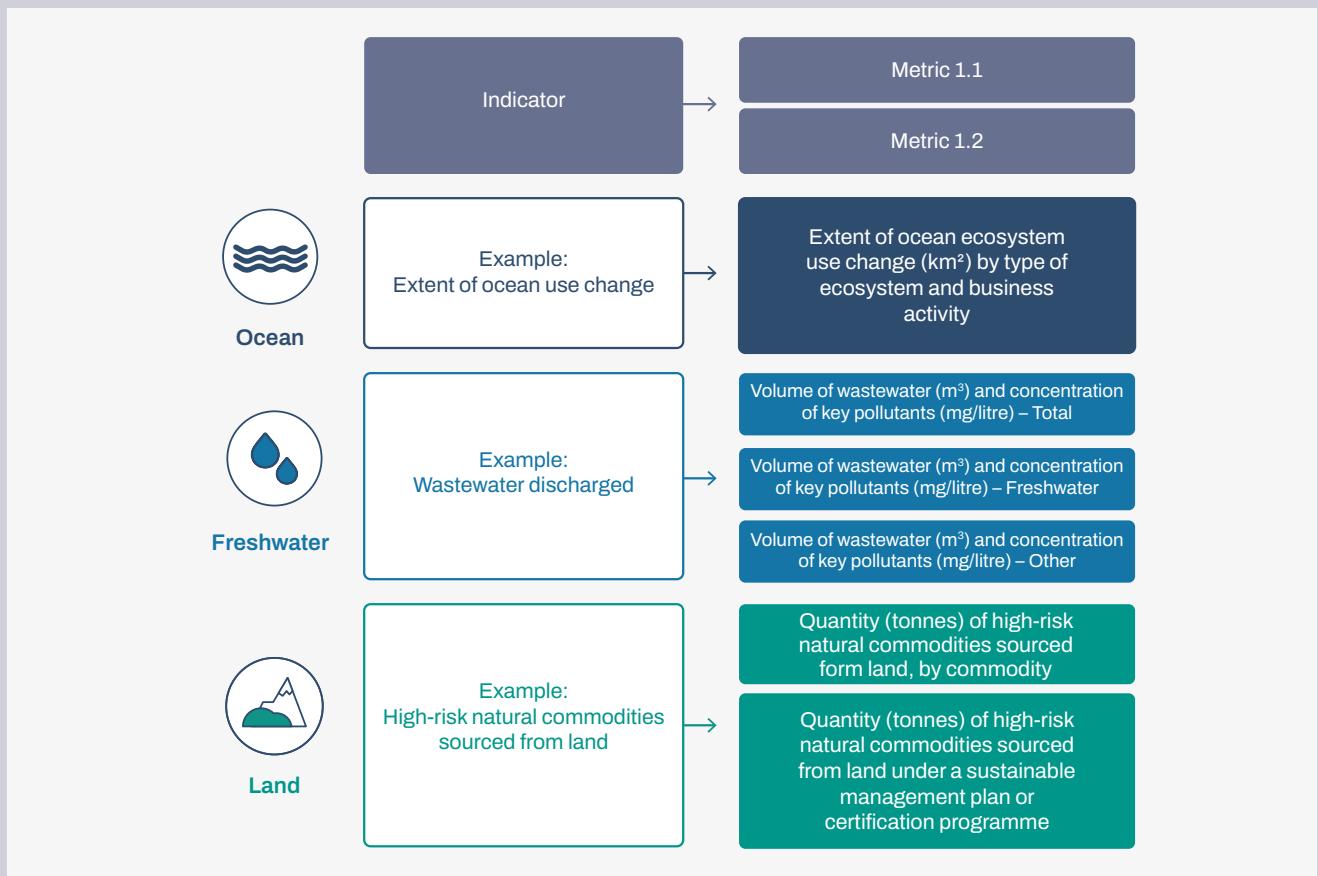
#### Box 4: Definitions of indicators and metrics

An **indicator** is a quantitative or qualitative factor or variable that provides a simple and reliable means to measure performance.<sup>61</sup> An indicator can be measured through one or multiple metrics.

A **metric** is a system or standard of measurement.<sup>62</sup>

Metrics for each category should correspond to related indicators in order to create a suite of related indicators across all metrics categories.

**Figure 22: Indicators and metrics**



Indicators and metrics can be measured for different parts of the **value chain**, i.e. direct operations, upstream and downstream.

Indicators and metrics can also be measured for different **levels of the organisation**, i.e. site, project, product or service, or corporate-level metrics. Metrics levels should be hierarchical (i.e. corporate-level metrics are the aggregation of site or project-level metrics).

<sup>61</sup> Organisation for Economic Cooperation and Development (2002) [Glossary of key terms in evaluation and results based management](#)  
Development Assistance Committee

<sup>62</sup> Biodiversity Indicators Partnership (2011) [Guidance for national biodiversity indicator development and use](#)

## 4.1. The TNFD metrics architecture: A leading indicators approach

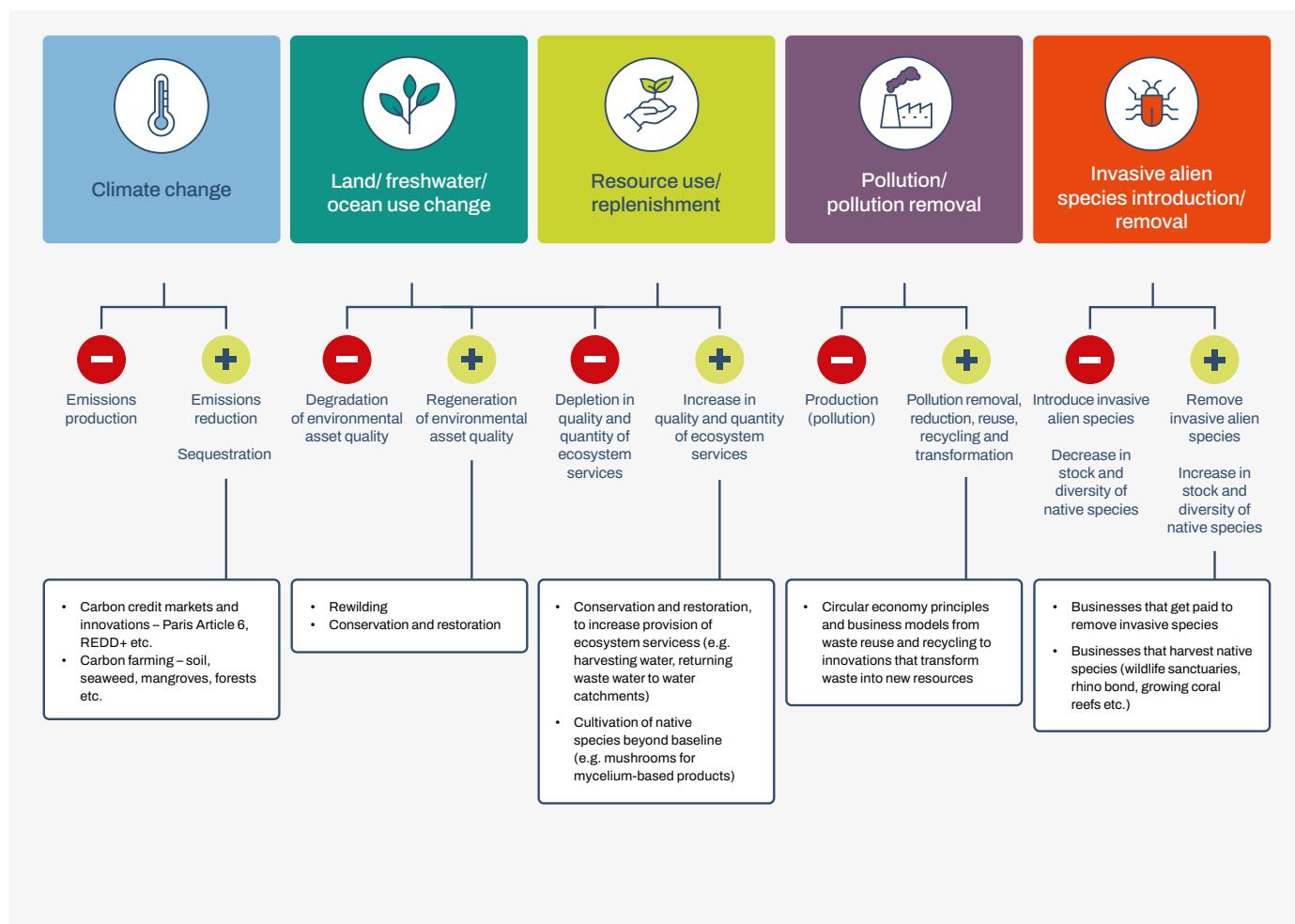
To reconcile the large number of indicators associated with nature-related issues, and the needs of market participants for a relatively small set of indicators that can be compared and subjected to third-party assurance on an annual basis as a key requirement for disclosure, the TNFD has adopted a leading indicators approach. This is a similar approach to that taken to mainstream financial reporting (the profit and loss, balance sheet and cashflow statements represent a set of leading indicators) and macro-economic reporting, which focus for example, on GDP, unemployment and inflation. The

TNFD's metrics approach includes different categories of metrics, shown in Figure 24. These include:

- A small set of core metrics – ‘core global metrics’ that apply to all sectors and ‘core sector metrics’ for each sector – to be disclosed on a comply or explain basis; and
- A larger set of additional metrics, which are recommended for disclosure, where relevant, to best represent an organisation’s material nature-related issues, based on their specific circumstances.

The TNFD's metrics enable assessment and disclosure of positive as well as negative impacts, as illustrated in Figure 23.

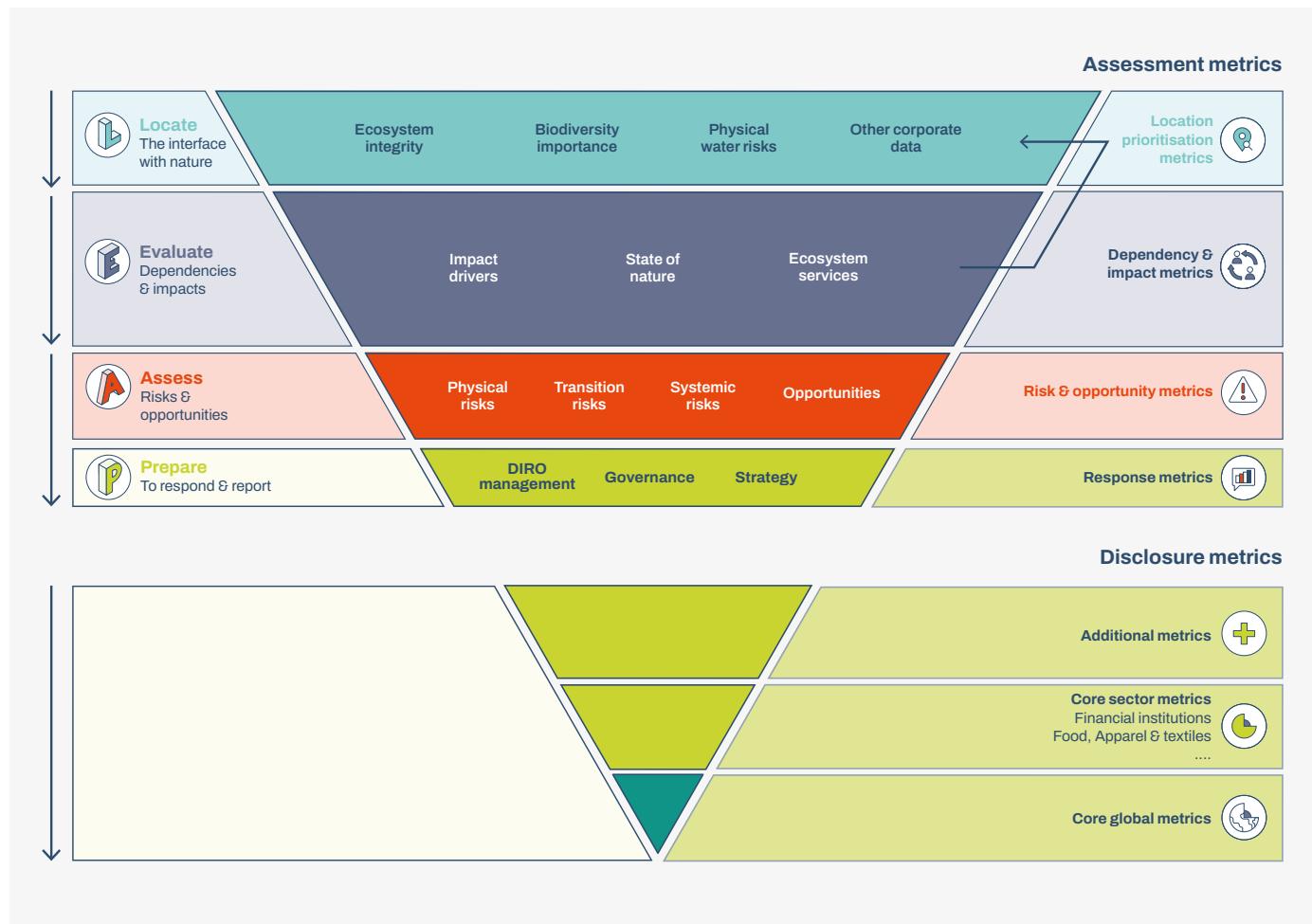
**Figure 23: Drivers of nature change – reflecting both negative and positive impacts**



The TNFD's recommended disclosure metrics are listed in Annex 1 (core disclosure metrics) and Annex 2 (additional disclosure metrics). These will be subject to a periodic review mechanism to ensure the TNFD measurement architecture remains fit for purpose as knowledge, data and analytics, tools and other frameworks evolve.<sup>63</sup>

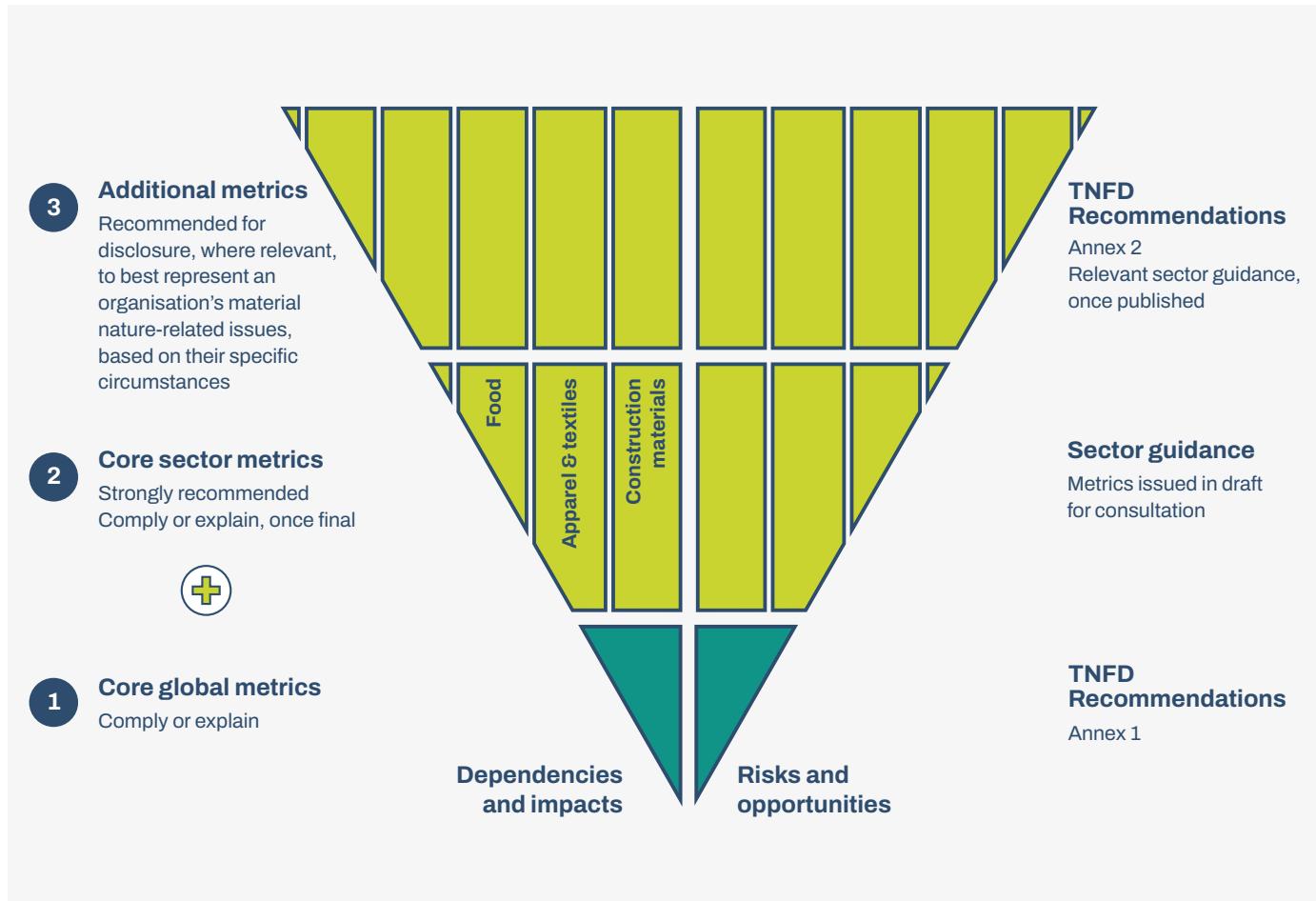
Definitions for key terminology related to the core disclosure metrics are provided in the TNFD glossary of terms (Annex 4 and [full glossary](#)). The TNFD will also update its definitions over time, learning from the further development of relevant standards and global initiatives.

**Figure 24 TNFD metrics architecture**



63 For example: reviews of the monitoring framework for the GBF; major assessment reports undertaken by IPBES, including its 'Methodological assessment of the impact and dependence of business on biodiversity and nature's contributions to people'; advances in state of nature measurement and biodiversity footprinting methodologies that meet the needs of report users and are practical for report preparers; and changes in regulatory arrangements and/or the information needs of financial institutions, including in the global baseline of sustainability reporting standards being developed by the IASSB and/or elsewhere.

Figure 25: Metrics for disclosure – How does it work?



## Sector metrics

Sector-specific metrics form an important part of the TNFD metrics architecture. This reflects the diversity of business models across value chains and their interface with biomes across and within sectors. Metrics that are specific to sectors can help financial institutions to compare organisations within that sector, which often face common nature-related issues.

The TNFD's core sector metrics are provided in each sector guidance document. Where there is not yet TNFD sector guidance, an organisation can refer to industry best practice and guidance from organisations such as GRI or SASB.

## Value chain reporting

Measuring upstream and downstream nature-related issues precisely for disclosure may be difficult for organisations currently. The TNFD expects that data and analytics improvements and technology innovations will make reporting of these metrics for upstream and downstream nature-related issues easier in future. However, the Taskforce recognises that it will take time for organisations to trace their full value chains upstream and downstream to the degree required to undertake a full analysis. If needed, organisations may use secondary data to estimate their nature-related issues as an initial step, see Box 5.

In the case of **financial institutions**, most impacts and dependencies are generated through their portfolios, i.e. their financial activities, rather than their direct operations. The TNFD recommends that financial institutions disclose according to the TNFD core global metrics for their own operations. Organisations should refer to the [TNFD guidance for financial institutions](#) on metrics for quantifying their nature-related dependencies, impacts, risks and opportunities.

## *Translation of nature-related dependencies and impacts into financial risks and opportunities*

Translating an evaluation of nature-related dependencies and impacts into an assessment of financial risks and opportunities is currently a challenging area for many organisations, in particular quantitatively identifying all points of contact with nature and translating biophysical metrics into financial values. When reporting risk and opportunity metrics, organisations are encouraged to describe where they are unable to measure the financial effects of a material dependency or impact and provide their best estimates. The TNFD does not provide prescriptive guidance on how to quantify nature-related risks and opportunities at this point. However, [TNFD additional guidance on the identification and assessment of nature-related issues \(the LEAP approach\)](#) provides further detail on translating an evaluation of nature-related dependencies and impacts to an assessment of financial risks and opportunities and on risk assessment methods to estimate the magnitude of risks and opportunities.

### Box 5: Use of secondary data, including proxy data and industry averages

Proxy data does not apply specifically to the locations in the organisation's value chain but instead provides averages to estimate nature-related issues, for example, by sector or country. Such data is often provided by third parties.

Use of proxy data may make analyses more tractable, allow an organisation to identify likely nature-related issues without investing in full traceability, and provide the organisation with enough information to be able to start to disclose against the TNFD's recommended disclosures.

However, proxies rely on estimation and have limitations compared to direct measurement. Proxies can also make it difficult to measure performance – if an organisation is only a relatively small part of the total market for a product in the country, its contribution is unlikely to show up in industry/market/national average data. Strong and weak performers cannot be easily distinguished from analysis based on proxy data. Financial institutions looking to aggregate or compare data across companies cannot do so reliably if some use data directly from suppliers and others use proxy data.

If an organisation uses proxy data for the TNFD disclosures, the organisation should:

- Clearly document the proxy selection process, the data sources used, and any assumptions made during the assessment;
- Understand the limitations of proxy use compared to direct measurements;
- Consider the purpose of using proxies and whether they are sufficient for that purpose and the intended audience and the specific nature-related issues concerned;
- Select proxies that have a well-established relationship with the targeted attributes, have been scientifically validated and used in similar contexts previously, with consideration of the biome, specific ecosystem or location in which the proxy is being applied;
- When possible, combine multiple proxies to gain a more comprehensive understanding;
- When possible, validate and ground truth proxies against location-specific nature-related data;
- Engage experts including ecologists in the process of selecting and interpreting proxy data; and
- Regularly review and update the proxy usage to ensure relevance and accuracy to account for technological developments and greater access to data.

In general, organisations should view use of proxy data as a transitional measure until higher traceability can be achieved.

[TNFD Guidance on the LEAP approach](#) provides further guidance on the use of proxy data.



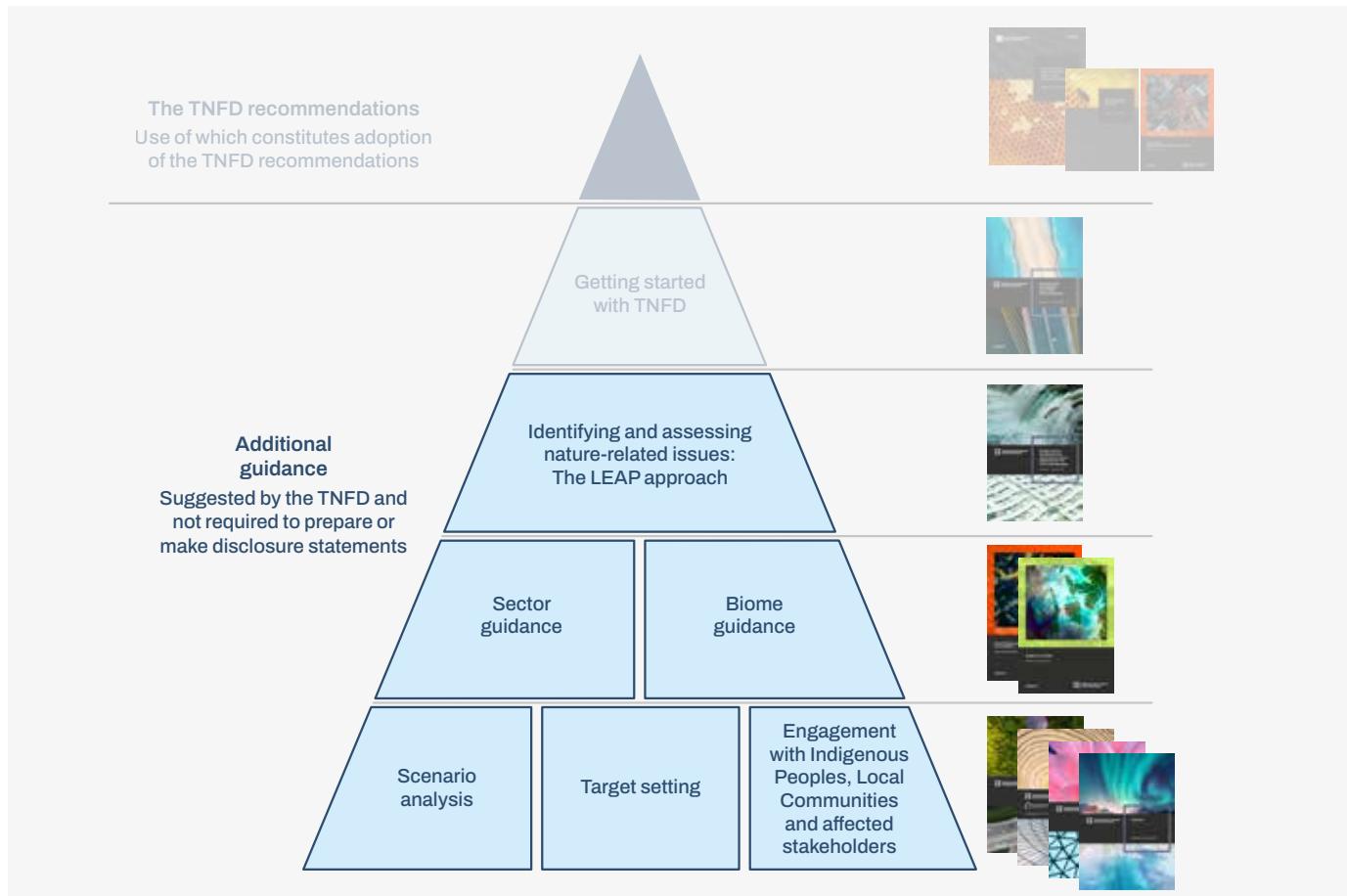
## 5. Overview of additional guidance

The ability to *disclose* material nature-related issues in mainstream corporate reporting is premised on having the knowledge and capacity to *identify and assess* the organisation's nature-related issues. To address those capacity building needs and support voluntary adoption of the TNFD recommendations, the TNFD has produced a set of additional guidance to support organisations in identifying, assessing, managing and disclosing their nature-related dependencies, impacts, risks and opportunities. These documents provide guidance but are not compulsory for organisations looking to report against the TNFD recommended disclosures.<sup>64</sup> They cover:

- Identifying and assessing nature-related issues (the LEAP approach) for all sectors;
- Sector-specific and biome-specific aspects of the LEAP approach;
- Target setting;
- Scenario analysis; and
- Engagement of Indigenous Peoples, Local Communities and affected stakeholders.

These guidance documents will be revised periodically based on feedback from market participants. Additional guidance will be developed on further topics of interest.

**Figure 26: TNFD additional guidance**



<sup>64</sup> Note that the additional guidance for financial institutions includes disclosure guidance and core disclosure metrics for financial institutions.

## 5.1. Guidance for identifying and assessing nature-related issues (the LEAP approach)

Market participants indicated that practical ‘how to’ guidance on identifying, assessing, managing and disclosing nature-related dependencies, impacts, risks and opportunities would be a welcome complement to the TNFD recommended disclosures.

The Taskforce has developed an integrated approach for the assessment and management of nature-related issues for use by a wide range of corporates and financial institutions.

This approach is called LEAP. It is designed to be used by a team of analysts in an organisation and involves four phases of assessment:

- **Locate** the interfaces with nature across geographies, sectors and value chains;
- **Evaluate** dependencies and impacts on nature;



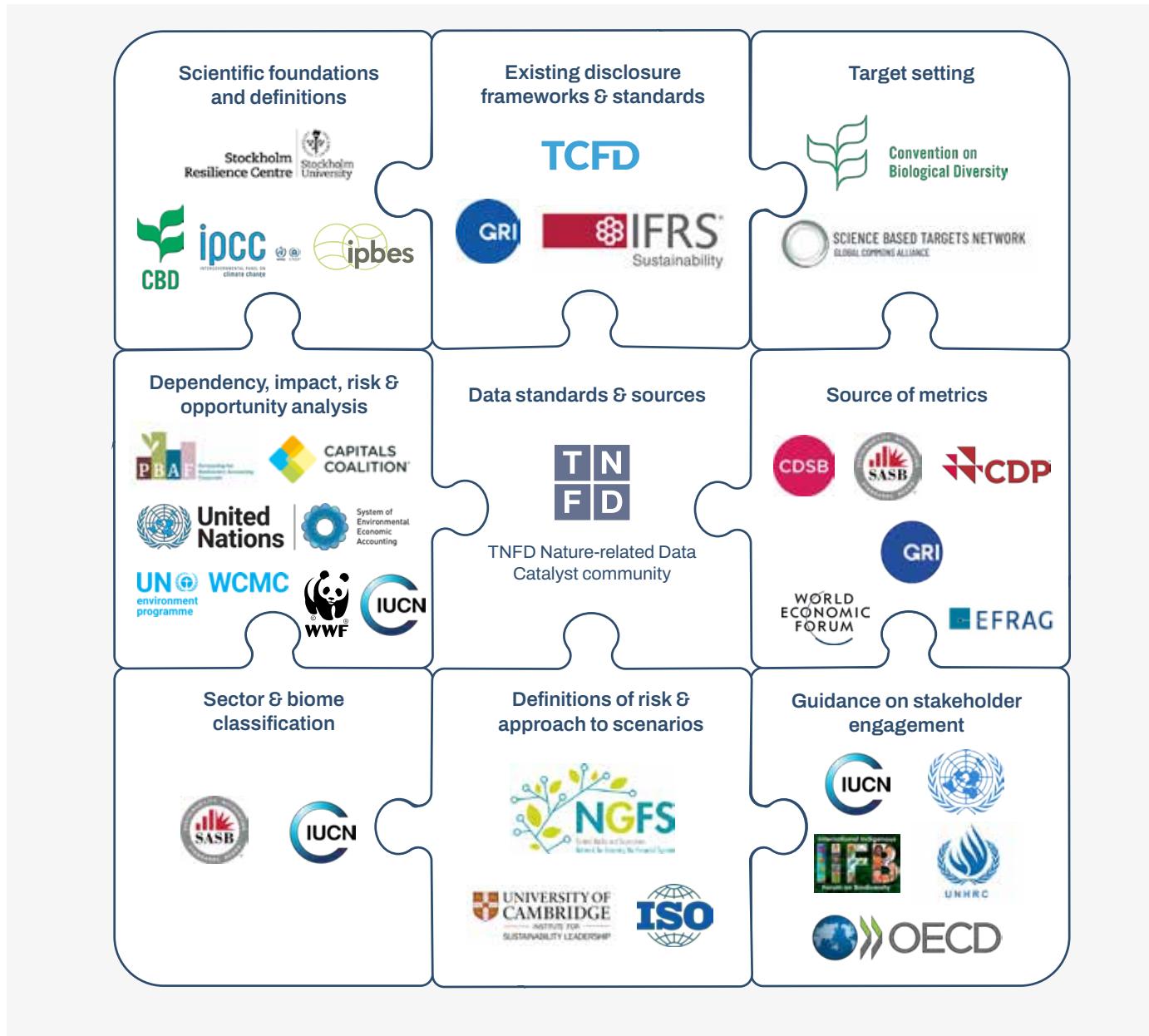
- **Assess** nature-related risks and opportunities to your organisation; and
- **Prepare** to respond to nature-related risks and opportunities, including reporting on material nature-related issues to the primary users of financial reports and other stakeholders, aligned with the TNFD’s recommended disclosures.

The LEAP approach integrates and builds on existing, high-quality, nature-related frameworks including the Natural Capital Protocol and the Science Based Targets Network (SBTN) methods, and tools, data sources and other guidance developed by a range of leading organisations that are aligned with the TNFD’s principles and approach (see Figure 27). The source frameworks and tools used are signposted throughout the phases of the LEAP approach, with descriptions of how they may be used by organisations.

The LEAP approach has been pilot tested by over 200 organisations across sectors, geographies and biomes around the world. It will continue to evolve based on market feedback. As new frameworks, tools, data sources and guidance are developed, the TNFD will add additional signposts into its guidance on the LEAP approach.



Figure 27: TNFD's additional guidance builds on existing frameworks, methods and tools



The TNFD recognises that some organisations may already have an equivalent process built into their enterprise risk management framework. The LEAP approach is offered as suggested guidance only to help market participants of all sizes, across all sectors and along value chains to identify and assess their nature-related issues, irrespective of whether they have any formal external reporting requirements to outside capital providers. It is designed to help organisations identify what is *potentially material* and then apply their chosen materiality approach to the analysis to determine what they should disclose to the primary users of their sustainability reporting and to other stakeholders. Following the LEAP approach is not a requirement to adopt the TNFD recommended disclosures.

The LEAP approach is not a requirement to adopt the TNFD recommended disclosures. It is provided by the TNFD as guidance to support the identification and assessment of nature-related issues and ultimately to support disclosure of those issues deemed material.

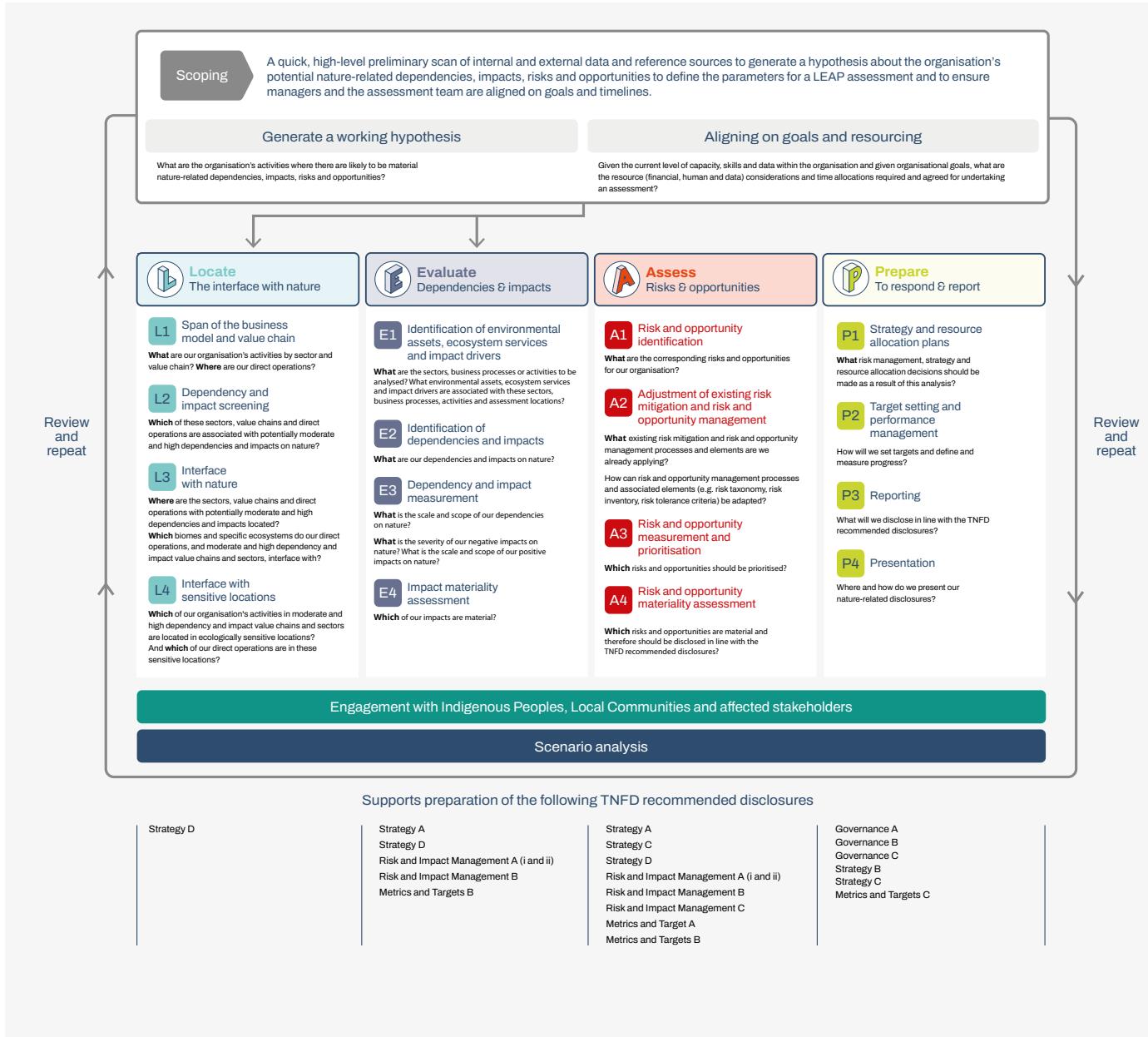
LEAP has been designed and developed with three overarching considerations in mind:

- As with any due diligence process, the TNFD encourages users to **consider the scope of their LEAP assessment before commencing**, given the inevitable cost, time and data availability constraints;
- The team of analysts undertaking a LEAP assessment are encouraged to engage **with Indigenous Peoples, Local Communities and affected and other stakeholders** as they work their way through the LEAP approach and to draw on third-party expert advice as and when needed; and
- LEAP is designed as **an iterative and repeatable process** – across business locations and business lines for corporates, and across investment portfolios and asset classes for financial institutions – in line with enterprise risk management processes and reporting and disclosure cycles.

Where an organisation already has its own equivalent assessment process in place, the LEAP approach can be used as a comparator to ensure that the existing process adequately addresses nature-related risks and opportunities in a way that is aligned with the reporting and disclosure requirements recommended by the TNFD.

Figure 28 below provides an overview of the LEAP approach and its components. Organisations interested in using the LEAP approach for their due diligence to identify and assess their potentially material nature-related issues should refer to the [additional guidance on the LEAP approach](#).

**Figure 28: The TNFD approach for identification and assessment of nature-related issues – LEAP**



## 5.2. Sector guidance

Report preparers and report users have highlighted the value of sector-specific additional guidance to help to interpret and apply the TNFD disclosure recommendations and cross-sector additional guidance.

In collaboration with industry and science partners, the Taskforce has begun to develop sector guidance, following the SASB sector classification adopted by the ISSB, to meet this demand.

The sector guidance provides further details to help organisations to interpret and apply the TNFD recommended disclosures and LEAP approach, where additional guidance is deemed warranted. The TNFD has prioritised the development of guidance for sectors with the most significant dependencies and impacts on nature.

As outlined in Section 4, the TNFD has also recommended sector-specific metrics, reflecting the significant differences in business models and value chains across sectors and the desire of capital providers for comparable information at a sector level to inform their capital allocation decisions.

This guidance is being developed by the Taskforce on an ongoing basis and, aligned with the Taskforce's open innovation approach, will be released in draft for feedback and pilot testing, before being released in final form in 2024.

Sector guidance  
Additional guidance for financial institutions  
Version 1.0 | September 2023

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## 5.3. Biome guidance

With knowledge partners and scientists, the TNFD has also developed guidance on applying the LEAP approach in specific biomes, reflecting the location-specific character of nature-related dependencies and impacts for different types of ecosystem. The guidance aims to support corporates that produce, operate or source

Guidance on biomes  
Version 1.0 | September 2023

tnfd.global TNFD Taskforce on Nature-related Financial Disclosures

in these biomes. As with the sector guidance, biome guidance is being developed by the Taskforce on an ongoing basis.

## 5.4. Scenario analysis guidance

Scenario analysis is an important tool to help organisations develop and test the resilience of their strategy, given a complex set of uncertainties. It allows organisations to explore the possible consequences of nature loss and climate change, the ways in which governments, markets and society might respond, and the implications of these uncertainties for business strategy and financial planning.

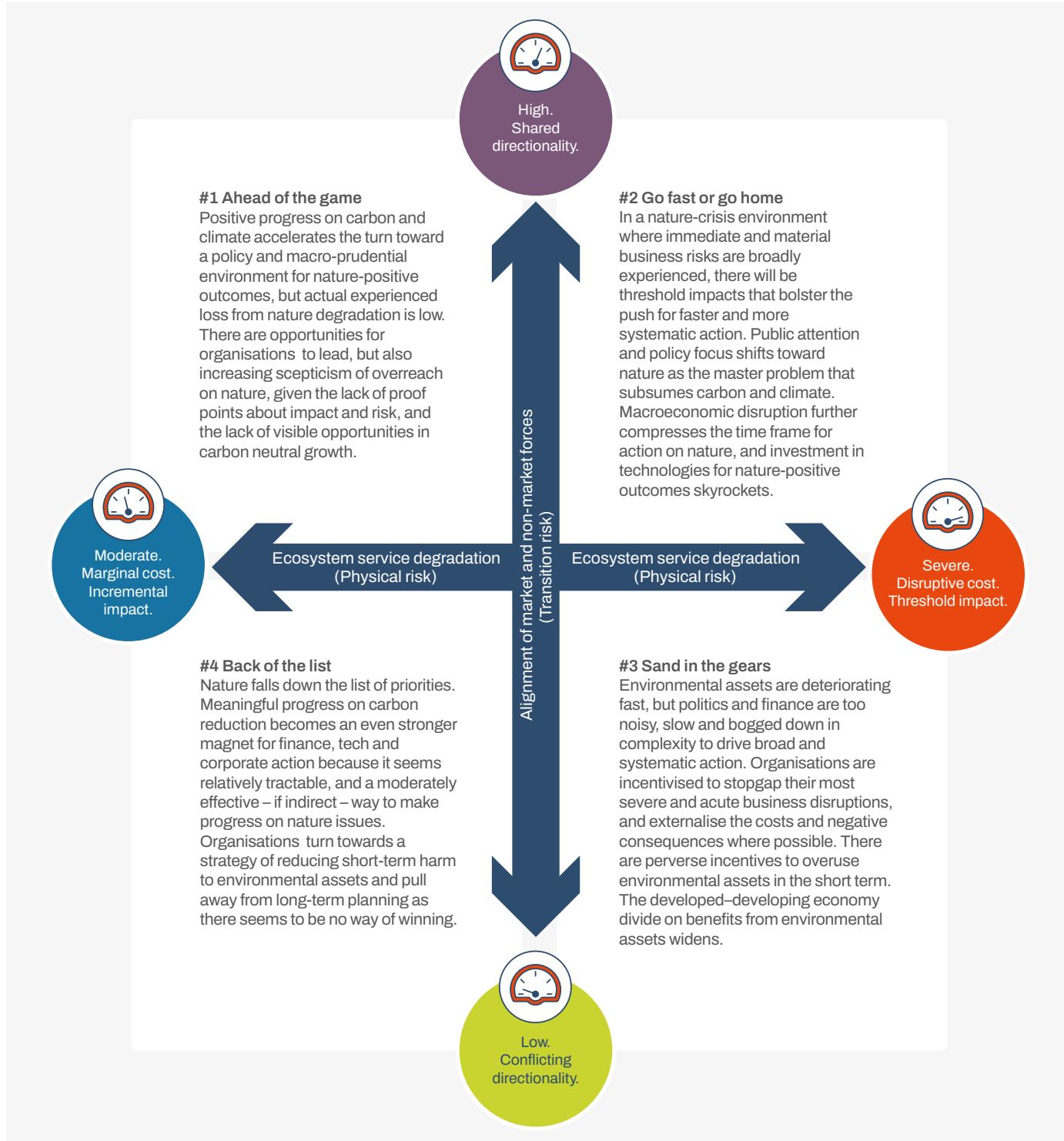
TNFD recommended disclosure Strategy C asks organisations to consider different scenarios when describing the resilience of the organisation's strategy to nature-related risks and opportunities. The TNFD has developed [guidance on scenario analysis](#), building on TCFD's scenario resources, including [TCFD Guidance on Scenario Analysis for Non-Financial Companies](#), to enable integrated considerations of climate and nature in scenario analysis and integrated disclosures.

The TNFD's approach to scenarios centres on two critical uncertainties – closely correlated to physical risk and transition risk – to create a practical and accessible approach that can be customised to an organisation's specific context, but still create a common approach to aggregate data (Figure 29). Based on pilot testing, the scenario analysis guidance is accompanied by several templates and reference sources to help organisations conduct workshop-based scenario exercises in their organisations.

Taskforce on Nature-related Financial Disclosures  
Guidance on scenario analysis  
Version 1.0 | September 2023

tnfd.global

**Figure 29: TNFD's default nature-risk scenarios**



## 5.5. Guidance on engagement of Indigenous Peoples, Local Communities & affected stakeholders

The TNFD recommended disclosures ask organisations to describe engagement activities with respect to Indigenous Peoples, Local Communities, affected and other stakeholders to help assess and respond to nature-related issues. To support this, the TNFD has developed [guidance on meaningful engagement](#) by companies and financial institutions with Indigenous Peoples, Local Communities and affected stakeholders as it pertains to the assessment and management of nature-related dependencies, impacts, risks and opportunities.

The guidance builds on leading international standards, guidelines and frameworks, in particular the UN Guiding Principles on Business and Human Rights. It can support application of the LEAP approach and disclosures consistent with the TNFD Recommended Disclosure Governance C and General Requirement 6.



# 6. Looking ahead – Getting started, and priorities for the Taskforce

The TNFD's recommendations, and accompanying additional guidance, provide a basis for organisations to identify, assess and disclose their nature-related dependencies, impacts, risks and opportunities consistent with the ISSB and GRI standards, with a view to aligning their reporting with Target 15 of the GBF over time.

The recommendations are intended to provide a practical basis for organisations to get started and to increase the scope and ambition of their disclosures in the coming years. As has been the case with climate-related reporting over the past decade, the TNFD expects that the disclosure of nature-related issues will improve over time as market understanding of nature-related issues and organisational capacity increases; audit and assurance capacities to provide limited assurance expand; and as data quality and availability, and other barriers to reporting, are addressed through new technologies and sector-level initiatives and guidance aimed at improving traceability.

Nature-related risks are a reality today in the cashflows and balance sheets of business and in the capital allocation portfolios of financial institutions. Notwithstanding capacity and data constraints, the Taskforce encourages organisations to get started and begin their nature-related assessment and reporting.

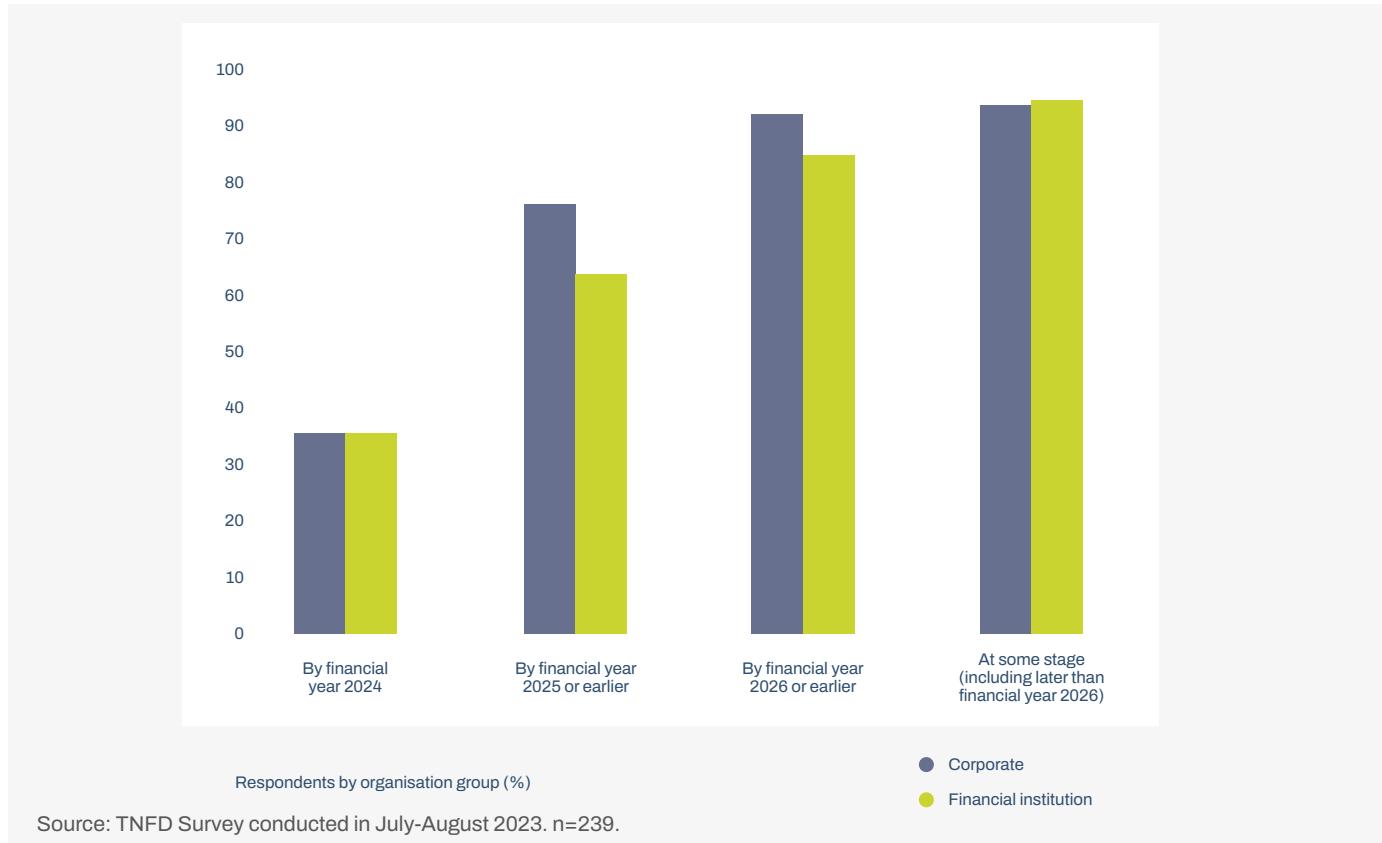
## 6.1. Getting started with nature-related financial disclosures

The Taskforce encourages organisations to [get started](#) and begin their nature-related assessment and reporting. The TNFD's recommended disclosures, like those of TCFD, are a combination of qualitative process-oriented disclosures and others requiring data and analytics. Those organisations finding data availability and quality a challenge can get started by enhancing their governance and risk management processes, for example, and signalling those actions to the primary users of their sustainability reporting and other stakeholders.



In a recent survey of the TNFD Forum, over 86% of 239 respondents from 36 countries and across 11 sectors indicated that they felt they could start reporting on the TNFD recommended disclosures by calendar year 2026, based on their financial year 2025 outcomes. In short, a lack of data should not be a reason to delay.

**Figure 30: Expectations of when organisations will likely be able to start disclosing aligned with TNFD recommendations**



**Figure 31: Expectations of which TNFD recommended disclosures an organisation will approach first**



Through the design and development of these recommendations over the past two years, the Taskforce has also convened a community of over 130 data providers and interested stakeholders as the [Nature Data Catalyst](#). It is clear that significant and rapid advancements are now being made in the nature data space. Over the next few years, stimulated by the GBF, the research of the NGFS, and growing demand from companies and investors for nature-related data and analytics, the Taskforce is confident that new data solutions and capabilities will emerge quickly and help to raise the quality of nature-related disclosures further. The TNFD plans to continue to support these efforts with a range of partner organisations, including the evaluation of the case for a [global nature-related public data facility](#).

*[Companies should] demonstrate how they are aligning their internal policies and practices with a nature-positive ambition and quantify the financial risks and opportunities associated with their dependencies and impact on nature, providing decision-useful disclosures to investors...*

*Accordingly, we expect all companies to begin reporting within a reasonable timeframe against the Taskforce on Nature-related Financial Disclosures (TNFD) framework due to be finalized in 2023.”*

Annual Letter to Company Chairpersons  
Mark Versey, Chief Executive Officer  
Aviva Investors

As the 2017 TCFD recommendations did for climate-related reporting, the TNFD recommendations provide a starting point for immediate adoption, beginning with disclosures in areas where organisations are able, leveraging work in other areas as much as possible, and with the flexibility to increase the scope of disclosures over time. Organisations already reporting nature-related issues under other frameworks, such as GRI and CDP, will be well positioned to disclose the TNFD's recommendations and are encouraged to do so.

The TNFD's additional guidance can also help organisations operating in jurisdictions where standards and regulation on nature are emerging, as is the case in the European Union, with the introduction of the CSRD.

*“As a financial investor, we may be exposed to portfolio risks and lost investment opportunities as biodiversity and ecosystems become degraded. The fund holds a diversified portfolio across industries and markets, and over time externalities from unsustainable use of natural ecosystems may affect its long-term performance.”*

Biodiversity and ecosystems,  
Expectations of companies  
Norges Bank Investment Management

*“While nature-related disclosures have historically been limited and difficult to compare across companies, private-sector initiatives, such as the Taskforce on Nature-related Financial Disclosures (TNFD), are working on frameworks to guide disclosure on material, nature-related impacts and dependencies, alongside associated risks and opportunities.”*

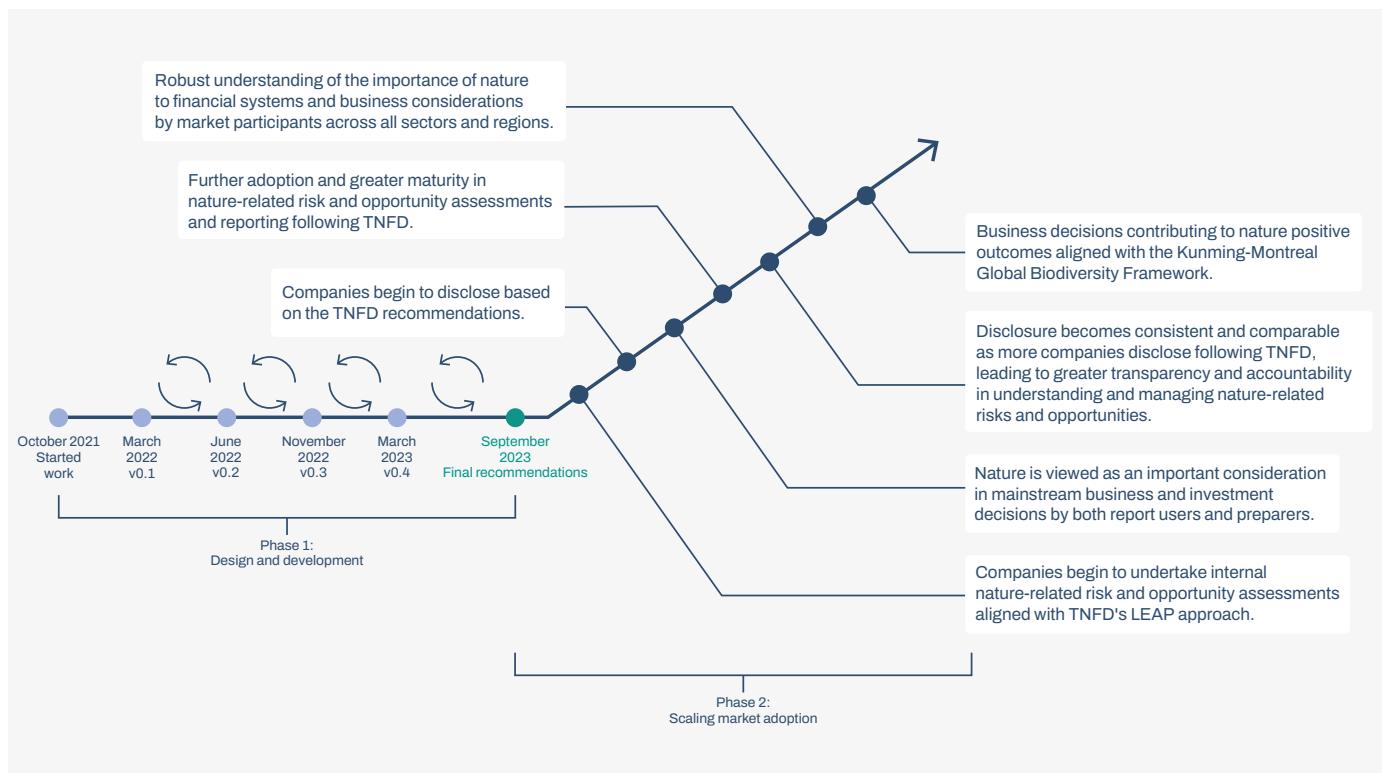
BlackRock Investment Stewardship  
Our approach to engagement on natural capital, 2023 BlackRock

## 6.2. What's next for the TNFD? Areas for further work

Following the publication of these recommendations, the TNFD will move to the next phase of its work to encourage and scale voluntary market adoption of the Taskforce's recommendations by expanding market awareness, market engagement and supporting market capacity building efforts (Figure 32).

The Taskforce has identified priority areas for further work with a range of partner organisations that will support the adoption of the TNFD's recommendations and encourage corporate reporting and action on nature-related issues more generally. Some of the key Phase 2 priority initiatives already identified by the Taskforce are outlined in Table 5.

**Figure 32: Implementation path for adoption of TNFD recommendations**



**Table 5: Selected TNFD priorities for its next phase**

<b>Further development of guidance by sector and biome</b>	<ul style="list-style-type: none"> <li>Develop and finalise further TNFD sector and biome guidance, including sector and biome metrics, using the TNFD's open innovation approach to crowd-in market feedback and pilot testing insights.</li> </ul>
<b>Alignment and input to standards and other reporting initiatives</b>	<ul style="list-style-type: none"> <li>Encourage and enable standards bodies and others to work actively toward greater alignment of frameworks and standards, and leverage the TNFD recommendations and guidance.</li> <li>Support efforts by the ISSB to draw on the TNFD's recommendations as relevant to the global sustainability reporting baseline for capital markets.</li> </ul>
<b>Market capacity building to support and accelerate nature-related corporate reporting</b>	<ul style="list-style-type: none"> <li>Work with partner organisations to develop training materials and deploy them to market participants and other stakeholders.</li> <li>Convene and support a TNFD Community of Practice to enable peer learning and feedback from those applying the TNFD's recommendations.</li> </ul>
<b>Data and analytics availability and quality</b>	<ul style="list-style-type: none"> <li>Catalyse more alignment and progress on nature-related metrics, including metrics on the state of nature, as well as metrics for financial institutions.</li> <li>Stimulate further innovation on a pre-competitive basis among data providers through the <a href="#">Nature-related Data Catalyst</a>.</li> <li>Advance, in concert with other organisations, the design and launch of a <a href="#">nature-related public global data facility</a>, subject to the interest and support of governments.</li> <li>Explore the use of natural capital accounts to support assessment and disclosure of nature-related issues.</li> </ul>
<b>Scenario analysis</b>	<ul style="list-style-type: none"> <li>Work with the NGFS and other partners to develop further guidance on nature-related scenario analyses for financial institutions and multinational corporates interested in developing more advanced approaches, building on the <a href="#">TNFD scenario guidance</a>.</li> </ul>
<b>Case studies and example disclosures</b>	<ul style="list-style-type: none"> <li>Provide further case studies and illustrative disclosures to assist report preparers to develop disclosures consistent with the TNFD's recommendations.</li> </ul>
<b>Targets and transition planning</b>	<ul style="list-style-type: none"> <li>Work with partners on additional guidance on transition planning and further guidance on target setting, including for financial institutions.</li> </ul>
<b>TNFD content</b>	<ul style="list-style-type: none"> <li>Explore potential additional applications of elements of the TNFD content in other areas such as sovereign debt and spatial planning.</li> </ul>



# Annex 1: TNFD core global disclosure metrics

The TNFD's recommended core disclosure metrics are organised around 14 core global indicators relating to:

- Dependencies and impacts on nature (recommended disclosure *Metrics and Targets B*); and
- Nature-related risks and opportunities to the organisation (recommended disclosure *Metrics and Targets A*).

The core global metrics recommended below have been selected by the TNFD on the basis that they:

- Are relevant across the majority of sectors and commonly incorporated into general or cross-sector standards;
- Cover the main drivers of nature change, as identified by the IPBES;
- Demonstrate alignment with global policy goals, including those of the GBF and other international conventions and international policy commitments; and
- Are decision-useful for report users, including investors, lenders and insurers.

## *Basis of disclosure*

These metrics should be reported on a comply or explain basis, with the exception of the placeholder metrics identified below.

Where organisations are unable to report against any of the core global metrics, they should provide a short explanatory statement as to why they have not reported those metrics. An organisation should report on the core global disclosure metrics unless:

- It has not been identified as relevant and material to the organisation, e.g. not relevant to business activities or the location the organisation is operating in, or not found to be a material issue for the organisation; or
- It has been identified as relevant and material, but the organisation is unable to measure it due to limitations with methodologies, access to data or because the information is commercially sensitive. In this case, organisations should explain how they plan to address this in future reporting periods.

It is not expected that all organisations will be able to report on all core disclosure metrics immediately.

Organisations are also encouraged to draw on other relevant metrics to represent most accurately the organisation's nature-related dependencies, impacts, risks and opportunities. Suggested additional disclosure metrics are included in Annex 2. Other examples of assessment metrics are included in the [TNFD additional guidance on assessment of nature-related issues \(the LEAP approach\)](#).

## TNFD core global disclosure metrics for dependencies and impacts on nature

The nine core global dependency and impact indicators relate to impact drivers. The indicators should be considered within the context of dependency and impact pathways, including impact drivers, external factors, changes to the state of nature and changes to ecosystem services.

### *Placeholder indicators*

The core global disclosure indicators for dependencies and impacts on nature include three placeholder indicators, which the TNFD encourages organisations to consider and report against where possible. These cover invasive alien species and the state of nature. There are not yet widely accepted metrics for these indicators, but the Taskforce recognises their importance,<sup>65</sup> and will continue to work with knowledge partners to develop further guidance on these metrics.

## *Alignment to the Global Biodiversity Framework (GBF)*

All the TNFD core global disclosure indicators and metrics for dependencies and impacts are relevant to Target 15 of the GBF. Where indicators contribute to other GBF targets, these have been noted. Metrics related to other GBF targets are included in sector metrics, for agriculture and food, for example.

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<sup>65</sup> The TNFD recognises the importance of measurement of the state of nature, particularly for direct assessments of the achievement of Goal A of the [Kunming-Montreal Global Biodiversity Framework](#). It also recognises the importance of measurement of invasive alien species, as one of the five main drivers of nature change.



**Table 6: TNFD core global disclosure indicators and metrics for nature-related dependencies and impacts**

Metric no.	Driver of nature change	Indicator	Metric	Connection to GBF targets
	Climate change	GHG emissions	Refer to ISSB's IFRS-S2 Climate-related Disclosures Standard	Target 7
<b>C1.0</b>	Land/freshwater/ocean-use change	Total spatial footprint	Total spatial footprint (km <sup>2</sup> ) (sum of): <ul style="list-style-type: none"> <li>• Total surface area controlled/managed by the organisation, where the organisation has control (km<sup>2</sup>);</li> <li>• Total disturbed area (km<sup>2</sup>); and</li> <li>• Total rehabilitated/restored area (km<sup>2</sup>).</li> </ul>	Target 1 (A.2 Extent of natural ecosystems), Target 2, Target 5, Target 11 (B.1 Services provided by ecosystems)
			Extent of land/freshwater/ocean ecosystem use change (km <sup>2</sup> ) by: <ul style="list-style-type: none"> <li>• Type of ecosystem;<sup>66</sup> and</li> <li>• Type of business activity.</li> </ul> Extent of land/freshwater/ocean ecosystem conserved or restored (km <sup>2</sup> ), split into: <ul style="list-style-type: none"> <li>• Voluntary; and</li> <li>• Required by statutes or regulations.</li> </ul> Extent of land/freshwater/ocean ecosystem that is sustainably managed (km <sup>2</sup> ) by: <ul style="list-style-type: none"> <li>• Type of ecosystem;<sup>67</sup> and</li> <li>• Type of business activity.</li> </ul>	Target 1 (A.2 Extent of natural ecosystems), Target 2, Target 5, Target 11 (B.1 Services provided by ecosystems)
<b>C2.0</b>	Pollution/pollution removal	Pollutants released to soil split by type	Pollutants released to soil (tonnes) by type, referring to sector-specific guidance on types of pollutants.	Target 7 (7.2 Pesticide environment concentration), Target 11

<sup>66</sup> When disclosing on ecosystem types, refer to the International Union for Conservation of Nature [Global Ecosystem Typology](#)<sup>67</sup> When disclosing on ecosystem types, refer to the International Union for Conservation of Nature [Global Ecosystem Typology](#)

Metric no.	Driver of nature change	Indicator	Metric	Connection to GBF targets
C2.1	Pollution/pollution removal	Wastewater discharged	<p>Volume of water discharged (m<sup>3</sup>), split into:</p> <ul style="list-style-type: none"> <li>• Total;</li> <li>• Freshwater; and</li> <li>• Other.<sup>68</sup></li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Concentrations of key pollutants in the wastewater discharged, by type of pollutant, referring to sector-specific guidance for types of pollutants; and</li> <li>• Temperature of water discharged, where relevant.</li> </ul>	Target 7 (7.1 Index of coastal eutrophication potential), Target 11 (B.1 Services provided by ecosystems)
C2.2	Waste generation and disposal		<p>Weight of hazardous and non-hazardous waste generated by type (tonnes), referring to sector-specific guidance for types of waste.</p> <p>Weight of hazardous and non-hazardous waste (tonnes) disposed of, split into:</p> <ul style="list-style-type: none"> <li>• Waste incinerated (with and without energy recovery);</li> <li>• Waste sent to landfill; and</li> <li>• Other disposal methods.</li> </ul> <p>Weight of hazardous and non-hazardous waste (tonnes) diverted from landfill, split into waste:</p> <ul style="list-style-type: none"> <li>• Reused;</li> <li>• Recycled; and</li> <li>• Other recovery operations.</li> </ul>	Target 7, Target 11 (B.1 Services provided by ecosystems)

<sup>68</sup> Freshwater: ( $\leq$ 1,000 mg/L Total Dissolved Solids). Other: ( $>$ 1,000 mg/L Total Dissolved Solids). Reference: GRI (2018) [GRI 303-4 Water discharge](#)

Metric no.	Driver of nature change	Indicator	Metric	Connection to GBF targets
C2.3	Pollution/pollution removal	Plastic pollution	<p>Plastic footprint as measured by total weight (tonnes) of plastics (polymers, durable goods and packaging) used or sold broken down into the raw material content.<sup>69</sup></p> <p>For plastic packaging, percentage of plastics that is:</p> <ul style="list-style-type: none"> <li>• Re-usable;</li> <li>• Compostable;</li> <li>• Technically recyclable; and</li> <li>• Recyclable in practice and at scale.</li> </ul>	Target 7, Target 11 (B.1 Services provided by ecosystems)
C2.4	Non-GHG air pollutants		<p>Non-GHG air pollutants (tonnes) by type :</p> <ul style="list-style-type: none"> <li>• Particulate matter (<math>PM_{2.5}</math> and/or <math>PM_{10}</math>);</li> <li>• Nitrogen oxides (<math>NO_2</math>, NO and <math>NO_3</math>);</li> <li>• Volatile organic compounds (VOC or NMVOC);</li> <li>• Sulphur oxides (<math>SO_2</math>, SO, <math>SO_3</math>, <math>SO_x</math>); and</li> <li>• Ammonia (<math>NH_3</math>)</li> </ul>	Target 7, Target 11 (B.1 Services provided by ecosystems)

<sup>69</sup> Raw material content: % of virgin fossil-fuel feedstock; % of post-consumer recycled feedstock; % of post-industrial recycled feedstock; % of virgin renewable feedstock.

Metric no.	Driver of nature change	Indicator	Metric	Connection to GBF targets
C3.0	Resource use/replenishment	Water withdrawal and consumption from areas of water scarcity	Water withdrawal and consumption <sup>70</sup> (m <sup>3</sup> ) from areas of water scarcity, including identification of water source. <sup>71</sup>	Target 11 (B.1 Services provided by ecosystems)
C3.1		Quantity of high-risk natural commodities sourced from land/ocean/freshwater	Quantity of high-risk natural commodities <sup>72</sup> (tonnes) sourced from land/ocean/freshwater, split into types, including proportion of total natural commodities.  Quantity of high-risk natural commodities <sup>73</sup> (tonnes) sourced under a sustainable management plan or certification programme, including proportion of total high-risk natural commodities.	Target 5 (5.1 Proportion of fish stocks within biologically sustainable levels), Target 9, Target 11 (B.1 Services provided by ecosystems)
C4.0	Invasive alien species and other	<b>Placeholder indicator:</b> Measures against unintentional introduction of invasive alien species (IAS) <sup>74</sup>	Proportion of high-risk activities operated under appropriate measures to prevent unintentional introduction of IAS, or low-risk designed activities.	Target 6, Target 11 (B.1 Services provided by ecosystems)

<sup>70</sup> Water consumption is equal to water withdrawal less water discharge. Reference: GRI (2018) [GRI 303-5](#)

<sup>71</sup> Surface water; groundwater; seawater; produced water; third-party water. Reference: GRI (2018) [GRI 303-3](#)

<sup>72</sup> Users should refer to the Science Based Targets Network (SBTN) [High Impact Commodity List \(HICL\)](#) and indicate what proportion of these commodities represent threatened and [CITES listed species](#).

<sup>73</sup> Users should refer to the Science Based Targets Network (SBTN) [High Impact Commodity List \(HICL\)](#) and indicate what proportion of these commodities represent threatened and [CITES listed species](#).

<sup>74</sup> Due to the measurement of levels of invasive species for organisations being a developing area, the chosen indicator focuses on whether an appropriate management response is in place for the organisation. The additional sets of metrics contain measurement of the level of invasive species within an area. The TNFD intends to do further work with experts to define 'high-risk activities' and 'low-risk designed activities'.

Metric no.	Driver of nature change	Indicator	Metric	Connection to GBF targets
C5.0	State of nature	<b>Placeholder indicator:</b> Ecosystem condition  <b>Placeholder indicator:</b> Species extinction risk	<p>For those organisations that choose to report on state of nature metrics, the TNFD encourages them to report the following indicators, and to refer to the TNFD additional guidance on measurement of the state of nature in Annex 2 of the <a href="#">LEAP approach</a>:</p> <ul style="list-style-type: none"> <li>• Level of ecosystem condition by type of ecosystem and business activity; and</li> <li>• Species extinction risk.</li> </ul> <p>There are a number of different measurement options for these indicators. The TNFD does not currently specify one metric as there is no single metric that will capture all relevant dimensions of changes to the state of nature and a consensus is still developing.</p> <p>The TNFD will continue to work with knowledge partners to increase alignment.</p>	Target 1, Target 2, Target 3, Target 4, Target 11

## TNFD core global disclosure metrics for nature-related risks and opportunities

The core global risk and opportunity metrics relate to aggregate levels of risk and/or opportunity within organisations and are designed to provide an overall indication of the level of risk or opportunity. Core global risk and opportunity metrics should be reported at the organisational level.

Risk and opportunity metrics should be disclosed separately for areas of the value chain (direct operations, upstream, downstream) where possible to provide an indication of where the most material risks and opportunities are for the organisation.

### *Alignment to the Global Biodiversity Framework (GBF)*

All the TNFD core global disclosure metrics for risks and opportunities are relevant to Target 15 of the GBF.

**Table 7: TNFD core global disclosure indicators and metrics for nature-related risks and opportunities**

Metric no.	Category	Metric
C7.0	Risk <sup>75</sup>	Value of assets, liabilities, revenue and expenses that are assessed as vulnerable to nature-related transition risks (total and proportion of total).
C7.1		Value of assets, liabilities, revenue and expenses that are assessed as vulnerable to nature-related physical risks (total and proportion of total).
C7.2		Description and value of significant fines/penalties received/litigation action in the year due to negative nature-related impacts.
C7.3	Opportunity	Amount of capital expenditure, financing or investment deployed towards nature-related opportunities, by type of opportunity, with reference to a government or regulator green investment taxonomy or third-party industry or NGO taxonomy, where relevant.
C7.4		Increase and proportion of revenue from products and services producing demonstrable positive impacts on nature with a description of impacts. <sup>76</sup>

75 Refer to the [TNFD Glossary](#) for the definition of vulnerable. Core global metrics C7.0 and C7.1 are connected to additional metrics A8.6 and A9.0 which ask for disclosure of exposure to nature-related risks. For organisations following the LEAP approach, exposure is determined in the Evaluate phase and connected to exposure to nature-related dependencies and impacts, whilst vulnerability is determined in the Assess phase, considering the likelihood of the risk arising and the organisation's ability to mitigate the risk.

76 Positive impacts on nature refer to positive changes to the state of nature. They can be generated by both positive impact drivers and those that reduce negative impact drivers.

## Annex 2: TNFD additional global disclosure metrics

Additional metrics are recommended for disclosure, where relevant, to best represent an organisation's mature nature-related issues, based on their specific circumstances. They include responses to nature-related issues, as well as the nature-related issues themselves. Organisations are not limited by the sets of metrics outlined and are encouraged to report any other metrics that are material and relevant to their organisation.

In choosing which additional metrics to disclose – or indeed other metrics – the TNFD recommends that organisations focus on those that:

- Help organisations understand material nature-related dependencies, impacts, risks and opportunities, including financial effects and operational consequences;
- Are relevant to the organisation and decision-useful for report users; and
- Show how the organisation manages nature-related issues as part of its governance, strategy and risk and impact management processes.

### Additional global disclosure metrics for dependencies and impacts on nature

The following additional global metrics include metrics on impact drivers, changes to the state of nature and changes to ecosystem services, and may support organisations when disclosing their material nature-related dependencies and impacts. They may be considered by organisations for disclosure if relevant.

Metrics for the measurement of the availability of the ecosystem services that the organisation has a dependency or impact on are an important group within this additional set, but are included only as a general indicator with examples. This is because the measurement of ecosystem services is very specific to the particular service being measured and to the location of the impact with, for example, regional variations to biodiversity aspects such as species at risk and affected stakeholders reliant on the services provided. Refer to Box 7 for further details.

**Table 8: TNFD additional global disclosure metrics for dependencies and impacts on nature**

Metric no.	Metric category	Indicator	Example metrics
<b>A1.0</b>	Driver of nature change: Land/freshwater/ocean-use change	Intensity of land-use	Land-use intensity (tonnes or litres of output/km <sup>2</sup> ). This will vary by sector context; for example, crop yield (tonnes/km <sup>2</sup> ) for the agriculture sector.
<b>A2.0</b>	Driver of nature change: pollution/pollution removal	Wastewater treated, reused/recycled or avoided	Volume of wastewater treated, reused or recycled (m <sup>3</sup> ).  Reduction in volume of wastewater relative to baseline as a result of technological or process changes (m <sup>3</sup> ).
<b>A2.1</b>		Waste minimised, reused or recycled	Reduction in waste generated relative to baseline as a result of technological or process changes (tonnes).
<b>A2.2</b>		Pollutants removed	Volume of pollutants removed from land, atmosphere, ocean and freshwater (tonnes).
<b>A2.3</b>		Light and noise pollution	For example: <ul style="list-style-type: none"><li>• Percentage of light fixtures that fully cut-off or are fully shielded, or are below 60W;</li><li>• Intensity of outdoor lighting (lumen/ha); and</li><li>• Average noise level on-site during noisiest part of the day, an hour either side of sunrise and an hour either side of sunset (dB); distance from nearest habitat (m).</li></ul>

Metric no.	Metric category	Indicator	Example metrics
A3.0	Driver of nature change: resource use and replenishment	Total water consumption and withdrawal	Total volume of water withdrawal and consumption (m <sup>3</sup> ). <sup>77</sup>
A3.1		Water replenished	Volume of water (m <sup>3</sup> ) replenished to the environment through replenishment programmes (split into total and to areas of water scarcity).
A3.2		Water reduced, reused or recycled	Total volume (m <sup>3</sup> ) or percentage of water (total, freshwater, other) reduced, reused or recycled.
A3.3		Water loss mitigated	Volume (m <sup>3</sup> ) of water loss mitigated.
A3.4		Area used for the production of natural commodities	Area (km <sup>2</sup> ) that the organisation controls and/or manages that is used for the production of natural commodities from land/ocean/freshwater ecosystems, by type of ecosystem.
A3.5		Use of wild species	Quantity of wild species (tonnes and/or number of individual specimens, by species) extracted from natural habitats for commercial purposes.
A4.0	Driver of nature change: Invasive species and other	Number/extent of unintentionally introduced species, varieties or strains	Number/extent of unintentionally introduced species, varieties or strains in areas owned, operated, used or financed in priority areas (absolute, presence/absence and/or number removed).

<sup>77</sup> Water consumption is equal to water withdrawal less water discharge. Reference: GRI (2018) [GRI 303-5](#).

Metric no.	Metric category	Indicator	Example metrics
A5.0	State of nature	Ecosystem condition	Level of ecosystem condition by type of ecosystem and business activity – refer to TNFD additional guidance on state of nature measurement in Annex 2 of <a href="#">the LEAP approach</a> .
A5.1		Ecosystem extent	Quantitative measure of ecosystem extent, e.g. change in habitat cover (km <sup>2</sup> ).
A5.2		Ecosystem connectivity	Quantitative measure of ecosystem connectivity, e.g. Singapore Index. <sup>78</sup>
A5.3		Species extinction risk	Quantitative measure of species extinction risk – refer to TNFD additional guidance on state of nature measurement in Annex 2 of <a href="#">the LEAP approach</a> .
A5.4		Species population size	Quantitative measure of species population size.
A6.0	Ecosystem services	Ecosystem services the organisation has an impact on: measurement of the change in the availability and quality of the ecosystem services	See guidance on measuring changes in ecosystem services in the <a href="#">TNFD additional guidance on the LEAP approach</a> .
A6.1		Ecosystem services the organisation depends on: measurement of the change in the availability and quality of the ecosystem services	See <i>Measuring changes in ecosystem services</i> in the TNFD additional guidance on the LEAP approach.

<sup>78</sup> Chan, L. et al. (2021) [Handbook on the Singapore Index on Cities' Biodiversity](#)

### Box 7: Metrics on ecosystem services

Disclosure of metrics on ecosystem services provides insight into the extent of organisational dependency or impact on ecosystem services, as well as the underlying health of the ecosystem asset underpinning the service. They can also be used to demonstrate societal impacts, positive and negative, related to nature, which may be useful for indicating transition risks and/or opportunities for the organisation and also demonstrate changes in performance in this area.

Example ecosystem service metrics that organisations may choose to report include:

- An organisation that has a material dependency on food mitigation services provided by a woodland water catchment may choose to report the frequency of flooding incidents or changes to flood damage costs to indicate the level of risk;
- An organisation dependent on pollinators for the provision of crops may choose to report the area of crops pollinated or changes to the yield of crop; and
- An organisation that is withdrawing water from a freshwater source in an area of water scarcity may choose to disclose the number of people or hectares that have secure water supply in the area to demonstrate effectiveness of risk management.

For further guidance on the measurement of ecosystem services, refer to TNFD additional guidance on the LEAP approach.

### Additional global disclosure metrics for risks and opportunities

The following additional global metrics include metrics split into different categories of nature-related risks and opportunities that may be considered by organisations for disclosure if relevant.

As nature-related risks and opportunities are generated from organisations' dependencies and impacts on nature, the TNFD recommends that the risk and opportunity metrics disclosed are connected to the relevant impact and/or dependency metric and response metric, where possible.

Metrics should be reported at the level that is most appropriate to reflect the magnitude of the risk or opportunity, which may be at the site, product or service, regional or organisational level.

Additional metrics are non-exhaustive and the TNFD recommends organisations consider them in the context of the most material risks and opportunities for the reporting organisation.

**Table 9: TNFD additional global metrics for nature-related risks and opportunities**

Metric no.	Risk / opportunity	Category	Metric
A7.0	Risk	Multiple	Value of write-offs and early retirements of assets due to nature-related risks.
A7.1			Value of capital expenditure, financing or investment deployed towards nature-related risks.
A8.0		Physical risk	Description and value of assets/total annual revenue dependent on area affected by physical risk.
A8.1			Number of locations/business lines/facilities exposed to physical risk.
A8.2			Value of capital expenditure on infrastructure asset repair or replacement as a result of nature-related loss and damage.
A8.3			Percentage increase in insurance costs due to nature-related loss and damage in the previous year.
A8.4			Capital expenditure on adaption due to nature-related physical risks.
A8.5			Costs associated with the relocation of operations and suppliers due to physical nature-related risks.
A8.6			Value of assets, liabilities, revenue and expenses that are exposed to nature-related physical risks (total and proportion of total).
A9.0		Transition risk	Value of assets, liabilities, revenue and expenses that are exposed to nature-related transition risks (total and proportion of total).
A10.0		Transition risk – Policy	Description and costs related to loss of operating areas.
A11.0		Transition risk – Liability	Description and value of clean-up costs due to nature-related impacts.

Metric no.	Risk / opportunity	Category	Metric
A12.0	Risk	Transition risk – Market	Description of exposure to/costs related to loss of market access.
A12.1			Description of exposure and costs related to raw material and natural resource price volatility.
A13.0		Transition risk – Reputation	Exposure to increased operational costs/loss of revenue due to reputational risks.
A14.0		Transition risk – Technology	Expenditure on R&D for new and alternative technologies related to mitigation and adaptation of nature-related risks.
A15.0	Opportunity	Market	Year-on-year change in ESG rating scores for previous three years.
A16.0		Capital flow and financing	Value of green finance instruments used, such as green bonds and sustainability-linked bonds.
A17.0		Resource efficiency	Value of operational cost savings associated with nature-related management, such as improvements in efficiency of use of nature-related resources and adoption of circular economy practices.

## Additional global disclosure metrics for responses to nature-related issues

Organisations may wish to consider using response metrics, which are designed to accompany descriptive statements on how organisations are addressing the material nature-related issues identified. When chosen for reporting, the organisation is encouraged to connect them to the relevant dependency, impact, risk or opportunity metric as far as possible.

Response metrics are practical to measure and can be easily interpreted by report users, and thus are important for providing decision-useful information. They allow

the demonstration of best practices for nature impact and risk management, which is essential to shift finance away from harmful activities, particularly for industries that cannot completely avoid harm.

Business responses to nature-related issues are highly dependent on the specific circumstances of the organisation, including the sector and biome in which the organisation operates. The list below is therefore illustrative and non-exhaustive – each organisation is encouraged to consider the most appropriate response metrics for its unique business model and reporting context.

**Table 10: TNFD additional global disclosure metrics for responses to nature-related issues**

Metric no.	Category	Sub-category	Metric
A19.0	Strategy	Policies, commitments and targets	Proportion of targets that are time-bound and quantifiable.
A19.1			Proportion of targets that address short term, medium term and long term risks and opportunities.
A19.2			Proportion of geographical sites/priority locations that are covered by targets.
A20.0		Engagement	Proportion of sites that have active engagement with local stakeholders on nature-related issues.
A20.1			Participation in sector-wide and/or multi-stakeholder agreements (number of agreements; number of stakeholders and stakeholder groups covered).
A21.0	Capital allocation/investment		Value of investment in projects that avoid or reduce negative nature impacts or conserve or restore ecosystems or species where impacts cannot be avoided.
A21.1			Investment in nature-related solutions as defined in relevant government or regulator green investment taxonomy.

Metric no.	Category	Sub-category	Metric
A22.0	Dependency, impact, risk and opportunity management	Value chain	Proportion of suppliers screened on nature-related issues, by spend and/or volume.
A22.1			Proportion of suppliers engaged for priority nature issues identified and/or when assessing nature-related issues, by spend and/or volume.
A22.2			Credible and transparent third-party certification: percentage and/or value of production, consumption and sourcing of raw materials, per certification type.
A22.3			Proportion of production, consumption and sourcing of raw materials that is traceable to original location.
A22.4			Proportion of suppliers committed to and effectively implementing sustainable production.

Metric no.	Category	Sub-category	Metric
A23.0	Dependency, impact, risk and opportunity management	Changes to nature (dependency and impact): mitigation hierarchy steps	Proportion of sites producing and effectively implementing nature action plans.
A23.1			Rate of reuse and recycling of i) waste or ii) product/material outflows (%).
A23.2			Restoration of negatively affected species and ecosystems (investment and extent (km <sup>2</sup> )) split into ecosystem/biome type and split into: <ul style="list-style-type: none"> <li>• Required by regulation;</li> <li>• Required by certifier; and</li> <li>• Voluntary.</li> </ul>
A23.3			Extent (km <sup>2</sup> ), duration (years) and monitoring frequency (count/year) of ecosystem restoration and/or species restoration projects.
A23.4			Circular material use rate (%).
A23.5			Value of operational/capital expenditure, categorised into mitigation hierarchy actions (avoid, reduce, restore and regenerate, transform) by value and/or proportions (%).
A23.6			Mandatory credit market schemes: Value of total biodiversity offsets purchased and sold by type and scope (geographies, activities).

Metric no.	Category	Sub-category	Metric
A24.0	Dependency, impact, risk and opportunity management	Voluntary conservation, restoration and regeneration	Value invested in voluntary ecosystem and/or species restoration.
A24.1			Extent (km <sup>2</sup> ), duration (years) and monitoring frequency (count/year) of voluntary ecosystem and/or species restoration projects.
A24.2			Value of investment in additional conservation actions split into type of action and type of ecosystem/biome applied to.
A24.3			Value of investment in nature-related community development programs intended to enhance positive impacts for Indigenous Peoples and affected stakeholders.
A24.4			Voluntary credit market schemes: Value of total biodiversity offsets purchased and sold by type and scope (geographies, activities).
A25.0	Dependency, impact, risk and opportunity assessment		The level(s) at which the assessment is taken (corporate, location-specific and/or project/service-line-specific).
A25.1			Percentage of direct operational locations assessed.
A25.2			Percentage of operational locations assessed upstream and downstream.
A25.3			Percentage of suppliers engaged on access to and availability of high-quality data.

# Annex 3: The Taskforce Members & TNFD Secretariat

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# Annex 4: TNFD mission, principles, objectives and approach

## Mission, principles and objectives

The Taskforce's stated **mission** is to develop and deliver a risk management and disclosure framework for organisations to report and act on evolving nature-related risks, with the ultimate aim of supporting a shift in global financial flows away from nature-negative outcomes and toward nature-positive outcomes.

The TNFD framework was developed on the basis of seven **principles**:

- **Market usability:** Directly usable and valuable to market participants, notably corporates and financial institutions, as well as policy and other actors;
- **Science-based:** Follow a scientifically anchored approach, incorporate well established and emerging scientific evidence, and converge towards other existing science-based initiatives;
- **Nature-related risks:** Embrace nature-related risks that include immediate and material financial risks, as well as nature dependencies and impacts and their related organisational and societal risks;
- **Purpose driven:** Actively reducing risks and increasing nature-positive action by using the minimum required level of granularity to ensure achievement of the TNFD goal;
- **Integrated and adaptive:** Can be integrated into and enhance existing disclosures and other standards. Account for and be adaptive to changes in national and international policy commitments, standards and market conditions;
- **Climate-nature nexus:** Employ an integrated approach to climate- and nature-related risks, scaling up finance for nature-based solutions; and

- **Globally inclusive:** Ensure the framework and approach is relevant and accessible worldwide, across emerging and developed markets.

In developing the framework, the Taskforce aimed to:

- Promote alignment across disclosure regimes;
- Consider the perspectives of users and the concerns of preparers of nature-related financial disclosures; and
- Create a framework that can be efficiently implemented by organisations in their financial reporting.

## Approach

The TNFD adopted an open innovation approach to the development of its risk management and disclosure framework. This involved iterative prototyping and successive updated releases of the beta framework based on market feedback and pilot testing from March 2022 to June 2023.

In addition to the expertise of its members, a broad range of external resources informed the Taskforce's recommendations, including existing voluntary and mandatory climate and nature-related reporting frameworks, environmental and risk management standards, government reports and research, expert resources, and various other stakeholders such as industry participants, market consortia, scientific organisations, and non-governmental organisations (NGOs).

By following an open innovation approach, inviting feedback and creating opportunities to pilot versions of the beta framework, the TNFD crowded in a broad

cross-section of market participants and other stakeholders to support the Taskforce in its design and development of a robust risk management and disclosure framework. Through this approach, the TNFD's final recommendations and guidance benefited from significant input from the market as well as a broad cross-section of scientific partners.

The 40 Taskforce members come from a range of companies, including large financial institutions, large corporates, accounting and consulting firms, stock exchanges and credit rating agencies, and brought a range of practical experience, expertise and global perspectives on the preparation and use of nature-related financial disclosures. They collectively have a market capitalisation of over \$2.3 trillion, manage over \$20.6 trillion in assets and have a footprint in over 180 countries. They represent 16 business sectors that were identified by the World Economic Forum (WEF) as most at risk or with a high impact or dependence on nature. Over 35% are from companies that built the TCFD. Through seventeen plenary meetings and participation in working groups, Taskforce members developed a consensus-based, market-led approach to nature-related financial risk management and disclosure.

The Taskforce sought input from a diverse range of organisations across different sectors, geographies and themes:

- [The TNFD Forum](#), a global network of over 1,200 organisations with a footprint in over 180 countries – contributing insight and expertise into the design and development of the TNFD framework. They represent all 24 business sectors identified by WEF as most at risk or with a high impact or dependence on nature. The Forum has grown over 10 times its original size in under two years. It also includes 70% of global systemically important banks, large global corporates, the world's leading credit rating agencies, leading regulators, market supervisors, governments, development finance institutions, multilateral institutions and over 60 market consortia – helping to further amplify the reach and engagement on the TNFD framework. Members of the Forum have provided feedback via pulse check surveys, input to working groups, sector groups and bilateral

discussions, on invitation from the Taskforce to deepen its understanding of market needs and abilities.

- **Pilots:** Over 200 institutions from 36 countries and jurisdictions across all six continents tested the beta TNFD framework with their sourcing, risk and sustainability teams. Their feedback was fundamental to the design of the framework. In addition to companies independently piloting the framework, the TNFD worked with a range of pilot programme partners who ran a portfolio of pilots across geographies, key sectors and supply chains.
- **Scientific partners:** The TNFD held a series of workshops with knowledge and other scientific partners to identify its disclosure and assessment metrics on impacts and dependencies on nature.
- **Nature-related Data Catalyst:** Over 135 nature-related data providers, spanning financial data aggregators, non-profit organisations, technology start-ups, research and academia, and government agencies formed the [Nature-related Data Catalyst](#) to address nature-related data challenges.
- **Indigenous Peoples and Local Communities:** The TNFD engaged with civil society organisations and held a 12-month process of dialogue with the International Indigenous Forum on Biodiversity (IIFB), a global network of Indigenous leaders, facilitated by IUCN and with support from the Shift team, to develop TNFD guidance on engagement.

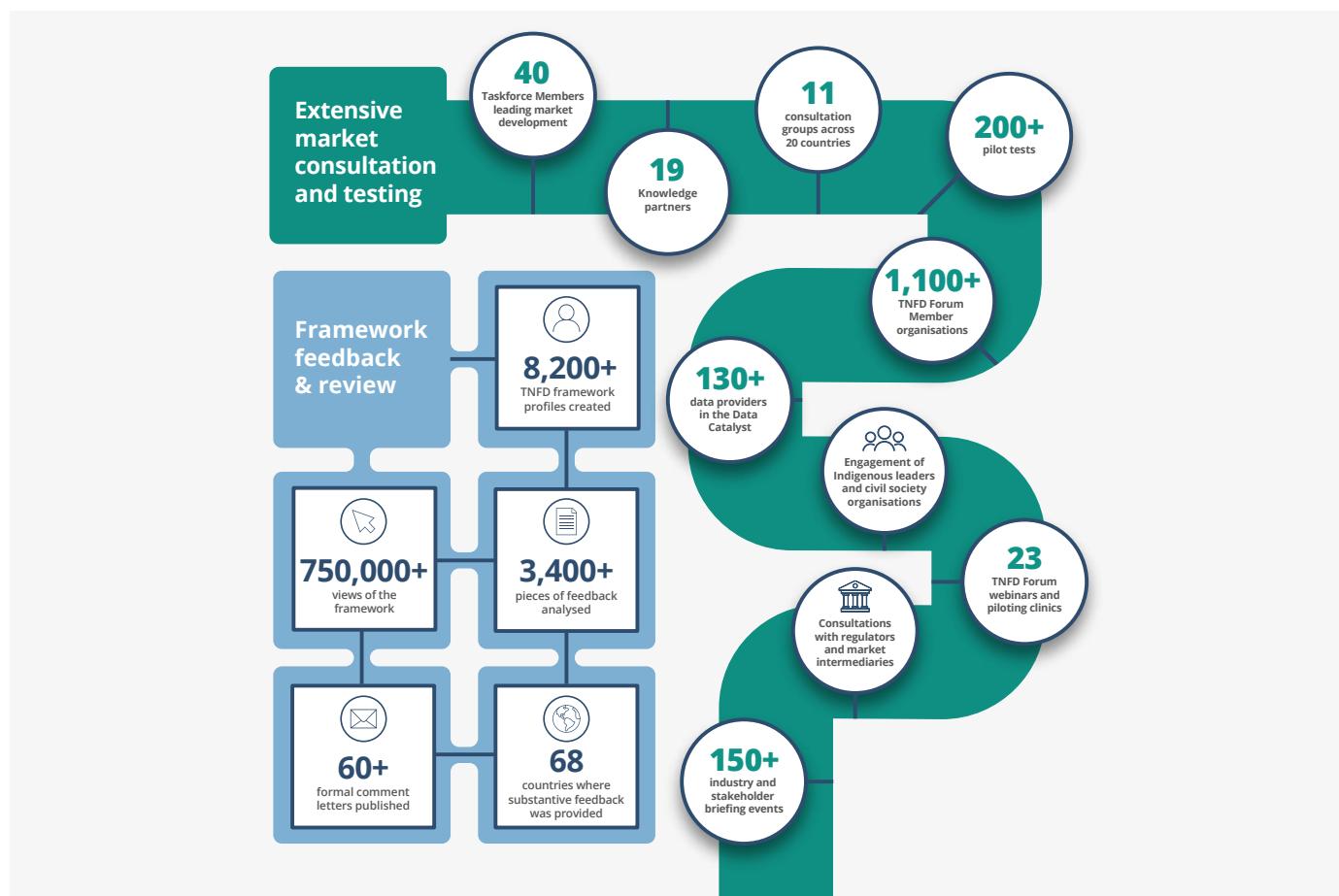
The Taskforce was supported by [19 knowledge partners](#), including leading global scientific, conservation and standards development bodies, which contributed to the development of specific aspects of the framework. The TNFD's knowledge partnerships reflect the commitment of the Taskforce to build on existing expertise, initiatives and standards, and to create a framework that is science-based. The TNFD also drew on the scientific work of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and the CBD. The Taskforce drew on publications and research conducted by scientific and UN bodies, governments, NGOs, industry participants, as well as standards with a focus on nature and climate-related issues.

Engagement with report users, preparers and other stakeholders in relevant industries and sectors across geographies was important in developing the Taskforce's recommendations (see infographic below). The Taskforce conducted five types of engagement over 18 months beginning in March 2022 to support this effort: public consultation via its online platform; industry interviews; government briefings; focus/pilot groups; outreach events; and webinars. This engagement served two primary purposes: to raise awareness and understanding about the Taskforce's work; and to solicit feedback on the Taskforce's proposed recommended disclosures and guidance through:

- **Online platform:** The TNFD beta framework website was visited 750,000 times by stakeholders in approximately 150 countries and territories following the release of the first beta version in March 2022.

Approximately 3,400 pieces of market feedback were received on the four versions of the beta framework from 45 countries;

- **11 TNFD Consultation Groups convened by business associations and companies.** TNFD consultation groups convened market participants in approximately 20 countries through 35 virtual and in-person sessions to raise awareness about the TNFD framework and nature-related issues, anchored in their geographic context; and
- **Over 150 consultation sessions** – in person and online – facilitated by the Taskforce, including with companies, regulators, supervisors, civil society organisations and a 12-month process of dialogue with the International Indigenous Forum on Biodiversity (IIFB), a global network of Indigenous leaders.



## Industry interviews, piloting and focus groups

The Taskforce conducted a series of industry interviews and focus groups with users and preparers of financial statements to gather feedback. The Taskforce prioritised engagement with representatives of industry and sectors with significant nature-related issues, and with geographic diversity to cover many countries. Industry

and focus groups were bilateral, sectoral and cross sectoral, and conducted both online and in person.

The key themes in the feedback received by the Taskforce from the public consultations, industry interviews, piloting and focus groups for each iteration of the draft framework were summarised and published online, and used to inform the subsequent iteration of the framework.

**Table 11: Summary of feedback themes on TNFD beta frameworks**

Beta release	Feedback themes
<b>v0.4, March 2023</b>  Approximately 1,750 pieces of feedback from 200 institutions and individuals in 27 countries, and more than 60 comment letters published.	<ul style="list-style-type: none"> <li>The need for <b>greater simplicity</b> of the framework: more accessible and implementable (both within content and website/published materials);</li> <li>General support for the framework's flexible <b>approach on materiality</b>, but broad calls for further clarity and guidance on the TNFD approach;</li> <li>Further clarity and guidance on <b>location prioritisation</b>, and the level of <b>granularity required for value chain disclosures</b>;</li> <li>General support for the <b>developments on metrics</b>, but several areas were raised to improve them, including state of nature and balance of positive and negative impact metrics; and</li> <li>Widespread call to provide a <b>phased/staged approach</b> to adopting the proposed disclosure recommendations to help organisations get started. This ask was particularly concentrated among financial institutions.</li> </ul>
<b>v0.3, November 2022</b>  Approximately 750 pieces of feedback from 150 institutions and individuals in 25 countries.	<ul style="list-style-type: none"> <li>Further clarity on the approach to materiality when following the TNFD disclosure recommendations;</li> <li>Further alignment of the TNFD framework with key standards and related initiatives;</li> <li>Specific guidance relevant for financial institutions;</li> <li>Further improvements to technical aspects of the TNFD's definitions, disclosure recommendations and LEAP approach, including on metrics, targets and scenarios; and</li> <li>A user-friendly guidance and framework structure.</li> </ul>

Beta release	Feedback themes
<b>v0.2, June 2022</b>  Approximately 500 pieces of feedback from 94 institutions and individuals in 21 countries.	<ul style="list-style-type: none"> <li>The need for disclosure of impacts on nature and related social considerations;</li> <li>The need for further guidance that helps users apply the framework in practice;</li> <li>Technical aspects of definitions, disclosure recommendations and the LEAP approach for risk and opportunity management; and</li> <li>The Taskforce's approach to developing the TNFD framework, including consultation and engagement processes, and alignment with other initiatives.</li> </ul>
<b>V0.1, March 2022</b>  500 pieces of feedback from 138 institutions and individuals in 37 countries.	<ul style="list-style-type: none"> <li>The need for further guidance;</li> <li>Technical aspects of core components of the beta v0.1 framework; and</li> <li>Approach to developing the TNFD framework, including communications and engagement.</li> </ul>

## Outreach events

The Taskforce co-hosted over 50 public outreach events in 35 countries and presented the draft recommendations and guidance at over 110 other events including conferences, forums and meetings sponsored by industry associations, NGOs, government agencies, corporations and other organisations.

Taskforce co-hosted events included panel discussions and keynote speeches by prominent climate-risk and financial experts. Attendees included representatives of financial and non-financial organisations that spanned a variety of corporate functions, including strategy, risk, accounting, portfolio and investment management, corporate sustainability, as well as representatives from industry associations, NGOs, government agencies, research providers, academia, accounting and consulting firms, and media.

The Taskforce presented at a number of global flagship events to advocate for the framework and invite feedback, including WEF Davos, New York Climate Week, IUCN Leaders Forum, PRI, UNFCCC COP 27, UN CBD COP 15, and meetings of the NGFS, Coalition of Finance Ministers for Climate Action and the G20 Sustainable Finance Working Group.

## Webinars

The TNFD offered 30 webinars reaching over 90 countries and territories to increase awareness and understandings of the Taskforce's framework development and to collect additional feedback. These include four types of webinar:

- A public webinar on the alignment of the TNFD to the Global Biodiversity Framework attended by almost 1,600 organisations from 78 countries;
- 12 TNFD Forum webinars attended by over 1,050 institutions from 65 countries to provide updates on the draft TNFD framework and information about market and regulator progress on nature-related issues;
- 10 piloting clinics attended by over 900 institutions from 51 countries to discuss progress made by pilot testing companies and financial institutions in applying the TNFD beta framework; and
- 7 Taskforce teach-ins to share cutting edge tools, approaches and research led by scientific, research and industry associations to inform the development of the framework.

## Annex 5: Summary glossary and acronyms

This is a summary glossary. For a full set of all definitions used in TNFD additional guidance, refer to the [TNFD Glossary](#).

Term	Definition
<b>Abiotic flows</b>	Abiotic flows are contributions to benefits from the environment that are not underpinned by, or reliant on, ecological characteristics and processes.  United Nations et al. (2021) <a href="#">System of Environmental Economic Accounting – Ecosystem Accounting (SEEA EA)</a>
<b>Acute risk</b>	Occurrence of short term, specific events that change the state of nature. For example, oil spills, forest fires or pests affecting a harvest.  Adapted from Task Force on Climate-related Financial Disclosures (2017) <a href="#">Final Report: Recommendations on Climate-related Financial Disclosures</a> , Financial Stability Board (2022) <a href="#">Final report: Supervisory and Regulatory Approaches to Climate-related Risks</a> , Network for Greening the financial System (2023) <a href="#">Nature-related Financial Risks: A Conceptual Framework to guide Action by Central Banks and Supervisors</a> , Organisation for Economic Co-operation and Development (2023, forthcoming) A prudential framework for assessing nature-related financial risks: identifying and navigating biodiversity risks
<b>Adaptation</b>	Adjustment in natural or human systems to a new or changing environment that exploits beneficial opportunities or moderates negative effects.  Adapted from <a href="#">Fourth National Climate Assessment Glossary</a>
<b>Additional conservation actions</b>	A broad range of activities intended to benefit biodiversity, where the effects or outcomes can be challenging to quantify.  United Nations Environment Programme – Finance Initiative (2021) <a href="#">Guidance for Banks: Biodiversity Target-setting</a>
<b>Additional metrics</b>	Metrics suggested by the TNFD that a company or financial institution may choose to include in their disclosures, based on their specific industry, location and/or regulatory requirements in order to provide more specific information and strengthen disclosures. The list of additional metrics is not exhaustive – but illustrative – and other metrics will likely be required to disclose against all material nature-related issues.  TNFD

<b>Affected stakeholders/ affected communities</b>	<p>People or groups that have been, or may be, affected by an organisation's operations, products, services and value chains, including an organisation's nature-related dependencies, impacts, risks and/or opportunities, and responses to those issues.</p> <p>Affected communities can range from local communities living adjacent to the organisation's operations or the site of its activities to those living at a distance but affected, for example, by nature loss, such as the loss of migratory species, or impact drivers, such as water or air pollution that the organisation generates. Affected communities can include Indigenous Peoples who have internationally recognised rights related to their lands, territories, resources, cultures, traditional knowledge and the conduct of their affairs, and the right to Free, Prior and Informed Consent before activities affecting their lands may proceed.</p> <p>Adapted from World Economic Forum (May 2022) <a href="#">Engaging Affected Stakeholders: The Emerging Duties of Board Members: Insight Report by the Global Future Council on Human Rights</a></p>
<b>Area controlled/ managed</b>	<p>A clearly defined geographical space that an entity has the power to govern financially and operationally to obtain benefits from its activities.</p> <p>Adapted from International Financial Reporting Standard <a href="#">Glossary</a></p>
<b>Assessment locations</b>	<p>Assessment locations include all sensitive locations and other locations where an organisation may have material dependencies, impacts, risks and opportunities.</p> <p>TNFD</p>
<b>Assessment metrics</b>	<p>Metrics used within an integrated internal process for identification and assessment of nature-related issues, such as the LEAP approach. These are not necessarily required for disclosure.</p> <p>TNFD</p>
<b>Assets</b>	<p>A present economic resource controlled by the entity as a result of past events and from which future economic benefits are expected to flow to the entity.</p> <p>International Financial Reporting Standard (2015) <a href="#">Conceptual Framework: Elements of Financial Statements – Definitions and Recognition</a></p>
<b>Atmosphere</b>	<p>Atmosphere includes the gaseous medium and its suspended particulate liquids and solids above the land realm, extending to the altitudinal limits of life.</p> <p>Keith, D et al (2020) <a href="#">IUCN Global Ecosystem Typology 2.0: Descriptive Profiles for Biomes and Ecosystem Functional Groups</a></p>

<b>Baseline</b>	<p>Starting point or benchmark against which changes in the state of nature attributed to business activities can be compared.</p> <p>Adapted from Capitals Coalition (2016) <a href="#">Natural Capital Protocol</a></p>
<b>Biodiversity</b>	<p>The variability among living organisms from all sources, including, <i>inter alia</i>, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.</p> <p>Convention on Biological Diversity (1992) <a href="#">Article 2</a></p>
<b>Biome</b>	<p>Global-scale zones, generally defined by the type of plant life that they support in response to average rainfall and temperature patterns e.g. tundra, coral reefs or savannas.</p> <p>Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2019) <a href="#">Global Assessment Report on Biodiversity and Ecosystem Services</a></p> <p>For the purpose of metrics, biomes are defined in the IUCN Global Ecosystem Typology as the component of a realm united by a few common major ecological drivers that regulate major ecological functions. Biomes are derived from the top down by subdivision of realms (Level 1)</p> <p>See Keith A. et al. (2020) <a href="#">IUCN Global Ecosystem Typology 2.0: Descriptive Profiles for Biomes and Ecosystem Functional Groups</a></p>
<b>Business model</b>	<p>An entity's system of transforming inputs through its activities into outputs and outcomes that aims to fulfil the entity's strategic purposes and create value for the entity and hence generate cash flows over the short, medium and long term.</p> <p>International Financial Reporting Standard (2023) <a href="#">S1 General Requirements for Disclosure of Sustainability-related Financial Information</a></p>
<b>Capital expenditure (CapEx)</b>	Funds used by a company to acquire or upgrade physical assets
<b>Capital flow and financing</b>	<p>Access to capital markets, improved financing terms or financial products connected to the management of nature-related dependencies, impacts, risks and opportunities.</p> <p>TNFD</p>
<b>Certification</b>	<p>The action or process of providing a product with an official document attesting to a status or level of achievement against a certain standard.</p> <p>CDP (2022) <a href="#">Forests Reporting Guidance</a></p>

<b>Certification programme</b>	A programme that provides procured volumes of a product with an official document attesting to a status or level of achievement against a certain standard.  Adapted from CDP (2022) <a href="#">Forests Reporting Guidance</a>
<b>Chronic risk</b>	Gradual changes to the state of nature. For example, pollution stemming from pesticide use or climate change.  Adapted from Task Force on Climate-related Financial Disclosures (2017) <a href="#">Final Report: Recommendations on Climate-related Financial Disclosures</a> , Financial Stability Board (2022) <a href="#">Final report: Supervisory and Regulatory Approaches to Climate-related Risks</a> , Network for Greening the financial System (2023) <a href="#">Nature-related Financial Risks: A Conceptual Framework to guide Action by Central Banks and Supervisors</a> , Organisation for Economic Co-operation and Development (2023, forthcoming) A prudential framework for assessing nature-related financial risks: identifying and navigating biodiversity risks
<b>Circular economy</b>	An economic system in which the value of products, materials and other resources in the economy is maintained for as long as possible, enhancing their efficient use in production and consumption, thereby reducing the environmental impact of their use and minimising waste and the release of hazardous substances at all stages of their life cycle, including through the application of the waste hierarchy.  European Commission (2023) <a href="#">Annex 2 to the Commission Delegated Regulation, supplementing Directive 2013/34/EU as amended by Directive 2022/2464 (CSRD), as regards sustainability reporting standards</a>
<b>Circular material use rate</b>	Recirculation of materials, components and products in practice after first use, employing the following strategies (in order of preference):  (i) maintenance/prolonged use; (ii) reuse/redistribution; (iii) refurbishment/remanufacturing; (iv) recycling, composting, or anaerobic digestion.  The use rate is defined as the ratio of circular use of materials to overall use of materials.  European Commission (2023) <a href="#">Annex 2 to the Commission Delegated Regulation, supplementing Directive 2013/34/EU as amended by Directive 2022/2464 (CSRD), as regards sustainability reporting standards</a>

<b>Compostable plastics</b>	A packaging or packaging component is compostable if it is in compliance with relevant international compostability standards and if its successful post-consumer collection, sorting and composting is proven to work in practice and at scale.  Ellen MacArthur Foundation (2022) <a href="#">New Plastics Economy Global Commitment</a>
<b>Conservation</b>	An action taken to promote the persistence of ecosystems and biodiversity.  Adapted from Levin (2009) <a href="#">The Princeton Guide to Ecology</a>
<b>Core global disclosure metrics</b>	Metrics to be included in all disclosures following the TNFD disclosure recommendations on a comply or explain basis. Core metrics are split into 'core global metrics' which all organisations should disclose, regardless of sector, and 'core sector metrics' which are specific to the sectors that organisations operate in (see below).  TNFD
<b>Core sector disclosure metrics</b>	Metrics relevant to most organisations in sectors defined by the SASB sector classification that should be disclosed by all report preparers within the sector on a comply or explain basis.  TNFD
<b>Critical habitat</b>	Any area of the planet with high biodiversity conservation significance, based on the existence of habitat of significant importance to critically endangered or endangered species, restricted range or endemic species, globally significant concentrations of migratory and/or congregatory species, highly threatened and/or unique ecosystems and key evolutionary processes.  International Finance Corporation (2012) <a href="#">Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</a>
<b>Dependencies (on nature)</b>	Dependencies are aspects of environmental assets and ecosystem services that a person or an organisation relies on to function. A company's business model, for example, may be dependent on the ecosystem services of water flow, water quality regulation and the regulation of hazards like fires and floods; provision of suitable habitat for pollinators, who in turn provide a service directly to economies; and carbon sequestration.  Adapted from Science Based Targets Network (2023) <a href="#">SBTN Glossary of Terms</a>
<b>Dependency pathway</b>	A dependency pathway shows how a particular business activity depends upon specific features of natural capital. It identifies how observed or potential changes in natural capital affect the costs and/or benefits of doing business.  Capitals Coalition (2016) <a href="#">Natural Capital Protocol</a>

<b>Direct impacts</b>	A change in the state of nature caused by a business activity with a direct causal link.  Climate Disclosure Standards Board (2021) <a href="#">Framework Application Guidance for Biodiversity-related Disclosures</a> , Endangered Wildlife Trust (2020) <a href="#">The Biological Diversity Protocol</a> , Capitals Coalition and Cambridge Conservation Initiative (2020) <a href="#">Integrated Biodiversity into Natural Capital Assessments</a>
<b>Direct operations</b>	All activities and sites (e.g. hydropower plants, buildings, mines, farms, stores) over which a company has operational or financial control.  TNFD
<b>Disclosure metrics</b>	Metrics required to be disclosed to market participants in line with the TNFD's disclosure recommendations.  Disclosure metrics are a sub-group of <i>assessment metrics</i> rather than a mutually exclusive group. Organisations may choose to disclose assessment metrics beyond the suggested core disclosure metrics.  TNFD
<b>Disturbed area</b>	A clearly defined geographical space that has been subject to human activity that has changed the land's surface condition, relative to a reference state.  TNFD
<b>Double materiality</b>	Double materiality has two dimensions, namely impact materiality and financial materiality.  European Commission (2023) <a href="#">Annex 1 to the Commission Delegated Regulation, supplementing Directive 2013/34/EU as amended by Directive 2022/2464 (CSRD), as regards sustainability reporting standards (ESRS E1)</a>
<b>Downstream</b>	All activities that are linked to the sale of products and services produced by the company setting targets. This includes the use and reuse of the product and its end of life, including recovery, recycling and final disposal  Science Based Targets Network (2023) <a href="#">SBTN Glossary of Terms</a>
<b>Drivers of nature change</b>	All external factors that affect nature, anthropogenic assets, nature's contributions to people and good quality of life. They include institutions and governance systems and other indirect and direct drivers (both natural and anthropogenic).  Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services <a href="#">IPBES Glossary</a>

<b>Durable goods</b>	Goods which have an expected lifetime of more than three years or that can be used more than once.  CDP (2023) <a href="#">Technical Note: Plastics Disclosure</a> , CDP (2023) <a href="#">Water Security Questionnaire</a>
<b>Ecological/ habitat connectivity</b>	The degree to which the landscape facilitates the movement of organisms (animals, plant reproductive structures, pollen, pollinators, spores, etc.) and other environmentally important resources, such as nutrients and moisture, between similar habitats. Connectivity is hampered by fragmentation.  Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services <a href="#">IPBES Glossary</a>
<b>Ecosystem</b>	A dynamic complex of plant, animal and microorganism communities and the non-living environment, interacting as a functional unit.  Convention on Biological Diversity (1992) <a href="#">Article 2</a> ; Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2019) <a href="#">Global Assessment Report on Biodiversity and Ecosystem Services</a>
<b>Ecosystem assets</b>	A type of environmental asset that represents a specific ecosystem type characterised by a distinct set of biotic and abiotic components and their interactions.  Adapted from United Nations et al. (2021) <a href="#">System of Environmental-Economic Accounting – Ecosystem Accounting</a>
<b>Ecosystem condition</b>	The quality of an ecosystem measured by its abiotic and biotic characteristics. Condition is assessed by an ecosystem's composition, structure and function which, in turn, underpins the ecological integrity of the ecosystem, and supports its capacity to supply ecosystem services on an ongoing basis.  Adapted from United Nations et al. (2021) <a href="#">System of Environmental-Economic Accounting – Ecosystem Accounting</a>
<b>Ecosystem connectivity</b>	The degree to which the landscape facilitates the movement of organisms (animals, plant reproductive structures, pollen, pollinators, spores, etc.) and other environmentally important resources, such as nutrients and moisture, between similar habitats. Connectivity is hampered by fragmentation.  Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services <a href="#">IPBES Glossary</a>
<b>Ecosystem extent</b>	Area coverage of a particular ecosystem, usually measured in terms of spatial area.  United Nations et al. (2021) <a href="#">System of Environmental-Economic Accounting – Ecosystem Accounting</a>

<b>Ecosystem function</b>	The flow of energy and materials through the biotic and abiotic components of an ecosystem. This includes many processes such as biomass production, trophic transfer through plants and animals, nutrient cycling, water dynamics and heat transfer.  <a href="#">Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2019) Global Assessment Report on Biodiversity and Ecosystem Services</a>
<b>Ecosystem health</b>	Used to describe the condition of an ecosystem, by analogy with human health. Note that there is no universally accepted benchmark for a healthy ecosystem. Rather, the apparent health status of an ecosystem can vary, depending upon which metrics are employed to assess it and which societal aspirations are driving the assessment.  <a href="#">Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services IPBES Glossary</a>
<b>Ecosystem protection, restoration and regeneration opportunity</b>	Activities that support the protection, regeneration or restoration of habitats and ecosystems, including areas both within and outside the organisation's direct control.  TNFD
<b>Ecosystem services</b>	The contributions of ecosystems to the benefits that are used in economic and other human activity.  <a href="#">United Nations et al. (2021) System of Environmental-Economic Accounting – Ecosystem Accounting</a>
<b>Ecosystem stability risk</b>	Risk of an event that leads to a destabilisation of a critical natural system, so it no longer can provide ecosystem services in the same manner as before. For example, tipping points are reached, regime shifts and/or ecosystem collapses occur that generate forms of physical and/or transition risk. This is one form of nature-related systemic risk.  <a href="#">Goldin, I &amp; Mariathasan, M (2014) The Butterfly Defect: How Globalisation Creates Systemic Risks, and What to Do about It</a> , <a href="#">International Risk Governance Centre (2018) IRGC Guidelines for the Governance of Systemic Risks</a> , <a href="#">Kaufmann, G &amp; Scott, K (2003) What Is Systemic Risk, and Do Bank Regulators Retard or Contribute to It?</a> , <a href="#">Network for Greening the Financial System (2023) Nature-related Financial Risks: A Conceptual Framework to guide Action by Central Banks and Supervisors</a> , <a href="#">Organisation for Economic Co-operation and Development (2023, forthcoming) A prudential framework for assessing nature-related financial risks: identifying and navigating biodiversity risks</a>

<b>Ecosystem type</b>	<p>TNFD refers to the IUCN Global Ecosystem Typology 2.0 that defines 25 biomes and 108 ecosystem functional groups and reflects a distinct set of abiotic and biotic components and their interactions.</p> <p>Keith A. et al. (2020) <a href="#">IUCN Global Ecosystem Typology 2.0: Descriptive Profiles for Biomes and Ecosystem Functional Groups</a></p>
<b>Efficient use of nature-related resources</b>	<p>Drawing from the Earth's limited resources in a sustainable manner while minimising impacts on nature</p> <p>Adapted from European Commission (2017) <a href="#">Circular Economy</a></p>
<b>Environmental assets</b>	<p>The naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity.</p> <p>United Nations. et al. (2021) <a href="#">System of Environmental-Economic Accounting – Ecosystem Accounting: Final Draft</a></p>
<b>Expense</b>	<p>Decreases in assets, or increases in liabilities, that result in decreases in equity, other than those relating to distributions to holders of equity claims.</p> <p>International Financial Reporting Standard (2015) <a href="#">Conceptual Framework: Elements of Financial Statements – Definitions and Recognition</a></p>
<b>Exposure (general)</b>	<p>The presence of people, livelihoods, species or ecosystems, environmental functions, services and resources, infrastructure, or economic, social or cultural assets in places and settings that could be adversely affected.</p> <p>Intergovernmental Panel on Climate Change (2022) <a href="#">Annex II Glossary in Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change</a></p>
<b>Extended producer responsibility</b>	<p>An environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle. An extended producer responsibility (EPR) policy is characterised by:</p> <ul style="list-style-type: none"> <li>• The shifting of responsibility (physically and/or economically; fully or partially) upstream toward the producer and away from municipalities; and</li> <li>• The provision of incentives to producers to take into account environmental considerations when designing their products.</li> </ul> <p>Organisation for Economic Corporation and Development (2016) <a href="#">Extended producer responsibility</a></p>

<b>Extinction risk (species)</b>	<p>Threat status of a species and how activities/pressures may affect the threat status. The indicator may also measure change in the relevant habitat for a threatened species as a proxy for impact on the local population's extinction risk.</p> <p>European Commission (2023) <a href="#">Annex 1 to the Commission Delegated Regulation, supplementing Directive 2013/34/EU as amended by Directive 2022/2464 (CSRD), as regards sustainability reporting standards (ESRS E4)</a></p>
<b>Final ecosystem services</b>	<p>When an ecological end-product transitions to being either an economic benefit or something that can be directly used or appreciated by people.</p> <p>Finisdore, J et al (2020) <a href="#">The 18 benefits of using ecosystem services classification systems</a>, Climate Disclosure Standards Board (2021) <a href="#">Framework Application Guidance for Biodiversity-related Disclosures</a></p>
<b>Financial exposure</b>	<p>The amount (usually expressed in monetary terms) of exposure to the risk of suffering a loss in a particular transaction or with respect to any kind of investments. It represents the amount an investor stands to lose in an investment should the investment fail.</p> <p>Corporate Finance Institute <a href="#">Basel Committee on Banking Supervision (BCBS) – Concept of Exposure at Default (or credit exposure) for Banks</a></p>
<b>Financial stability risk</b>	<p>Risk that a materialisation and compounding of physical and/or transition risk leads to the destabilisation of an entire financial system. It is one type of nature-related systemic risk.</p> <p>Goldin, I &amp; Mariathasan, M (2014) <a href="#">The Butterfly Defect: How Globalisation Creates Systemic Risks, and What to Do about It</a>, International Risk Governance Centre (2018) <a href="#">IRGC Guidelines for the Governance of Systemic Risks</a>, Kaufmann, G &amp; Scott, K (2003) <a href="#">What Is Systemic Risk, and Do Bank Regulators Retard or Contribute to It?</a>, Network for Greening the Financial System (2023) <a href="#">Nature-related Financial Risks: A Conceptual Framework to guide Action by Central Banks and Supervisors</a>, Organisation for Economic Co-operation and Development (2023, forthcoming) A prudential framework for assessing nature-related financial risks: identifying and navigating biodiversity risks</p>
<b>Fresh water returned</b>	<p>The fresh water discharged from a facility (directly or via a third party) into a freshwater body or aquifer.</p> <p>International Petroleum Industry Environmental Conservation Association (2020) <a href="#">Reporting Guidance for the Oil and Gas Industry</a></p>

<b>Freshwater</b>	<p>All permanent and temporary freshwater bodies as well as saline water bodies that are not directly connected to the oceans.</p> <p>The United States Geological Survey (USGS) (2018) <a href="#">Water Science Glossary of Terms</a>, World Health Organization (WHO) (2017) <a href="#">Guidelines for Drinking-water Quality</a>.</p>
<b>Freshwater use change</b>	<p>The change from one freshwater use category to another.</p> <p>Adapted from Science Based Targets Initiative (2022) <a href="#">Forest, Land and Agriculture Guidance Science Based Target-Setting Guidance</a></p>
<b>Government or regulator green investment taxonomy</b>	<p>A common framework or classification system, designed by authoritative bodies, such as governments or financial regulators, which establishes criteria for assessing whether investments can be defined as environmentally sustainable.</p> <p>Adapted from <a href="#">Green Finance Institute</a></p>
<b>Green finance instruments</b>	<p>Financial products and services for green investments such as green bonds and structured green funds.</p> <p>TNFD</p>
<b>Hazardous waste</b>	<p>Waste that possesses any of the characteristics contained in Annex III of the Basel Convention, or that is considered to be hazardous by national legislation.</p> <p>United Nations Environment Programme (1989) <a href="#">Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal</a>, GRI (2022) <a href="#">GRI Standards Glossary</a></p>
<b>High-risk natural commodities</b>	<p>High-risk natural commodities refer to commodities or products where production has significant negative impacts on nature.</p> <p>Organisations should refer to the SBTN High Impact Commodity List in the first instance, supplemented by TNFD sector-specific guidance for details on the types of high-risk natural commodities for each sector, where relevant. Organisations should also indicate what proportion of these commodities represented are threatened and CITES-listed species.</p> <p>Science Based Targets Network (2023) <a href="#">SBTN High Impact Commodity List</a></p>
<b>Impact drivers</b>	<p>A measurable quantity of a natural resource that is used as a natural input to production (e.g. the volume of sand and gravel used in construction) or a measurable non-product output of a business activity (e.g. a kilogram of NOx emissions released into the atmosphere by a manufacturing facility).</p> <p>Capitals Coalition (2016) <a href="#">Natural Capital Protocol</a></p>

<b>Impact materiality</b>	Information on the organisation's most significant impacts on the economy, environment, and people, including impacts on their human rights.  GRI (2021) <a href="#">GRI 3: Material topics 2021</a>
<b>Impact pathway</b>	An impact pathway describes how, as a result of a specific business activity, a particular impact driver results in changes in natural capital, and how these changes in natural capital affect different stakeholders.  Capitals Coalition (2016) <a href="#">Natural Capital Protocol</a>
<b>Impacts (on nature)</b>	Changes in the state of nature (quality or quantity), which may result in changes to the capacity of nature to provide social and economic functions. Impacts can be positive or negative. They can be the result of an organisation's or another party's actions and can be direct, indirect or cumulative. A single impact driver may be associated with multiple impacts.  Science Based Targets Network (2023) <a href="#">SBTN Glossary of Terms</a> , Climate Disclosure Standards Board (2021) <a href="#">Application Guidance for Biodiversity-related Disclosures</a>
<b>Indicator</b>	A quantitative or qualitative factor or variable that provides a simple and reliable means to measure performance. An indicator can be measured through one or multiple metrics.  OECD/DAC (2002) <a href="#">Glossary of Key Terms in Evaluation and Results Based Management Development Assistance Committee</a>
<b>Indicator (for measuring performance against goals or targets)</b>	A specific metric used to track performance or progress (positive or negative change) against a goal or target.  Science Based Targets Network (2023) <a href="#">SBTN Glossary of Terms</a>

<b>Indigenous Peoples</b>	<p>There is no formal definition adopted in international law. A strict definition is seen as unnecessary and undesirable.</p> <p>The United Nations use a working definition from the Martinez Cobo Study:</p> <p>'Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing on those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal system.'</p> <p>It also notes that an Indigenous person is: '... one who belongs to these indigenous populations through self-identification as indigenous (group consciousness) and is recognised and accepted by these populations as one of its members (acceptance by the group). This preserves for these communities the sovereign right and power to decide who belongs to them, without external interference.'</p> <p>According to ILO Convention 169, Indigenous Peoples are descendants of population 'which inhabited a country or geographical region during its conquest or colonisation or the establishment of present state boundaries' and 'retain some or all of their own social, economic, cultural and political institutions'.</p> <p>Asia Pacific Forum of National Human Rights Institutions and the Office of the United Nations High Commissioner for Human Rights (August 2013) <a href="#">The United Nations Declaration on the Rights of Indigenous Peoples, Office of the United Nations High Commissioner for Human Rights. A Manual for National Human Rights Institutions</a></p>
<b>Invasive alien species</b>	<p>Species whose introduction and/or spread by human action outside their natural distribution threatens biological diversity, food security and human health and well-being. 'Alien' refers to the species having been introduced outside its natural distribution ('exotic', "non-native" and 'nonindigenous' are synonyms for 'alien'). 'Invasive' means tending to expand into and modify ecosystems to which it has been introduced. Thus, a species may be alien without being invasive, or in the case of a species native to a region, it may increase and become invasive, without actually being an alien species.</p> <p>Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services <a href="#">IPBES Glossary</a>, European Commission (2023) <a href="#">Annex 2 to the Commission Delegated Regulation, supplementing Directive 2013/34/EU as amended by Directive 2022/2464 (CSRD), as regards sustainability reporting standards</a></p>

<b>Land</b>	<p>Land includes all dry land, its vegetation cover, nearby atmosphere and substrate (soils, rocks) to the rooting depth of plants, and associated animals and microbes.</p> <p>International Union for Conservation of Nature (2023) <a href="#">IUCN Global Ecosystem Typology 2.0: Descriptive Profiles for Biomes and Ecosystem Functional Groups</a></p>
<b>Landfilling</b>	<p>Landfilling: final depositing of solid waste at, below or above ground level at engineered disposal sites.</p> <p>GRI (2022) <a href="#">GRI Standards Glossary</a> from UN (1997) <i>Glossary of Environment Statistics, Studies in Methods, Series F, No. 67</i></p>
<b>Land footprint</b>	<p>A corporate's land footprint, known in life cycle assessment terms as "land occupation", is defined as the amount of agricultural land required per year to produce the products produced or sourced by a company, and it is reported in hectares per year. For crops, land occupation is also referred to as "harvested area" in the Food and Agriculture Organization's data portal FAOSTAT.</p> <p>Science Based Targets Network (2023) <a href="#">SBTN Glossary of Terms</a></p>
<b>Land use change</b>	<p>The change from one land use category to another. Land use change refers to the modification or management of natural environments into human dominated environments, such as settlements, semi-natural, agricultural areas and other living things and which may lead to a modification in land cover.</p> <p>Science Based Targets Initiative (2022) <a href="#">Forestry, Land and Agriculture Science Based Target-Setting Guidance</a>, IPBES <a href="#">Glossary</a>, European Commission (2023) <a href="#">Annex 2 to the Commission Delegated Regulation, supplementing Directive 2013/34/EU as amended by Directive 2022/2464 (CSRD), as regards sustainability reporting standards</a></p>
<b>Land use intensity</b>	<p>The reciprocal of yield, referring to the amount of land needed to produce a given unit of product. The unit of product in the denominator of this calculation can vary (e.g. weight, kilocalories, protein).</p> <p>Science Based Targets Network (2023) <a href="#">SBTN Glossary of Terms</a></p>
<b>Liability</b>	<p>A present obligation of the entity to transfer an economic resource as a result of past events.</p> <p>International Financial Reporting Standard (2015) <a href="#">Conceptual Framework: Elements of Financial Statements – Definitions and Recognition</a></p>

<b>Liability risk</b>	<p>Arising directly or indirectly from legal claims. As laws, regulations and case law related to an organisation's preparedness for nature action evolves, the incident or probability of contingent liabilities arising from an organisation may increase.</p> <p>Reference: Adapted from TCFD <a href="#">Implementing the Recommendations of the TCFD, Appendix Table A1.3</a></p>
<b>Light pollution</b>	<p>Light pollution refers to artificial light that alters the natural patterns of light and dark in ecosystems. It comprises direct glare, chronically increased illumination and temporary, unexpected fluctuations in lighting. The sources of ecological light pollution include sky glow, illuminated buildings, streetlights, fishing boats, security lights, lights on vehicles, flares on offshore oil platforms, and lights on undersea research vessels. While light pollution is eminently detrimental to nocturnal and migratory animals and to animals in flight, it also produces harmful effects on plants.</p> <p>Longcore, T., Rich, C. 2004. <a href="#">Ecological light pollution. Frontiers in Ecology and the Environment, 2[4]: 191-198</a></p>
<b>Liquidity risk</b>	<p>Banks' access to stable sources of funding could be reduced as market conditions change. Nature-related risks may cause banks' counterparties to draw down deposits and credit lines.</p> <p>For example, there may be pressure to liquidate assets due to rapid nature degradation as a result of crossing a tipping point or new regulations affecting particular assets that influence cash flows and collateral values.</p> <p>Adapted from Task Force on Climate-related Financial Disclosures (2017) <a href="#">Final Report: Recommendations on Climate-related Financial Disclosures</a>, Financial Stability Board (2022) <a href="#">Final report: Supervisory and Regulatory Approaches to Climate-related Risks</a>, Network for Greening the Financial System (2023) <a href="#">Nature-related Financial Risks: A Conceptual Framework to guide Action by Central Banks and Supervisors</a>, Organisation for Economic Co-operation and Development (2023, forthcoming) A prudential framework for assessing nature-related financial risks: identifying and navigating biodiversity risks</p>

<b>Local Communities</b>	<p>The term ‘Local Communities’ is used based on the characteristic listed by the Convention on Biological Diversity and its article 8 (j) which refer to: ‘Local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity’.</p> <p><a href="#">Convention on Biological Diversity, Article 8: In-situ Conservation</a></p> <p>The Convention on Biological Diversity in its decision XI/14, Article 8(j) and related provisions, ‘Takes note of the characteristics listed in section I of the annex to the report of the Expert Group Meeting as potentially useful advice in identifying local communities, within the mandate of the Convention.’</p> <p><a href="#">Convention on Biological Diversity, Decision adopted by the Conference of the Parties to the Convention on Biological Diversity at its Eleventh Meeting. XI/14. Article 8(j) and related provisions</a></p> <p>The experts recommended that a working definition may be possible based on the following characteristics, some of which could be considered essential: Local Communities living in rural and urban areas of various ecosystems may exhibit some of the following characteristics:</p> <ul style="list-style-type: none"><li>(a) Self-identification as a local community;</li><li>(b) Lifestyles linked to traditions associated with natural cycles (symbiotic relationships or dependence), the use of and dependence on biological resources and linked to the sustainable use of nature and biodiversity;</li><li>(c) The community occupies a definable territory<sup>79</sup> traditionally occupied and/or used, permanently or periodically. These territories are important for the maintenance of social, cultural and economic aspects of the community;</li><li>(d) Traditions (often referring to common history, culture, language, rituals, symbols and customs) that are dynamic and may evolve;</li><li>(e) Technology/knowledge/innovations/practices associated with the sustainable use and conservation of biological resources;</li><li>(f) Social cohesion and willingness to be represented as a local community;</li><li>(g) Traditional knowledge transmitted from generation to generation including in oral form;</li><li>(h) A set of social rules (e.g. that regulate land conflicts/sharing of benefits) and organisational-specific community/traditional/customary laws and institutions;</li></ul>
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<sup>79</sup> Territory is interpreted as lands and waters.

<b>Local Communities (Cont.)</b>	<ul style="list-style-type: none"> <li>(i) Expression of customary and/or collective rights;</li> <li>(j) Self-regulation by their customs and traditional forms of organisation and institutions;</li> <li>(k) Performance and maintenance of economic activities traditionally, including for subsistence, sustainable development and/or survival;</li> <li>(l) Biological (including genetic) and cultural heritage (bio-cultural heritage);</li> <li>(m) Spiritual and cultural values of biodiversity and territories;</li> <li>(n) Culture, including traditional cultural expressions captured through local languages, highlighting common interest and values;</li> <li>(o) Sometimes marginalised from modern geopolitical systems and structures;</li> <li>(p) Biodiversity often incorporated into traditional place names;</li> <li>(q) Foods and food preparation systems and traditional medicines are closely connected to biodiversity/environment;</li> <li>(r) May have had little or no prior contact with other sectors of society resulting in distinctness or may choose to remain distinct;</li> <li>(s) Practice of traditional occupations and livelihoods;</li> <li>(t) May live in extended family, clan or tribal structures;</li> <li>(u) Belief and value systems, including spirituality, are often linked to biodiversity;</li> <li>(v) Shared common property over land and natural resources;</li> <li>(w) Traditional right holders to natural resources;</li> <li>(x) Vulnerability to outsiders and little concept of intellectual property rights.</li> </ul> <p><u><a href="#">Report of the Expert Group Meeting of Local Community Representatives within the Context of Article 8(j) and Related Provisions of the Convention on Biological Diversity</a></u></p>
<b>Market opportunity</b>	<p>Changing dynamics in overall markets, such as access to new markets or locations, which arise from other opportunity categories as a result of changing conditions, including consumer demands, consumer and investor sentiment and stakeholder dynamics.</p> <p>TNFD</p>

<b>Market risk</b>	<p>Changing dynamics in overall markets, including changes in consumer preferences, which arise from other risk categories as a result of changing physical, regulatory, technological and reputational conditions and stakeholder dynamics.</p> <p>Adapted from Task Force on Climate-related Financial Disclosures (2017) <a href="#">Final Report: Recommendations on Climate-related Financial Disclosures</a>, Financial Stability Board (2022) <a href="#">Final report: Supervisory and Regulatory Approaches to Climate-related Risks</a>, Network for Greening the Financial System (2023) <a href="#">Nature-related Financial Risks: A Conceptual Framework to guide Action by Central Banks and Supervisors</a>, Organisation for Economic Co-operation and Development (2023, forthcoming) A prudential framework for assessing nature-related financial risks: identifying and navigating biodiversity risks</p>
<b>Materiality</b>	<p>Report preparers should use the definitional guidance regarding materiality provided by the regulatory authorities for their reporting jurisdiction(s).</p> <p>In the absence of any such guidance, the TNFD recommends that organisations apply the ISSB's approach to identifying information that is material for users of general financial reports as a baseline. Report preparers who want or need to report to a different materiality approach may apply an impact materiality approach to identify information in addition to the ISSB's baseline. With respect to impact materiality, the TNFD has aligned its recommendations (and supporting additional guidance) with the language and approach of the GRI's Sustainability Reporting Standards.</p> <p>Organisations seeking to align with Target 15 of the GBF will want to consider the application of an impact materiality lens to identify information that is incremental to the global baseline.</p> <p>International Financial Reporting Standards (2023) <a href="#">IFRS S1: General Requirements for Disclosure of Sustainability-related Financial Information</a>; GRI (2021) <a href="#">GRI 1: Foundation 2021, Section 2.2</a></p>
<b>Material locations</b>	<p>Locations where an organisation has identified material nature-related dependencies, impacts, risks and opportunities in its direct operations and upstream and downstream value chain(s).</p> <p>TNFD</p>
<b>Measurement (science-based targets)</b>	<p>The process of collecting data for baseline setting, monitoring and reporting of science-based targets.</p> <p>Science Based Targets Network (2023) <a href="#">SBTN Glossary of Terms</a></p>
<b>Metric</b>	<p>A system or standard of measurement</p> <p>Biodiversity Indicators Partnership (2011) <a href="#">Guidance for National Biodiversity Indicator Development and Use</a></p>

<b>Mitigation</b>	Action(s) taken to reduce the extent of a negative impact.  <a href="#">GRI (2022) GRI Standards Glossary</a> from <a href="#">UN (2012) The Corporate Responsibility to Respect Human Rights: An Interpretive Guide</a>
<b>Mitigation hierarchy (and conservation hierarchy)</b>	The mitigation hierarchy is the sequence of actions to anticipate and avoid, and where avoidance is not possible, minimise, and when impacts occur, restore, and where significant residual impacts remain, offset for biodiversity-related risks and impacts on affected communities and the environment.  The conservation hierarchy goes beyond mitigating impacts, to encompass any activities affecting nature. This means that conservation actions to address historical, systemic and non-attributable biodiversity loss can be accounted for in the same framework as actions to mitigate specific impacts.  The TNFD aligns to the SBTN AR3T Framework that covers actions to avoid future impacts, reduce current impacts, regenerate and restore ecosystems, and transform the systems in which companies are embedded. It is built on the mitigation hierarchy set out in the International Financial Corporation's (IFC) Performance Standard 6 and the Conservation Hierarchy.  Adapted from Cross Sector Biodiversity Initiative (2015) <a href="#">A cross sector guide for implementing the Mitigation Hierarchy: Executive Summary and Overview, Conservation hierarchy</a> , Science Based Targets Network (2023) <a href="#">Step 4. Act</a>
<b>Monitoring (science-based targets)</b>	Tracking progress towards targets.  <a href="#">Science Based Targets Network (2023) SBTN Glossary of Terms</a>
<b>Natural capital</b>	The stock of renewable and non-renewable natural resources (e.g. plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people.  <a href="#">Capitals Coalition (2016) Natural Capital Protocol</a>
<b>Natural commodities (resources)</b>	Natural assets (raw materials) occurring in nature that can be used for economic production or consumption.  <a href="#">Organisation for Economic Cooperation and Development (2008) OECD Glossary of Statistical Terms</a>

<b>Natural ecosystem</b>	An ecosystem that substantially resembles – in terms of species composition, structure and ecological function – one that is or would be found in a given area in the absence of major human impacts. This includes human-managed ecosystems where much of the natural species composition, structure and ecological function is present.  <a href="#">Science Based Targets Network (2023) Step 3: Measure, Set, Disclose: Land (Version 0.3)</a>
<b>Nature</b>	The natural world, with an emphasis on the diversity of living organisms (including people) and their interactions among themselves and with their environment.  Adapted from Diaz, S et al (2015) <a href="#">The IPBES Conceptual Framework – Connecting Nature and People</a>
<b>Nature loss</b>	The loss and/or decline of the state of nature. This includes, but is not limited to, the reduction of any aspect of biological diversity, such as diversity at the genetic, species and ecosystem levels in a particular area through death (including extinction), destruction or manual removal.  <a href="#">Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2019) Global Assessment Report on Biodiversity and Ecosystem Services</a>
<b>Nature's contribution to people</b>	All the contributions, both positive and negative, to people's quality of life.  <a href="#">Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services IPBES Glossary</a>
<b>Nature-based solutions</b>	Actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems that address societal, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services, resilience and biodiversity benefits.  Adapted from International Union for Conservation of Nature (2020) <a href="#">The IUCN Global Standard for Nature-based Solutions</a>
<b>Nature-positive</b>	A high-level goal and concept describing a future state of nature (e.g. biodiversity, ecosystem services and natural capital) that is greater than the current state.  <a href="#">Science Based Targets Network (2023) SBTN Glossary of Terms</a>
<b>Nature-related community development programs</b>	Plan that details actions to minimise, mitigate or compensate for adverse social and/or economic impacts, and/or to identify opportunities or actions to enhance positive impacts of a project on the community.  <a href="#">GRI (2022) GRI Standards Glossary</a>

<b>Nature-related opportunities</b>	<p>Activities that create positive outcomes for organisations and nature by creating positive impacts on nature or mitigating negative impacts on nature.</p> <p>Nature-related opportunities are generated through impacts and dependencies on nature, and can occur:</p> <ul style="list-style-type: none"> <li>When organisations avoid, reduce, mitigate or manage nature-related risks, for example, connected to the loss of nature and ecosystem services that the organisation and society depend on;</li> <li>Through the strategic transformation of business models, products, services, markets and investments that actively work to reverse the loss of nature, including by restoration, regeneration of nature and implementation of nature-based solutions.</li> </ul> <p>Adapted from WWF (2022) <a href="#">A Biodiversity Guide for Business</a></p>
<b>Nature-related physical risks</b>	<p>Nature-related physical risks are risks resulting from the degradation of nature (such as changes in ecosystem equilibria, including soil quality and species composition) and consequential loss of ecosystem services that economic activity depends upon. These risks can be chronic (e.g. a gradual decline of species diversity of pollinators resulting in reduced crop yields or water scarcity) or acute (e.g. natural disasters or forest spills). Nature-related physical risks arise as a result of changes in the biotic (living) and abiotic (non-living) conditions that support healthy, functioning ecosystems. These risks are usually location-specific.</p> <p>Network for Greening the Financial System (2023) <a href="#">Nature-related Financial Risks: A Conceptual Framework to guide Action by Central Banks and Supervisors</a>, Organisation for Economic Co-operation and Development (2023, forthcoming) <a href="#">A prudential framework for assessing nature-related financial risks: identifying and navigating biodiversity risks</a>, Financial Stability Board (2022) <a href="#">Supervisory and Regulatory Approaches to Climate-related Risks Final report</a>, International Association of Insurance Supervisors (2021) <a href="#">Application Paper on the Supervision of Climate-related Risks in the Insurance Sector</a>, Network for Greening the Financial System (2019) <a href="#">A Call for Action: Climate Change as a source of Financial Risk</a></p>
<b>Nature-related risks</b>	<p>In line with ISO, the TNFD defines nature-related risks as potential threats (effects of uncertainty) posed to an organisation that arise from its and wider society's dependencies and impacts on nature.</p> <p>International Organization for Standardization (2018) <a href="#">ISO 31000, Risk Management – Guidelines</a></p>

<b>Nature-related systemic risks</b>	<p>Nature-related systemic risks are risks arising from the breakdown of the entire system, rather than the failure of individual parts. Nature-related systemic risks are characterised by modest tipping points combining indirectly to produce large failures and cascading interactions of physical and transition risks. One loss triggers a chain of others and stops systems from recovering their equilibrium after a shock.</p> <p>Nature-related systemic risk covers more than only risk to a financial system (i.e. financial stability risk). It also covers the risks from the breakdown of natural systems (i.e. ecosystems).</p> <p><a href="#">Goldin, I &amp; Mariathasan, M (2014) The Butterfly Defect: How Globalisation Creates Systemic Risks, and What to Do about It</a>; International Risk Governance Centre (2018) <a href="#">IRGC Guidelines for the Governance of Systemic Risks</a>; Kaufmann, G &amp; Scott, K (2003) <a href="#">What Is Systemic Risk, and Do Bank Regulators Retard or Contribute to It?</a></p>
<b>Nature-related transition risks</b>	<p>Nature-related transition risks are risks to an organisation that stem from a misalignment of economic actors with actions aimed at protecting, restoring, and/or reducing negative impacts on nature. These risks can be prompted, for example, by changes in regulation and policy, legal precedent, technology, or investor sentiment and consumer preferences. They can also arise from activities aimed at restoring nature that no longer align with, for example, revised policies.</p> <p><a href="#">Network for Greening the Financial System (2019) A Call for Action: Climate Change as a Source of Financial Risk</a>, <a href="#">Network for Greening the Financial System (2021) Climate-related Litigation: Raising Awareness About a Growing Source of Risk</a>, <a href="#">Financial Stability Board (2022) Supervisory and Regulatory Approaches to Climate-related Risks Final report</a>, <a href="#">Network for Greening the Financial System (2023) Nature-related Financial Risks: A Conceptual Framework to guide Action by Central Banks and Supervisors</a>, <a href="#">Organisation for Economic Co-operation and Development (2023, forthcoming) A prudential framework for assessing nature-related financial risks: identifying and navigating biodiversity risks</a></p>
<b>Negatively impacted ecosystems</b>	Ecosystems which have been disturbed or disrupted as a result of human activity or natural occurrences, creating changes to the state of the ecosystem, such as degradation, habitat loss or species loss.
<b>Noise pollution</b>	<p>Harmful or unwanted sounds in the environment, which in specific local areas, can be measured and averaged over a period of time.</p> <p><a href="#">European Environment Agency (2000) EEA Glossary ETC/CDS. General Environmental Multilingual Thesaurus (GEMET)</a></p>

<b>Non-hazardous waste</b>	See definition of waste.
<b>Non-purposefully introduced species</b>	See definition of 'unintentional/intentional introduction of invasive alien species' Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services <a href="#">IPBES Glossary</a> , European Commission (2023) <a href="#">Annex 2 to the Commission Delegated Regulation, supplementing Directive 2013/34/EU as amended by Directive 2022/2464 (CSRD), as regards sustainability reporting standards</a>
<b>Ocean</b>	All connected saline ocean waters characterised by waves, tides and currents.
<b>Ocean use change</b>	The change from one ocean use category to another. Adapted from Science Based Targets Initiative (2022) <a href="#">Forest, Land and Agriculture Guidance Science Based Target-Setting Guidance</a>
<b>Operational risk</b>	<p>Increasing legal and regulatory compliance costs associated with investments and businesses.</p> <p>For example, a financial institution may face regulatory, reputational or liability risks as a result of financing a company engaged in activities that contribute to deforestation. Facilities/suppliers of the financial institution may be affected by flooding or landslides</p> <p>Adapted from Task Force on Climate-related Financial Disclosures (2017) <a href="#">Final Report: Recommendations on Climate-related Financial Disclosures</a>, Financial Stability Board (2022) <a href="#">Final report: Supervisory and Regulatory Approaches to Climate-related risks</a>, Network for Greening the Financial System (2023) <a href="#">Nature-related Financial Risks: A Conceptual Framework to guide Action by Central Banks and Supervisors</a>, Organisation for Economic Co-operation and Development (2023, forthcoming) A prudential framework for assessing nature-related financial risks: identifying and navigating biodiversity risks</p>
<b>Physical water risk</b>	Area of high physical water risk include limited water availability, flooding and poor quality of water. This also includes marine areas with high levels of land-based pollution.
<b>Plastic</b>	<p>Material containing a polymer (a large chain molecule with repeating molecular units) that can be moulded into a finished product. Examples include thermoplastics, polyurethanes, elastomers, thermosets, adhesives, coatings and sealants, and PP fibres.</p> <p>CDP (2023) <a href="#">Technical Note – Plastics Disclosure. CDP Water Security 2023</a></p>

<b>Plastic packaging</b>	<p>Plastic means a polymer material to which additives or substances may have been added. When assessing the amount of plastic in a packaging component, the additives are classed as part of the plastic.</p> <p>Plastics include polymers which are:</p> <ul style="list-style-type: none"> <li>• biodegradable</li> <li>• compostable</li> <li>• oxo-degradable</li> </ul> <p>If a plastic packaging component is made from multiple materials but contains more plastic by weight (including additives which form part of the plastic) than any other substance, it will be classed as a plastic packaging component.</p> <p>Ellen MacArthur Foundation (2022) <a href="#">New Plastics Economy Global Commitment</a></p>
<b>Policy risk</b>	<p>Changes in the policy context due to new (or enforcement of existing) policies associated with creating positive impacts on nature or mitigating negative impacts on nature.</p> <p>Adapted from: Task Force on Climate-related Financial Disclosures (2017) <a href="#">Final Report: Recommendations on Climate-related Financial Disclosures</a>, Financial Stability Board (2022) <a href="#">Final report: Supervisory and Regulatory Approaches to Climate-related risks</a>, Network for Greening the Financial System (2023) <a href="#">Nature-related Financial Risks: A Conceptual Framework to guide Action by Central Banks and Supervisors</a>, Organisation for Economic Co-operation and Development (2023, forthcoming) A prudential framework for assessing nature-related financial risks: identifying and navigating biodiversity risks</p>
<b>Pollution</b>	<p>Presence of substances and heat in air, water and/or land whose nature, location or quantity produce harmful and undesirable environmental effects.</p> <p><a href="#">UN Statistics Division Environment Glossary</a></p>
<b>Pollutants</b>	<p>Substances and heat in air, water and/or land whose nature, location or quantity produce harmful and undesirable environmental effects.</p> <p><a href="#">UN Statistics Division Environment Glossary</a></p>
<b>Pollutants removed from land, atmosphere, ocean and freshwater</b>	<p>Pollution removal (or remediation) is the removal of pollutants, including chemical substances and/or energy, that are judged to be having a negative impact on the environment, specifically soils, sediments and watercourses.</p> <p><a href="#">Nature Journal</a></p>

<b>Polymers</b>	A large chain molecule with repeating molecular units.  CDP (2023) <a href="#">Technical Note – Plastics Disclosure. CDP Water Security 2023</a>
<b>Principles of extended producer responsibility</b>	An environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle. An extended producer responsibility (EPR) policy is characterised by:  The shifting of responsibility (physically and/or economically; fully or partially) upstream toward the producer and away from municipalities; and  The provision of incentives to producers to take into account environmental considerations when designing their products.  Organisation for Economic Corporation and Development (2016) <a href="#">Extended Producer Responsibility</a>
<b>“Prior and informed consent” or “free, prior and informed consent” or “approval and involvement”</b>	Free implies that Indigenous Peoples and Local Communities are not pressured, intimidated, manipulated or unduly influenced and that their consent is given, without coercion. Prior implies seeking consent or approval sufficiently in advance of any authorisation to access traditional knowledge respecting the customary decision-making processes in accordance with national legislation and time requirements of Indigenous Peoples and Local Communities. Informed implies that information is provided that covers relevant aspects, such as the intended purpose of the access; its duration and scope; a preliminary assessment of the likely economic, social, cultural and environmental impacts, including potential risks; personnel likely to be involved in the execution of the access; procedures the access may entail; and benefit-sharing arrangements. Consent or approval is the agreement of the Indigenous Peoples and Local Communities who are holders of traditional knowledge or the competent authorities of those Indigenous Peoples and Local Communities, as appropriate, to grant access to their traditional knowledge to a potential user and includes the right not to grant consent or approval. Involvement refers to the full and effective participation of Indigenous Peoples and Local Communities in decision-making processes related to access to their traditional knowledge. Consultation and full and effective participation of Indigenous Peoples and Local Communities are crucial components of a consent or approval process.  Convention on Biological Diversity (2018) <a href="#">Glossary of Relevant Terms</a>

<b>Priority locations</b>	<p><b>Priority locations</b> are locations that are:</p> <p><b>Material locations:</b> Locations where an organisation has identified material nature-related dependencies, impacts, risks and opportunities in its direct operations and upstream and downstream value chain(s); and/or</p> <p><b>Sensitive location:</b> Locations where the assets and/or activities in its direct operations – and, where possible upstream and downstream value chain(s) – interface with nature in:</p> <ul style="list-style-type: none"> <li>• Areas important for biodiversity; and/or</li> <li>• Areas of high ecosystem integrity; and/or</li> <li>• Areas of rapid decline in ecosystem integrity; and/or</li> <li>• Areas of high physical water risks; and/or</li> <li>• Areas of importance for ecosystem service provision, including benefits to Indigenous Peoples, Local Communities and stakeholders.</li> </ul> <p>TNFD</p>
<b>Product and services opportunity</b>	<p>Value proposition related to the creation or delivery of products and services that protect, manage or restore nature, including technological innovations.</p> <p>TNFD</p>
<b>Rate of reuse and recycling</b>	<p>The ratio between total waste generated, excluding major mineral wastes, and the quantities that were managed through reuse and recycling.</p> <p>European Environment Agency (2022) <a href="#">Waste and recycling in Europe</a></p>
<b>Raw material content</b>	<p>Primary or secondary material that is used to produce a product</p> <p>European Commission (2023) <a href="#">Annex 2 to the Commission Delegated Regulation, supplementing Directive 2013/34/EU as amended by Directive 2022/2464 (CSRD), as regards sustainability reporting standards</a></p>
<b>Realm</b>	<p>Major components of the living, natural world that differ fundamentally in ecosystem organisation and function: terrestrial (land), freshwater, marine (ocean), subterranean and atmospheric. The TNFD's framework is based on four realms – land, freshwater, ocean and atmosphere. The subterranean realm is included within the land, freshwater and ocean realms.</p> <p>Adapted from Keith A. et al. (2020) <a href="#">IUCN Global Ecosystem Typology 2.0: Descriptive Profiles for Biomes and Ecosystem Functional Groups</a></p>

<b>Recyclable packaging</b>	<p>A packaging or packaging component is recyclable if its successful post-consumer collection, sorting and recycling is proven to work in practice and at scale.</p> <p>A package can be considered recyclable if its main packaging components, together representing &gt;95% of the entire packaging weight, are recyclable according to the above definition, and if the remaining minor components are compatible with the recycling process and do not hinder the recyclability of the main components. ‘At scale’ is considered a 30% recycling rate.</p> <p>Ellen MacArthur Foundation (2022) <a href="#">New Plastics Economy Global Commitment</a></p>
<b>Reference condition</b>	<p>The condition against which past, present and future ecosystem conditions are compared in order to derive metrics and measure relative change over time.</p> <p>An example could be a previous or desired state of nature that can be used for comparison. The choice of reference condition will depend on the business and environmental context.</p> <p>Further guidance on reference condition can be found in <a href="#">TNFD's additional guidance on the LEAP approach</a></p> <p>United Nations et al. (2021) <a href="#">System of Environmental-Economic Accounting – Ecosystem Accounting (SEEA EA)</a></p>
<b>Reputation risk</b>	<p>Changes in perception concerning a company’s actual or perceived nature impacts, including at a local, economic and societal level, that can result from direct company impacts, industry impacts and/or impacts of upstream/ downstream operations.</p> <p>Adapted from Task Force on Climate-related Financial Disclosures (2017) <a href="#">Final Report: Recommendations on Climate-related Financial Disclosures</a>, Financial Stability Board (2022) <a href="#">Final report: Supervisory and Regulatory Approaches to Climate-related risks</a>, Network for Greening the Financial System (2023) <a href="#">Nature-related Financial Risks: A Conceptual Framework to guide Action by Central Banks and Supervisors</a>, Organisation for Economic Co-operation and Development (2023, forthcoming) A prudential framework for assessing nature-related financial risks: identifying and navigating biodiversity risks</p>
<b>Reputational capital opportunity</b>	<p>Changes in perception concerning a company’s actual or perceived nature impacts, including the consequent impacts on society and engagement of stakeholders.</p> <p>TNFD</p>

<b>Resilience</b>	<p>Resilience is defined as having the capacity to live and develop with change and uncertainty. It provides capacities for turning risks into opportunities. This includes: (1) adaptive capacities to absorb shocks and turbulence and avoid unpleasant tipping points, thresholds and regime shifts; (2) capacities to prepare for, learn from and navigate uncertainty and surprise; (3) capacities for keeping options alive and creating space for innovation; and (4) capacities for systemic transformation in the face of crises and unsustainable development pathways and traps.</p> <p>Folke, C., R. Biggs, A.V. Norström, B. Reyers, and J. Rockström (2016), <a href="#">Social-Ecological Resilience and Biosphere-Based Sustainability Science</a>, <i>Ecology and Society</i> 21(3):41,</p> <p>Rockström, J., A.V. Norström, N. Matthews, R. Biggs, C. Folke, A. Harikishun, S. Huq, N. Krishnan, L. Warszawski, and D. Nel. (2023), <a href="#">Shaping a Resilient Future in Response to COVID-19</a>, <i>Nature Sustainability</i></p>
<b>Resource efficiency opportunity</b>	<p>Actions an organisation can take within its own operations or value chain in order to avoid or reduce impacts and dependencies on nature (for example, by utilising less natural resources), while achieving co-benefits such as improved operational efficiency or reduced costs (for example, micro irrigation that maximises plant health, reduces water use and reduces costs).</p> <p>TNFD</p>
<b>Restoration</b>	<p>The process of assisting the recovery of an area or ecosystem that has been degraded, damaged or destroyed. The aim of ecological restoration is to re-establish the ecosystem's composition, structure and function, usually bringing it back to its original (pre-disturbance) state or to a healthy state close to the original. An ecosystem is restored when it contains sufficient biotic and abiotic resources to sustain itself structurally and functionally and can continue its development without further assistance or subsidy. It will demonstrate resilience to normal ranges of environmental stress and disturbance and interact with contiguous ecosystems in terms of biotic and abiotic flows and cultural interactions. Ecosystem restoration is sometimes used interchangeably with ecological restoration, but ecological restoration always addresses biodiversity conservation and ecological integrity, whereas some approaches to ecosystem restoration may focus solely on the delivery of ecosystem services.</p> <p>Adapted from Gann G.D. et al. (2019) <a href="#">International Principles and Standards for the Practice of Ecological Restoration</a>. <i>Restoration Ecology</i> Volume 27, Issue S1</p>

<b>Reusable plastics</b>	An item of packaging can be defined as reusable if it is conceived, designed and marketed to carry out multiple trips in its lifetime by being refilled or reused for the same purpose for which it was conceived. Reusable packaging should be designed to be recyclable as far as possible, as it will inevitably reach the maximum number of reuse cycles at some point, after which recycling ensures the material is kept in the economy.  Ellen MacArthur Foundation (2022) <a href="#">New Plastics Economy Global Commitment</a>
<b>Revenue</b>	Revenue is the gross inflow of economic benefits during a financial year arising from the course of the ordinary activities of an entity when those inflows result in increases in equity, other than increases relating to contributions from equity participants.  Adapted from International Financial Reporting Standards <a href="#">IAS 18 Revenue</a>
<b>Scenarios</b>	A scenario is a logically consistent story that describes a plausible future. It identifies some significant events, the main actors and their motivations, and how the world functions in this plausible future. It is intended to challenge thinking about what the future might be like and how they might respond under circumstances different from those they face today. Scenarios explore a broad set of uncertainties, at least some of which represent discontinuities with existing planning models. Scenarios are also typically designed in part to identify risks that could emerge over the course of a longer time frame (e.g. multiple years), which typically take shape at the intersection of several seemingly unconnected uncertainties.  Adapted from Task Force on Climate-related Financial Disclosures (2020) <a href="#">Guidance on Scenario Analysis for Non-Financial Companies</a>
<b>Science-based targets for nature (or SBTs)</b>	Measurable, actionable and time-bound objectives based on the best available science that allow actors to align with Earth's limits and societal sustainability goals.  Science Based Targets Network (2023) <a href="#">SBTN Glossary of Terms</a>
<b>Scope 1, 2 and 3 emissions</b>	Refer to <a href="#">TCFD Glossary</a> and/or GHG Protocol for climate-related definitions.

<b>Sensitive locations</b>	<p>Locations where the assets and/or activities in an organisation's direct operations – and, where possible, upstream and downstream value chain(s) – interface with nature in:</p> <ul style="list-style-type: none"> <li>• Areas important for biodiversity; and/or</li> <li>• Areas of high ecosystem integrity; and/or</li> <li>• Areas of rapid decline in ecosystem integrity; and/or</li> <li>• Areas of high physical water risks; and/or</li> <li>• Areas of importance for ecosystem service provision, including benefits to Indigenous Peoples, Local Communities and stakeholders.</li> </ul> <p>TNFD</p>
<b>Species</b>	<p>A fundamental category for the classification and description of organisms, defined in various ways but typically on the basis of reproductive capacity; i.e. the members of a species can reproduce with each other to produce fertile offspring but cannot do so with individuals outside the species.</p> <p>Levin, S. A. ed. (2009) <a href="#">The Princeton Guide to Ecology</a> (Princeton, NJ: Princeton University Press)</p>
<b>Stakeholder engagement</b>	<p>Stakeholder engagement involves interactive processes of engagement with relevant stakeholders through, for example, meetings, hearings or consultation proceedings. Effective stakeholder engagement is characterised by two-way communication and depends on the good faith of the participants on both sides.</p> <p><a href="#">UN Guiding principles reporting framework</a></p>
<b>Stakeholders</b>	<p>Stakeholders are persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively.</p> <p><a href="#">UN Guiding principles reporting framework</a></p>
<b>State of nature</b>	<p>The condition and extent of ecosystems, and species population size and extinction risk, including positive or negative changes.</p> <p>Adapted from United Nations et al. (2021) <a href="#">System of Environmental-Economic Accounting – Ecosystem Accounting (SEEA EA)</a></p>
<b>Supply chain</b>	<p>The linear sequence of processes, actors and locations involved in the production, distribution and sale of a commodity from start to finish.</p> <p>Task Force on Climate-related Financial Disclosures (2020) <a href="#">Guidance on Scenario Analysis for Non-Financial Companies</a></p>

<b>Sustainable production / sustainable consumption and production</b>	The use of services and related products, which respond to basic needs and bring a better quality of life while minimising the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardise the needs of future generations.  United Nations Environment Programme <a href="#">Sustainable Consumption and Production Policies</a>
<b>Sustainable use of natural resources opportunity</b>	Substitution of natural resources by recycled, regenerative, renewable and/or ethically responsibly sourced organic inputs.  TNFD
<b>Sustainably managed</b>	The use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.  European Commission (2023) <a href="#">Annex 2 to the Commission Delegated Regulation, supplementing Directive 2013/34/EU as amended by Directive 2022/2464 (CSRD), as regards sustainability reporting standards</a>
<b>Target</b>	Specific quantitative and time-bound objective, preferably with a defined means of measurement.  Science Based Targets Network (2020) <a href="#">Science Based Targets for Nature: Initial Guidance for Business</a>
<b>Technology risk</b>	Substitution of products or services with a reduced impact on nature and/or reduced dependency on nature.  For example, loss of pollinators may be replaced by mechanical pollination technologies.  Adapted from Task Force on Climate-related Financial Disclosures (2017) <a href="#">Final Report: Recommendations on Climate-related Financial Disclosures</a> , Financial Stability Board (2022) <a href="#">Final report: Supervisory and Regulatory Approaches to Climate-related risks</a> , Network for Greening the Financial System (2023) <a href="#">Nature-related Financial Risks: A Conceptual Framework to guide Action by Central Banks and Supervisors</a> , Organisation for Economic Co-operation and Development (2023, forthcoming) A prudential framework for assessing nature-related financial risks: identifying and navigating biodiversity risks
<b>Threatened ecosystem</b>	Ecosystem assessed as facing a high risk of collapse in the medium term.  International Union for Conservation of Nature (2017) <a href="#">Guidelines for the Application of IUCN Red list of Ecosystems Categories and Criteria</a>

<b>Threatened species</b>	Species assessed as facing a high risk of extinction in the wild in the medium term.  International Union for Conservation of Nature (2012) <a href="#">IUCN red list categories and criteria</a>
<b>Traceable</b>	The ability to follow a product or its components through stages of the supply chain (e.g. production, processing, manufacturing and distribution).  Accountability Framework Initiative (2019) <a href="#">Terms and Definitions</a>
<b>Traditional knowledge</b>	The knowledge, innovations and practices of Indigenous and Local Communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity.  Convention on Biological Diversity (2019) <a href="#">Glossary of relevant key terms in the context of Article 8(j) and Related Provisions</a>
<b>Unintentional/intentional introduction of invasive alien species</b>	Species whose intentional or unintentional introduction and/or spread by human action outside their natural distribution threatens biological diversity, food security and human health and well-being. ‘Alien’ refers to the species having been introduced outside its natural distribution (‘exotic’, ‘non-native’ and ‘nonindigenous’ are synonyms for ‘alien’). ‘Invasive’ means tending to expand into and modify ecosystems to which it has been introduced. Thus, a species may be alien without being invasive, or, in the case of a species native to a region, it may increase and become invasive, without actually being an alien species.  Adapted from Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services <a href="#">IPBES Glossary</a> , European Commission (2023) <a href="#">Annex 2 to the Commission Delegated Regulation, supplementing Directive 2013/34/EU as amended by Directive 2022/2464 (CSRD)</a> , as regards sustainability reporting standards
<b>Upstream</b>	All activities associated with suppliers, such as. production or cultivation, sourcing of commodities or goods and the transportation of commodities to manufacturing facilities.  Science Based Targets Network (2023) <a href="#">SBTN Glossary of Terms</a>
<b>Valuation</b>	The process of estimating the relative importance, worth or usefulness of natural capital to people (or to a business) in a particular context. Valuation may involve qualitative, quantitative or monetary approaches, or a combination of these.  Capitals Coalition (2016) <a href="#">Natural Capital Protocol</a>
<b>Valuation technique</b>	The specific method used to determine the importance, worth or usefulness of something in a particular context.  Capitals Coalition (2016) <a href="#">Natural Capital Protocol</a>

<b>Value chain</b>	<p>The full range of interactions, resources and relationships related to a reporting entity's business model and the external environment in which it operates.</p> <p>A value chain encompasses the interactions, resources and relationships an entity uses and depends on to create its products or services from conception to delivery, consumption and end-of-life, including interactions, resources and relationships in the entity's operations, such as human resources; those along its supply, marketing and distribution channels, such as materials and service sourcing, and product and service sale and delivery; and the financing, geographical, geopolitical and regulatory environments in which the entity operates.</p> <p>International Financial Reporting Standard (2023) <a href="#">S1 General Requirements for Disclosure of Sustainability-related Financial Information</a></p>
<b>Voluntary conservation/ voluntary restoration</b>	<p>Voluntary conservation and restoration refer to conservation and restoration activities that are not required by statutes or regulations.</p> <p>TNFD</p>
<b>Vulnerability</b>	<p>The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.</p> <p>IPCC (2022), Annex II: Glossary in: Climate Change 2022: <a href="#">Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change</a></p>
<b>Waste</b>	<p>Any substance or object that the holder discards, intends to discard or is required to discard. Waste can be defined according to the national legislation at the point of generation.</p> <p>Adapted from United Nations Environment Programme (1989) Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, GRI (2022) <a href="#">GRI Standards Glossary</a></p>
<b>Waste disposal</b>	<p>Disposal is any operation which is not recovery, even where the operation has as a secondary consequence the recovery of energy.</p> <p>Note: Disposal is the end-of-life management of discarded products, materials and resources in a sink or through a chemical or thermal transformation that makes these products, materials and resources unavailable for further use.</p> <p>GRI (2022) <a href="#">GRI Standards Glossary</a> from EU (2008) Waste Framework Directive (Directive 2008/98/EC)</p>

<b>Waste disposal methods</b>	Methods by which waste is treated or disposed of. Examples include composting, deep well injection, incineration, landfill, onsite storage, recovery, recycling and reuse.  GRI (2022) <a href="#">GRI Standards Glossary</a> from UN (1997) <i>Glossary of Environment Statistics, Studies in Methods, Series F, No. 67</i>
<b>Waste incineration</b>	Controlled burning of waste at high temperatures.  GRI (2022) <a href="#">GRI Standards Glossary</a> from UN (1997) <i>Glossary of Environment Statistics, Studies in Methods, Series F, No. 67</i>
<b>Waste recovered</b>	Components of products or materials that have become waste that are prepared to fulfill a purpose in place of new products, components or materials that would otherwise have been used for that purpose.  United Nations Environment Programme (1989) <a href="#">Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal</a>
<b>Waste recycled</b>	Reprocessing of products or components of products that have become waste to make new materials.  United Nations Environment Programme (1989) <a href="#">Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal</a>
<b>Waste reused</b>	Products or components of products that have become waste that are prepared to be put to use for the same purpose for which they were conceived.  Adapted from European Union (2008) <a href="#">Waste Framework Directive (Directive 2008/98/EC)</a>
<b>Wastewater discharge</b>	Sum of effluents, used water or other water leaving the boundaries of the organisation and released to surface water, groundwater, seawater or a third party, for which the organisation has no further use, over the course of the reporting period.  Adapted from GRI (2022) <a href="#">GRI Standards Glossary</a>  European Commission (2023) <a href="#">Annex 2 to the Commission Delegated Regulation, supplementing Directive 2013/34/EU as amended by Directive 2022/2464 (CSRD), as regards sustainability reporting standards</a>
<b>Wastewater temperature</b>	A critical parameter to monitor for any biological wastewater treatment system. Bacteria in wastewater treatment systems function best when under a 20-35C temperature range.  TNFD

<b>Water consumption</b>	<p>The amount of water drawn into the boundaries of the undertaking (or facility) and not discharged back to the water environment or a third party over the course of the reporting period. Water consumption is equal to water withdrawal less water discharge.</p> <p>European Commission (2023) <a href="#">Annex 2 to the Commission Delegated Regulation, supplementing Directive 2013/34/EU as amended by Directive 2022/2464 (CSRD), as regards sustainability reporting standards</a></p>
<b>Water produced</b>	<p>Water that enters the organisation's boundary as a result of extraction (e.g. crude oil), processing (e.g. sugar cane crushing) or use of any raw material, and has to consequently be managed by the organisation.</p> <p>CDP (2023) <a href="#">Water Security Questionnaire</a>, GRI (2022) <a href="#">GRI Standards Glossary</a></p>
<b>Water quality</b>	<p>The biological, chemical and physical properties of water, often assessed against a usage standard, such as whether its quality can support freshwater biodiversity, be used for drinking water for people, or irrigation. Note that standards and definitions of water quality vary across use cases.</p> <p>United Nations Environment Programme (2008) <a href="#">Water Quality Index for Biodiversity Technical Development Document</a></p>
<b>Water reduced</b>	<p>An organisation can reduce its water withdrawal and consumption and associated impacts through efficiency measures, such as water recycling and reuse, and process redesign.</p> <p>TNFD</p>
<b>Water reused/ recycled</b>	<p>Water and wastewater (treated or untreated) that has been used more than once before being discharged from the undertaking's or shared facilities' boundary, so that water demand is reduced. This may be in the same process (recycled) or in a different process within the same facility (own or shared with other undertakings) or in another of the undertaking's facilities (reused).</p> <p>European Commission (2023) <a href="#">Annex 2 to the Commission Delegated Regulation, supplementing Directive 2013/34/EU as amended by Directive 2022/2464 (CSRD), as regards sustainability reporting standards</a></p>

<b>Water scarcity</b>	<p>Refers to the volumetric abundance, or lack thereof, of freshwater resources. Scarcity is human driven; it is a function of the volume of human water consumption relative to the volume of water resources in a given area. As such, an arid region with very little water, but no human water consumption would not be considered scarce, but rather arid. Water scarcity is a physical, objective reality that can be measured consistently across regions and over time. Water scarcity reflects the physical abundance of freshwater rather than whether that water is suitable for use. For instance, a region may have abundant water resources (and thus not be considered water scarce), but have such severe pollution that those supplies are unfit for human or ecological uses.</p> <p>The CEO Water Mandate (2014) Corporate Water Disclosure Guidelines, European Commission (2023) <a href="#">Annex 2 to the Commission Delegated Regulation, supplementing Directive 2013/34/EU as amended by Directive 2022/2464 (CSRD), as regards sustainability reporting standards</a></p>
<b>Water sources</b>	<p>Water sources include water withdrawn from surface water, groundwater, seawater, produced water and third-party water.</p> <p>GRI (2018) <a href="#">GRI 303: Water and Effluents</a></p>
<b>Water stress (areas of)</b>	<p>Water stressed (region): defined in three levels: 25%, below which no water scarcity exists; 60%, indicating approaching scarcity; 75%, above which strong water scarcity is identified. Anything above the 60% figure, approaching scarcity, is considered ‘water stressed’.</p> <p>Adapted from UN Water (2021) <a href="#">Summary Progress Update 2021: SDG 6 — water and sanitation for all</a></p>
<b>Water withdrawal</b>	<p>The sum of all water drawn into the boundaries of the undertaking from all sources for any use over the course of the reporting period.</p> <p>European Commission (2023) <a href="#">Annex 2 to the Commission Delegated Regulation, supplementing Directive 2013/34/EU as amended by Directive 2022/2464 (CSRD), as regards sustainability reporting standards</a></p>
<b>Wild species</b>	<p>Refers to populations of any native species that have not been domesticated through multigenerational selection for particular traits, and which can survive independently of human intervention that may occur in any environment. This does not imply a complete absence of human management and recognises various intermediate states between wild and domesticated.</p> <p>Intergovernmental Platform on Biodiversity and Ecosystem Services (2022) <a href="#">IPBES Sustainable Use of Wild Species Assessment, Chapter 1</a></p>

## Acronyms

AR3T – SBTN’s action framework for the mitigation hierarchy (Avoid, Reduce, Restore, Regenerate, Transformative action)	IPBES – Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
BCBS – Basel Committee on Banking Supervision	IPCC – Intergovernmental Panel on Climate Change
CBD – UN Convention on Biological Diversity	IPLCs – Indigenous Peoples and Local Communities
CDP – Carbon Disclosure Project	IRGC – International Risk Governance Council
CDSB – Climate Disclosures Standards Board	ISO – International Organization for Standardization
CIFF – Childrens’ Investment Fund Foundation	ISSB – International Sustainability Standards Board
CITES – Convention on International Trade in Endangered Species of Wild Fauna and Flora	IUCN – International Union for Conservation of Nature
COP – Conference of the Parties	JFSA – Financial Services Agency of Japan
E/MSY – Extinctions per million species per year	LEAP – Locate, Evaluate, Assess, Prepare – TNFD’s approach for identification and assessment of nature-related issues
EFRAg – European Financial Reporting Advisory Group	N – Nitrogen
ESRS – European Sustainability Reporting Standard	NGFS – The Network of Central Banks and Supervisors for Greening the Financial System
FSB – Financial Sustainability Board	OECD – Organisation for Economic Co-operation and Development
GBF – Kunming-Montreal Global Biodiversity Framework	P – Phosphorus
GEF – Global Environment Facility	SASB – Sustainability Accounting Standards Board
GFI – Green Finance Institute	SBTi – Science Based Targets initiative
GHG – Greenhouse gas	SBTN – Science Based Targets Network
HICL – High Impact Commodity List	SME – Small and Medium Size Enterprise
IAASB – International Auditing and Assurance Standards Board	SRC – Stockholm Resilience Centre
IAIS – International Association of Insurance Supervisors	TCFD – Task Force on Climate-Related Financial Disclosures
IFRS – International Financial Reporting Standards Foundation	UNDP – United Nations Development Program
IIFB – International Indigenous Forum on Biodiversity	UNEP – United Nations Environment Programme
	UNEP FI – United Nations Environment Programme Finance Initiative

UNFCCC – United Nations Framework Convention on Climate Change

UNEP-WCMC – United Nations Environment Programme World Conservation Monitoring Centre

UN SEEA EA – United Nations System of Environmental-Economic Accounting – Ecosystem Accounting

WEF – World Economic Forum

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### Consultation group conveners

TNFD would like to thank the following business associations who worked with our Taskforce member organisations to convene [Consultation Groups](#) that brought together market participants in approximately 20 countries to raise awareness about the TNFD framework and nature-related issues, anchored in their geographic context.

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#### **TNFD Forum members**

The TNFD is grateful to members of the TNFD Forum for their inputs to specific Taskforce Working Groups and research project activities.

*Members include over 1,200 corporates, financial institutions, public sector institutions including regulators, pension funds and sovereign wealth funds,*

*academic and research organisations, business associations, inter-governmental organisations, as well as conservation and civil society organisations. The TNFD Forum is a global multi-disciplinary consultative group of institutions. A full list of TNFD Forum members is available at:*

<https://tnfd.global/about/the-tnfd-forum/>



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