

NATURE POSITIVE INITIATIVE



BUILDING CONSENSUS ON A UNIVERSAL SET OF STATE OF NATURE INDICATORS AND METRICS TECHNICAL OUTPUT REPORT

OCTOBER 2026

ABOUT THIS REPORT

This report presents the outputs of a two-year process to co-develop and build consensus around a universal, minimum set of metrics to assess changes in the state of nature and track progress toward nature-positive outcomes, concluding in July 2026.

The project was convened by the Nature Positive Initiative (NPI) and managed with support from Ernst & Young (EY) and The Biodiversity Consultancy (TBC). The marine metrics work was developed in collaboration with the World Economic Forum (WEF) and the Ocean Risk and Resilience Action Alliance (ORRAA).

We would like to acknowledge and thank the more than 500 individuals - representing their respective organisations - who have participated in workshops, focus groups, consultation surveys, piloting, feasibility assessments, and providing subject matter expertise as part of this project, including the staff of the 27 core member organisations of the Nature Positive Initiative, the World Economic Forum, and the Ocean Risk and Resilience Action Alliance. The outputs presented in this report could not have been developed without their generous support and meaningful contributions.

Citation: Nature Positive Initiative, 2026. Building consensus on a universal set of state of nature indicators and metrics: Technical Output Report. DOI: [10.5281/zenodo.23185439](https://doi.org/10.5281/zenodo.23185439)

Disclaimer: This report is for general informational purposes only. While all efforts were made to ensure the information was accurate at the time of writing, no representations or warranties of any kind are made regarding the completeness or accuracy of the contents. The Nature Positive Initiative and all report contributors disclaim all responsibility to any other party for any loss or liability that the other party may suffer or incur arising from, relating to, or in any way connected with the report, the provision of the report to the other party, or the reliance upon the report by the other party.

CONTENTS



Executive Summary	6
1. Introduction to the Nature Positive global goal	9
2. State of Nature Indicators and Metrics project objectives and scope	14
3. Consensus-building process	22
4. Final outputs	35
5. Rationale	38
6. Data and practicality	61
7. Next steps and calls to action	79
Appendix A: Piloting Programme case studies	86
Appendix B: Consultation and testing findings	121
Appendix C: Alignment with GBF Monitoring Framework	145
Appendix D: Glossary	147

ACRONYMS

BioBA	Biodiversity Benefit Accounting
BIRS	Biodiversity Indicator and Reporting System
CBD	Convention on Biological Diversity
CBD COP16	Sixteenth meeting of the Conference of the Parties to the Convention on Biological Diversity
CBD COP17	Seventeenth meeting of the Conference of the Parties to the Convention on Biological Diversity
CDP	Carbon Disclosure Project
CHA	Critical Habitat Assessment
CSRD	Corporate Sustainability Reporting Directive
eDNA	Environmental DNA
EEZ	Economic Exclusion Zone
ESRS	European Sustainability Reporting Standards
EY	Ernst & Young
GBF	Kunming-Montreal Global Biodiversity Framework
GBIF	Global Biodiversity Information Facility
GET	Global Ecosystem Typology
GIS	Geographic Information System
GRI	Global Reporting Initiative
IBAT	Integrated Biodiversity Assessment Tool
IBGE	Instituto Brasileiro de Geografia e Estatística
IFC	International Finance Corporation
IP&LCs	Indigenous Peoples and Local Communities
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
ISSB	International Sustainability Standards Board
ITV	Vale Technological Institute
IUCN	International Union for Conservation of Nature
KPI	Key Performance Indicator
LEAP	Locate, Evaluate, Assess, Prepare
LiDAR	Light Detection and Ranging
LIFE (metric)	Land-cover change Impacts on Future Extinctions
NGO	Non-Governmental Organisation
NPI	Nature Positive Initiative
OBIS	Ocean Biodiversity Information System
ORRAA	Ocean Risk & Resilience Action Alliance
SAF	Sustainable Aviation Fuel
SBTN	Science Based Targets Network
SoN	State of Nature
STAR	Species Threat Abatement and Restoration
STAR-t	Species Threat Abatement and Restoration threat
TBC	The Biodiversity Consultancy
TNFD	Taskforce on Nature-related Financial Disclosures
UMD	University of Maryland

ACRONYM	EXPANDED FORM
UNOC	United Nations Ocean Conference
UNSD	United Nations Statistics Division
VITO	Flemish Institute for Technological Research
WBCSD	World Business Council for Sustainable Development
WCS	Wildlife Conservation Society
WEF	World Economic Forum
WWF	World Wide Fund for Nature

EXECUTIVE SUMMARY

It is the fantastic diversity of life forms and the complexity of natural systems that sustain our economies, our health and wellbeing, the food, water and natural resources we need to thrive and develop, and the very functioning of the planet we live on.

Finding a practical way to measure the state of these complex systems is essential for monitoring whether we are on track to halt and reverse nature loss, in line with the definition of the Nature Positive goal and the mission of the Kunming-Montreal Global Biodiversity Framework (GBF, adopted by 196 Parties to the CBD), and for ensuring all actors but particularly corporations are addressing the significant nature-related dependencies, impacts, risks and opportunities they now face. However, there are a plethora of metrics available for assessing the state of nature, resulting in confusion and ultimately inertia, and a gap relating to them in most existing corporate frameworks and standards. In May 2024, the Nature Positive Initiative set out to build global consensus on a minimum set of universal state of nature indicators and metrics for embedding consistently across frameworks and standards.

The project aimed to identify a set of indicators and metrics that were suitable for as wide adoption as possible, striking the right balance between scientific rigour and practical use. Six key metric design criteria guided the process. The metrics had to be: (i) credible and science-based; (ii) responsive; (iii) able to incorporate new data and measurement techniques; (iv) aligned with existing standards and frameworks; (v) accessible and affordable; and (vi) auditable. Businesses and financial institutions (FIs) were identified as primary focus users of the metrics with national and local governments, landowners and stewards and civil society as other potential users. The engagement in their development spanned across academia, governments, UN agencies, NGOs and communities, financial institutions and of course companies from across a wide range of sectors. Open and transparent engagement and inclusive design were embedded in every step of the process, which included a metric landscape analysis, extensive technical workshops and stakeholder input sessions, a Piloting Programme, feasibility and readiness assessments and two public consultations. In total, over 500 individuals inputted to the development of the indicators and metrics from the perspective of the organisations they represented, with many more engaged through external outreach and events.

After a nearly two year journey, consensus has centred around four core indicators, to be applied at both site and landscape/seascape scales (Figure 0.1). Ecosystem extent, ecosystem condition, species extinction risk and species populations provide a simple, communicable but also credible framework for companies and other actors to explore their dependencies, impacts, risks and opportunities related to the state of nature. Each indicator is underpinned by a metric and supporting measurement guidance to help drive the consistency and comparability of measurements. The indicators and metrics are intended to remain stable over time, to give companies the confidence to invest time/resources as needed to integrate them into their measurement processes, while the guidance will continue to iterate to keep pace with the development of new data, tools and methodologies to enhance the practicality and robustness of measurements.

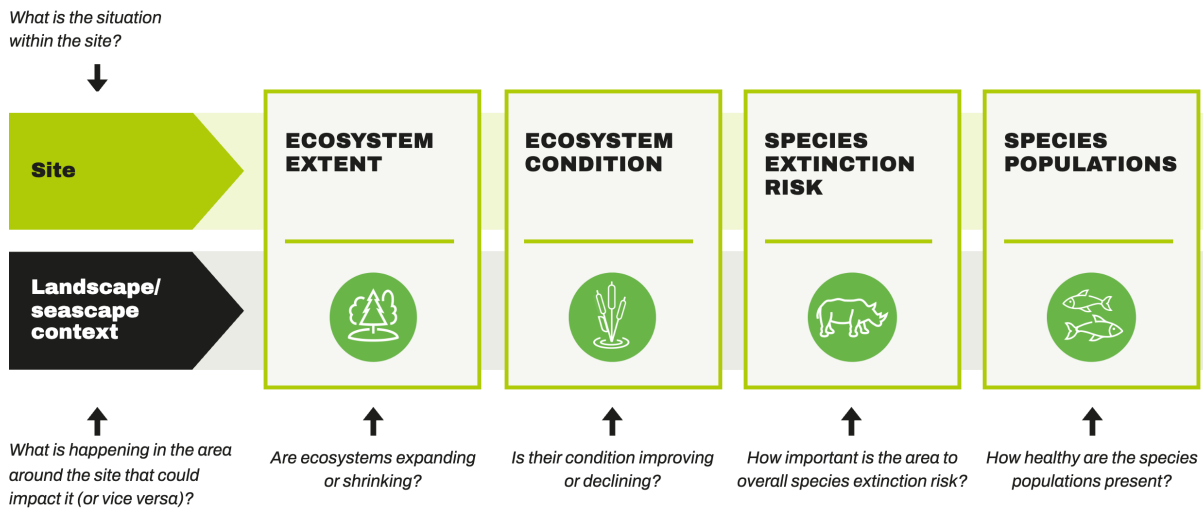


Figure 0.1: State of Nature Indicators

METRICS				
	Ecosystem extent	Ecosystem condition	Species extinction risk	Species populations
Site	Area, losses, and gains in extent of natural ecosystems (including semi-natural) by type (ha, %)	Area, losses and gains for each condition class (ha, %), by ecosystem type, considering elements of structure, function and composition.	Species extinction risk measurement showing the contributions of the site to global extinction risk	Number and proportion of priority species with estimated populations that are 1) declining, 2) slowing in decline, 3) stable, and 4) increasing
Landscape/seascape context	Area, losses, and gains in extent of natural ecosystems (including semi-natural) by type (ha, %)	Values and change in structural and functional connectivity between natural ecosystems	Species extinction risk measurement showing the contributions of the landscape/seascape to global extinction risk	Number and proportion of priority species with estimated populations that are 1) declining, 2) slowing in decline, 3) stable, and 4) increasing*

*Important note: To be measured where possible, however, it is recognised that further work on data availability needs to be undertaken to make measurement more feasible

Figure 0.2: State of Nature Indicators and Metrics Framework

This report aims to transparently document the consensus-building process followed, rationale for key decision making, readiness of indicators and metrics for adoption and calls to action to the wider community for steps to enhance the practicality of metric adoption. It provides the background for the [State of Nature Indicator and Metric Framework](#) and the [Initial Measurement Guidance](#) (version 1) and should be read in conjunction with these outputs. Please see naturepositive.org for more information on the Nature Positive Initiative, its work and further resources available.



01

INTRODUCTION TO THE NATURE POSITIVE GLOBAL GOAL

1. INTRODUCTION TO THE NATURE POSITIVE GLOBAL GOAL

On 19 December 2022, 196 Parties to the CBD adopted the Kunming-Montreal Global Biodiversity Framework (GBF), establishing a landmark agenda for global action on nature. The GBF sets out four long-term goals and 23 targets for 2030, in support of its mission, effectively adopting for the first time a global goal for nature:

“To take urgent action to halt and reverse biodiversity loss to put nature on a path to recovery for the benefit of people and planet by conserving and sustainably using biodiversity and by ensuring the fair and equitable sharing of benefits from the use of genetic resources, while providing the necessary means of implementation.”¹

While all 23 action targets are important for business, Target 15 is especially noteworthy, as it specifically calls on businesses and financial institutions to “regularly monitor, assess, and transparently disclose their risks, dependencies, and impacts on biodiversity.”

Since its adoption, momentum has increased, with nature receiving growing global attention and recognition. However, with 2030 fast approaching, decisions made today across policy, strategy, and investment will determine our collective ability to halt and reverse nature loss and sustain the ecological systems and functions that underpin ecosystems, climate, food and water security, local economies, business resilience, and human well-being.

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services’ (IPBES) Business and Biodiversity Assessment, published in February 2026, highlights that despite the systemic economic, financial, and human well-being risks posed by biodiversity decline, businesses continue to lag in taking action, largely due to limited knowledge and awareness. According to this report, a key barrier to action is the lack of data and knowledge required to quantify impacts and dependencies on biodiversity.

There is a clear need for increased focus and the establishment of meaningful targets to drive tangible action on the ground. Such action must be timely, ambitious, measurable, and effective if progress toward a nature-positive future is to be realised.



“The business imperative is clear, the knowledge and tools are in place and we at last have an aligned set of indicators and metrics. There can be no more delay: now we need nature positive action.”

Marco Lambertini Convener, Nature Positive Initiative

¹ 2050 Vision and 2030 Mission

WHAT IS NATURE POSITIVE?

Nature Positive is a global societal goal defined as “halt and reverse nature loss by 2030 on a 2020 baseline and achieve full recovery by 2050.”² Put simply, it means ensuring there is more nature in the world in 2030 than in 2020, with continued recovery after that.

Delivering the Nature Positive goal requires measurable positive biodiversity outcomes through improvements in the abundance, diversity, integrity, and resilience of species, ecosystems, and natural processes. The Nature Positive goal is designed to drive an absolute improvement in the state of nature relative to a defined baseline, strengthening nature’s capacity to support ecosystems, economies, and human well-being.

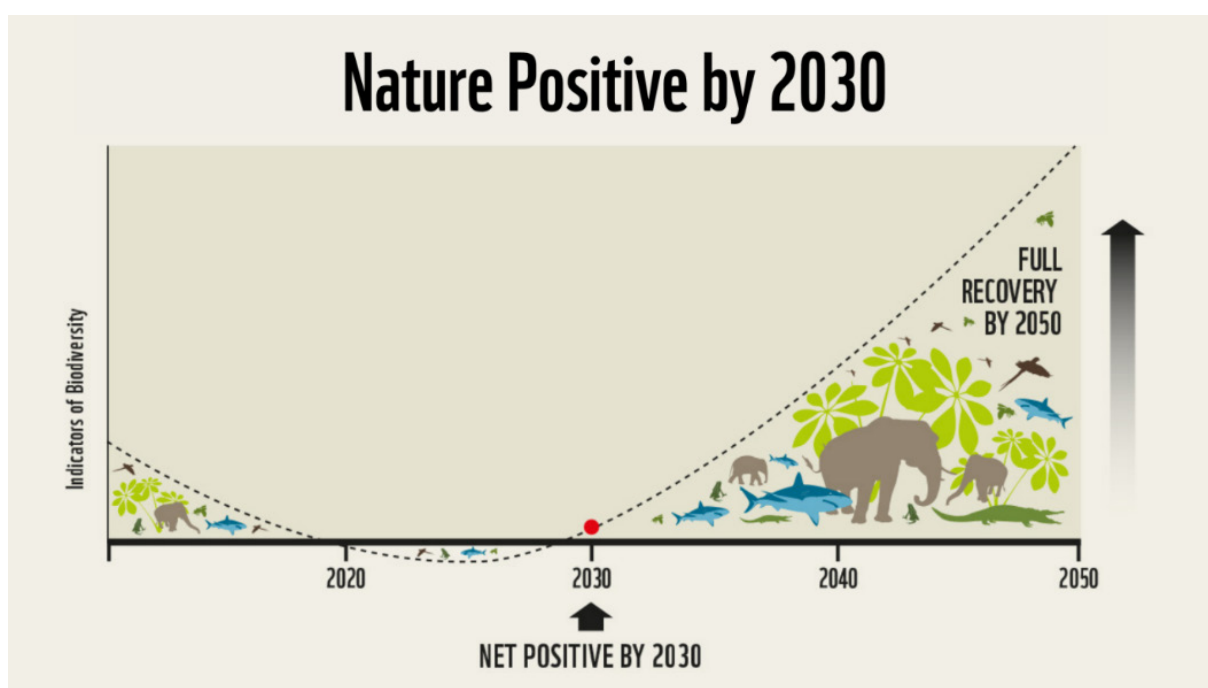


Figure 1.1: Bending the curve: The nature positive trajectory

GLOBAL ADOPTION

First conceived in 2020 with an initial definition published in 2021 and a more detailed one in 2023, the concept of Nature Positive has seen increasing adoption across governments, businesses, and civil society following the adoption of the GBF’s Mission³, whose language aligns with the definition of the Nature Positive goal. This also is reflected in the strong international endorsement of the International Union for Conservation of Nature’s (IUCN) Resolution 072⁴:

“Defining a robust Nature Positive for Business framework, to mobilise corporate, civil society and government support for high-integrity nature positive contributions aligned with the Kunming–Montreal Global Biodiversity Framework.”

² [The Definition of Nature Positive, 2023](#)

³ [GBF 2050 Vision and 2030 Mission](#)

⁴ [WCC-2025-Res-072 | IUCN Library System](#)

At the IUCN World Conservation Congress in October 2025, 154 national governments, representing 99% of those voting, supported this resolution, alongside 649 civil society organisations, representing 96% of those voting, signalling a high level of alignment around both the definition and the need for coordinated action.

This momentum is echoed in the private sector, where over 200 companies, financial institutions, professional services providers and technology and analytics developers have committed to the Nature Positive definition through joining the Nature Positive Forum. In parallel, leading business coalitions—including the World Business Council for Sustainable Development (WBCSD), the World Economic Forum (WEF), Business for Nature, Finance for Biodiversity and ICMM (International Council on Mining and Metals)—have developed sector-specific nature-positive roadmaps, tools and commitments to support implementation, further embedding the concept across industries.

Global convenings are reinforcing this trajectory. The first Global Nature Positive Summit, held in Sydney in 2024, and the second Summit, held in Kumamoto, Japan, in July 2026, brought together leaders from business, finance, government, science, and civil society to advance practical strategies and showcase progress toward halting and reversing nature loss. Over 2,700 people attended the second Summit in Kumamoto, more than two-thirds of which were from the private sector.



“Nature positive is about more than protecting nature. It’s about safeguarding the Earth systems that support our economies, societies, wellbeing.”

Johan Rockström Director, Potsdam Institute for Climate Impact Research

“Every sector of society must come together to make a real difference. Governments, companies, and financial institutions must commit to ‘Nature-Positive’ outcomes and each of us must do our part because we all depend on a healthy planet that can support us.”

Grethel Aguilar Director General, IUCN

“Business must reinvent itself – not to simply do less harm, but to protect, restore and sustainably manage nature.”

Eva Zabey CEO, Business for Nature

”

WHAT IS THE NATURE POSITIVE INITIATIVE?

The Nature Positive Initiative is a diverse alliance of 27 of the world's largest nature conservation organisations, sustainable business platforms, standard-setting organisations, academia, Indigenous and local government networks collaborating to preserve the integrity, align on guidance and support the implementation of the Nature Positive Global Goal for nature. The Initiative is reinforced by the Nature Positive Forum, a group of nearly 500 organisations and institutions that have committed to uphold the definition of Nature Positive by 2030 and pursue action to secure a nature-positive world.





02

STATE OF NATURE INDICATORS AND METRICS PROJECT OBJECTIVES AND SCOPE

2. STATE OF NATURE INDICATORS AND METRICS PROJECT OBJECTIVES AND SCOPE

PROBLEM STATEMENT

A shared approach to measuring the state of nature is essential for halting and reversing nature loss and for companies and financial institutions to understand their dependencies, impacts, risks and opportunities in standardised and comparable ways. However, reaching consensus on how to measure progress towards improved outcomes for biodiversity remained a major challenge following the adoption of the GBF in 2022, particularly for businesses.

While organisations were increasingly expected to demonstrate how their actions contribute to halting and reversing nature loss, there was still no widely agreed set of credible and practical metrics for assessing the state of nature and tracking outcomes over time. This limits the ability to connect actions and pressure-reduction efforts with measurable changes in nature, and creates barriers to engagement, accountability, recognition, assessment, disclosure and progress tracking.

Moreover, nature is inherently complex and diverse, and no single indicator or metric can fully capture its status across ecosystems, species and locations. At the same time, the large number of available state-of-nature metrics (over 600) makes it difficult for organisations to determine what to measure in a consistent, comparable and decision-useful way. This lack of convergence leads to uncertainty and, in some cases, inaction.

OBJECTIVE

The objective of the project was to build global consensus on a minimum set of measurable state of nature (SoN) indicators and metrics that could be used to assess changes in the state of nature and support progress towards halting and reversing nature loss. It aimed to identify a focused set that was scientifically credible, practical to apply, accessible to a broad range of users, and suitable for integration into existing and emerging nature-related standards, frameworks and guidance.

The need for urgent action on nature

Nature underpins the health of the planet and the well-being of all who inhabit it. It provides essential services, including food, medicine, clean air and water, climate regulation, protection from natural disasters, and places for recreation and cultural enrichment. However, nature is in a critical state of decline, with significant implications for people, economies and the achievement of the Sustainable Development Goals (SDGs)⁵.

The global commitment to halt and reverse nature loss by 2030 creates a clear and urgent timeframe for action. With only four years remaining, the ability to measure progress is becoming increasingly important. Yet organisations still lack the tools and consensus needed to assess whether actions are leading to measurable improvements in the state of nature. This gap makes it difficult to determine whether nature loss is being successfully reversed and to track progress in a credible, comparable and decision-useful way.

5 [THE 17 GOALS | Sustainable Development](#)

There is a clear business case for measuring nature. Robust and standardised measurement enables organisations to identify and manage nature-related risks and opportunities across operations and value chains, from resource dependencies to emerging sources of value creation. It supports alignment with voluntary frameworks and prepares companies for an evolving landscape of regulatory disclosure requirements. In addition, the ability to track and evidence performance allows organisations to communicate transparently with stakeholders and will be essential when credibly demonstrating contributions to positive biodiversity outcomes. As expectations increase, measuring nature becomes an essential tool for resilience, competitiveness and trust.

Achieving consensus will help to:

- Align the metrics applied by diverse groups of state and non-state actors, establishing a more consistent understanding of how to measure the state of nature and therefore business dependences on nature, through metrics that are both scientifically robust and practical enough to be applied at scale by businesses and other actors;
- Ensure that strategies and actions targeted at pressures and responses are contributing to nature's recovery;
- Provide clarity and confidence, today lacking, needed to ignite actions and collaboration at the scale and speed needed, through a standardised approach;
- Create accountability through the credible measurement of biodiversity-positive outcomes, and establish a basis for credible assessment, reporting/disclosure and legitimate recognition of each actors' contribution.

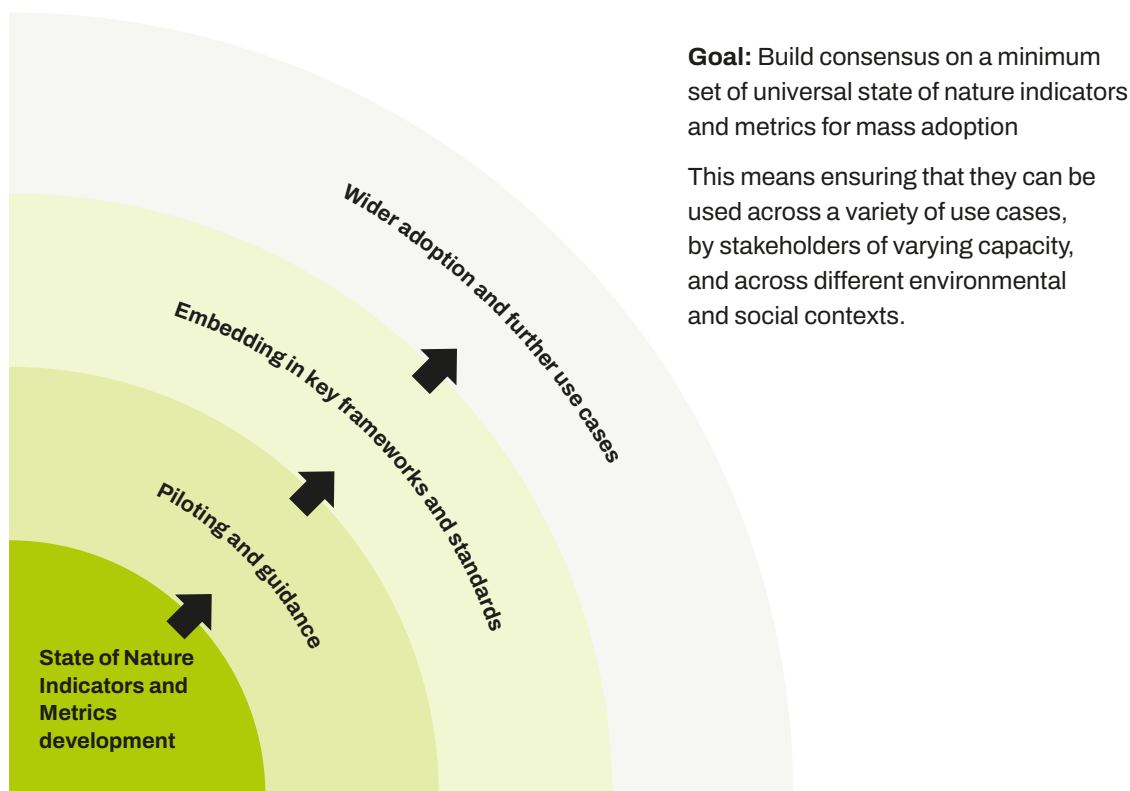


Figure 2.1: Project goal and rollout model



“We from the Convention on Biological Diversity look forward to working hand-in-hand with you and making sure that these metrics are fully aligned with the Kunming-Montreal Global Biodiversity Framework because through this alignment governments and all other actors can trace how they are moving forward towards the 23 targets of the Global Biodiversity Framework.”

Astrid Shomaker Executive Secretary, UN Convention on Biological Diversity

KEY OBJECTIVES

The project objectives translate this mission into the core principles that guided the development, testing and refinement of the SoN indicators and metrics.

- **Consensus-based approach** – The metrics are intended to achieve impact through broad adoption across actors, sectors and geographies. The project therefore aimed to build a strong, inclusive and co-developed global consensus around a set of metrics that are both credible and practical.
- **Holistic minimum set of metrics** – No single metric can capture the full diversity of nature across ecosystems, yet an overly extensive set can be impractical to apply. The project therefore established a minimum core set of aligned metrics that provide a robust proxy for the overall state of nature and can be supplemented for specific use cases.
- **Best available metrics** – Rather than developing new metrics, the approach focused on identifying the most robust and widely available existing metrics that meet the design criteria.
- **Suitable for universal, wide adoption** – The metrics were designed to be applicable across user groups, use cases and geographies. Attention has been given to ensuring they are fit for purpose for corporates and financial institutions, and accessible beyond leading organisations to those with more limited measurement capacity.
- **Aligned across realms** – The metrics were developed to maximise alignment across terrestrial, fresh-water and marine realms, enabling a more holistic approach to measuring nature. Additional realm-specific guidance where necessary supports their application.
- **Designed for embedding** – The metrics framework is intended to be embedded within existing frameworks and standards, including voluntary and mandatory disclosure standards, project monitoring approaches, corporate strategies, measurement tools and services etc.



“If you want to continue to create the prosperity humanity needs, we need to be able to use nature in a way that is sustainable. The best way to do this is to actually start to measure it.”

André Hoffmann Co-Chair of the Board of Trustees of the World Economic Forum and Vice Chairman of Roche Holding AG

METRIC DESIGN CRITERIA

The metric design criteria were used to evaluate candidate SoN metrics and identify a minimum viable set for further development, consultation and testing. They were designed to balance scientific credibility with practical implementation, recognising that no metric can fully capture the complexity of nature and that all metrics therefore act as proxies for biodiversity outcomes. The criteria ensure that selected metrics are responsive to change, flexible across users and contexts, aligned with international frameworks, accessible and affordable, and supported by evidence that could be independently assured.

- **Credible and science-based**, with viable datasets and fully documented logic of how the metric is calculated available;
- **Responsive** to change, with a clear link between values of the metric and the state of nature;
- **Flexible** to different types of data and a range of users to apply across different realms, and geographies;
- **Aligned** with international standards, particularly the GBF;
- **Accessible and affordable** for all users, regardless of their technical expertise or resources;
- **Auditable** and supported by empirical evidence or data that could be independently assured.



“Biodiversity is one of the most critical challenges of our time – and has huge relevance for business. Future-fit companies need to be accountable for their impacts on the natural world.”

Robin Hodess CEO, GRI

PROJECT SCOPE

State of nature metrics

The pressure-state-response framework provides a useful conceptual model for understanding how actions to reduce pressures on nature and implement responses can contribute to changes in the state of nature. It is used in nature-related standards and frameworks, including TNFD and SBTN, and is sometimes presented in the expanded DPSIR form: driver, pressure, state, impact and response. Within this model, SoN metrics help assess whether changes in pressures and responses are translating into measurable outcomes for ecosystems and species.

Figure 2.2 illustrates how SoN metrics complement pressure and response metrics within this framework.

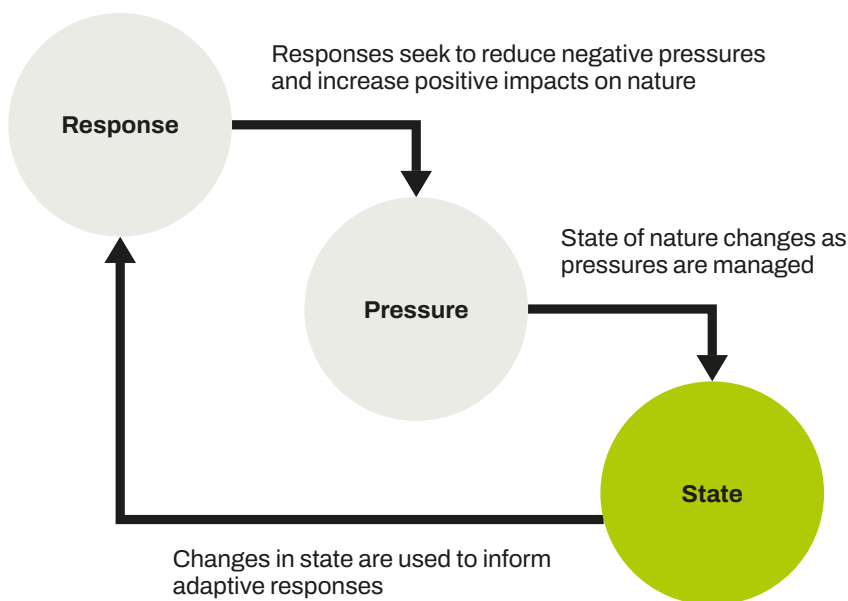


Figure 2.2: Completing the pressure-state-response framework

Per TNFD's LEAP approach (Evaluate, Assess, Prepare); SBTN's five-step framework; and GRI 101: Biodiversity 2024.

Measuring the state of nature is essential because it tells us whether our pressure and response actions are having the desired effect (i.e. if environmental strategies are resulting in improved outcomes for nature and addressing risks and opportunities for business and communities). This holds true even where it may be challenging to specifically attribute changes in state of nature to specific actions or organisations. Fundamentally, if the state of nature is not improving in the area it suggests, there may need to be reinvestment of resources into a different or adapted set of pressure reduction and response actions. Considering the state of nature in a location can also help identify the most cost-effective approach to both enhance nature and increase business resilience by ensuring the longevity of nature-related dependencies.

It is important to note that SoN metrics are not intended to replace pressure and response metrics, but rather, crucially, to complement them.

Users and use cases

Whilst corporates and financial institutions were the initial focus users when developing these metrics, sustained nature-positive outcomes will require collaboration across a wider range of user types, including national and sub-national governments, landowners and land stewards. The metrics are therefore designed to support priority corporate and financial institution applications, while remaining relevant to other users and decision contexts.

Metrics should be measurable at the scale and granularity level appropriate for the decision-making context, including site, landscape/seascape, value chain, portfolio and company-level applications. The state of nature indicators metrics are intended to support a range of use cases, including assessment, disclosure, target setting, transition planning, performance tracking and decision-making. As noted in the objectives above, they have not been developed as a stand-alone framework but rather to fill an important role in existing, comprehensive standards and frameworks relating to these use cases – see [Section 7](#) for guidance on embedding metrics within frameworks and standards.

Figure 2.3 illustrates this relationship between the two priority user groups, the scales at which the metrics may be applied, and examples of priority use cases.

TYPE OF USER		X	SCALE	X	OBJECTIVE
Corporate	Other land managers (e.g. IP&LC)		Site		Voluntary disclosure (e.g. TNFD, GRI)
Sub-national governments	Cities		Landscape		Strategy, target setting & tracking (e.g. SBTN, corporate strategies)
National governments	Assurance providers		Company		Compliance (e.g. CSRD or EUDR)
	Financial institutions		Value chain or portfolio assessment		Aligning financial flows (e.g. Multilateral Development Banks (MDBs) and financial institutions)

Figure 2.3 – Indicator and metric use case framework

Scope components

The scope of the NPI project was defined by the intended objectives of the SoN indicators and metrics, the established design criteria, and the anticipated user needs and use cases. As a result, certain components were deliberately considered out of scope (Table 2.1). This should not be interpreted as an omission or deficiency of the framework itself. The metrics framework was conceived as an enabling layer to be embedded within existing standards, frameworks and assessment systems, rather than as a self-contained framework. Accordingly, the project sought to address a gap in the metrics landscape for measuring state of nature, by developing a scientifically robust, decision-useful and interoperable framework, rather than to create a new overarching framework for nature-related assessment and reporting.



“In today’s world, where businesses are increasingly held accountable for their actions on climate and nature, understanding their impact on biodiversity – whether positive or negative – is critical. Companies need a single set of science-based and practical metrics to help them assess and report on their impact on nature.”

Tony Goldner Executive Director, Taskforce on Nature-related Financial Disclosures

Table 2.1: Key components of the scope of the project

IN SCOPE	OUT OF SCOPE	RATIONALE
State of nature indicators and metrics	Pressure and response indicators and metrics	Pressure and response metrics for nature are already well-developed. However, there is a key gap around state in existing frameworks and standards. Understanding state of nature is needed to evaluate whether our actions to reduce negative and increase positive impacts are having the intended outcomes for nature, see discussion above.
Biotic metrics	Abiotic metrics	This project utilised biotic ecosystems metrics as a proxy for the overall state of nature. Abiotic factors are often well-aligned with pressure and response measures, whereas biotic measures how living elements of nature are responding to changes in these pressures.
Species and ecosystem metrics	Genetic diversity	Genetic diversity is recognised as vitally important, but measurement approaches are far less mature and not ready for widespread adoption yet. Genetic diversity should be considered as a factor in nature-related decision-making as far as is feasible and developments in these measurements should be monitored for future adoption.
	Nature’s contributions to people metrics	Nature’s contributions to people (or ecosystem services) metrics are important but were out of scope of this project as they are generally less mature and not ready for widespread adoption across the range of different contributions/services. A healthy state of nature can also drive enhanced contributions to people.
Wide variety of users/ use cases	Sector, geography, use case-specific metrics or guidance	The indicators, metrics and guidance were designed for universal and widespread adoption. While the initial focus for testing was corporates and financial institutions, they were designed to be flexible for use by a wide range of stakeholder groups. A universal approach was prioritised for the project, which also helps enable aggregation and collaborative action across stakeholders, however sector-specific implementation guidance could be developed in future. Use case-specific guidance is the remit of the frameworks/standards into which the metrics will be embedded.
Overview measurement guidance	Extensive measurement guidance	Overview measurement guidance was developed to support users in the consistent application of the selected metrics, drawing from established good practices, e.g. UN-SEEA. The intention was to provide sufficient guidance to enable implementation and facilitate adoption across existing frameworks and standards. Over time, this guidance can then be iterated and added to as new approaches, data, technologies and case studies become available.
Areas where natural and semi-natural ecosystems are present	Highly urban areas	Specific and separate metrics may be needed for highly urbanised areas where there is little to no natural or semi-natural ecosystem present.



03

CONSENSUS- BUILDING PROCESS

3. CONSENSUS-BUILDING PROCESS

The Nature Positive Initiative developed the State of Nature (SoN) Indicators and Metrics Framework through a structured, two year consensus-building process designed to ensure both scientific robustness and practical applicability. This process deliberately engaged corporates and financial institutions – the primary intended users of the framework – alongside a broad range of technical stakeholders to ensure it had strong methodological and practical foundations. This balance is reflected in the diversity of participants in the two public consultations (Figure 3.1), which brought together stakeholders across sectors including companies, financial institutions, professional services, NGOs and academia.

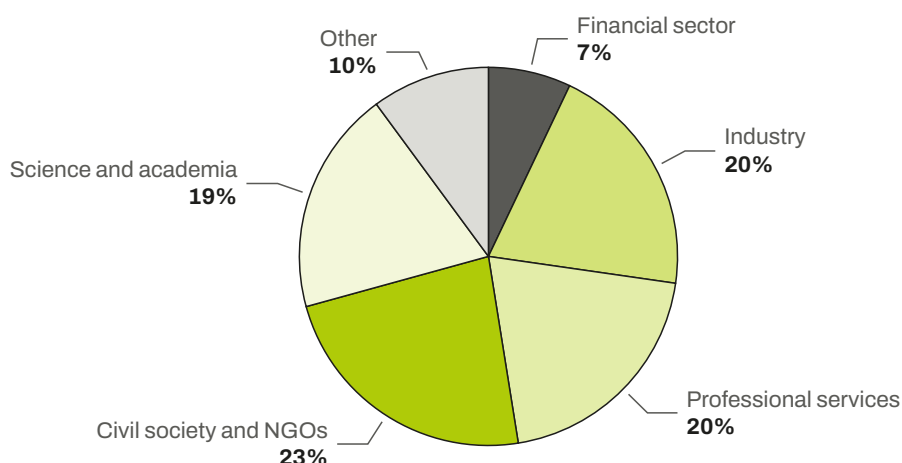


Figure 3.1: Breakdown of the two public consultations respondents by sector [of 213 unique participants (some organisations participated in both consultations)]

The Other category includes governmental organisations and multigovernmental organisations (1st public consultation), individuals, industry and membership associations, technology specialists and consultants (2nd public consultation)

Through iterative engagement including consultations, technical working groups and piloting, the framework was continuously refined, strengthening both its credibility and usability (Figure 3.2).

Support for delivering the consensus-building process was provided by The Biodiversity Consultancy and EY.



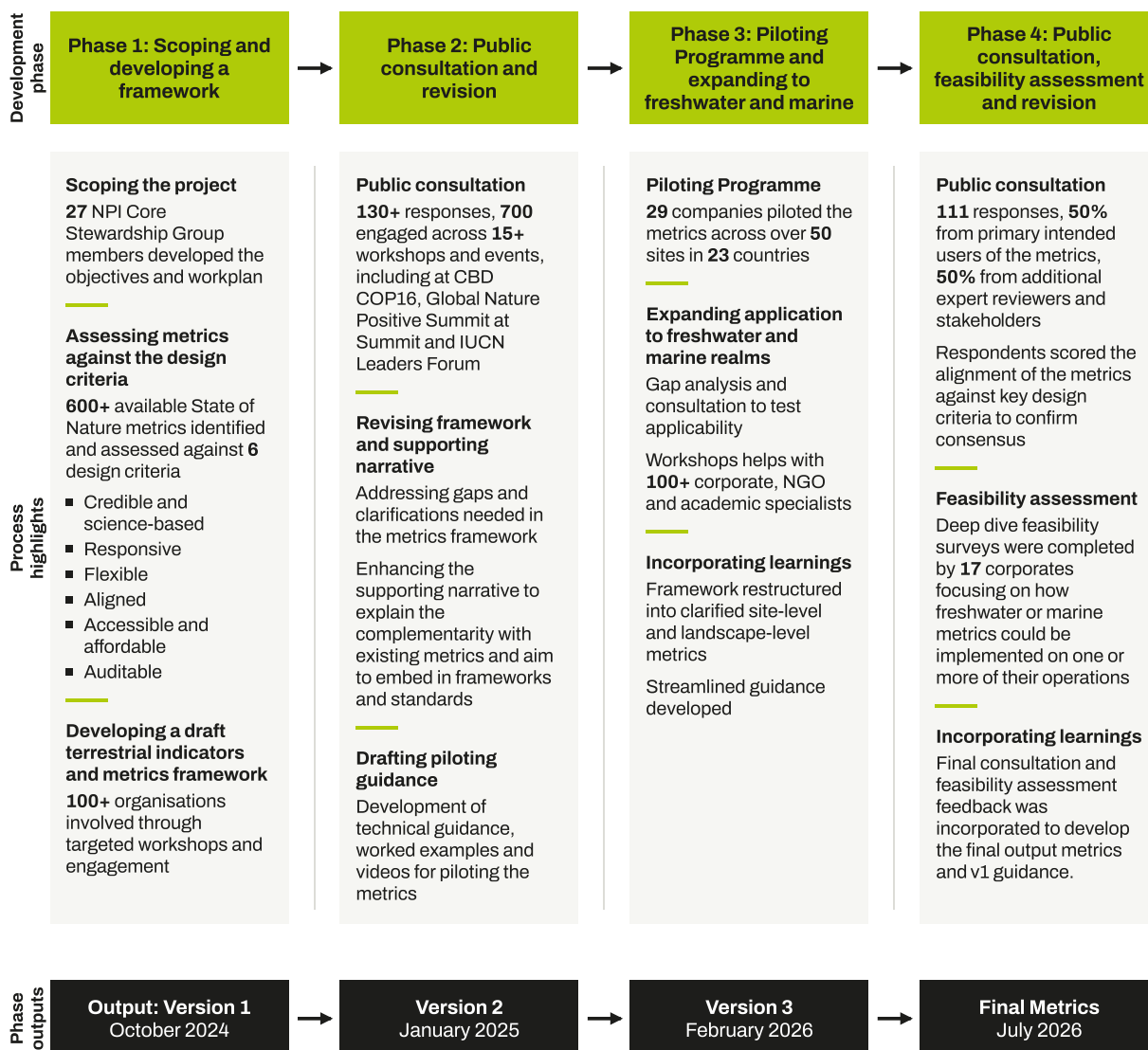


Figure 3.2: Overview of the consensus-building process

PHASE 1: DEVELOPING A FRAMEWORK, MAY-OCTOBER 2024

The NPI first defined the framework's objectives and established the six criteria (see Figure 3.2) to guide the selection and refinement of indicators and metrics.

In July 2024, an initial comprehensive landscape review identified over 600 SoN indicators and metrics (terrestrial, marine, and freshwater) from scientific and grey literature, stakeholder contributions, and existing databases. The full set was assessed against the six criteria to derive a minimum viable set of metrics.

The NPI Secretariat then convened 15 bilateral meetings and 2 workshops to test and refine the approach. These sessions gathered feedback on the conceptual framework and potential use cases. Participants included technical experts, academics, NGOs, auditors, standard setters, and representatives from corporates and financial institutions, ensuring a diversity of perspectives from the start of the process.

Key challenges identified during the workshops included:

- Balancing practicality and scientific robustness
- Ensuring alignment with existing frameworks and standards including the GBF
- Managing trade-offs between flexibility and standardisation
- Addressing data availability, quality, and cost constraints
- Designing an indicators and metrics framework that is both globally comparable and locally relevant

To deepen the analysis, targeted focus groups were subsequently established to address these challenges. More than three quarters of the participants in these focus groups were primary intended users.

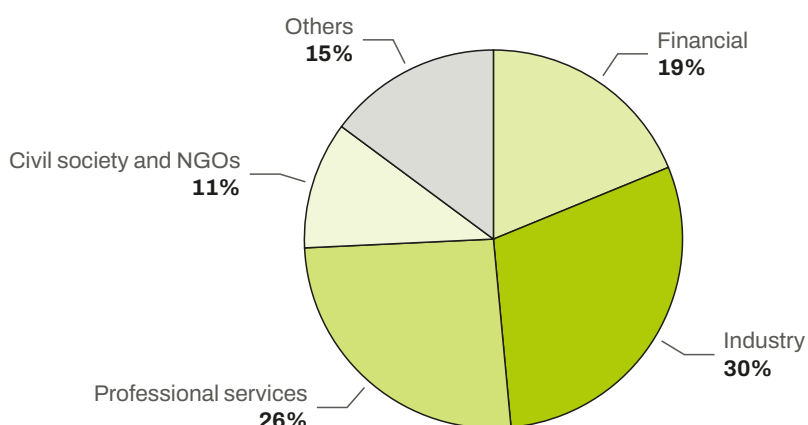


Figure 3.3: Breakdown of the participants in the focus groups [of 27 participants]

The Other category includes governmental organisations, multigovernmental organisations and framework and standard setters

Finally, two further drop-in sessions were held for participants in the original workshops to receive an update and provide feedback on the process to date.

Overall, this sequenced and multi-layered engagement process, which mobilised more than 100 organisations during Phase 1 (including over 40% from the private sector), enabled the Nature Positive Initiative to deliver a first version of the SoN metrics that combined scientific robustness with initial stakeholder consensus (Figure 3.4).

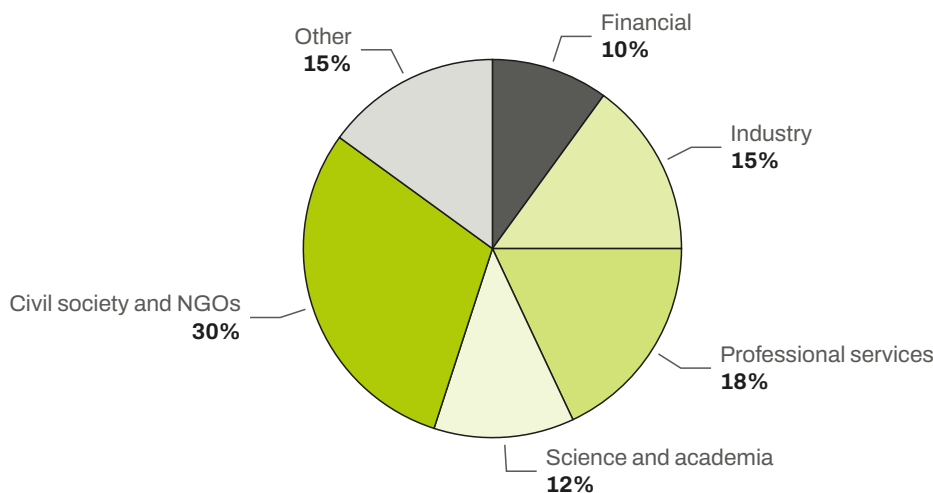


Figure 3.4: Breakdown of the participants in the first phase of the process [of 105 participants]

The Other category includes governmental organisations, multigovernmental organisations and framework and standard setters

PHASE 2: PUBLIC CONSULTATION AND REVISION, OCTOBER 2024 – JANUARY 2025

The first version of the framework was published for public consultation in October 2024 to ensure that diverse perspectives across geographies and sectors could inform the development of a final draft set of metrics, ahead of piloting in 2025.

A total of 134 organisations responded to the public consultation survey, while over 700 stakeholders were engaged through key international events, including the Sixteenth meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD COP16), the International Union for Conservation of Nature's (IUCN) Leaders' Forum, and the first Global Nature Positive Summit in Sydney, Australia. Responses were received from a broad range of sectors (Figure 3.5).

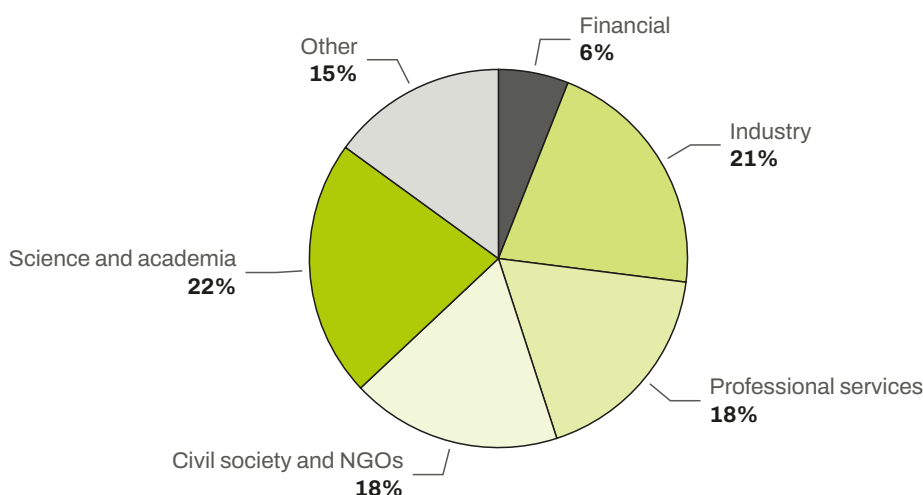


Figure 3.5: Breakdown of survey respondents by sector [of 134 participants]

The Other category included individuals, industry and membership associations, technology specialists and consultants

The feedback received on the draft framework focused on five key themes:

- Clarity and structure of the framework
- Practicality for adoption
- Indicator coverage
- Metrics design
- Alignment with existing frameworks

This phase resulted in simplified and clearer metrics, improved framework structure for usability, reduced methodological complexity, relaxed untested technical specifications, and the shift from maturity levels to granularity levels. Further detail on consultation feedback, along with the Nature Positive Initiative's responses, is provided in Appendix B.

PHASE 3: PILOTING AND EXPANDING TO APPLY TO FRESHWATER AND MARINE REALMS, FEBRUARY 2025-FEBRUARY 2026

Piloting Program: Terrestrial

The Piloting Program focused on corporate and financial institution application of indicators and metrics for real projects. Participants were selected to cover a broad range of sectors and geographies. Each participant had a piloting partner from one of the Nature Positive Initiative core organisations, to help guide their approach.

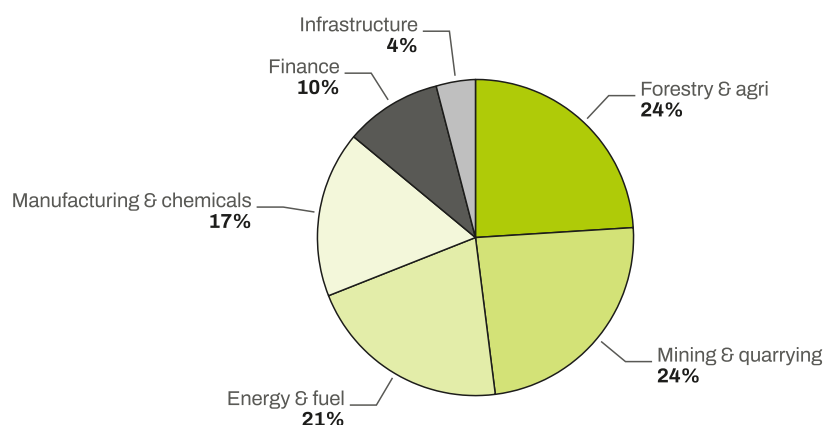
The program involved 29 companies from six key sectors applying the metrics across more than 50 sites in 23 countries, supported by six piloting partners. This provided a practical test of the metrics across a range of operating contexts, site types, sectors and geographies, and generated evidence on both metric design and implementation needs.



PARTNERS



PILOTING PARTICIPANTS BY SECTOR

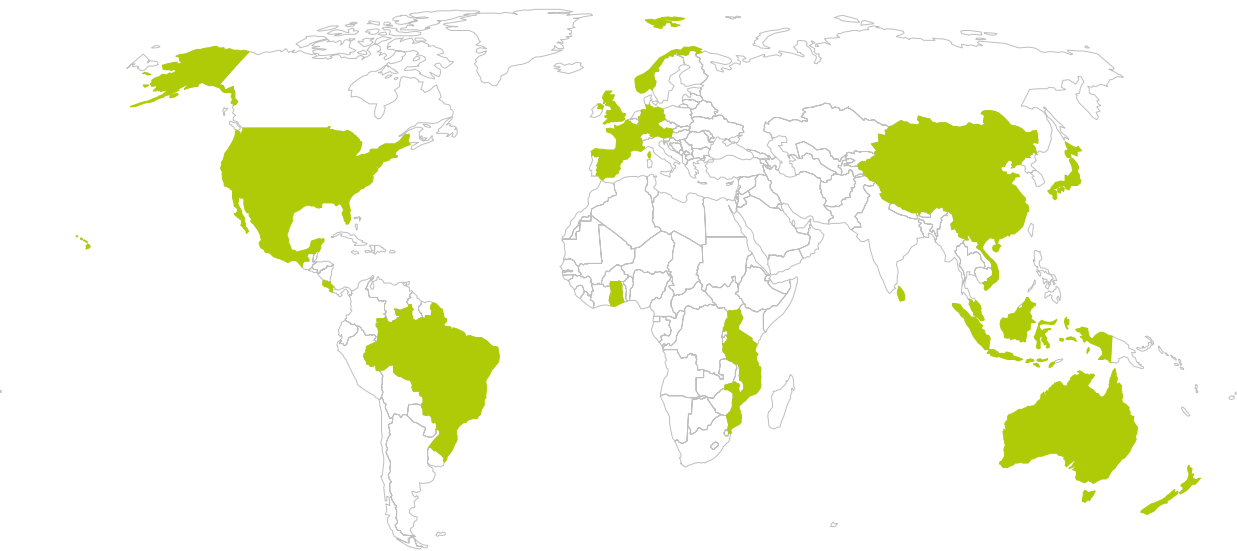


PARTICIPATING COMPANIES



Figure 3.6: Scope of Piloting Program

The terrestrial pilots tested both the draft indicators and metrics framework and new draft supporting implementation guidance. Participants applied the metrics to selected real-world sites or portfolios and used the process to test data availability, technical feasibility, interpretation of the guidance and the level of support needed to apply the metrics consistently.



PILOTING PROGRAMME COUNTRIES (23)

Australia	Germany	Mongolia	Tanzania
Austria	Ghana	Mozambique	Uganda
Brazil	Indonesia	New Zealand	UK
China	Japan	Norway	USA
Costa Rica	Malaysia	Spain	Vietnam
France	Mexico	Sri Lanka	

Basemap redrawn from Natural Earth (public domain), Natural Earth I projection.

Figure 3.7: Countries where the terrestrial indicators and metrics were piloted during the Piloting Program (in green)

The pilots were supported through a structured engagement model, including piloting partner support, webinars, and a helpdesk for participants to raise questions and test solutions. Feedback on the piloting structure and support model was positive, indicating that participants valued the regular engagement opportunities and support available throughout the process. This helped capture implementation issues as they emerged, rather than relying only on end-of-pilot surveys. A number of channels were used to collect this feedback:

- 5 monthly pulse surveys
- 6 monthly Community of Practice meetings, each held in two time zones
- 18 weekly drop-in sessions, each held in two time zones
- 118 technical questions answered and documented
- 13 company 1:1 calls to discuss challenges and feedback
- 9 company case studies shared during the Communities of Practice meetings
- 1 piloting workbook completed by each company documenting the methodologies followed and overall feedback on the metrics and guidance.

Key themes in piloting challenges included ecosystem classification, defining natural versus semi-natural habitat, technical expertise and data access for condition metrics, dataset availability and update frequency, and the cost and effort associated with species population measurement.

Feedback from the terrestrial pilots directly informed revisions to the framework and guidance. The framework was restructured to distinguish site and landscape/seascape context metrics, trigger criteria were moved into the guidance, and the Species Selection Filter was developed to support more practical prioritisation of species population measurement. Piloting also informed the shift from “low” to “preparatory” granularity, a streamlined base map approach, clearer output guidance and additional transparency guidance.

Piloting case studies are available in Appendix A. A summary of piloting feedback and how it was addressed is provided in Appendix B.

Applying to freshwater and marine realms

In parallel with the terrestrial piloting programme, the NPI initiated work to test the applicability of the framework to the freshwater and marine realms, with the aim of maintaining a consistent structure across all three realms. This was supported by two iterative, stakeholder-driven processes, one for each realm, to assess the relevance and robustness of the framework in these contexts.



Freshwater realm

The application of the SoN indicators and metrics to the freshwater realm was developed by building on the terrestrial framework and testing its applicability through a structured, evidence-based process. An initial gap analysis identified key considerations specific to freshwater ecosystems – such as rivers, lakes, and wetlands – which informed the decision to maintain the existing metrics but refine and add to the measurement guidance for this context.

These refinements were tested and strengthened through engagement with a broad range of stakeholders, involving more than 30 representatives from corporates, NGOs, and specialist organisations. This included a series of focus groups and follow-up surveys to capture technical input. The process also drew on existing methodologies, notably integrating insights from the Biodiversity Benefit Accounting (BioBA) programme, to ensure alignment with emerging best practices.

The main challenges identified were: data availability, volume, connectedness (migratory species and diffuse and downstream impacts) and seasonality. They were addressed by adding species-based proxies, volumetric metric components and improved boundary guidance for the freshwater realm, with seasonality identified as a focus area for further future technical guidance.

Further detail on the unique characteristics identified for freshwater systems and how they were addressed is provided in Appendix B.



Marine realm

Building on the terrestrial SoN framework, the NPI Secretariat, the Ocean Risk and Resilience Action Alliance (ORRAA) and the World Economic Forum (WEF) jointly initiated a process to extend the approach to the marine realm. Initial discussions were convened at the 2025 United Nations Ocean Conference (UNOC), where the three organisations identified key gaps, data and monitoring challenges, and priority issues in measuring marine net positive biodiversity outcomes, helping to define the scope and direction of the work.



A Stakeholder Engagement Form was used to gather perspectives from 48 participants at the Blue Economy Finance Forum in Monaco and the United Nations Ocean Conference, covering existing frameworks and data, key gaps to address, priority use cases and ecosystem types. These perspectives were incorporated into the development of the marine-specific metrics and guidance.

Alongside this broader engagement, 12 core partner organizations including experts from standards and frameworks, NGOs, finance and marine scientific organizations collaborated on the drafting and refinement of the marine-specific metrics and guidance, bringing together relevant expertise and incorporating feedback iteratively throughout the process.

The framework was subsequently validated and strengthened through targeted engagement, including dedicated focus groups with corporates and impact investors, as well as broader review by 20 corporates and specialist organisations, ensuring its relevance and applicability to real-world decision-making contexts.

The main challenges identified were limited data availability, depth-structured ecosystems, and connectedness/diffuse impacts. These were addressed by allowing the use of coarser and proxy data with more flexible measurement requirements, incorporating volumetric considerations alongside area-based measurements, and adding optional complementary metrics and guidance to better capture diffuse pressures in marine systems.

Further detail on the unique characteristics identified for marine systems and how they were addressed is provided in Appendix B.

The output from Phase 3 was a further clarified framework and new, streamlined accompanying measurement guidance to enhance the practicality of metric adoption across terrestrial, freshwater and marine realms.

PHASE 4: SECOND AND FINAL PUBLIC CONSULTATION, FEASIBILITY ASSESSMENT AND REVISION, MARCH 2026 – JULY 2026

As part of the consensus-building process, the Nature Positive Initiative undertook a final public consultation to assess whether the proposed set of SoN indicators and metrics met the project's design criteria. Respondents evaluated the framework against five criteria – clarity, practicality, comprehensiveness, robustness, and decision-usefulness – through both quantitative scoring and qualitative feedback.

The consultation received responses from 105 organisations, with a further 6 submissions included in the qualitative analysis. Participants represented a broad cross-section of stakeholders, including companies, financial institutions, professional services, NGOs, academia, and government (see Figure 3.8). The respondent group was evenly split between primary intended users and additional users and reviewers. Notably, 86% of respondents had some prior knowledge of the project, indicating a good level of familiarity and engagement.

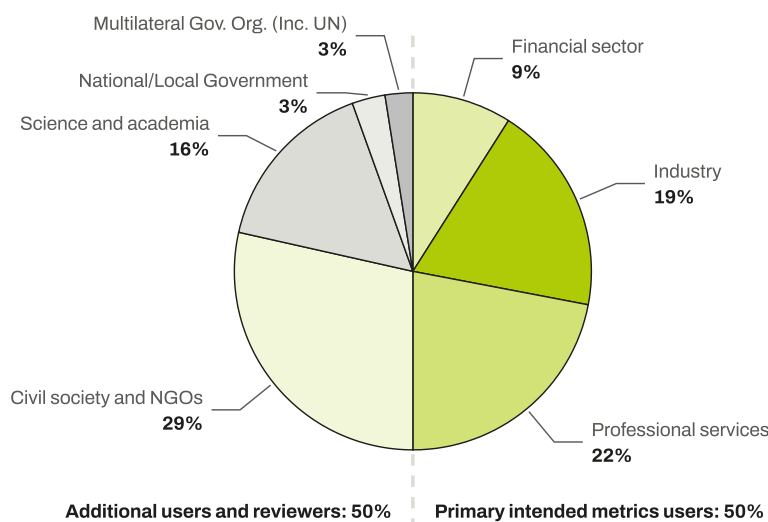


Figure 3.8: Breakdown of survey respondents by sector

The perspectives of 111 respondents were gathered and used to refine the indicators and metrics framework.

The findings indicated broad agreement across the design criteria, with particularly strong support for the clarity of the framework and its decision-usefulness (Figure 3.9). The main area of challenge identified through the consultation related to practicality, which emerged as the lowest-scoring criterion and was closely linked to broader constraints around data availability and implementation. In addition, targeted feedback on specific components – including freshwater and marine applications, as well as the Species Selection Filter – provided further insight into context-specific challenges, particularly in relation to methodological clarity and application across diverse ecological and operational settings.

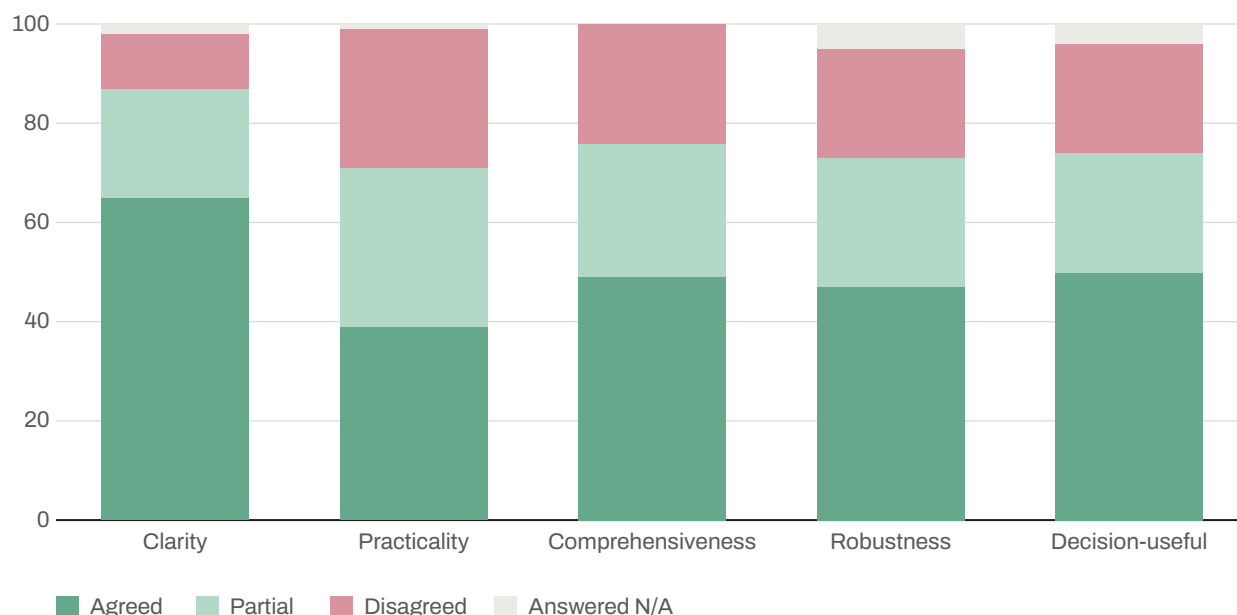


Figure 3.9: Final public consultation responses when asked whether the Indicator and Metrics Framework from Phase 3 met five key criteria (% of 105 survey responses)

In response, targeted actions were developed to address each key issue raised. In many cases, feedback resulted in clarifications and additional detail on the indicators and metrics, which were subsequently reviewed and validated through the Metrics Working Group and the Core Group, reinforcing the robustness and legitimacy of the final outputs. Addressing the remaining challenges will require continued strengthening of the supporting guidance, alongside broader improvements in data accessibility.

A detailed synthesis of all consultation feedback, and how the Nature Positive Initiative has responded to each key issue, is provided in Appendix B.

Feasibility assessments: Freshwater and marine

The 2025 Piloting Program focused on terrestrial application of the indicators and metrics. Applicable findings from the terrestrial pilots were incorporated into the development of guidance for applying the metrics in freshwater and marine environments.

In addition to the terrestrial piloting, desk-based feasibility assessments were conducted by companies in Q1 2026 to test the applicability and practicality of the metrics and supporting guidance in freshwater and marine contexts.

The feasibility assessments were designed to test whether the metrics and guidance could be applied in practical, real-world settings without requiring participants to complete full metric calculations. Participants selected one or more sample sites, reviewed the draft measurement guidance, considered how the metrics would be applied to their selected site, and completed a feedback survey covering use cases, feasibility, data accessibility, decision-usefulness and guidance improvements. WBCSD supported recruitment for the freshwater feasibility assessments and the marine feasibility assessments were carried out in partnership with WEF and the ORRAA.

The freshwater feasibility assessment tested the framework across a diverse set of operational contexts, including power generation, chemicals manufacturing, telecommunications infrastructure, beverage manufacturing and agriculture. Participants considered how the indicators and metrics could support impact assessment, disclosure, strategy development, monitoring, target-setting and business decision-making.



Freshwater

Participants:	 	 	 
	<i>Assessment across freshwater contexts confirmed the framework's relevance and helped target guidance updates on boundaries, classification, proportional application and data sources.</i>		

For freshwater areas, participants did not identify missing indicators and metrics and primarily requested clearer freshwater-specific examples, water-body classification references, granularity rules, boundary guidance, and clearer pathways for applying the metrics across small sites and multiple assets.

The marine feasibility assessment tested the framework across a broad range of marine and coastal contexts, including ports, offshore wind, aquaculture, marine construction, logistics, tourism, biodiversity conservation and seabed stewardship. Participants explored how the metrics could support strategy development, disclosure, impact monitoring, compliance, target-setting and decision-making at project and seascape scales.



Marine

Participants:	     
	   
Support from:	 
<i>Assessment across marine contexts confirmed the framework as a useful starting point and helped strengthen guidance on data, seascape boundaries, condition measurement and species approaches.</i>	

For the marine realm, participants generally viewed the framework and guidance as useful starting points, while requesting more sector-specific examples, clearer workflows, additional condition guidance, and support for low-data and project-level contexts.

Feedback from the freshwater and marine feasibility assessments was collated with the final public consultation feedback to identify where the metrics and measurement guidance needed to be strengthened. This feedback was used to improve the clarity and practicality of the metrics and guidance, including through additional realm-specific data sources, clearer guidance on boundary-setting, proxy use, baseline choices and proportional application and updates to the Species Selection Filter. These updates were intended to help users apply the metrics more consistently across realms, while recognising ongoing limitations in data availability, accessibility and technical capacity.



04

FINAL OUTPUTS

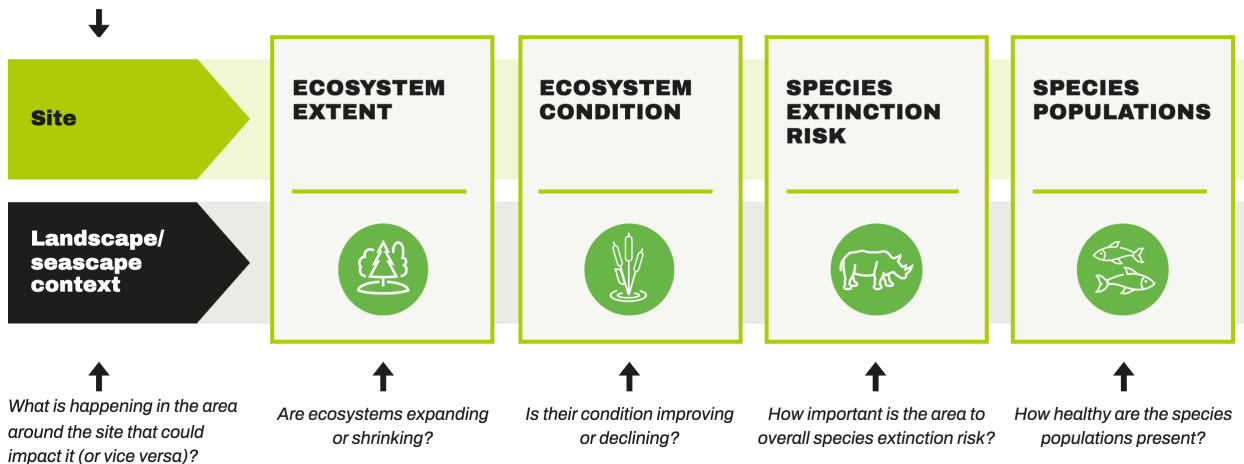
4. FINAL OUTPUTS

The final outputs of the state of nature consensus-building process are comprised of three components:

	COMPONENT	OVERVIEW	LINK
1	Indicators	Four core indicators allowing for a holistic overview of the state of nature.	State of Nature Indicators and Metrics Framework
2	Metrics	Measurements for each indicator at site and landscape/ seascape level.	
3	Initial measurement guidance	Iterative guidance to support the measurement and calculation of the metrics	Initial Measurement Guidance

STATE OF NATURE INDICATORS

What is the situation within the site?



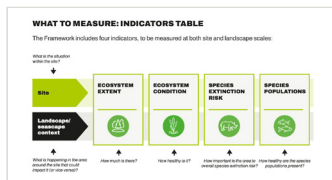
STATE OF NATURE INDICATORS AND METRICS

METRICS				
	Ecosystem extent	Ecosystem condition	Species extinction risk	Species populations
Site	Area, losses, and gains in extent of natural ecosystems (including semi-natural) by type (ha, %)	Area, losses and gains for each condition class (ha, %), by ecosystem type, considering elements of structure, function and composition.	Species extinction risk measurement showing the contributions of the site to global extinction risk	Number and proportion of priority species with estimated populations that are 1) declining, 2) slowing in decline, 3) stable, and 4) increasing
Landscape/seascape context	Area, losses, and gains in extent of natural ecosystems (including semi-natural) by type (ha, %)	Values and change in structural and functional connectivity between natural ecosystems	Species extinction risk measurement showing the contributions of the landscape/ seascape to global extinction risk	Number and proportion of priority species with estimated populations that are 1) declining, 2) slowing in decline, 3) stable, and 4) increasing*

* Important note: To be measured where possible, however, it is recognised that further work on data availability needs to be undertaken to make measurement more feasible

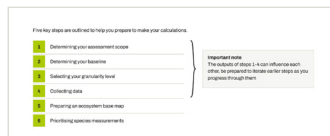
INITIAL MEASUREMENT GUIDANCE

1 Introduction to metrics and guidance



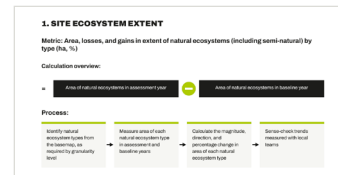
This lays out a high-level background, the scope of the guidance, key definitions and the metrics and measurement specification guidance.

2 Preparing to measure



This section walks through six preparatory steps: (i) determining an assessment scope, (ii) determining a baseline, (iii) selecting granularity levels, (iv) collecting data, (v) preparing a base map, (vi) prioritising species measurements.

3 Metric calculation



An overview of the measurement approach guidance is provided for each metric, including the calculations, example data sources/measures, and metric outputs.

4 Transparency

Disclosure guidance will be in the purview of the specific framework or standard into which the metrics are embedded. In this section, some potential guiding principles specifically for the transparent disclosure of state of nature metrics are provided.

5 Appendix A

A set of guiding principles for framework and standards developers when embedding the metrics.

6 Appendix B

A data needs cross-mapping table for the metrics and key frameworks and standards.



05

RATIONALE

5. RATIONALE

This section explains the rationale for key design and methodological decisions that resulted in the final State of Nature Indicators and Metrics Framework and Initial Measurement Guidance.

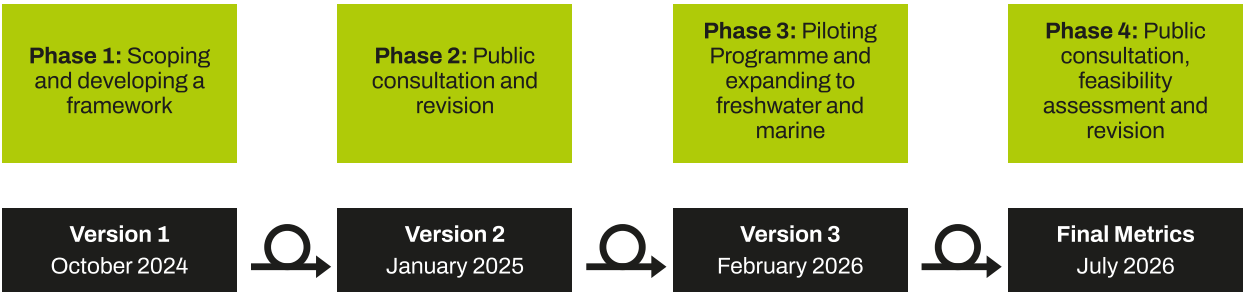
OVERVIEW OF FRAMEWORK EVOLUTION

Over the course of the two year development period, extensive feedback was collected to refine the indicators and metrics framework, with a focus on maximising credibility and practicality. To deliver an open and effective consensus-building process, it is vital that this feedback is recognised and as far as possible responded to. Therefore, the framework underwent numerous iterations or “evolutionary leaps” over the course of its development (Figure 5.1), informed by a series of consultations, testing processes and stakeholder engagement.

Over the course of this process and thanks to the feedback provided, the framework has become significantly clearer and more concise, making it more easily communicable and widely applicable than the original version, which is essential for its understanding and uptake. Some of the underlying technical complexities are now captured in the measurement guidance, others removed to instead refer to the relevant aspects of the use case-specific frameworks or standards in which the metrics will be embedded, and some were removed completely where they were found to be impractical. In the final phase, however, additional wording was added back into the metric descriptors to address crucial consultation feedback on clarifications needed, helping to find the right balance between conciseness and detail needed.

Full documentation of the key feedback themes and how they were addressed in each phase is available in **Appendix B**.

Figure 5.1 – Overview of indicator and metrics framework evolution



Phase 1: Scoping and developing a framework

(Version 1, October 2024)

- The metrics are structured by universal vs case-specific, indicator, maturity level and data type
- Each indicator has three metrics at different maturity levels

- The metric descriptors include detailed measurement specifications
- Case-specific metric triggers are also applied at the three maturity levels to identify where these metrics are required.

			State of Nature (SON) Indicators and Metrics			
Indicators (IND)			Entry-level	Standard	Advanced	Data type
Universal	Ecosystem	Ecosystem Extent (Change & Classification) (IND 1)	SON E1	SON S1	SON A1	Individual
		Ecosystem Condition (IND 2)	-	SON S2	SON A2	Individual
		Landscape Intactness (IND 3)	SON E3	SON S3	SON A3	Contextual
	Species	Species Extinction Risk (IND 4)	SON E4	SON S4	SON A4	Contextual
	Natural processes	Planned for future integration				
Case-specific	Ecosystem	Extent of Highly-Threatened Ecosystems (Change & Classification) (IND 5)	SON E5	SON S5	-	Individual
		Condition of Highly-Threatened Ecosystems (IND6)	SON E6	SON S6	-	Individual
		Proportion of Natural or Semi-Natural Habitat (IND 7)	SON E7	SON S7	-	Individual
		Condition of Semi-Natural Habitat (IND 8)	-	SON S8	SON A8	Individual
	Species	Species Population Abundance (IND 9)	SON E9	SON S9	SON A9	Individual
	Natural processes	Planned for future integration	Metrics most users should adopt			

Phase 2: Public consultation and revision

(Version 2, January 2025)

- The metrics are structured by ecosystem extent, condition and species and by indicator, with granularity levels and case-specific triggers cross-mapped - Each indicator has one metric at three different granularity levels (i.e. with different measurement specifications).		- Metric descriptors are simplified and included in the table. - Each case-specific metric has one set of trigger criteria and the title of these is incorporated into the table.
--	--	--

Indicators (IND)		Metrics	Granularity level	Case-specific metric triggers
Ecosystem Extent	Ecosystem Extent & Classification (IND 1)	Area of loss, gain and net change in extent (ha)	Low, Medium, High	N/A
	Extent of Priority Ecosystems (IND 1.1)	Area of loss, gain and net change in extent (ha)*	Medium, High	Priority ecosystem trigger criteria
	Proportion of natural or semi-natural habitat (IND 2)	Area of loss, gain and net change in average proportion of natural and semi-natural habitats within each km2 (%)	Low, Medium, High	Intensive land use biome trigger criteria
Ecosystem Condition	Site Condition (IND 3)	Area and change since baseline by condition class (ha per condition class)	Medium (under development), High	N/A
	Condition of Priority Ecosystems (IND 3.1)	Value and change since baseline by condition class (ha per condition class)*	Medium, High	Priority ecosystem trigger criteria
	Landscape Condition (IND 4)	Values and change in a) landscape intactness, b) structural connectivity, and c) functional connectivity	Low, Medium, High	N/A
	Condition of semi-natural habitat (IND 5)	Area and change since baseline of natural and semi-natural habitat by condition class (ha per condition class)	Medium, High	Intensive land use biome trigger criteria
Species	Species Extinction Risk (IND 6)	Species extinction risk score and trend	Low, Medium, High	N/A
	Species Population Abundance (IND 7)	Change in the number and proportion of priority species with: 1) stable or increasing populations, and 2) declining populations	Low, Medium, High	Priority species trigger criteria

Key	Universal metric
	Case specific metric

*Case-specific metric is the same as the universal one but applied at a higher granularity level and only for areas meeting the trigger criteria

Phase 3: Piloting Programme and expanding to freshwater and marine

(Version 3, February 2026)

- The metrics are structured by site versus landscape/seascape and by indicator, with metrics available at both scales for the four indicators
- Landscape species populations is greyed out due to limited feasibility at present
- Case-specific metrics and triggers are removed from the universal framework or embedded in the metrics and guidance
- Granularity levels are part of the guidance rather than the core metrics framework

Metrics				
	Ecosystem extent	Ecosystem condition	Species extinction risk	Species populations
Site	Area (absolute and percentage) of loss, gain and net change in extent of natural ecosystems (ha, %)	Area and change by condition class (ha, %)	Species extinction risk measurement showing the contributions of the site to global extinction risk	Number and proportion of priority species with populations that are 1) declining, 2) slowing in decline, 3) stable, and 4) increasing.
Landscape/ Seascape	Area (absolute and percentage) of loss, gain and net change in extent of natural ecosystems (ha, %)	Values and change in structural and functional connectivity between natural ecosystems	Species extinction risk measurement showing the contributions of the landscape/seascape to global extinction risk	Number and proportion of priority species with populations that are 1) declining, 2) slowing in decline, 3) stable, and 4) increasing.*

**Important note: To be measured where possible, however it is recognised that further work on data availability needs to be undertaken to make measurement more feasible.*

Phase 4: Public consultation, feasibility assessment and revision

(Final metrics, July 2026)

- The Landscape/seascape row is retitled as Landscape/seascape context
- Wording of the ecosystem metrics is tweaked to provide clarification and increase robustness
- Wording of the species populations metrics is tweaked to emphasise that these are estimates.

Metrics				
	Ecosystem extent	Ecosystem condition	Species extinction risk	Species populations
Site	Area, losses, and gains in extent of natural ecosystems (including semi-natural) by type (ha, %)	Area, losses, and gains for each condition class (ha, %), by ecosystem type, considering elements of structure, function and composition	Species extinction risk measurement showing the contributions of the site to global extinction risk	Number and proportion of priority species with estimated populations that are 1) declining, 2) slowing in decline, 3) stable, and 4) increasing.
Landscape/ seascape context	Area, losses, and gains in extent of natural ecosystems (including semi-natural) by type (ha, %)	Values and change in structural and functional connectivity between natural ecosystems	Species extinction risk measurement showing the contributions of the landscape/seascape to global extinction risk	Number and proportion of priority species with estimated populations that are 1) declining, 2) slowing in decline, 3) stable, and 4) increasing.*

**Important note: To be measured where possible, however it is recognised that further work on data availability needs to be undertaken to make measurement more feasible.*

FRAMEWORK STRUCTURE

Whilst a range of feedback guided the development of the framework components, the core deciding factor for the content included in the final framework versus the supporting measurement guidance was the longevity of the particular component. The indicators and metrics are intended to remain stable for a period of time in order to (i) give frameworks and standards developers confidence in embedding them, (ii) give companies confidence in investing time/resources into adopting them, (iii) encourage data and tools developers to invest in solutions to support their measurement, (iv) allow time for comparable metric output datasets to be generated, collated and used to drive decision-making by different stakeholder groups. The measurement guidance, on the other hand, is intended to be iterative to reflect the ongoing rapid evolution of data and tools to support metric application and to ensure that it points users to the most practical and robust approaches as they become available.

The metric descriptors in the core framework are intentionally worded to be flexible enough to allow for the evolution of measurement approaches (e.g. new and improved datasets or monitoring methods, as outlined in the measurement specifications in the guidance) to calculate them, whilst still driving the robustness and comparability of metric outputs. Positioning the measurement guidance a central reference for all users (i.e. different frameworks and standards can recommend users refer to it for how to measure the metrics) can also help ensure the standardisation and comparability of measurement approaches, even as these evolve, however there is a need for a permanent mechanism to manage this guidance iteration, e.g. see [Section 7](#) for discussion of a Nature Measurement Protocol.

Table 5.1 – Overview of components of indicator and metrics framework

COMPONENT	FRAMEWORK	GUIDANCE	
Indicators <i>Variables being measured</i>	✓		Designed to be revisited infrequently
Metric descriptors <i>Wording of metric</i>	✓		
Metric boundary <i>Site or landscape</i>	✓		
Granularity levels <i>Level of detail of metric measurement</i>		✓	Will be iterated more frequently
Measurement specifications <i>Key resolution, classification or estimation guidelines</i>		✓	
Case-specific metrics and triggers <i>Additional metrics for specific situations</i>		✓	
Calculation methodologies <i>Steps to calculate the metrics</i>		✓	

Rationale for final placement of components:

i. Indicators

Positive feedback was received on the incorporation of indicators as well as metrics into the framework, and reviewers highlighted that structuring the framework by indicators helped to clearly communicate the core biotic elements comprising state of nature to stakeholders. Creating clarity about these fundamental elements was also a focus in order to mitigate the risk of users only selecting one or two metrics by reinforcing that they are designed to be used as a holistic set. Structuring the framework based on the

indicators, particularly the simplified wording in version 3 onwards, additionally aligns more closely with wording and visuals in frameworks such as TNFD and the EU ESRS E4 Standard.

ii. Metric descriptors

The metric descriptors, alongside the indicators, are the key outcomes of this consensus development and so are central to the framework structure. A focus was placed on maintaining the minimum number of different descriptors, in line with the design criteria, and on ensuring they contained sufficient detail to drive alignment in how companies measure the state of nature, whilst also allowing sufficient flexibility to allow for the development of enhanced methodologies and tools to calculate them that are described in the iterative guidance document.

iii. Metric boundaries

The restructure of the framework into distinct site and landscape/seascape context boundaries received strong positive feedback from piloting companies and in the public consultation on Version 3 of the Framework. The benefits of this approach include: alignment with standard accounting boundaries for sites (operational or financial control) used across financial and non-financial reporting, clear communication of the level of control the company has over the metrics reported (i.e. more analogous to scope 1 vs scope 2 or 3 carbon reporting), and consistent application of boundaries across the different metrics, improving the applicability and decision-usefulness of the information generated..

The consensus-building process demonstrated that land/seascape-level context metrics were considered essential to understanding the state of nature. The benefits of the incorporation of land/seascape-level metrics in the framework include:

- provide a robust assessment of both the changes in the state of nature around the site that could affect the site (in terms of nature-related dependencies and impacts and their resulting risks and opportunities (DIROs)) and the impacts the site could have on the nature surrounding it, informing well-designed actions that address these DIROs,
- provide important context for metric users to understand the significance of site-level trends and whether strategies in place to address them are appropriate and proportionate,
- encourage collaborative action at the scale most needed for achieving nature-positive outcomes, which may also result in more cost-effective strategy implementation and data collection,
- provide a practical starting point for applying metrics in value chains where there is not yet traceability to site-level.

While it is recognised that companies are likely to have reduced access to data for the landscape/seascape than they might for their sites under direct operation (although this could be the opposite in value chain assessments), this was a core consideration in the metric and guidance development to ensure practicality. Please see [Section 7](#) for a detailed review of data accessibility. The guidance also supports companies in selecting the most appropriate boundary for their context, rather than mandating a one-size-fits-all approach.

iv. Granularity levels

There was lots of support amongst framework reviewers for providing approaches to the metrics at different granularity levels, as this increased the practicality of applying them for differing use cases, geographic or organisational scales or at different levels of reporting maturity or data availability. This range of different benefits were also the reason that the levels were renamed from “maturity levels” in

Version 1 to “granularity levels” in Version 2, i.e. maturity implies that the highest level is always best, whereas granularity level can be selected according to appropriateness for the use case.

The change in the name of the first granularity level from “low” to “preparatory” in Version 3 was implemented to facilitate using practical approaches requiring reduced data collection and manipulation at this level, in order to provide a more accessible on-ramp to using the metrics for companies just getting started or with low capacity. The use of “preparatory” is important as it emphasises that the measurements are entry points for exploring the metrics and may **not** always be sufficiently robust and holistic enough for companies to (i) identify their nature-related dependencies, impacts, risks and opportunities, (ii) identify actions and set targets for mitigating nature loss and restoring nature, or (iii) communicate and demonstrate particular outcomes at a site-level. The Nature Positive Initiative is continuing work to build consensus on how to credibly demonstrate and communicate positive outcomes for nature, which will build upon the indicators, metrics and granularity levels already developed.

Results from the metrics piloting demonstrated that companies did not automatically select the preparatory granularity level – many companies selected medium or high levels, typically those with more experience in handling nature metrics. The inclusion of the granularity levels in the guidance rather than the metrics framework itself is primarily because the levels are differentiated by their measurement specifications, which need the flexibility to iterate over time (see point (v)). It also helps to simplify the metrics framework and enables either (a) the external frameworks and standards providers to select the appropriate granularity level(s) for their use cases as needed when embedding the metrics, or (b) the metric users to select the appropriate level for them.

v. Measurement specifications

The measurement specifications at each granularity level, include factors such as dataset resolution, calculation or estimation approaches, ecosystem classification types and minimum data layer specifications. These are all factors that may need to be evolved over time as new data and approaches are developed and are therefore included in the iterative guidance to future-proof the metrics. For example, specifications based on the resolution of the best globally accessible data layers today could become outdated over time or as better data sources become available.

vi. Case-specific metrics and triggers

Versions 1 and 2 of the framework incorporated case-specific metrics and triggers that were either removed, embedded in guidance or made part of the core framework. The outputs and rationale are explained in Table 5.2.

Table 5.2 – Approach to case-specific metrics and triggers in the final framework

	TRIGGER	CASE-SPECIFIC METRICS TRIGGERED	HOW ADDRESSED IN FINAL OUTPUT
1	Priority ecosystems criteria	Extent and condition metrics required at minimum medium granularity level	<i>Trigger criteria:</i> Removed from framework and guidance due to overlap and potential confusion with prioritisation in existing frameworks and standards identified during piloting. Guidance now refers users to align with such established and credible standards. <i>Metrics:</i> Due to the significant variation in the capacity of metric users, mandating a minimum granularity level was removed from the framework to avoid discouraging engagement and also to enable frameworks and standards to select the most appropriate granularity levels for their use cases when embedding the metrics. Safeguards were added to the guidance to ensure progression to medium level over time.
2	Priority species criteria	Species population abundance	<i>Trigger criteria:</i> The criteria are now revised and embedded in the guidance in the Species Selection Filter. <i>Metric:</i> Incorporated as a core metric in the framework under a fourth indicator as it was being consistently triggered. The wording was reframed to focus on “priority species”, linking to the Species Selection Filter guidance.
3	Located in the intensive land use biome	Proportion and condition of natural or semi-natural habitat	<i>Trigger criteria and metrics:</i> These were separated out from the core framework to ensure it was universally applicable, simple and communicable. Additional metrics identified for supporting assessments the marine realm also required this approach. The metrics are included in the guidance as important for users operating in this biome and are available for frameworks and standards to consider when embedding the metrics.

INDICATORS

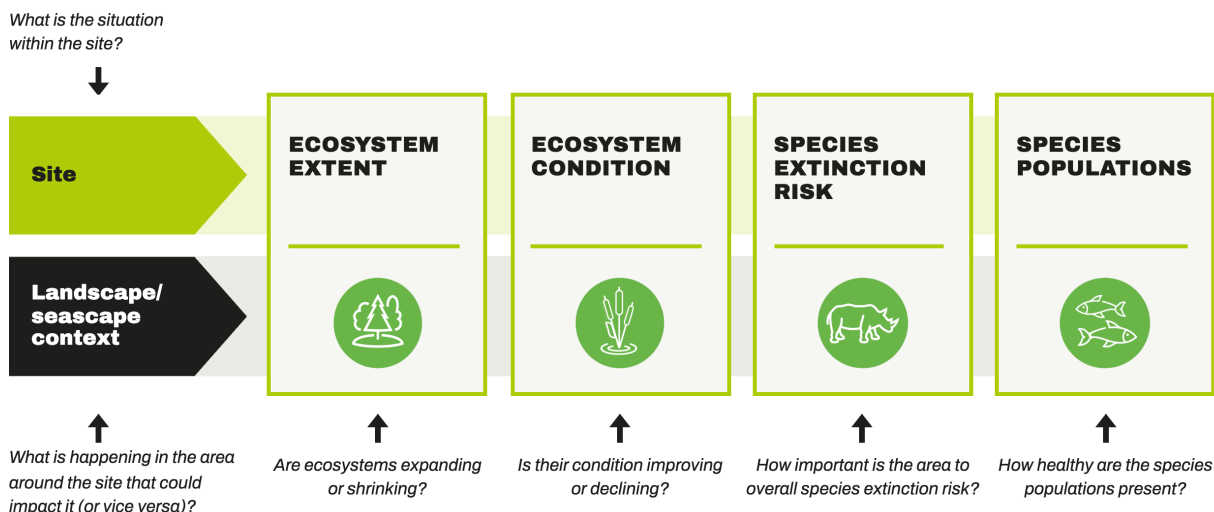


Figure 5.2 – Visualisation of framework indicators

Table 5.3 – Rationale for individual indicator selection

INDICATOR	KEY QUESTION THE INDICATOR ANSWERS	RATIONALE FOR INCLUSION	CBD GLOBAL BIODIVERSITY FRAMEWORK GOAL A ALIGNMENT
Ecosystem extent	<i>Are ecosystems expanding or shrinking?</i>	Measures the size of an area of a specific natural ecosystem, which helps in understanding trends in habitat loss and restoration. Ecosystem extent is included in many existing nature-related frameworks.	<i>“..substantially increasing the area of natural ecosystems by 2050”</i>
Ecosystem condition	<i>Is ecosystem condition improving or declining?</i>	Measuring ecosystem condition complements ecosystem extent. Condition helps determine if an ecosystem can function effectively, sustain itself and provide ecosystem services.	<i>“The integrity, connectivity and resilience of all ecosystems are maintained, enhanced, or restored..”</i>
Species extinction risk	<i>How important is the area to overall species extinction risk?</i>	Measures the extinction risk of species within an area. This indicates the relative contribution of a site or surrounding landscape to species extinction risk, from a global perspective.	<i>“Human induced extinction of known threatened species is halted, and, by 2050, the extinction rate and risk of all species are reduced tenfold..”</i>
Species populations	<i>How healthy are the species populations present?</i>	Measures changes in the relative abundance of important species. These species may need monitoring due to their intrinsic value, pressures they are under, the services they provide or the indication they provide of the overall state of nature.	<i>“..the abundance of native wild species is increased to healthy and resilient levels”</i>

The objective of this work was to align on a core, *minimum* set of indicators and metrics. Each of the four indicators in the final framework represents a complementary lens on the overall state of nature that together give a broader view than any single indicator could on its own. Importantly, the indicators align closely to the wording of elements of Goal A of the CBD GBF (Table 5.3).

Species and ecosystems

Biological diversity is defined by the Convention on Biological Diversity as: “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”⁶. Genetic diversity (i.e. within species), whilst incredibly important to protect, was out of scope of this project (see [Section 2](#)) as it remains challenging to measure, although it should be considered in the design of all conservation and restoration approaches and in time should also be incorporated into universal state of nature measurements. Metrics can, however, be readily used to capture the distinct impact dimensions of species and ecosystems. Both dimensions are required to comprehensively assess nature-related impacts and recovery. For example, the loss of species due to overexploitation might not be captured by ecosystem metrics and it is often challenging to assess the rate of natural habitat loss or degradation with species metrics alone.

There is one main area of overlap in the measurements of the dimensions, as species can also feature in the ecosystem composition component of ecosystem condition metrics. Safeguards have been put in place in the guidance (in the final tier of the Species Selection Filter) to minimise duplication.

Extent and condition

Both the total area and the health of the nature in a site or landscape/seascape are needed to fully understand the state of nature. Measuring ecosystem extent alone is misleading – a larger but heavily degraded ecosystem may be of lower conservation or ecosystem services value than a smaller intact one. Similarly, ecosystem condition alone lacks context – a tiny patch in good condition is unlikely to last long, particularly if it is isolated. Ongoing degradation can be hidden by stable extent, and this reduction in ecosystem functionality or resilience can be vital for understanding dependencies, impacts and their associated risks. It is important that the extent and condition of a particular area are reported together to ensure robustness, credibility and to avoid the risk of misleading outputs.

Extinction risk and populations

The contribution of a site or landscape to the risk of species extinction provides important context about the significance of the biodiversity present and helps inform decisions about the most effective and urgent conservation actions needed to protect against the loss of species globally. Whilst the extinction risk of species may be slower to change over time, this metric compliments the other state of nature metrics to signify the implications of their trends for threatened species. Pressure-based calibration approaches can be used in the interim to model changes in species extinction risk contributions based on threat reduction.

6 [Convention on Biological Diversity, Article 2: Use of Terms \(2006\)](#)

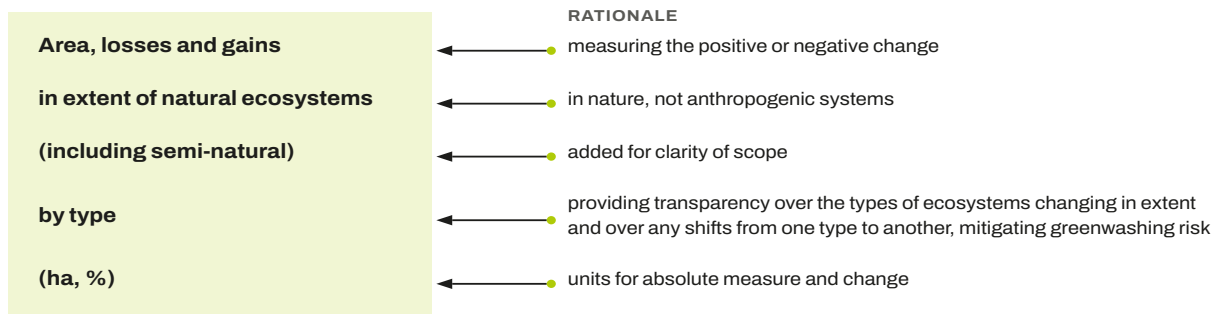
Species population measurements are needed alongside extinction risk as they cover a range of different use cases and assess a different dimension of species loss/recovery. These include:

- *Capturing species ecosystem service provision* – In many instances, population health of species with high ecological, commercial or cultural value are highly relevant functionally and socio-economically;
- *Reflective of local/site impacts* – Species populations metrics provide a complementary measure of local changes in species abundance on site that can help better capture local impacts and action, particularly for smaller sites;
- *Sensitivity to change* – Species population measurements are more sensitive to change on shorter timescales. This also supports earlier intervention, proactive and adaptive management and transparency. Species population trends at local level indicate risks of local extinctions;
- *Importance for corporate use cases* – Species population state of nature data helps inform risk assessments. They can be used to measure the state of species important to ecosystem function, business materiality (in particular species-specific dependencies) and to local communities and stakeholders. Increasingly, certifications and sometimes national legislation are also incorporating species populations, e.g. through Critical Habitat assessments and/or ‘no-net-loss’ requirements for particular species.

METRICS

Site and landscape ecosystem extent

Rationale for metric components:



Discussion:

Key topics of interest in the development of consensus on the ecosystem metrics included wording relating to “netting” overall changes, which originally appeared in relation to ecosystem extent. Netting requires additional guidance such as a detailed like-for-like approach. The requirement to report by type was moved into the metric descriptor from the guidance to enhance transparency and to further mitigate against abuses of the term ‘net’ i.e. by hiding the loss of key or priority ecosystems by summing with the gain of common or lower biodiversity significance ecosystems. This also aligns with the UN SEEA-EA guidance.

More in-depth discussion and review was conducted relating to the definition of natural, semi-natural and anthropogenic ecosystems. Piloting highlighted that there was confusion around the definition of semi-natural and that it was often time-consuming to differentiate natural and semi-natural habitats, especially from remote-sensing data e.g. for forests and grasslands. Public consultation feedback also raised the need for further clarity on the scope of ecosystem metric application, particularly for the agriculture and forestry sectors. Concurrently, the Expert Group under the UN Statistics Division (UNSD) for CBD GBF Headline Indicator A.2 conducted a review of the calculation methodologies and associated definitions for measuring the extent of natural ecosystems.

Following a review of key relevant definitions, the measurement guidance was updated to align with the revised GBF metadata for Headline Indicator A.2, see Table 5.4. The rationale for this was multi-fold:

- Maximising alignment with the GBF Monitoring Framework was one of the key design criteria for the metrics project, helping companies to support and demonstrate their contributions to global and national goals. The importance of this alignment was reemphasised in feedback received throughout the project;
- The review found that fundamental components of natural, semi-natural and anthropogenic ecosystems outlined in the CBD definitions were fairly consistent across other key sources, helping to ensure interoperability across different frameworks and standards;
- The CBD’s definition of natural ecosystems groups both natural and semi-natural ecosystems into one category, thus removing the challenges with differentiating these encountered in the piloting. Transparency over the changes in state between ecosystems is still maintained as companies are required to provide a breakdown of their extent and condition metrics by ecosystem type (using GET Levels 3+ or national equivalents) at medium and high granularity levels;

- Calculations at the preparatory granularity level remain accessible as tools such as SBTN's Natural Lands Map can be used to easily identify natural ecosystems including semi-natural for terrestrial ecosystems;
- The final definitions also help to address the piloting and consultation requests for further clarity, as the GBF Headline Indicator A.2 metadata further specifies which GET Level 3 categories are to be considered anthropogenic, thus reducing ambiguity for users (CBD, 2026);
- Site ecosystem condition measurements could theoretically be applied to anthropogenic ecosystems that have some potential value for biodiversity (e.g. croplands, plantations, artificial systems). However, the lack of data and methodologies for assessing the condition of these ecosystems at present coupled with the fact that the biodiversity value is likely to be much lower and the best predictor of biodiversity abundance on areas such as croplands is proximity to natural habitats⁷, results in a high measurement cost for outputs with decreased decision-usefulness. Instead, the species metrics (alongside relevant pressure and response metrics) can provide a more practical and universal option for these ecosystems. Any natural or semi-natural ecosystems interspersed within anthropogenic areas, e.g. in mosaic productive landscapes, would be in the scope of the ecosystem metrics, helping to measure conservation and restoration actions in these areas.

Table 5.4 – A selection of definitions relating to natural ecosystems

CATEGORY	TERM	SOURCE	DEFINITION
Final definitions in guidance			
Natural	Natural ecosystems	CBD, 2026. GBF Headline Indicator A.2	Natural ecosystems are ecosystems in which the impacts of humans on ecosystem composition, structure and function are low compared to natural factors. In this broad sense, natural ecosystem types include: (a) Ecosystems influenced or modified to varying degrees by human interventions, but with natural compositional, structural and functional characteristics still at least partially present and recognisable. The human interventions could be beneficial, neutral or negative from a biodiversity perspective. In some cases, the human intervention may mimic processes that would have taken place as part of the natural functioning of the ecosystem prior to human modification (e.g. grazing by wild herbivores or natural fire cycles). It may include the use of ecosystems by traditional and/or Indigenous societies, including practices such as fire management, nomadic grazing and other pastoral practices. In some contexts, these modified ecosystems are termed semi-natural. (b) Instances of natural ecosystem types that are in a range of condition states, from pristine ecosystems in excellent condition or with high integrity, through to those in poor condition, degraded, or with low integrity.

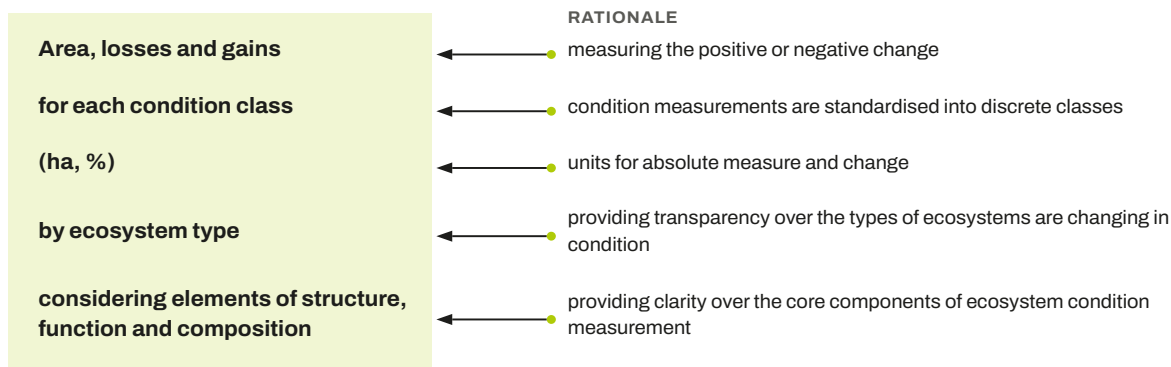
7

See for example: [Estrada-Carmona et al. 2022](#) and [Outhwaite et al. 2022](#)

CATEGORY	TERM	SOURCE	DEFINITION
Non-natural	Anthropogenic ecosystems	CDB, 2026 GBF Headline Indicator A.2	Anthropogenic ecosystem types are those created and maintained through human interventions, i.e. human interventions are the primary determinant of the composition, structure and functioning of the ecosystem. An anthropogenic ecosystem type has typically replaced an antecedent or pre-existing natural ecosystem type, which is no longer recognisably present (although small patches/fragments and some native species may persist). Human intervention does much more than influence or modify the ecosystem, even substantially. It determines the compositional, structural and functional characteristics of the ecosystem, and is typically essential for maintaining those characteristics.
Other key relevant definitions			
Natural	Natural habitat	IPBES, 2019; aligned with IFC	Areas composed of viable assemblages of plant and/or animal species of largely native origin and/or where human activity has not essentially modified an area's primary ecological functions and species composition
	Natural ecosystem	Accounting Framework Initiative, 2024	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 are present.
Semi-natural	Semi-natural habitat	IPBES, 2019	An ecosystem with most of its processes and biodiversity intact, though altered by human activity in strength or abundance relative to the natural state
	Semi-natural habitat	WBCSD, 2024	A habitat within or outside a crop made up of a community of primarily native, non-crop plant species, which human activity may modify but is able to contribute to enhanced ecosystem services
Non-natural	Modified habitat	IFC, 2012	Areas that may contain a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition
	Non-natural habitat	SBTN, 2025	Areas where ecological functions have been considerably altered, including mono-crop agricultural landscapes, forest plantations, and urban areas
	Conversion	Accounting Framework Initiative, 2024	Loss of a natural ecosystem as a result of its replacement with agriculture or another land use, or due to a profound and sustained change in a natural ecosystem's species composition, structure, or function
	Anthropogenic ecosystem	UN-SEEA EA, 2021	Anthropogenic ecosystems are predominantly influenced by human activities where a stable natural ecological state is unobtainable and future socio-economic interventions are required to maintain a new stable state

Site ecosystem condition

Rationale for metric components:

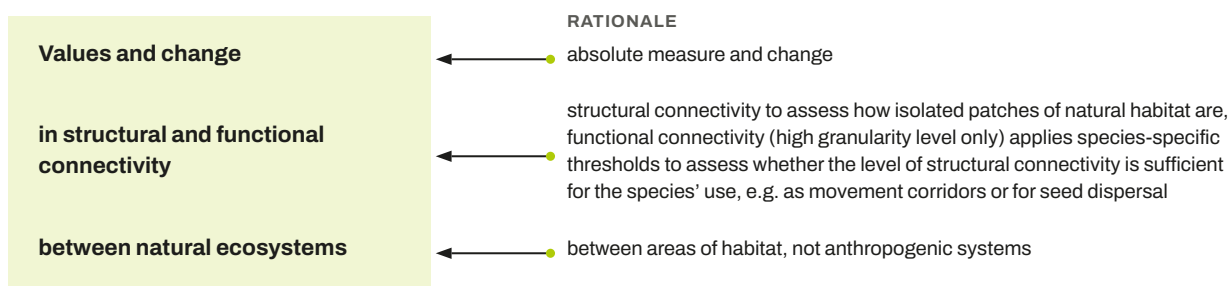


Discussion:

Consultation and piloting identified ecosystem condition as a less mature/standardised metric and existing data layers varied in their coverage, scope and methodologies. This meant it was particularly important for this metric descriptor to strike the right balance between driving alignment and maintaining the flexibility for measurement approaches to continue to advance. Grouping into discrete condition classes helps increase the communicability of output data for example, but classes can be determined by a range of approaches still. The listed elements of structure, function and composition are well-established as the fundamental building blocks of ecosystem condition (e.g. UN SEEA, EU Align, IUCN Red List of Ecosystems) but how they are assessed, aggregated and validated is not. This is highlighted as an important area of future work, see [Section 7](#).

Landscape ecosystem condition

Rationale for metric components:



Discussion:

Ecosystem connectivity is defined as “the unimpeded movement of species and the flow of natural processes that sustain life on Earth”⁸ and is essential for halting and reversing nature loss, including by facilitating species migration and access to resources, for maintaining genetic diversity in populations and for species' climate resilience by enabling range shifts.

8 [Convention on the Conservation of Migratory Species of Wild Animals, 2019](#)

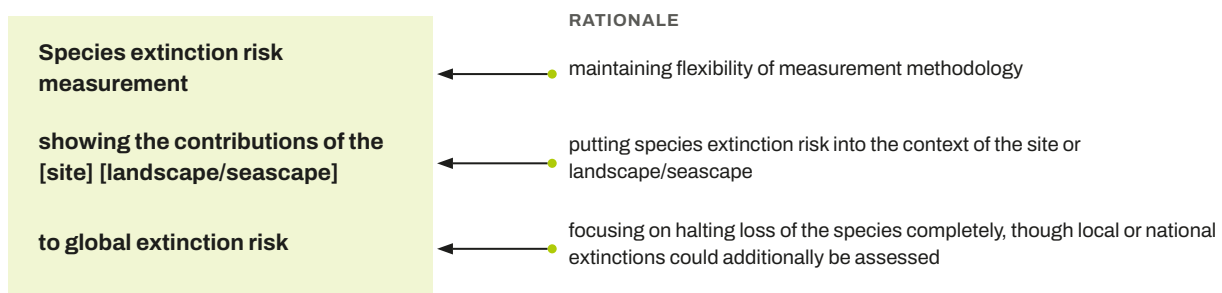
Of particular note for landscape ecosystem condition is that the metric focuses on connectivity *only*, i.e. it is not measuring the structure, function and composition of the ecosystems in the landscape outside of the lens of connectivity like the site-level condition metric. This is because the immaturity of data layers for ecosystem condition places particular importance on the role of ground-truthing, a key part of the site-level condition guidance for medium and high granularity, to ensure accuracy. Piloting and consultation identified that gaining access to areas outside the site boundary, as well as the resources to do so, can be a significant barrier to being able to ground-truth ecosystem condition models. For ecosystem extent, high resolution remote-sensing data can be used to avoid access issues, however ground measurements are generally still needed to validate condition data. The connectivity measurements are feasible because they rely on the habitat maps already created for the extent metrics and are an essential factor for condition assessment and decision-making at the landscape-scale. It is also noted that this metrics framework provides a minimum set of metrics for universal adoption – if users are able to assess further aspects of landscape condition then this is highly recommended.

Other key features of this metric include:

- **Functional connectivity** – This requires additional species-specific ecological and behavioural data, e.g. from academic or grey literature, local knowledge etc., therefore the guidance suggests that it is incorporated at the high granularity level.
- **Between natural ecosystems** – Historically, the development of connectivity indices often focused on the connectivity between protected areas. This has been broadened to natural ecosystems in the metric to reflect the fact that unprotected areas of habitat may also be playing vital roles in enhancing the state of nature across landscapes and indeed may be potential future priorities for protection.
- **Flexibility in units** – Due to the generally lower maturity of connectivity metrics, although there are many examples available, maximum flexibility for further development and standardisation has been maintained by not specifying units within the metric – values and change are required. Relevant units are likely to be scores or threshold-based, e.g. index values (e.g. connectivity or dendritic connectivity indices), or modelled connectivity scores derived from dispersal or flow-based analyses.

Site and landscape species extinction risk

Rationale for metric components:



Discussion:

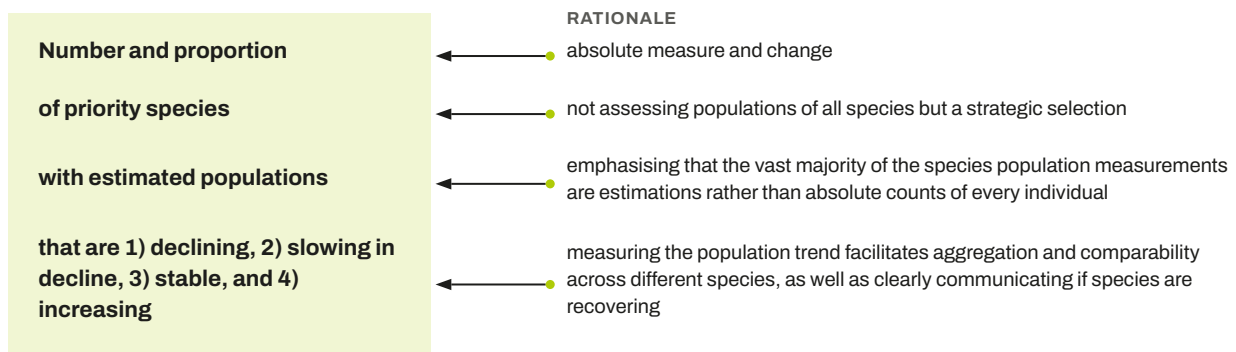
Understanding species extinction risk is essential for halting and reversing the loss of species. In this case the reduction of the negative (extinction risk) is deemed of such importance to achieving nature positive that it must be incorporated and interpreted appropriately.

A key factor in the development of this metric was the coverage and frequency of update of species threat assessment data. Whilst global extinction risk data are available from the IUCN Red List for over 170,000 species of animals, plants, fungi and chromists worldwide, the feasibility and meaningfulness of updating the assessments for each species means the frequency of data updates is likely to be misaligned with the annual reporting cycles of companies. Additionally, it was highlighted that data from previous years may not be completely comparable as species coverage and assessment methodologies continue to improve. To address this, the metric descriptor does not explicitly mandate the calculation of the change in extinction risk contribution. Instead, the guidance advises that the metric is re-calculated according to data availability and ecological context, and change described appropriately. The species populations metric provides a complementary approach to monitoring change in priority species in the interim years, and additional pressure or response metrics can also be supplemented to provide a holistic assessment.

Units are not specified in this metric descriptor to allow for flexibility in measurement approaches. As the data availability and technology landscape continues to evolve there may be new measures to calculate this outcome. Transparency in methodology is important to allow users of the outcome data to interpret it accurately.

Site and landscape species populations

Rationale for metric components:



Discussion:

The measurement guidance plays a particularly important role in the practicality of this metric and wording in the descriptor points to key aspects of it. Firstly, “priority” species – this was incorporated as it is impractical for high numbers of species populations to be measured. The Species Selection Filter in the guidance helps companies select appropriate priority species based on their ecological, social and business importance, their impact pathways and whether they are captured by other metrics. Secondly, “estimated” populations refers to the different estimation approaches outlined in the granularity levels for this metric – different levels may be more or less feasible for different species.

An additional trend category, “slowing in decline”, was added in Version 3 to reflect the fact that some species populations may change slowly or it may take longer to confirm they are stable and in the interim some way of describing progress towards a stable population is needed. This category helps increase the sensitivity of the metric to change and allow companies to better monitor progress without requiring any additional measurement effort.

ALIGNMENT ACROSS REALMS

Maximising alignment of the metrics across realms was a key design criterion for the framework development. The benefits of this approach include:

- i. Meeting the objective of creating a “universal” framework that can be applied across users, geographies and use cases.
- ii. Maintaining clarity and communicability of the core components of state of nature;
- iii. Reducing silos between realms to facilitate systems-scale thinking for maximising nature-positive outcomes;
- iv. Helping streamline metric outputs in disclosures and the useability of these;
- v. Bringing equal prominence to all three realms – organisations are likely to interact with all three across their value chains.

The work to apply the metrics in the freshwater and marine realms identified that as the fundamentals of biotic nature are the same, the core indicators and descriptors could also remain the same – particularly when embedded alongside pressure metrics in existing frameworks. The challenges arose not in the relevance of the indicators and metrics for assessing state of nature, but in the practicality of their application in these realms. Such realm-specific practicality challenges were a focus of additional measurement guidance developed.

Where some particularly relevant additional state of nature metrics were identified that could provide further insight for a particular realm (i.e. beyond the core indicator and metrics framework), they have also been included in the guidance so that frameworks and standards can opt to incorporate them if relevant for their specific use case.

To ensure the metrics were practical to implement across the freshwater and marine realms, assessment and consultation was conducted on the realm-specific characteristics that could impact the applicability of the metrics. Tables 6.5 and 6.6 outline the findings and actions taken to address them.



Table 5.5 – Freshwater realm metric applicability analysis

	CHARACTERISTIC	HOW ADDRESSED
1	Data availability Ecosystem extent: Smaller water bodies Ecosystem condition Species populations	Relevant examples of data sources, metrics and external guidance were included in the measurement guidance to support users. This can be expanded further in future technical guidance and key data gaps have been identified for developers (see Sections 6 and 7). It was identified that smaller water bodies may not be visible in spatial layers for ecosystem extent and condition as they can be of much smaller width than the minimum resolution (30m). To ensure that the state of these systems is assessed where relevant, a realm-specific criteria to incorporate an indicator species was included in the Species Selection Filter.
2	Volume The depth and flow of freshwater systems are a key aspect of state	A volumetric measurement component for determining the condition class was added into the measurement specifications for the site ecosystem condition metric at medium and high granularity, accompanying the existing area-based measures. While arguably abiotic, this was seen as essential for capturing the state of these systems where area-based measurements alone are insufficient.

	CHARACTERISTIC	HOW ADDRESSED
3	Connectedness Migratory species Diffuse and downstream impacts	Migratory species were included in the Species Selection Filter prioritisation guidance and data sources such as Global Swimways may be helpful for companies in understanding the significance of systems in their assessment area for freshwater migrations. Boundary-setting guidance was clarified to specify the role of watersheds and areas of influence in the analysis. Measuring pressure and response metrics alongside state metrics can provide important context for understanding and evaluating diffuse impacts on the state of nature.
4	Seasonality Larger natural fluctuations may be present	While such fluctuations may be more visible in freshwater systems, they can be important in all realms and future technical guidance will cover this topic, see Section 7 . Measuring average population sizes or using dynamic baselines may be appropriate, however care is needed not to mask trends driven by, for example, climate change when managing natural fluctuations.

Table 5.6 – Marine realm metric applicability analysis

	CHARACTERISTIC	HOW ADDRESSED
1	Data availability	The marine measurement specifications were designed to allow for the use of coarser data across space and time (e.g. lower minimum spatial resolutions and GET classifications), focusing on ecosystems for which datasets are readily available, using proxy indicators in some cases, and recommending use of emerging technologies. More flexibility was provided in the guidance around measuring ecosystem connectivity, suggesting that this is pursued only where feasible given the available data and significance of drivers of change in the state of nature. In the case of site ecosystem condition, the potential need to apply abiotic or pressure-based proxies is recognised in the guidance at preparatory level.
2	Depth-structure	Area-based metrics were maintained to allow for alignment and comparability with the other realms, however incorporating proxies as described above can help address the unique impacts on the state of nature in a volumetric and depth-structured space. Volumetric considerations were added as additional guidance for marine habitats.
3	Connectedness and diffuse impacts	The diffuse and dynamic nature of marine impacts is addressed through: (i) the application of seascape-scale metrics alongside site-scale metrics, to capture impacts beyond the immediate operational boundary; (ii) guidance on measuring structural and functional connectivity between marine ecosystems; and (iii) noting the importance of calculating state of nature metrics alongside relevant pressure and response metrics to provide context on diffuse drivers of change. Three additional pressure-based indicators originally developed to address diffuse marine impacts were removed from the framework as they fell outside the scope of the project deliverables (see Table B13).

KEY COMPONENTS OF GUIDANCE

As described above, the measurement guidance is intended to be iterated over time to reflect ongoing developments in data availability and measurement methodologies. This means that the Initial Measurement Guidance reflects the best available and most widely applicable approaches, as far as possible, at the time of development but that the rationale for key methodological decisions made in the guidance described below may need to evolve in future.

Rationale for measurement specifications: Ecosystem metrics

GRANULARITY		TERRESTRIAL/ FRESHWATER	MARINE
What are the pixel sizes for assessment?			
Spatial resolution	Preparatory	≤30m	1-10km
	Medium*	≤10m	100m-1km
	High*	≤10m	≤30m where possible or ≤1km
What is the level of detail of the ecosystem type classifications for metric breakdowns?			
GET Level (or national equivalent)	Preparatory	Natural/non-natural	Natural/non-natural
	Medium	3 or 4	3
	High	5 or 6	3

Ecosystem classification was found to be particularly challenging during the piloting (although will become easier over time as more data layers become available) and the specifications were adjusted accordingly.

Piloting highlighted that ground-truthing was important for robust metrics but gaining access to land outside the site boundaries made it challenging to implement across landscapes. This approach reflects a balance of these considerations.

*Medium and high granularity data layers should be ground-truthed for site-level ecosystem metrics. At landscape/seascape scale, ground-truthing is only required at the high granularity level.

The terrestrial and freshwater ecosystem type classifications were selected as follows:

- **Preparatory:** Natural/non-natural aligns with the SBTN Natural Lands Map and enables users new to state of nature assessment to begin to explore the nature on their sites.
- **Medium:** GET Level 3 or 4 aligns with the GBF Monitoring Framework metadata and top-down (i.e. using global data sets) approach for identifying GET levels.
- **High:** GET Level 5 or 6 are the most detailed categories for site-level decision-making and require bottom-up (i.e. local data) approaches for categorisation, aligning with the high granularity level.

The marine specifications are more coarse due to current data availability gaps.

Rationale for measurement specifications: Species metrics

Spatial resolution is only required for preparatory-level data, where the estimation approach relies on spatial habitat maps. It was selected to align with the preparatory-level ecosystem map specifications for easy inter-operability.

The extinction risk specifications reflect existing availability and scale-specific use case needs but also provide a minimum bar/flexibility to select a species-appropriate resolution.

	GRANULARITY	SPECIES POPULATIONS†	SITE SPECIES EXTINCTION RISK	LAND/SEASCAPE EXTINCTION RISK
<i>What are the pixel sizes for assessment?</i>				
Spatial resolution	Preparatory	≤30m (or up to ≤1km for marine)	≤5km	≤10km
	Medium	N/A	≤1km (5km for marine)	≤5km
	High	N/A	≤1km (5km for marine)	≤5km
<i>How should the metric be measured?</i>				
Measurement	Preparatory	Area of habitat/range proxies	Sum the proportion of the global area of habitat†† of each species in scope that falls within the site or landscape/seascape. It is strongly recommended to weight each species by threat status and/or use proportion of a specified historical reference range, except when robust assessments of extinction risk are unavailable at global, regional, or national levels.	
	Medium	Species-based index of relative abundance		
	High	Estimates of absolute abundance or density		
The estimation approaches in the guidance reflect the balance of practicality and robustness when calculating species populations, allowing usability at different levels of capacity and data availability.			The approach aligns with existing metrics assessing contribution to species extinction risk, e.g. STAR and LIFE. However, flexibility is also maintained for other robust approaches to be applied/developed, e.g. range-weighted rarity-based approaches. A safeguard has also been applied to ensure that weighting by threat status is applied only when robust assessment is available.	

Other key aspects of guidance

Table 5.7 – Rationale for key aspects of the guidance

GUIDANCE SECTION	APPROACH TAKEN	RATIONALE
Step 1: Determining your assessment scope	The guidance points to established and credible approaches to scoping the sites included in an assessment. The site boundary follows either operational or financial control approaches and the landscape/ seascape boundary refers to a range of potential sources and incorporates Area of Influence.	Piloting found that guidance relating to scoping the sites for inclusion was duplicative of and could confuse existing use-case specific guidance, so it was decided to reference these existing approaches. Following existing accounting boundaries helps align metrics with other sustainability and financial reporting and decision-making. The most appropriate landscape/ seascape boundaries may be driven by factors including data availability and use case. For this reason, the guidance is flexible and gives a range of credible approaches.

GUIDANCE SECTION	APPROACH TAKEN	RATIONALE
Step 2: Determining your baseline	A baseline year of 2020 is advised, however if the data needed is not available or there are other use case-specific requirements to be met then other years may be selected. It is noted that the CBD suggests baselines between 2011-2020 for GBF reporting. Users must also consider making their baseline earlier if there was a recent significant impact prior to the year for potential selection.	A baseline year of 2020 is advised in order to align with the definition of Nature Positive. However, flexibility is incorporated to ensure that the baselines are both practical and credible, and in acknowledgment of the CBD guidance. The importance of transparency on baseline selection is noted in Section 4 of the guidance to enhance credibility and comparability and the safeguard relating to recent significant impacts helps to mitigate the risk of greenwashing..
Step 3. Selecting your granularity level	Three granularity levels are provided for each metric: preparatory, medium and high, and states that companies should spend no more than 2 years at Preparatory level. Data and resource requirements increase with the levels.	The granularity level approach received positive feedback, and the measurement specifications were refined for each following piloting and consultation, as outlined above. Providing a time limit for the preparatory phase in the guidance ensures that this can function as an accessible on-ramp into state of nature measurement but that companies do not stay at this level of lower robustness assessment. Example use cases for each granularity level are not given in the measurement guidance, as these would be determined by the specific frameworks and standards embedding the metrics.
Step 4. Collecting data	Illustrative example data sources are included in the overview guidance, i.e. not a comprehensive list of all available data. Guidance is then provided on how to select an appropriate source.	The data availability landscape is evolving quickly and so generally applicable principles are helpful for supporting companies to assess their options. The data needs cross-mapping in the guidance appendix was highlighted by piloting companies as a particularly helpful resource for identifying where their company might have already collected relevant data.
Step 5. Preparing a base map	Creation of a basemap covering the site and landscape/seascape boundaries, land/sea use types and ecosystem classifications is included in the guidance for calculating the ecosystem metrics. The same base map can be used for the different metrics at the same granularity level.	Piloting highlighted some confusion about how each metric related to others and a need was highlighted for streamlining measurements. The measurement specifications were aligned across the ecosystem metrics to enable a base map to be calculated at a specific granularity level, thus streamlining calculation.
Step 6. Prioritising species measurements	A Species Selection Filter is provided to help companies identify priority species for the species populations metric. This covers: (i) identifying a shortlist of key species for selection based on environmental, social and business criteria, (ii) whether there are potential impact pathways on the species, and (iii) whether the species are covered by other metrics. Additional consideration is given to data availability. The Filter application guidance includes some safeguards to ensure critically endangered species are not excluded and that the outputs are appropriate for the granularity level.	The overall approach draws upon the established practices of IFC Performance Standard 6. The shortlist incorporates species-related Critical Habitat criteria, which feature in existing certifications and national programmes, and have established assessment guidance. Species important to local communities helps identify those important to the delivery of ecosystem services, whilst business materiality helps ensure companies are also monitoring those upon which they have a high dependency or impact. The filters related to impact pathways and coverage by other metrics provide options for prioritising the list to bring the number of species for monitoring down to a more feasible list and data availability must then be reviewed for those remaining.

GUIDANCE SECTION	APPROACH TAKEN	RATIONALE
Section 4: Transparency	A number of principles are provided to guide companies in the transparent disclosure of state of nature metrics. These include key aspects of the methodology to disclose, ensuring sufficient contextual information is provided, maintaining evidence for validation and assurance processes and aggregating/disaggregating metrics as appropriate for the audience.	While disclosure guidance is ultimately the purview of reporting standards and frameworks who will embed these metrics, the principles included are important for addressing some of the key technical challenges in the metrics. Some flexibility will always be required in approaches for calculating state of nature metrics as they are inherently context-specific, therefore transparency of methodology is vital for credibility and comparability. Feedback was also received about the feasibility of including highly detailed information in Annual Reports, which led to the development of point 4 in this section on aggregation.
Appendix A: Principles for embedding metrics	Guidance is provided for embedding metrics into frameworks and standards. Key principles covered include: maintaining the integrity of the core metrics framework and design criteria, embedding alongside pressure and response metrics, ensuring a robust approach to prioritising locations for assessment, and including safeguards to ensure responsible measurement and transparency.	As the metrics are designed to be embedded in existing frameworks and standards, these principles are included to help ensure their use aligns with the original design and intent and that the embedding process does not result the consensus built around the framework being misapplied or misused.
Appendix B: Cross-mapping data needs	A cross-mapping table is provided to illustrate where data needed for calculating the SoN metrics may already be being collected by the business to meet existing reporting requirements in key frameworks and standards.	This was developed in response to requests raised by pilots and in public consultations. While it is not yet possible to directly cross-map individual metrics in many cases, as they are still to be embedded in many frameworks and standards, much of the underlying data needed to calculate SoN metrics (especially at the preparatory level) is already required by key nature-related frameworks and standards.



06

DATA AND PRACTICALITY

6. DATA AND PRACTICALITY

This section provides an overview of the practical readiness of the State of Nature Indicators and Metrics for adoption and embedding by frameworks and standards, and for application by organisations using the measurement guidance. Data availability and practicality varies by metric, realm, granularity level and application context. In particular, the level of data and technical capacity needed differs between preparatory and higher-granularity approaches, and between site-level and landscape/seascape context application.

The following assessment reflects a snapshot of evidence collated from consultation feedback, piloting, feasibility assessments and data review undertaken during the indicator and metric development process. Overall, the analysis finds that the proposed indicators and metrics provide an implementable framework for measuring changes in the state of nature, while recognising that practicality will continue to improve as the measurement guidance is iterated, data sources develop, and further tools and case studies become available.

Data availability was one of the most frequently raised practicality considerations throughout the final consultation and feasibility assessment process. Respondents highlighted that data coverage, quality, accessibility, update frequency and the technical capability required to process, interpret and apply data to calculate the metrics can vary significantly across regions, sectors, organisations and realms.

In this assessment data availability has been considered across three related dimensions. First, whether relevant datasets or measurement approaches exist for each metric and granularity level. Second, whether those datasets are accessible to users, including whether at least one relevant dataset is freely available or whether access may be constrained by cost or licensing. Third, whether additional expertise, ground-truthing or technical capacity is likely to be required to apply the data appropriately.

The analysis distinguishes between availability and accessibility. A dataset may exist but still be difficult for some users to access because of cost, licensing, technical requirements or limited regional coverage. Conversely, paid or specialist datasets may in some cases provide greater robustness, resolution or confidence. For this reason, the assessment does not treat “free” and “fit for purpose” as equivalent; rather, it considers the likely level of effort, cost and technical input needed to use data to apply each metric in practice.

The data availability review combines indicator-by-indicator assessment with a forward-looking horizon scan. This approach supports the overall objective of the State of Nature Indicators and Metrics Framework: to provide a stable and aligned set of metrics, while allowing measurement guidance and data sources to evolve as methods, technologies, user approaches and markets mature.



Reader note: Interpreting tables in Section 6

The data tables in this section provide an illustrative, point-in-time (May-June 2026) assessment of practical considerations for applying the State of Nature indicators and metrics. They are intended to support interpretation of metric readiness by showing examples of relevant data needs, possible overlaps with existing frameworks and standards, current data availability, selected external developments, and remaining implementation gaps. They should not be read as a comprehensive review of all available datasets, tools, methods, frameworks or standards or as any kind of validation or endorsement of particular datasets.

The cross-mapping in **Table 6.1** identifies where information collected for existing frameworks and standards may help support calculation of the State of Nature Indicators and Metrics. It does not indicate that the requirements of those frameworks and standards are *equivalent* to the State of Nature Indicators and Metrics.

The data availability tables in **Tables 6.2, 6.4 and 6.6** are indicative. The assessment focuses on preparatory and medium granularity pathways, as these utilise more secondary data sources and are expected to provide the most practical starting points for wider uptake. The scoring reflects a point-in-time review and expert judgement and should not be interpreted as confirmation that a dataset is available, accessible or appropriate for every potential scenario, nor vice versa..

Data availability, accessibility, quality, spatial and temporal resolution, licensing terms, update frequency and technical requirements may vary by realm, location and metric. In some cases, “global” datasets may have uneven coverage across ecosystem types, taxa, regions or time periods, and local or regional datasets may be more robust. Paid or specialist datasets may provide greater resolution, coverage or confidence in some contexts, while free datasets may still require technical processing or expert interpretation. Users should assess the suitability of any data source against the measurement guidance and their own decision-making context.

The **Tables 6.3, 6.5 and 6.7** summarise selected data availability challenges, actions taken reflected in the measurement guidance, a selection of relevant external developments and remaining gaps or calls to action at the time of this report’s publication. References to third-party datasets, tools, methods or initiatives are illustrative examples only. They are not exhaustive, do not represent review or endorsement by the Nature Positive Initiative, and do not imply that the examples are suitable for every potential scenario.

Using data already collected for existing frameworks

Table 6.1 identifies where data used for existing standards and frameworks may also support calculation of the State of Nature indicators and metrics. It is intended to help users recognise where relevant information may already sit within current nature-related assessment, disclosure or target-setting processes, rather than assuming that all data collection needs to start afresh. This table is also included as an appendix to the Initial Measurement Guidance for State of Nature Metrics.

Table 6.19: Data needs cross-mapping to existing frameworks and standards

WHICH REQUIREMENTS IN EXISTING FRAMEWORKS AND STANDARDS MIGHT HAVE OVERLAPPING DATA NEEDS WITH STATE OF NATURE METRICS?								
METRIC	DATA NEEDED	DATA TYPES	TNFD	GRI 101 BIO-DIVERSITY	SBTN	ESRS E4*	ISSB S1 & S2	CDP 2026
All	Location: Site	Owned, leased or managed areas e.g. exact spatial locations for direct operations	Locate L1-3 Strategy Disclosures B and D Metrics & Targets Disclosures B: Core global disclosure metric C1.0	Requirements 101-5-a, 101-5-c	Step 1, Task 10	ESRS E4 paragraph 19(a); paragraph 8; AR 8. Paragraph 19(b)-(c)	S1: Paragraph 32 S2: Paragraph 13 S2: Paragraph 29 (a)(i) - Scope 1 and 2 metrics	1.8 / 1.8.1 facility geolocation data, where supply-chain requested; 3.2 river basin facility risk; 9.1.1 country/area and river basin of excluded water, where relevant.
	Location: Value chain	Upstream or downstream e.g. exact spatial locations or, if not possible, landscape/region-level location information for sites in the value chain	Locate L1-3 Strategy Disclosures B and D Metrics & Targets Disclosures B: Core global disclosure metric C1.0	Requirement 101-5-d Option in Guidance to 101-5	Step 1, Task 10	ESRS E1 Chapter 5.2 ESRS E4 paragraph 13(a); AR 7(c) (now attached to para. 16)	S1: Paragraph 32 S2: Paragraph 13 S2: Paragraph 29 (a)(i) - Scope 3 metrics	1.24 value chain mapping; 1.24.2 upstream mapping of timber, palm oil, cattle, soy, rubber, cocoa and coffee; 5.11 / 5.11.1 value chain engagement and engagement topics; 8.3 / 8.5 origin of forest-risk commodities and sourced commodity volumes.
Base map layers	Land/sea use	Land/sea use e.g. maps/data layers showing land/sea use types present in the area	Locate L3 Metrics & Targets Disclosures B: Core global disclosure metric C1.1	Natural ecosystem conversion (101-6-a-i) Other modified ecosystem conversion (101-6-a-ii)	Step 1, Task 11-13 Step 3: Land, Step 3: Ocean	ESRS E4 Paragraph 20 AR 10 for para. 20 AR 11 for para. 20	Paragraph 46**	-
	Eco-system classification	Ecosystem classification e.g. map showing the types of ecosystems present using the IUCN Global Ecosystem Typologies or national equivalent	Locate L3 Metrics & Targets Disclosures B: Core global disclosure metric C1.1	Requirement 101-6-a Requirement 101-7-a-i	Step 1, Task 10	AR 11 for para. 20	Paragraph 46**	-

9 Note: This table should be read alongside the reader note at the start of [Section 6](#). The mapping is illustrative and identifies potential overlaps in underlying data needs only. It does not indicate equivalence between the State of Nature indicators and metrics and the requirements, methods or outputs of the listed frameworks and standards, nor does it imply endorsement, approval or validation by the organisations listed unless separately confirmed.

Table 6.1 (continued): State of nature data cross-mapping

WHICH REQUIREMENTS IN EXISTING FRAMEWORKS AND STANDARDS MIGHT HAVE OVERLAPPING DATA NEEDS WITH STATE OF NATURE METRICS?								
METRIC	DATA NEEDED	DATA TYPES	TNFD	GRI 101 BIO-DIVERSITY	SBTN	ESRS E4*	ISSB S1 & S2	CDP 2026
Metric-specific	Eco-system extent	Area (absolute and percentage) of loss, gain and net change in extent of natural ecosystems (ha, %) e.g. using the ecosystem classification maps described above	Locate L4, Evaluate E3 Metrics & Targets Disclosures B: Core global disclosure metric C5.0	Requirements 101-7-a-I and 101-7-a-II	Step 1, Task 13 Step 3: Land	ESRS E4 Paragraph 20; AR 10 (a); AR 10(c); AR 11; AR 12	Paragraph 46**	8.10 / 8.10.1 monitoring and estimating deforestation and conversion footprint
	Eco-system condition	Area and change by condition class (ha, %) E.g. data layers showing the structure, function and/or composition of ecosystems	Locate L4, Evaluate E3 Metrics & Targets Disclosures B: Core global disclosure metric C5.1	Requirement 101-7-a-iii	Step 1, Task 13, Step 3: Land	ESRS E4 Paragraph 20; AR 10 (a); AR 10(c); AR 11; AR 12	Paragraph 46**	3.1 / 3.1.1 environmental risks and value-chain stage; 3.2 river basin facility risk; 5.11.1 impact on habitats and basin/landscape/marine ecosystem condition; 2.5 / 2.5.1 and 9.2 / 9.2.9 water pollutants, pollutant management and wastewater treatment; 9.15 / 9.15.1 water targets including SBTN-related fields.
		Values and change in structural and functional connectivity between natural ecosystems e.g. scores, maps or indices measuring ecosystem connectivity	Locate L4, Evaluate E3 Metrics & Targets Disclosures B: Core global disclosure metric C5.1	Requirement 101-7-a-iii	Step 1, Task 13 Step 3: Land	ESRS E4 Paragraph 20; AR 10 (a); AR 10(c); AR 11; AR 12	Paragraph 46**	
	Species extinction risk	Species extinction risk measurement showing the contributions of the site to global extinction risk	Locate L4, Evaluate E3 Metrics & Targets Disclosures B: Core global disclosure metric C5.2	Requirements 101-5-b and 101-6-b-i & recommendation in Guidance to 101-7		ESRS E4 Paragraph 20; AR 10(b); AR 11; AR 12	Paragraph 46**	-
		Species extinction risk measurement showing the contributions of the landscape/seascape to global extinction risk	Locate L4, Evaluate E3 Metrics & Targets Disclosures B: Core global disclosure metric C5.2	Requirements 101-5-b and 101-6-b-i & recommendation in Guidance to 101-8	Step 1: Task 13, Step 3: Land	ESRS E4 Paragraph 20; AR 10(b); AR 11; AR 12	Paragraph 46**	
	Species populations	Number and proportion of priority species with populations that are 1) declining, 2) slowing in decline, 3) stable, and 4) increasing.	Locate L4, Evaluate E3 Additional global disclosure metric A5.0	Recommendation in Guidance to 101-7	Step 1: Task 13 (optional), Step 3: Ocean	ESRS E4 Paragraph 20; AR 10(b); AR 11; AR 12	Paragraph 46**	-

WHICH REQUIREMENTS IN EXISTING FRAMEWORKS AND STANDARDS MIGHT HAVE OVERLAPPING DATA NEEDS WITH STATE OF NATURE METRICS?

METRIC	DATA NEEDED	DATA TYPES	TNFD	GRI 101 BIO-DIVERSITY	SBTN	ESRS E4*	ISSB S1 & S2	CDP 2026
Prioritizing species	Critical habitat criteria	(1) CR and EN species (2) Endemic and Restricted range Species (3) Migratory and Congregatory Species (all realms) e.g. Critical Habitat data layers	Locate L4, Evaluate E3 Strategy Disclosures A, B & D	Requirement 101-5-b & Guidance to 101-7	Step 1, Task 9 and Task 13, Step 3: Ocean	ESRS E4 paragraph 19(b); AR 8; AR 9; AR 10(b)	Paragraph 43-44**	-
	Locally important species	Locally important species e.g. information on species important for ecosystem service delivery and local values	Locate L4, Evaluate E3 Strategy Disclosures A, B & D	Requirement 101-5-b & Guidance to 101-7	Step 1, Task 9 and Task 13	ESRS E4 paragraph 20; AR 10(b); AR 11; AR 12. Paragraph 18(b)	Paragraph 43-44**	-
	Realm-specific criteria	Freshwater: One species as a good indicator of the health of small rivers/streams, if applicable. Marine: Species subject to direct and indirect exploitation.	Metrics & Targets Disclosures B: Core global disclosure indicator C3.1 Marine: Additional global metric A3.5	Wild species (101-6-b-i) & Guidance to 101-7	Step 3: Ocean, Step 3: Freshwater	ESRS E4 paragraph 20; AR 10(b); AR 10(c); AR 11; AR 12. Paragraph 18(c)	Paragraph 43-44**	-
Resources			Taskforce on Nature-related Financial Disclosures (TNFD) Recommendations TNFD Guidance on the identification and assessment of nature-related issues: the LEAP approach	GRI 101: Biodiversity 2024 Decoding biodiversity impacts: A practical guide to corporate reporting with the GRI Standards	SBTN Step 1: Assess SBTN Step 2: Prioritise SBTN Step 3: Set Targets - Land SBTN: Step 3: Set Targets - Ocean	Revised European Sustainability Reporting Standards (ESRS), European Commission Delegated Act, 3 July 2026	ISSB S1 Standard ISSB S2 Standard	CDP 2026 Disclosure

*Revised European Sustainability Reporting Standards (ESRS), European Commission Delegated Act, 3 July 2026

**ISSB S1 states that an entity shall disclose an entity's processes to identify, assess, prioritise and monitor sustainability-related risks and opportunities, and metrics for each sustainability-related risk and opportunity that could reasonably be expected to affect the entity's prospects. Therefore the State of Nature Indicators and Metrics may be relevant depending on the specific sustainability-related risk or opportunity context. Ongoing work by the ISSB on nature can be followed [here](#).

DATA REVIEW: TERRESTRIAL

Table 6.2¹⁰: Terrestrial data availability

METRIC	GRANULARITY LEVEL	AVAILABILITY	POTENTIAL COST	
			AT LEAST ONE DATA SET IS FREE	ADDITIONAL GROUND-TRUTHING / EXPERTISE NEEDED
1. Site ecosystem extent	  	✓	✓	✓
	  	✓	✓	x [*]
2. Landscape ecosystem extent	  	✓	✓	✓
	  	✓	✓	✓
3. Site ecosystem condition	  	✓	✓	✓
	  	✓	x	x [*]
4. Landscape ecosystem condition	  	✓	✓	✓
	  	✓	✓	✓
5. Site species extinction risk	  	✓	✓	x ^{**}
	  	✓	x	x [*]
6. Landscape species extinction risk	  	✓	✓	✓
	  	✓	✓	✓
7. Site species populations	  	✓	✓	✓
	  	x ⁺	✓	x [*]
8. Landscape species populations	  	✓	✓	✓
	  	x ⁺	✓	x [*]

Availability

✓	2 or more datasets with global coverage
—	1 dataset with global coverage
x	no datasets with global coverage

Data level

  	Preparatory
  	Medium
  	High

Potential cost

✓	at least one dataset is free for commercial use · no ground-truthing or technical expertise needed
x	analysed datasets are not free, available behind pay wall · ground-truthing and or additional technical expertise is needed

* Ground-truthing is required

** A higher technical requirement

+ Citizen science data sources are freely available. However: there are noted biases; and geographic and taxonomic coverage limitations.

Note: This table should be read alongside the reader note at the start of Section 6.

Table 6.3¹¹: Terrestrial data availability challenges, emerging developments and remaining gaps

	FEEDBACK ON DATA CHALLENGES	NPI SECRETARIAT ACTIONS TO ADDRESS	EXAMPLES OF ONGOING EXTERNAL DEVELOPMENTS	REMAINING GAPS
Ecosystem extent	Classifying ecosystem types can be challenging if datasets are not available or clear	The level of granularity of ecosystem classification was lowered and made more flexible in the measurement specifications guidance following metric piloting. Additional guidance was also added on the use of land cover layers in base map preparation where ecosystem classification data is limited. The guidance will be continually reviewed to point to the best available data sources and measurement approaches.	The Global Ecosystems Atlas will provide ecosystem classification maps to GET Level 3 (medium granularity), expected by the end of 2026. Ongoing advances in remote sensing and time-series monitoring (e.g., satellite-based land cover change, LiDAR, and AI-driven classification) will also help to enhance data availability.	Protocols or detailed guidance for companies on classifying ecosystems and on integrating remote sensing with field data for ground-truthing
Ecosystem condition	Data and technical capacity for calculating ecosystem condition are not consistently available across regions or organisations	The guidance was updated to point to additional data sources across different geographies, where available. The preparatory granularity level was also updated to provide a wider range of practical starting points to begin to explore ecosystem condition prior to moving to the more robust measurements at medium level.	Data are increasingly becoming available relating to ecosystem condition, with several regional metrics being launched and new methods being tested. Examples include: the expansion of the IUCN Red List of Ecosystems, Nature Health Index, the Habitat Condition Assessment System for Australia, Phase 2 of the Global Ecosystems Atlas (GEA), etc.	Gaps in global coverage, aligned with the measurement specifications. This space will continue to advance as the market stabilises.

	FEEDBACK ON DATA CHALLENGES	NPI SECRETARIAT ACTIONS TO ADDRESS	EXAMPLES OF ONGOING EXTERNAL DEVELOPMENTS	REMAINING GAPS
Species extinction risk	Data inputs can be costly to access	Weighting by threat status often requires data that is behind a paywall, so this was not made a required component of the extinction risk metric.	A visual map of the terrestrial STAR layer is now available for free on IBAT, but not for download/reports. The LIFE metric is free to access and currently covers terrestrial vertebrates, with early plans to expand.	Freely available or means-based access to data that meet at least the preparatory specifications, to get companies started
	Datasets cover a limited range of taxa and are not updated frequently enough using comparable approaches	Companies are advised in the guidance to use the best available data they can access and to be transparent about its limitations. Following piloting feedback on data update frequency, the metric descriptor does not mandate the measurement of change over time, although this is encouraged where feasible in the guidance. It is also noted that the metrics are designed to be embedded alongside pressure and response metrics to create a holistic monitoring approach with appropriate measurement frequencies.	A visual map of the terrestrial STAR layer is now available for free on IBAT, but not for download/reports. The LIFE metric currently covers terrestrial vertebrates and land cover change and there are early plans to expand. Efforts are underway to help deliver more frequent Red List updates.	Support to calculate comparable extinction risk scores, e.g. through expansion of taxa coverage and guidance/tools for re-baselining
Species populations	Repeated and more resource-intensive measurements are needed to produce stable trends	The metric wording was updated to emphasise that population trend estimates are required rather than absolute population counts. The Species Selection Filter and different estimation approaches for each granularity level were developed to help ensure data collection is manageable.	Advances in nature tech/ near-real-time monitoring (e.g., eDNA, bioacoustics, AI-enabled trail cameras), and image processing are lowering time and cost constraints. Expansion of citizen science and data sharing platforms including, iNaturalist, eBird, GBIF and OBIS will also increase access to data.	Gaps in scope and access to species population measurements.

DATA REVIEW: FRESHWATER

Table 6.4¹²: Freshwater data availability

METRIC	GRANULARITY LEVEL	AVAILABILITY	POTENTIAL COST	
			AT LEAST ONE DATA SET IS FREE	ADDITIONAL GROUND-TRUTHING / EXPERTISE NEEDED
1. Site Ecosystem Extent	  	✓	✓	✓
	  	✓	✓	x [*]
2. Landscape Ecosystem Extent	  	✓	✓	✓
	  	✓	✓	x [*]
3. Site ecosystem condition	  	x	x	x ^{**}
	  	x	x	x ^{*/**}
4. Land/Seascape ecosystem condition	  	—	✓	✓
	  	—	✓	x ^{**}
5. Site species extinction risk	  	—	x	✓
	  	x [†]	x	x [*]
6. Landscape species extinction risk	  	—	x	✓
	  	x [†]	x	✓
7. Site species populations	  	—	x	✓
	  	—	x	x ^{*/**}
8. Landscape species populations	  	—	x	✓
	  	—	x	x ^{**}

Availability

✓	2 or more datasets with global coverage
—	1 dataset with global coverage
x	no datasets with global coverage

Data level

  	Preparatory
  	Medium
  	High

Potential cost

✓	at least one dataset is free for commercial use · no ground-truthing or technical expertise needed
x	analysed datasets are not free, available behind pay wall · ground-truthing and or additional technical expertise is needed

* Ground-truthing is required

** A higher technical requirement

† Freshwater STAR is due for publication (1km res.) by the end of 2026

Note: This table should be read alongside the reader note at the start of Section 6.

Table 6.5¹³: Freshwater data availability challenges, emerging developments and remaining gaps

	FEEDBACK ON DATA CHALLENGES	NPI SECRETARIAT ACTIONS TO ADDRESS	EXAMPLES OF ONGOING EXTERNAL DEVELOPMENTS	REMAINING GAPS
Ecosystem extent	There is little data available on the extent of smaller freshwater ecosystem types in particular, e.g. small streams, ponds and rivers.	Additional freshwater-specific data sources were added to the guidance, and this will continue to iterate to reflect the latest updates to data availability. A proxy approach was developed to monitor the state of small rivers and streams where these are prevalent.	Global Wetland Watch dataset is expected to be released December 2026. This dataset provides high-resolution (~10 m), time-series wetland extent maps. The preview is already available.	Higher spatial and temporal resolution of freshwater extent datasets, particularly for smaller rivers, streams, seasonal systems and ecosystem-type classifications.
Ecosystem condition	Existing condition monitoring is fragmented for freshwater systems and there is a lack of accessible data with wide coverage	Additional freshwater-specific data sources were added to the guidance, e.g. using Global Dam Watch data to calculate connectivity. Guidance will continue to iterate to reflect the latest updates to data availability. A proxy approach has been included for small rivers and streams.	The Nature Health Index is developing a biome-scale condition metric for freshwater, and efforts to use eDNA-based approaches are ongoing.	Open, globally comparable condition datasets.
Species extinction risk	Species extinction risk contribution calculation layers are not currently available for freshwater. See also discussion in Table 6.3 relating to data update frequency and cost.	The IUCN Freshwater STAR layer is due to be published in 2026.	Efforts are underway for increased frequency of Red List updates and taxa coverage. New freshwater Area of Habitat layers (e.g. Ridley et al. 2026) are becoming more available and can be used for calculating contribution to species risk.	Broader coverage of freshwater species across taxa and geographies, as well as means-based access to data layers.

13 Note: This table should be read alongside the reader note at the start of [Section 6](#).

	FEEDBACK ON DATA CHALLENGES	NPI SECRETARIAT ACTIONS TO ADDRESS	EXAMPLES OF ONGOING EXTERNAL DEVELOPMENTS	REMAINING GAPS
Species populations	Repeated and more resource-intensive measurements are needed to produce stable trends. There is a lack of datasets containing long-term data beyond fish populations.	Additional freshwater-specific data sources were added to the guidance, e.g. for estimation approaches at the different granularity levels.	Advances in freshwater nature technologies and near-real-time monitoring (e.g., eDNA sampling, hydroacoustic tools, AI-enabled underwater cameras, and automated image/audio processing) are reducing time, cost and access constraints. Freshwater Area of Habitat layers (e.g. Ridley et al. 2026) are also becoming more available. The expansion of citizen science and data-sharing platforms will further improve data availability and accessibility for freshwater biodiversity.	Gaps in scope and access to species population measurements.

DATA REVIEW: MARINE

Table 6.6¹⁴: Marine data availability

METRIC	GRANULARITY LEVEL	AVAILABILITY	POTENTIAL COST	
			AT LEAST ONE DATA SET IS FREE	ADDITIONAL GROUND-TRUTHING / EXPERTISE NEEDED
1. Site ecosystem extent	  	✓	✓	✓
	  	✓	✓	x*
2. Landscape ecosystem extent	  	✓	✓	✓
	  	✓	✓	✓
3. Site ecosystem condition	  	✓	✓	✓
	  	x	x	x**
4. Landscape ecosystem condition	  	N/A: not required for marine		
	  			
5. Site species extinction risk	  	✓	x	✓
	  	—	x	x*
6. Landscape species extinction risk	  	✓	x	✓
	  	—	x	✓
7. Site species populations	  	✓	✓	✓
	  	x	x	x*
8. Landscape species populations	  	✓	✓	✓
	  	—	x	x**

Availability

✓	2 or more datasets with global coverage
—	1 dataset with global coverage
x	no datasets with global coverage

Potential cost

✓	at least one dataset is free for commercial use · no ground-truthing or technical expertise needed
x	analysed datasets are not free, available behind pay wall · ground-truthing and or additional technical expertise is needed

* Ground-truthing is required

** A higher technical requirement

Data level

  	Preparatory
  	Medium
  	High

Note: This table should be read alongside the reader note at the start of Section 6.

Table 6.7¹⁵: Marine data availability challenges, emerging developments and remaining gaps

	FEEDBACK ON DATA CHALLENGES	NPI SECRETARIAT ACTIONS TO ADDRESS	EXAMPLES OF ONGOING EXTERNAL DEVELOPMENTS	REMAINING GAPS
Ecosystem extent	IUCN GET Level 3 maps cover major coastal ecosystems (coral, mangrove, seagrass) but gaps remain for deep-sea, pelagic and temperate habitats. Spatial resolution varies from ~5 m (Allen Coral Atlas) to >1 km (AquaMaps). Temporal resolution of data is less consistent. Some core datasets start after 2020, creating baseline gaps. Dynamic ecosystems (upwellings, ice-edge) are poorly captured by static maps.	Guidance was developed to allow flexibility on baseline year where 2020 data is unavailable, with transparency on rationale advised. Marine-specific baseline dataset examples were added (e.g. Allen Coral Atlas 2018–2020, Global Mangrove Watch from 2020) and a range of spatial resolution options were provided for each granularity level. IUCN GET Level 3 is suggested for classifying ecosystems at both medium and high granularity, as it has the best coverage at present.	The Global Ecosystems Atlas aims to provide globally consistent maps to GET Level 3, whilst the Allen Coral Atlas continues to expand coverage and the Global Mangrove Watch provides annual updates. ESA WorldCover is also improving land–sea interface mapping.	Standardised, regularly updated global maps for seagrass, kelp, saltmarsh and deep-sea ecosystems. Improved temporal coverage and methods to support dynamic (e.g., seasonal or ephemeral) marine ecosystems in particular.
Ecosystem condition	No globally standardised marine condition index exists. Collating the three components (composition, function, abiotic stressor) is challenging for most marine ecosystems. Abiotic proxies (SST, chlorophyll) may not reliably indicate biological state. Marine condition varies over short periods (seasonal cycles, El Niño) and with depth.	Illustrative examples of acceptable condition measures were provided per ecosystem type (e.g. coral cover, mangrove canopy density), including simplified approaches for Preparatory level. The guidance clarifies that abiotic indicators should be appropriate and additional to biotic elements.	IUCN Red List of Ecosystems expanding marine assessments: coral reef, mangrove and seagrass assessments underway or published. Ocean Health Index (Halpern et al. 2012, 2015) provides composite condition scores for 220 EEZs although components are updated at different frequencies. Copernicus Marine Service is making available free near-real-time oceanographic data globally. The Marine Biodiversity Observation Network (MBON) is developing Essential Ocean Variables.	Standardised, scalable marine ecosystem condition indices integrating biological and abiotic components. Priority: coral reefs, seagrass, deep-sea. Freely accessible condition baselines for marine ecosystems to reduce the entry barrier at medium granularity.

	FEEDBACK ON DATA CHALLENGES	NPI SECRETARIAT ACTIONS TO ADDRESS	EXAMPLES OF ONGOING EXTERNAL DEVELOPMENTS	REMAINING GAPS
Species extinction risk	IUCN Red List has assessed ~17,000 marine species (vs >100,000 terrestrial). Key gaps: invertebrates, deep-sea taxa, many fish groups. STAR metrics are based on Red List assessments, which update every few years, and IBAT is behind a paywall for commercial users.	Weighting by threat status is not mandatory (“strongly recommended”), allowing alternatives where data is limited. The guidance notes use of national Red Lists where global coverage is sparse. The metric does not mandate the measurement of change. The metrics are designed to be used as part of a monitoring approach and extinction risk is complemented by species populations, as well as by relevant pressure and response metrics, which are more responsive to short-term change.	IUCN is prioritising reassessment of data-deficient marine species. The marine STAR layer will be available within IBAT by the end of 2026 and will include new data on trees. OBIS and GBIF continue to expand marine species observation records.	Accelerated threat assessment for marine invertebrates, deep-sea species, and commercially exploited fish in particular.
Species populations	Marine population monitoring is resource-intensive (BRUVs, ROVs, eDNA, acoustic surveys require specialist expertise) and appropriateness of methods varies across taxa and ecosystems. Data can be fragmented across disparate sources. Stable trend estimates require repeated multi-year measurements with appropriate sampling in space and time.	The metric was wording updated to highlight that population trend estimates are needed, rather than absolute counts. At preparatory level, relative abundance using area of habitat as a proxy is accepted. The Species Selection Filter updated with marine-specific guidance and guidance emphasises holistic use alongside other metrics.	Expansion of tech and AI-enabled sampling methods and processing is reducing monitoring costs and improving auditability and scalability. The Living Planet Index marine component now tracks thousands of marine vertebrate populations across >1,800 species (WWF/ZSL, 2024). There is also ongoing expansion of citizen science platforms.	Gaps in scope and access to species population measurements for non-commercial species. Scalable, cost-effective monitoring protocols adoptable by non-specialist corporate users.

OTHER PRACTICALITY CHALLENGES

Table 6.8: Other (non-data availability) challenges identified in feedback during the consensus-building process

METRIC	KEY TOPIC	FEEDBACK ON BARRIERS TO PRACTICALITY	NPI SECRETARIAT ACTIONS TO ADDRESS	ONGOING EXTERNAL DEVELOPMENTS	REMAINING GAPS
Ecosystem condition	Ecosystem condition standardisation	“Ecosystem condition” and “condition class” are not well defined, leaving wide scope for inconsistent interpretation.	The criteria for ecosystem condition layer selection were reviewed and some high-level guidance provided on principles for defining classes. Greater prescriptiveness would require further and extensive consensus building, therefore this will be proposed as a topic for future frameworks to consider.	Many organisations, including NPI Core Group members, are advancing ecosystem condition measures to provide consistency at the biome level	A standardised framework/ protocol is needed to consistently classify condition across ecosystem types, biomes, and reference state approaches.
Species populations	Monitoring guidance	Framework does not provide guidance on methodologies for and how often to measure/ report species populations.	Reporting frequency is the mandate of the framework and standards embedding the metrics. Further examples of different monitoring approaches have been added to the guidance. Monitoring frequency will depend on use case needs and species life history, amongst other factors, and will therefore require very context-specific guidance.	Emerging updates in EU reporting requirements and CBD progress updates (e.g. through national monitoring systems) may help drive advances in guidance and tools for monitoring. TNFD provided a number of examples of corporate reporting of species populations in its discussion paper on state of nature metrics.	Detailed monitoring guidance for companies

METRIC	KEY TOPIC	FEEDBACK ON BARRIERS TO PRACTICALITY	NPI SECRETARIAT ACTIONS TO ADDRESS	ONGOING EXTERNAL DEVELOPMENTS	REMAINING GAPS
All metrics	Feasibility of landscape metrics	Landscape/ seascape-level application can be limited by data accessibility and interoperability.	The measurement guidance was enhanced to cover: (i) newly available data sources, (ii) defining practical landscape boundaries, (iii) use of remote-sensing for ground-truthing, as well as only requiring ground-truthing at high granularity for landscape metrics, and (iv) the option to use different granularity levels for site vs landscape metrics if required.	Data sharing platforms are continuing to grow, although could benefit from further alignment/ standardisation of metadata for inter-operability. The growth of cloud-based geospatial platforms can help enable scalable analysis. It is hoped that the development of aligned metrics and measurement specifications will encourage market development of data and tools to deliver them.	Coordinated data collection and availability across landscapes/ jurisdictions. Guidance on linking landscape metrics to use case decision-making
	Feasibility for supply chains	Metrics are site-centric and may be challenging to use across complex supply and value chains where data and traceability are constrained.	Guidance was updated to highlight the availability of landscape-scale metrics for where site-level location data is unavailable, and these could be particularly helpful for sourcing regions. The guidance also points to existing frameworks and standards (e.g. TNFD, GRI, SBTN) on how to approach assessment efforts in value chains.	There is increasing availability of supply chain traceability tools (e.g. blockchain-based or other geolocation of sourcing areas) and growth of jurisdictional / landscape initiatives (e.g. for deforestation-free supply chains). The integration of value chain assessments into key voluntary and mandatory frameworks (e.g. TNFD, EU ESRS) will also help support market development.	State of nature metrics in supplier certifications and supply chain tools, reducing the burden on customers. Further capacity building on traceability.

METRIC	KEY TOPIC	FEEDBACK ON BARRIERS TO PRACTICALITY	NPI SECRETARIAT ACTIONS TO ADDRESS	ONGOING EXTERNAL DEVELOPMENTS	REMAINING GAPS
	Feasibility for financial institutions	Metrics are not yet feasible for financial institutions due to limited guidance on portfolio-level application and aggregation where site-level data is lacking.	Recognising in the guidance that application is currently more advanced for asset managers and asset owners with location-specific data (e.g. listed equities, real assets), and that feasibility for other asset classes (e.g. loans, private markets, sovereign exposures) will improve over time once client data becomes available.	There is increasing availability of geospatial portfolio screening tools, growth in datasets linking corporate activities to locations and emerging methodologies to extend analysis to indirect exposures (e.g. corporate lending, sovereigns). Projects such as those of Multilateral Development Banks and UNEP-FI to embed nature metrics and targets are testing approaches.	Approaches and guidance for extending applicability from location-specific portfolios (e.g. real asset managers) to more complex asset classes.
	Feasibility for forestry/ agriculture sectors	Sector-specific challenges for forestry and agriculture included how to apply to semi-natural sites, disaggregated sites and across larger scales and temporal harvesting cycles.	The inclusion of semi-natural ecosystems was clarified within the ecosystem extent metric wording. Guidance on the application to large sites and on additional metrics to capture the impact of these sectors across mosaic landscapes was added. It was also noted that supplementary sector-specific metrics should be used on top of the universal set as needed.	There is increasing recognition of semi-natural and managed ecosystems in global metrics. Expansion of monitoring approaches that integrate functionality and production may also support these sectors.	Sector-specific guidance for applying the aligned state of nature metrics as needed. Increased accessibility of monitoring for small holders.
	Equity issues - Feasibility for SMEs	Equity issues due to data costs in some cases and need for specialist GIS/ecology knowledge or capacity.	Steps to address data accessibility as noted in Tables 6.2-6.7, as well as developing SME case studies and targeted guidance.	Technical capacity building programs exist, including with Esri, GeoForAll and UN Open GIS Initiative. Training programs through IUCN Academy , Conservation Training , and Learning for Nature may also support SMEs.	Accessible tools to automate the calculation of the preparatory level metrics. Means-based data access.



07

NEXT STEPS AND CALLS TO ACTION

7. NEXT STEPS AND CALLS TO ACTION

CALLS TO ACTION

The feedback gathered during the consensus-building process highlighted a range of areas of further work that would help increase the practicality or robustness of the metric calculations. This list is not a comprehensive assessment and is not ranked, rather it provides a reflection of some of the key challenges raised by metric users and experts that need to be unlocked to help support metric implementation. It is shared here as a call to action for all those operating in the state of nature metrics space to help address the key challenges faced by metric adopters. This includes data and metrics providers, consultancies, academic and research institutions, governments, communities, companies and non-governmental organisations. There is already lots of fantastic innovation underway in relation to nature data and measurement; by providing consensus on metrics, we hope to help drive alignment and further market incentive around solutions to the key challenges below.

Table 7.1 – Summary of calls to action for improving metric practicality

THEME	CALL TO ACTION	DETAIL
Data tools and platforms	Improving data and making data accessible	Robust data tends to be more costly to produce, however paywalls can form a significant barrier to using metrics. Governments and funding institutions should look to provide financial support for robust, sustained and open access biodiversity data for calculating core metrics. Data providers could also consider offering means-based access to data (i.e. income or size-based fee structures) or exploring other innovative financial and licensing models to improve equitability of data access. Companies could also consider responsibly sharing the data they collect, e.g. via platforms such as GBIF.
	Landscape-level coordination on data	Enhanced coordination of nature data collection and availability across landscapes, jurisdictions and even globally will help streamline measurement, especially of the landscape context metrics. Collating data across landscapes and making it easily accessible can reduce the responsibility, resource burden and potential duplicated effort for individual actors in the landscape. See also TNFD's recommendations for a global Nature Data Public Facility .
	Automation	At the preparatory granularity level, the metrics can be calculated using global nature data layers combined with location information. The development by nature tech providers of tools to automate the calculation of preparatory-level metrics and guide users on the steps to reach medium level would help companies get started with exploring nature on their sites and accelerate progression towards robust metric calculation.
Priority data gaps	Terrestrial	See Table 6.3. Comparable and robust ecosystem classification and condition measurement layers with global coverage and regular updates will help reduce data manipulation and calculation inputs from companies at medium and high granularity levels.
	Freshwater	See Table 6.5. Mapping and state of nature data for <30m pixel size rivers and streams will help to ensure these ecosystems can also be measured. Condition data layers and species data beyond fish are also lacking global coverage.

THEME	CALL TO ACTION	DETAIL
	Marine	See Table 6.7. Global coverage remains a key challenge for marine data. Standardised, regularly updated ecosystem extent global maps for seagrass, kelp, saltmarsh and deep-sea ecosystems are high priority, as well as standardised condition indices for coral reefs, seagrass and deep-sea ecosystems and population data for non-commercial species.
Guidance	Further development	The Initial Measurement Guidance (v1) provides an overview of metric measurement and calculation approaches, however further detail such as worked examples, technical guidance on key challenge areas and metric application guidance specific to particular sectors, use cases or realms/ecosystems would support companies in using the metrics. See Table 7.2 below.
Ecosystem condition	Standardisation	Ecosystem condition measurement and classification stands to benefit from further standardisation to improve comparability of measurements. This could include building consensus across stakeholders around the measurement and aggregation of input components (i.e. structure, function and composition) and a system for assigning condition classes, as well as furthering alignment on measurements of ecosystem connectivity.
Value chain application	Traceability and data transfer along value chains	Value chain traceability and data transfer remains a challenge across many aspects of business risk and sustainability (e.g. climate risk and Scope 3 emissions, modern slavery/human rights risks, etc.), especially for dynamic or less transparent value chains. Technologies such as blockchain and product passports are gaining momentum but further guidance or other support for companies is still needed.
	Certifications and tools	Commodity certification and procurement or other related tool providers can have an important role to play in value chain metric application. Either by facilitating location level data collection or by embedding state of nature metric calculation into their processes, they have the potential to reduce the resource burden on downstream customers.
	SME support	Upstream SMEs may have reduced capacity for direct state of nature measurement, yet they may be closest to the impacts on the state of nature and could benefit greatly from support from larger entities further down the value chain. Capacity-building and data sharing initiatives across value chains can benefit both parties.

Table 7.2 – Selection of identified further technical measurement guidance needs

THEME	TOPIC	NEED
Key overarching topics	Seasonality/ temporal variation	Intra- or inter-annual variation in species and ecosystem dynamics can impact state of nature metric measurements. Further supporting guidance is needed on how to manage this appropriately, including in relation to baseline-setting.
	Frequency of monitoring	The appropriate frequency of monitoring of an indicator could vary by species and ecosystem type, as well as by use case and other factors. More detailed technical guidance is needed to support companies in designing appropriate monitoring plans.
	Incorporating different knowledge types	Local and traditional knowledge has a key role to play in state of nature assessment and management, e.g. see the IPBES Transformative Change Assessment . The co-development with knowledge holders of guidance covering responsible and respectful incorporation of different types of knowledge into the specific State of Nature Indicators and Metrics can help strengthen the robustness of metric outputs.
	Additional context-specific metrics	The indicator and metrics framework presented in this report provides a core, minimum set of universally applicable state of nature metrics. These will likely need to be supplemented with context-specific metrics for particular use cases or ecosystem types.
	Pressure-state interactions, ability to influence and attribution	Natural systems function in fantastically complex ways, so it is not always possible to attribute the change in a particular pressure (solely) to a specific change in state, nor to have complete influence over a state outcome. This will hopefully become easier as our understanding of these systems develops over time, however attribution is a topic that will be covered by the Nature Positive Initiative's upcoming work on demonstrating credible nature-positive outcomes.
	Biotic and abiotic interactions	There is also a need for clearer guidance on how abiotic and biotic factors interact and how relevant metrics can be used alongside one another, including in relation to pressure-state relationships as described above.
	Interpretation and further use case guidance	The Initial Measurement Guidance intentionally only covers how the metrics can be calculated. It is designed to support existing frameworks and standards in embedding the metrics for particular use cases (e.g. assessment, disclosure, transition planning, target-setting etc.). Further use case-specific guidance will be needed to help companies apply the metrics and other users may also benefit from guidance on how to interpret the metric outputs produced.
	Worked examples and case studies	Step-by-step worked examples of how to measure and calculate the metrics will be highly beneficial for companies. These can also help to elucidate further on topics users find challenging, e.g. how to ground-truth data. A set of piloting case studies is available in Appendix A and could be supplemented in future by further studies from different realms, use cases and ecosystems.
Freshwater and marine realms	Defining site boundaries	Further technical guidance for defining site boundaries in areas that can often be less clearly demarcated, e.g. hydropower systems and marine areas, was identified as a need for companies in the feasibility assessments.

THEME	TOPIC	NEED
	Ecosystem classification and differentiation	Similarly to the site boundaries, identifying where the boundaries of specific ecosystem types lie in dynamic freshwater and marine ecosystems was identified as needing further guidance. This also links to the data gaps around freshwater and marine ecosystem maps.
	Volumetric approaches	Applying metrics in three-dimensional freshwater and marine systems presents unique challenges. The current measurement guidance focuses on ensuring universal practicality, however future guidance on how to apply volumetric measurement approaches can help better capture the state of nature in these systems.
Sector-specific guidance	Financial portfolios	Whilst the metrics were found to already be helpful for real asset management and project finance use cases, application across intangible financial portfolios remains a challenge. This will become easier over time as more client data becomes available following the aligned metrics, however more immediate guidance may be needed to support state of nature assessment across financial portfolios.
	Forestry and agriculture	Sector-specific measurement challenges relating to the forestry and agriculture sectors include the disaggregation of operations across a landscape and the impact of harvesting cycles. Further sector-specific guidance on applying the metrics and considering additional metrics may be helpful.

NEXT STEPS

Embedding metrics

The metrics are intended to be embedded in existing frameworks and standards alongside the pressure and response metrics needed for driving and monitoring action to halt and reverse nature loss. These frameworks and standards can or should contain reasonable safeguards in place, such as social safeguards and the need for free prior informed consent. For example, in April 2026 TNFD, SBTN and GRI launched a public consultation on how the metrics could be embedded in their frameworks to support focus use cases (Figure 7.1).

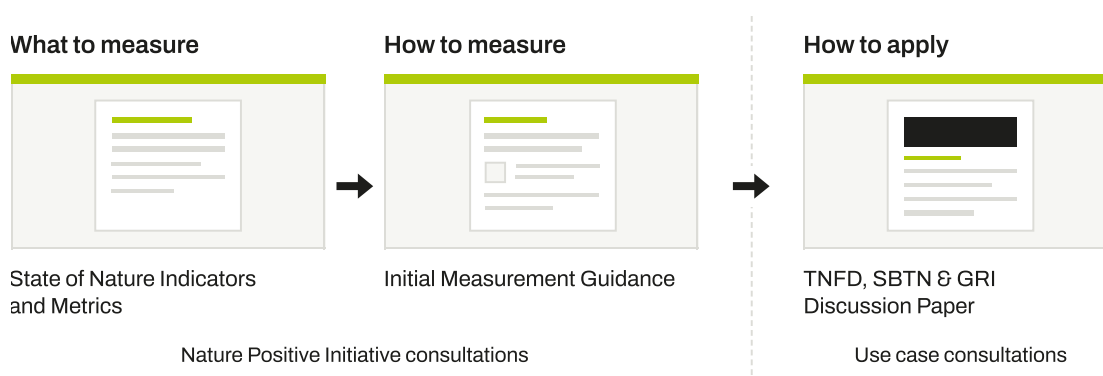


Figure 7.1 – Overview of scope of consultation processes, H1 2026

There is a range of other frameworks, standards and potential use cases for the metrics and the the Nature Positive Initiative looks forward to engaging with owners and developers. It is particularly important that the robustness of the measurement approach is maintained when embedding the metrics and a series of principles have been developed to support responsible adoption of the metrics, see **Box 7.1**.

Box 7.1 – High-level principles for embedding the State of Nature Metrics in frameworks and standards

While how to embed these metrics is ultimately the decision of the organisations embedding them, some key principles to consider include:

1. Maintain the core framework as a holistic approach to state of nature assessment. The components are designed to be combined to create a robust perspective on the state of nature, and this purpose will not be achieved if only a selection of the indicators and metrics are embedded.
2. Embed state metrics alongside the pressure and response metrics they are designed to complement in order to support an absolute avoidance approach to managing pressures on nature, consistent with SBTN's AR3T framework, and avoidance first emphasis consistent with the mitigation hierarchy and conservation hierarchy. These metrics should be used to drive action to halt and reverse nature loss, consistent with the definition of Nature Positive and the mission of the Kunming-Montreal Global Biodiversity Framework. Monitoring and reporting of the metrics should not be utilised to drive perverse outcomes for nature, e.g. habitat loss (e.g. deforestation) or overexploitation (e.g. overfishing), and other pressures. For more information on the importance of embedding and safeguards, please see Accountability Framework Initiative, Science Based Targets Network, and long-standing institutional positions on deforestation and conversion-free commodities (DCF).
3. Ensure a robust and credible approach to prioritisation of locations for measurement is applied where needed. This should incorporate the principle of double materiality and consideration of species and ecosystem risk. Examples include TNFD's Locate phase, GRI 101 Biodiversity Standard Disclosures 101-4 and 101-5, and SBTN Steps 1 and 2 guidance.
4. Maintain appropriate safeguards to ensure the responsible implementation of measurement, both from environmental and social perspectives. This includes the respectful and equitable incorporation of local and Indigenous Knowledge regarding the state of nature, following the principle of Free, Prior and Informed Consent.
5. If creating additional guidance or tools to support metric implementation, keep in mind the core design criteria for the metrics:
 - ✓ Credible and science-based
 - ✓ Responsive
 - ✓ Flexible
 - ✓ Aligned
 - ✓ Accessible and affordable
 - ✓ Auditable
6. Take action to ensure transparency of methodologies and approaches (see Initial Measurement Guidance [Section 4](#)). This could include, for example, requiring "Comply or explain" approaches for disclosures and granularity level progress, especially as companies are getting up to speed with applying the metrics.
7. Consider the ecological appropriateness and practicality of measurement when determining requirements related to frequency of reporting, noting that this may vary across species and ecosystems.

Further support

As highlighted in the ‘Further needs and calls to action’ section above, steps to further enhance the practicality of measuring state of nature metrics may span from tackling highly specific challenges (e.g. sector or location-specific nuances) to wide, systemic issues (e.g. relating to equity and data access). Whether the solutions lie in further guidance, technological development or other actions, these are issues to be addressed as a community of experts and users, and it is hoped that the consensus around these core metrics will help accelerate aligned action to help corporates and other users meet their measurement goals.

[Section 6](#) highlights a selection of example initiatives already underway to facilitate ease of measurement, which we can draw confidence from today. An emerging guidance initiative in its very early stages is the development of a Nature Measurement Protocol to provide a level of detail and standardisation analogous to the Greenhouse Gas Protocol for core nature metrics. See **Box 7.2** for more information.

Box 7.2 – The need for a Nature Measurement Protocol

In November 2025, a number of global nature and sustainable business organisations - including the the Nature Positive Initiative, WBCSD, Capitals Coalition, GRI, IUCN, TNFD and WRI – came together to announce an agreement to develop a Nature Measurement Protocol. This new Protocol would provide standardised measurement methodologies and tools, link site-level data to national and global goals and bridge nature, carbon and financial accounting standards. The initiative will be convened initially by the Nature Positive Initiative and WBCSD and will build on a strong foundation of existing work, synthesising best practices into a single, adaptable toolbox for implementation and update.

The Protocol aims to:

1. Strengthen decision-making and disclosure by providing guidance on consistent measurement approaches across companies, sectors, geographies and value chains, improving comparability and assurance under frameworks such as TNFD and standards such as GRI, ISSB and the European Sustainability Reporting Standards under the Corporate Sustainability Reporting Directive (CSRD).
2. Enable credible target-setting by grounding corporate target-setting in robust, repeatable measurement methods at both site- and corporate-level, ensuring targets are based on consistent, high-quality data.
3. Establish a common benchmark by providing a protocol-compliance lens to assess tools, datasets and methodologies used in nature transition plans and reporting.
4. Integrate nature and financial accounting by supporting alignment with sustainability and regulatory systems such as UN System of Environmental-Economic Accounting (UN SEEA) Ecosystem Accounting and emerging ISSB IFRS standards.

The first phase of this work covers fundraising and building a strong and inclusive governance structure for the Protocol’s development. Initial stakeholder engagement will focus on establishing consensus on the scope and structure of the Protocol to inform a technical development roadmap. To follow and engage in this work, you can register for the the Nature Positive Initiative or WBCSD newsletters or join the Nature Positive Forum.



APPENDICES

APPENDIX A: PILOTING PROGRAMME CASE STUDIES

Following the terrestrial Piloting Programme, participating companies were invited to share their experiences with the State of Nature (SoN) framework, including how they calculated the metrics, their rationale for doing so, and the insights generated. This section outlines project case studies from 10 companies:

- 1. Acciona
- 2. Dow
- 3. Holcim
- 4. LanzaJet
- 5. MS&AD Insurance Group
- 6. New Forests
- 7. Oji Holdings
- 8. Sibelco
- 9. Suzano
- 10. Vale

The piloting programme was conducted during Phase 3 of the consensus-building process. As a result, the indicators used were not the final agreed set but an interim version (Figure A1).

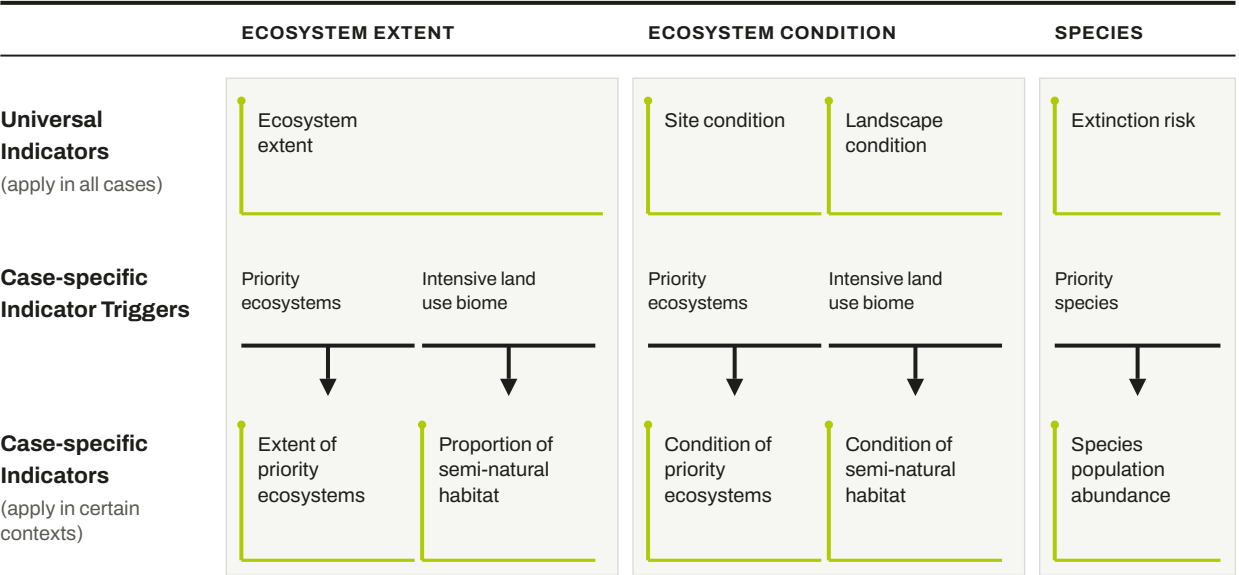


Figure A1: Indicators tested in the terrestrial Piloting Programme (May-October 2025)

All piloting companies were also asked to share any advice they had for others on adopting state of nature metrics. Figure A2 outlines some themes in their responses.

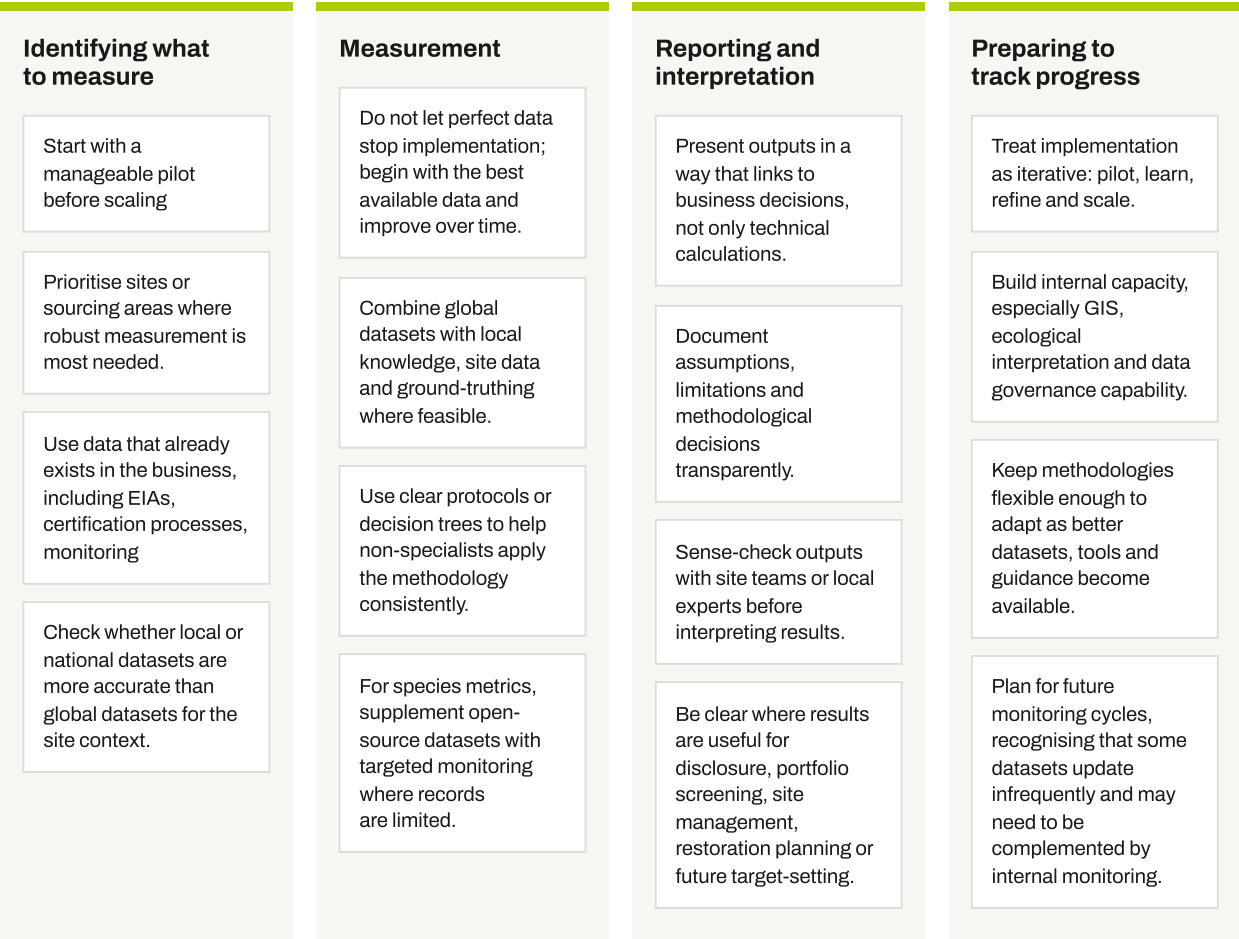


Figure A2: Advice from piloting companies on adopting state of nature metrics

CASE STUDY: ACCIONA

Acciona is a global sustainable infrastructure group dedicated to the development and management of infrastructure and renewable energy. Acciona participated in the State of Nature (SoN) Metrics piloting programme to test emerging global metrics aligned with the Nature Positive Initiative and evaluate their practical applicability across infrastructure projects.

A) Where Acciona applied the metrics

Location	Moss Municipality, Viken County, Norway
Pilot site	Sandbukta–Moss–Såstad railway project
Pilot area size	The project comprises two tunnels of 2.3 km and 2.7 km, a 500m cut-and-cover tunnel, and associated linear infrastructure
Ecosystems covered	The surrounding landscape is dominated by croplands, with forest and wetland corridors providing ecological connectivity
Metrics piloted & granularity	The indicators ‘proportion of natural or semi-natural habitat’, ‘site condition’, ‘landscape condition’ and ‘species extinction risk’ were computed at medium granularity level; the indicator ‘ecosystem extent & classification’ at high granularity level and ‘species population abundance’ at low granularity level
Piloting partner(s)	World Business Council for Sustainable Development (WBCSD)

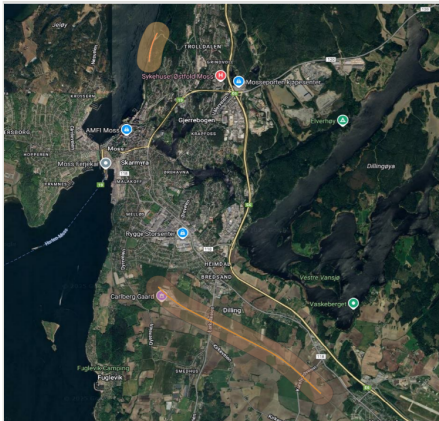


Figure 1: Site location (Source: Acciona)

B) How and why the piloting project was completed

In line with its sustainability commitments to regenerating ecosystems, Acciona sought to understand how the SoN indicators could strengthen environmental decision-making, enhance biodiversity outcomes and support future disclosures. The pilot also offered an opportunity to contribute technical insights to the development of a globally consistent framework.

The pilot program followed a multi-step workflow and integrated both corporate and project-level data sources. Acciona’s Corporate Sustainability team coordinated the exercise with their Construction business. Site, buffer and surrounding areas were delineated according to the NPI guidance.

For data collection, amongst other tools, Acciona relied on Environmental Impact Assessment (EIA) studies, ecological surveys and monitoring reports from the client and Acciona’s on-site teams. On-site environmental specialists provided ecological context, species observations and mitigation measures. Client documentation (provided by the Government agency responsible for railway operation, BaneNor) and Norwegian environmental datasets were reviewed to validate ecological baselines.

Metrics were computed using GIS tools, applying reclassification, overlay analyses and change detection across 2017-2024 imagery. A pre-construction baseline (2020) was complemented by retrospective imagery from 2017 to capture pre-disturbance conditions.

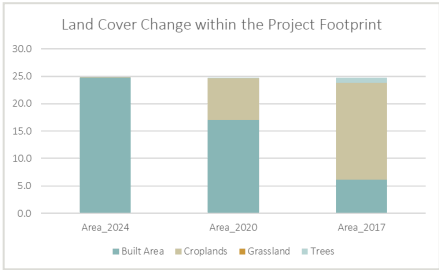


Figure 2: Land cover change computed by the company as part of their SoN assessment [Acciona]

C) Key measurement approaches and tools used

Ecosystem (condition and extent)		Species
Approaches	- Detailed national datasets were used to complete high granularity ecosystem classification - Multiple sources were overlaid to validate classifications - Ecosystem condition assessment integrated both spatial datasets and expert ecological judgement where required	Priority species were identified and habitat-based estimates of population change applied - evaluation of habitat stability was applied as a proxy for species habitat conditions
Tools / data sources	- Land-cover and landscape metrics: satellite datasets (ESA Dynamic World, WorldCover), Natur i Norge (NiN) datasets, with Google Earth Imagery for verification - Ecosystem types classification: GET Level 3, SBTN “Natural Lands” typology, with project orthophotos and site inspections for validation - Spatial processing: QGIS 3.34	- Priority species identification: IBAT species reports, Arborist report (2025), EIA species lists and habitat assessments (Norconsult, 2019) - Local species-habitat cross-reference: Natur i Norge (NiN) - Habitat stability: ESA Dynamic World land cover dataset, and orthophotos - Regional species influenced by the project area identification: IBAT and Artsdatabanken, Arborist report (2025) - Mapping and spatial comparison: QGIS

D) Key challenges encountered and how the framework was adjusted to ensure practicality

		NPI notes: How feedback was incorporated
Ecosystem Extent	Metric suitability limitation (linear infrastructure): as narrow footprints rarely generate detectable pixel-level change, Acciona found the land-cover metrics were not suitable for linear projects. They addressed this by emphasising qualitative ecological assessments and integrating additional condition indicators.	It was noted that higher granularity metric measurement specifications were likely to be best suited for linear infrastructure projects. This feedback also emphasised the importance of maintaining sufficient flexibility and safeguards in the condition metric descriptor to enable it to be applied robustly in different contexts.
Species	Over-inclusive species triggering: Acciona found the site buffer zones overly-inclusive, producing long lists of species beyond the true area of habitat. These were refined manually by Acciona using habitat suitability and EIA documentation.	Further clarity has been provided on the boundaries to which species metrics should be applied (i.e. site vs landscape), recognising that measuring species populations at the landscape scale is not yet feasible due to data limitations in many areas. A Species Selection Filter and guidance was also developed to support the refinement of species lists.

E) Why is it important for companies to measure state of nature metrics?

For Acciona, measuring SoN Metrics is important because it helps reduce variability in how biodiversity is assessed and managed across projects, geographies and regulatory contexts. By structuring and harmonising existing environmental information—such as that generated through EIA—the metrics provide a consistent baseline of ecological understanding, including in jurisdictions where requirements are uneven or absent.

This consistency supports more robust and comparable decision-making and enables users to move beyond compliance-driven assessments towards more integrated, landscape-aware approaches that embed biodiversity into asset performance and strengthen ecological resilience and value.



“By investing in a clear scope, robust ecological baselines and consistent metrics, organisations can turn biodiversity data into a powerful tool for decision-making.”

Kristina Cerro Urcelay
Environmental Specialist, Acciona

CASE STUDY: DOW

Dow Inc. is an American multinational corporation, amongst the largest chemical producers in the world. The company piloted the metrics to retrospectively analyse one of their restoration projects.

A) Where Dow applied the metrics

Location	Midland, Michigan, United States of America
Pilot site	Man-made ash pond once part of Dow Chemical's Michigan Operations (built in the 1950s) along the Tittabawassee River and adjacent to area owned by the city of Midland
Pilot area size	The pilot area was comprised of 23 acres total, which includes an adjacent property of 14 acres owned by the city of Midland
Ecosystems covered	Man-made pond turned into a functioning wetland
Metrics piloted & granularity	Ecosystem extent, proportion of natural or semi-natural habitat and site ecosystem condition were measured at all three granularity levels; landscape condition was measured at the high granularity level
Piloting partner(s)	Global Reporting Initiative (GRI)

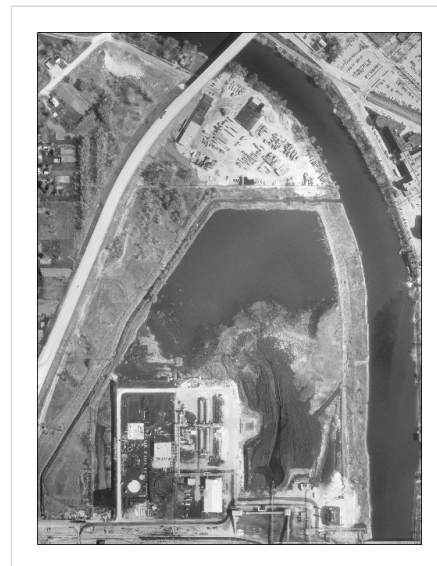


Figure 1: Project Area (Source: Dow)

B) How and why the piloting project was completed

Dow sought to restore an ash pond and initially considered two remediation options (cap & treat or full restoration). To inform the decision and design the preferred solution, Dow developed a tailored ecosystem services–based approach using the Ecosystem Intelligence tool (developed by Dow, the Nature Conservancy and EcoMetrix Solution Group). The selected nature-based restoration design was then used as a pilot case for a retrospective application of the state of nature metrics.

Dow’s approach to calculating nature-related indicators utilised both the Ecosystem Intelligence tool and direct field observation. Indicator calculation was spatially explicit, with the site divided into discrete polygons that reflect meaningful variation in ecological attributes influencing ecosystem functioning.

Dow also carefully considered the use of the metric outputs, applying an iterative process in which site context, observed conditions and functional performance together informed how indicators were calculated and interpreted, ensuring their decision relevance.



Figure 2: Site to be mapped using Ecosystem Intelligence

C) Key measurement approaches and tools used

Ecosystems		Species
Approaches	- Ecosystem classification: applied the Global Ecosystem Typology (GET) levels and then used datasets including vegetation/structure, soil structure, water regime and topography to further refine ecosystem types in line with their functional processes - Landscape condition: additional abiotic contextual aspects were added, such as flood risk, to expand this assessment	- Map of Life was used to identify protected species present within a 20km buffer surrounding the site with data available - A local expert also provided information on the species known or expected to be found in riparian areas around the site - No at-risk species were located on the site itself, therefore habitat change was used as a proxy metric
Tools / data sources	- Ecosystem classification and condition: On the ground ecosystem service valuation and Ecosystem Intelligence tool at high granularity involving multi-stakeholder engagement and scientific validation - Landscape condition: Map of Life, Floodplain Mapping, Historic Landcover Mapping, IBAT	Map of Life tool

D) Key challenges encountered and how the framework was adjusted to ensure practicality

		NPI notes: How feedback was incorporated
Ecosystem Extent	Appropriateness of datasets: Dow found the datasets suggested, especially GET levels for ecosystem classification, difficult to work with and of limited utility – particularly for smaller sites located in more urban areas. It noted more flexibility in methods, tools and/or baseline years could be helpful.	Flexibility relating to the use of GET classifications or other national equivalents was included in the guidance. Similarly, while a baseline of 2020 was advised, flexibility was incorporated based on data availability and other contextual factors, providing the methodology is made transparent.
All indicators	Natural vs semi-natural classification: Dow considers that classifying ecosystems as 'natural' or 'semi-natural' introduces complexity without necessarily addressing the key factors needed to assess ecosystem extent and condition in the context of land use change.	The requirement to categorise ecosystems into natural and semi-natural was removed, instead focusing on breakdowns by ecosystem type and land use categories.

E) Why is it important for companies to measure state of nature metrics?

Dow's assessment found that ecological restoration of the ash pond to provide wetland habitat was faster, lower cost and provided strengthened ecosystem service delivery compared to the traditional cap and treat remediation method. The State of Nature metrics were integrated into the project design and delivery, complementing additional measures, to inform robust decision-making, as well as supporting external reporting against the GRI 101: Biodiversity Standard.

Dow noted that the State of Nature Metrics help address the lack of clear and consistent measurement, which had been a major barrier to meaningful corporate engagement on biodiversity. They felt ambiguity and inconsistency in metrics can undermine credibility and decision-making; whereas robust, aligned metrics provide the foundation companies need to track progress, demonstrate impact, and move biodiversity action from aspiration to implementation.



I think this work will have great impact. I could see that all of the participants and NPI community are passionate about this piece of work and we all want to finally be able to say: “Yes, biodiversity can be assessed. Let me show you how we can do this”.

France Guertin
Senior Manager Environmental Resilience, Dow

CASE STUDY: HOLCIM

Holcim is a global firm with operations spanning two business segments: building materials and building solutions. Within the building materials division, Holcim operates several cement plants and quarries. Holcim participated in the NPI state of nature metrics piloting program as part of its commitment to nature conservation, aiming to support efforts to standardise corporate measurement of nature impacts and reinforce its ambition to lead on nature action.

A) Where Holcim applied the metrics

Location	- Macuspana, Mexico - Cartago, Costa Rica
Pilot site and area	- Buenavista (Macuspana): cement plant and quarry, 1.3km² - La Chilena (Cartago): cement plant and quarry, 0.2km²
Ecosystems covered	- The Buenavista site is located in a patch of tropical rainforest surrounded by agricultural land - To the east, La Chilena's site borders the Agua Blanca Nature Reserve and is otherwise surrounded by tropical rainforest
Metrics piloted & granularity	- Ecosystem extent was measured at high granularity level - Site condition, species extinction risk and species population abundance were all measured at low granularity level
Piloting partner(s)	IUCN

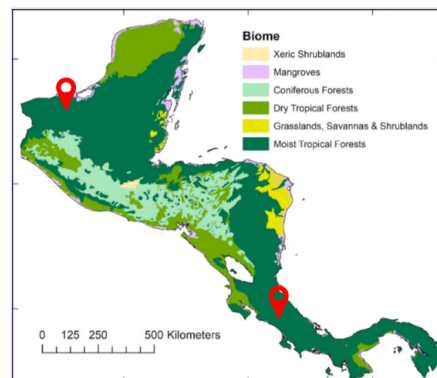


Figure 1: Holcim sample site locations in Central America. (Source: Base map, Harvey et al. 2021)

B) How and why the piloting project was completed

Holcim's main objectives of the pilot were to (i) test the Species Threat and Abatement Risk threat (STAR-t) indicator as a metric of species extinction risk and (ii) to test the compatibility of the Biodiversity Indicator and Reporting System (BIRS), which was developed by IUCN for the cement and aggregates sector in 2014, to measure ecosystem extent and site condition.

Holcim used existing data as much as possible. The company requires quarries located in areas of high biodiversity importance to develop a Biodiversity Management Plan and has conducted BIRS assessments across all of its quarry sites. As a result of these requirements, both sites utilised existing ground-truthing on data on species presence and abundance, habitat extent and classification and site conditions. These assessments were carried out with the support of local ecological consultants. The remaining data gaps were addressed using available literature and site-specific knowledge from local employees. For the species indicators, Holcim worked closely with the site's employees and their piloting partner, IUCN.



Figure 2: Image of sample site landscape.
(Source: Holcim)

C) Key measurement approaches and tools used

	Ecosystems (extent and condition)	Species
Approaches	Following the BIRS assessment methodology for identifying habitat types and calculating condition classes, with the support of local ecological consultants	- Calculating calibrated STAR-t scores for the sites following IUCN's methodology - Estimated STAR-t scores were cross-checked with biodiversity and threat data to calibrate
Tools / data sources	- Primary data, observations in the field - GIS mapping of ecosystems already conducted by the company - Available literature - Knowledge of the sites from local employees	- Integrated Biodiversity Assessment Tool (IBAT) - Estimated STAR-t layer - STAR calibration methodology - Biodiversity inventory data and threat scope and severity data from on-site surveys

D) Key challenges encountered and how the framework was adjusted to ensure practicality

		NPI notes: How feedback was incorporated
All indicators	Adopting new metrics: integrating these new indicators requires time to fully understand them and to find reliable data sources. Holcim therefore prioritised low granularity levels. Holcim considers that local teams will need to familiarise themselves with the metrics and receive adequate training. Securing reliable local data and technical expertise will likely require a staggered approach to reporting.	The low granularity level metrics have been revised into a “Preparatory” level. These are simpler to calculate, requiring minimal manipulation of globally available data, and are designed to provide an accessible on-ramp into understanding the nature on the site and starting to establish reporting practices.
	Related to this, it would be useful to prioritise sites to focus on robust measurement where it is most needed. This would also ensure that resources are allocated as efficiently as possible.	The draft Measurement Guidance has been updated to refer companies to established frameworks and standards for prioritising measurement efforts, e.g. from TNFD, SBTN and GRI. This allows flexibility for companies to align with frameworks they are already using (thus reducing duplicated effort), whilst ensuring good practice is followed.

E) Why is it important for companies to measure state of nature metrics?

According to Holcim, the metrics offer a comprehensive view of the state of nature at a site, as well as a broad understanding of the improvements required, how they should be prioritised, and how they can be delivered. Holcim further states that the metrics provide a standardised approach to assessing the state of nature, enabling comparability not only across sites within a company but also between companies and across sectors.



“Through our pilot with the Nature Positive Initiative, in collaboration with the IUCN, we demonstrated how our BIRS methodology can measure biodiversity in a practical and decision-relevant way. This work confirms the critical role of such initiatives in harmonising biodiversity metrics across industries and advancing the development of state-of-nature indicators under the TNFD framework.”

Renata Pollini
Head of Sustainable Construction and Nature, Holcim

CASE STUDY: LANZAJET

LanzaJet is a US-based sustainable aviation fuel (SAF) producer, with an expanding global pipeline of projects, leveraging the organisation's Ethanol-to-Jet technology. Their product is fully compatible with existing commercial aircraft and airport re-fuelling infrastructure. They are considered as a key player within the airline industry's net zero transition. LanzaJet applied state of nature metrics to explore how they could provide a science-based, standardised way to measure ecological integrity and impact across different sites and feedstock landscapes.

A) Where LanzaJet applied the metrics

Location	Sarawak (Malaysia) and Northwest Borneo
Pilot site	Four RAW Biofuels feedstock sites, a prospective feedstock (Hybrid Tropical Switchgrass) supplier for LanzaJet's fuel production
Pilot area size	3,000 hectares
Ecosystems covered	Degraded grasslands, former plantation areas, and secondary forests
Metrics piloted & granularity	- Ecosystem extent, natural-habitat proportion and habitat connectivity were completed at medium granularity level - Site and landscape condition, and species-extinction risk were completed at low granularity level
Piloting partner(s)	Global Reporting Initiative (GRI)

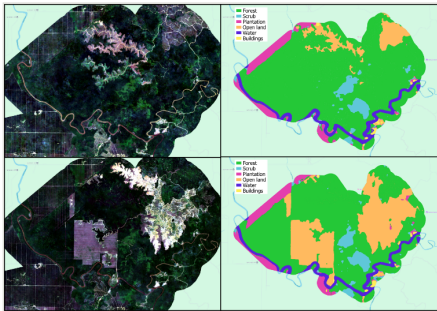


Figure 1: Landcover classification of one of the sample sites for 2020 (top) and 2025 (bottom) (Source: RAW Biofuels)

B) How and why the piloting project was completed

By piloting the state of nature metrics, LanzaJet aimed to (i) test how data could inform responsible land selection and use for SAF feedstock production, (ii) guide nature-positive investment decisions by demonstrating natural capital appreciation, and (iii) create a transparent, evidence-based baseline for impact reporting. For the sample sites especially, LanzaJet sought to identify low-risk, high restoration potential land for Hybrid Tropical Switchgrass cultivation - avoiding high-value ecosystems, restoring degraded soils, and quantifying the biodiversity co-benefits from such regenerative energy production.

LanzaJet relied on a data-driven and field-validated approach to assess the condition of nature across their sites. The pilot was co-led by RAW Biofuels (a potential supplier), Gentian (a biodiversity intelligence platform), and LanzaJet, with technical support from GRI. Indigenous cooperatives played a central role, providing local ecological knowledge and access for ground-truthing. Additional input came from biodiversity specialists and remote sensing scientists.

Regarding species, field diversity data (species richness, canopy height, and vegetation density) were used to validate condition categories, and confirm that no Critical Habitats were present that would trigger a Critical Habitat Assessment (CHA) under the International Finance Corporation (IFC) Performance Standard 6 (PS6).

C) Key measurement approaches and tools used

Ecosystems		Species
Approaches	- Used satellite and aerial imagery to develop an AI model of the ecosystem types present, which was trained using ground mapping data collected between 2024 and 2025; - Followed the High Carbon Stock Approach for forest classification, equivalent to GET Levels 4-5; - The model was verified by cross-referencing against on-the ground biodiversity baseline survey data; - Field diversity data on species richness, canopy height, and vegetation density were used to validate ecosystem condition categories	Extinction risk was measured at low granularity using the Land-cover change Impacts on Future Extinctions (LIFE) metric (Eyres et al. 2025)



Plate 1. A troop of Pig-tailed macaque roaming around in front of the camera (CTS) at the Project Area located on the North-eastern part of the plantation.

Figure 2: Pig-tailed macaques captured by one of the cameras at the Project Area.
(Source: RAW Biofuels)

C) Key measurement approaches and tools used (continued)

	Ecosystems	Species
Tools / data sources	- Ecosystem imagery: 10-metre Sentinel-2 satellite imagery, Light Detection and Ranging (LiDAR) data, and Very High Resolution (VHR) aerial imagery (30 cm) - Field data for condition measurements: Quadrat and transect sampling, camera traps, and vegetation diversity indices (Simpson's and Shannon-Weiner) - Landscape-level data: Hansen Global Forest Change v1.12 (2000-2024) (30m resolution)	Open-source data: LIFE database, IUCN Red List

D) Key challenges encountered and how the framework was adjusted to ensure practicality

		NPI notes: How feedback was incorporated
All indicators	Field access/ground-truthing constraint: limited field access limited the possibilities for ground-truthing. LanzaJet worked with local Indigenous cooperatives, along with local and international ecological experts, providing essential validation and field observations.	The Measurement Guidance was updated to only require ground-truthing at the landscape scale at high granularity and to also include more detail about when and how high resolution remote-sensing data can be used for ground-truthing where site access is restricted
Species	Dataset availability for species: as it considered species records for Sarawak and Borneo limited, LanzaJet supplemented open-source data with targeted field data collection and intends to expand future monitoring with environmental DNA (eDNA) surveys.	A Species Selection Filter has been drafted in the Measurement Guidance to help companies prioritise species data collection on where it is most needed. Example data sources are also provided for the estimation approaches at the different granularity levels of species population metrics.

E) Why is it important for companies to measure state of nature metrics?

According to LanzaJet, the State of Nature metrics offer a common, science-based framework for understanding how business operations interact with ecosystems and biodiversity. They consider knowing their impacts and dependencies on natural capital to be a competitive advantage.

They note that the metrics allow companies to:

- Turn ecological data into actionable insights, enabling informed, low-risk sourcing and land-use decisions.
- Build a credible foundation for nature-based and positive claims, aligned with the likes of the TNFD, SBTN and GRI.
- Help identify priority areas for restoration, protection or regenerative production, thereby both balancing and optimising environmental and business outcomes.
- Create traceable, defensible evidence for investors, regulators and customers.
- Demonstrate how low-carbon fuel production in the SAF industry can also deliver broader ecosystem recovery and regeneration, contributing directly to Natural Capital appreciation
- Leverage scalable, remote data solutions that can offer sufficient granularity levels, helping to complement or reduce over-reliance on costly and logistically challenging manual surveys.



“Using these metrics can help expand SAF’s value proposition by showing how renewable fuels can regenerate their own system of supply - rather than deplete. This delivers simultaneous outcomes of risk mitigation and value creation, strengthening SAF's investment attraction and ability to deliver long-term fuel sales”

Daniel Bloch
Director, Strategic Partnerships, LanzaJet

CASE STUDY: MS&AD INSURANCE GROUP

MS&AD Insurance Group is a Japanese insurance company that has long focused on nature-related issues as a source of medium- to long-term risks and opportunities for businesses. They have actively conducted research and external communication on biodiversity and have supported corporate clients in assessing nature-related risks and enhancing their disclosures as part of their consulting activity.

A) Where MS&AD applied the metrics

Location	Kuma River basin, southern Japan
Pilot site	Wetland restoration project
Pilot area size	- Wetland site: 2 ha - Basin: 30 km x 15 km, with the Kuma River extending 115 km and draining a catchment of 1,880 km²
Ecosystems covered	Wetland habitat connecting paddy fields, rivers and surrounding forests and providing habitat for wetland plants, aquatic insects and amphibians. These wetlands provide important flood-prevention infrastructure for the basin
Metrics piloted & granularity	All metrics were piloted and different granularity levels were tested for each metric
Piloting partner(s)	TNFD

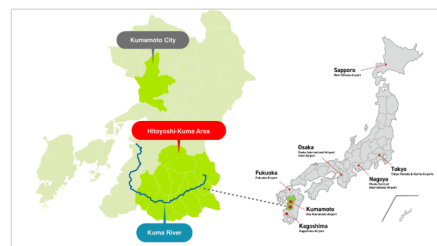


Figure 1: Kuma Basin

B) How and why the piloting project was completed

MS&AD has seen water-related disaster losses become a critical management issue as part of its insurance activities and has increasingly come to recognise the importance of nature-based solutions. MS&AD began collaborating with researchers at the Prefectural University of Kumamoto and Kumamoto University, supported by the Japan Science and Technology Agency, to conserve a group of historical wetlands in the Kumagawa river basin and better understand their contribution to flood management. The target site for state of nature metric piloting was a 2 ha wetland, which functions as natural flood-management infrastructure by attenuating runoff, storing stormwater, sustaining spring flows, and stabilising slopes.

For the piloting, MS&AD collaborated with the Nature Positive Sustainable Development Hub at Tohoku University. To facilitate the calculation of the metrics, researchers at Tohoku University also wrote R code to calculate these metrics and plan to release an open package to disseminate these tools.

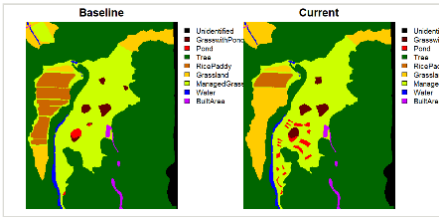


Figure 2: Landcover results

C) Key measurement approaches and tools used

Ecosystems		Species
Approaches	Followed Nature Positive Initiative guidance, relying on remote-sensing data (satellite imagery, aerial photographs) and ground-truthed data obtained from local governments, academic partners, and prior field studies	- Extinction risk: Used Red List ratings (national/prefectural) and field surveys, and eDNA species distribution data to calculate weighted extinction risk (STAR-t scores) for each land-use category. Taxonomic coverage was expanded using available occurrence data and estimating the Area of Habitat (AOH) approach - Populations: Used mark-recapture data for two priority species to estimate population size with a dynamic N-mixture model (a type of time-series abundance model that considers imperfect detection) for high granularity, and explored the potential of using eDNA
Tools / data sources	- Low granularity: Esri Land Cover data - Medium granularity: Vegetation map, Sentinel data - High granularity: Drone and aerial images - Ecosystem condition layers: Normalised Difference Water Index and Normalised Difference Vegetation Index.	- Extinction risk: STAR-t scores, GBIF occurrence data for plants, field survey occurrence data for aquatic organisms - Populations: eDNA and mark-recapture data

D) Key challenges encountered and how the framework was adjusted to ensure practicality

		NPI notes: How feedback was incorporated
All indicators	Data resolution: MS&AD has found that State of Nature metrics are more difficult to apply at very small sites due to the limited resolution of input data. The pilot also highlighted the need for higher-resolution classification data to assess broad-scale trends more accurately	Additional detail was added to the guidance on applying metrics at very small sites, including noting that the high granularity level approaches are likely to be more appropriate for such sites and that a focus may be placed on species population measurement if it is not possible to obtain meaningful extinction risk metric data (for very small sites only).
	Inclusion of human intervention: the aim of MS&AD is not to restore a “pristine” system, but actively manage successional processes by reintroducing moderate disturbance, an approach that differs from conservation vs. development dichotomy	The need for additional technical standardisation and guidance for measuring ecosystem condition has been identified for further work. At present, full flexibility has been maintained for companies to use a reference state that is most meaningful for their context to model and validate their condition class measurements.

E) Why is it important for companies to measure state of nature metrics?

MS&AD felt that, for companies, the greatest benefit of applying the State of Nature Metrics is the ability to communicate the outcomes of their activities and the condition of surrounding ecosystems through objective, comparable indicators based on a common evaluation framework. They noted the importance of supplementing the core universal set of metrics with context- and ecosystem service-specific metrics for their research project.



“We believe that by enhancing nature, we can not only mitigate escalating flood risks, but also build resilient and flourishing communities sustained by rich ecosystems. The key to achieving this vision lies in advanced analyses that bridge the state of nature and the impact on flood risk mitigation, illuminating pathways toward transformative solutions. Inspired by the insights and challenges highlighted in this pilot, we remain committed to pursuing this important journey and to embracing the challenges that lie ahead.”

Hiroko Urshima
Senior Specialist, MS&AD Insurance Group

CASE STUDY: NEW FORESTS

New Forests is a natural capital investment firm investing in the productive use and long-term stewardship of forests and land. As of March 2026, it manages approximately AUD 10.6 billion in assets and over 5.7 million hectares across its operating regions. New Forests piloted the State of Nature Metrics to test whether a consistent, practical measurement framework can support portfolio-wide decision-making and landscape-scale collaboration.

A) Where New Forests applied the metrics

Location	East Africa (Mozambique, Uganda, Tanzania), United States (California) and Western Australia
Pilot site and area	• East Africa: approx. 86,400 ha of plantation forestry and conservation area • United States (California): approx. 7,600 ha of semi-natural forest • Western Australia: approx. 56,000 ha of plantation forestry and conservation area and approx. 8.6 million hectares of surrounding landscape
Ecosystems covered	The pilots covered diverse forest types, as well as multiple land uses within Western Australia’s South Coast Natural Resource Management’s (SCNRM’s) operating region. The South Coast region of Western Australia contains areas of exceptionally high conservation value and supports many endemic and threatened species
Metrics piloted & granularity	The objective was to calculate the metrics primarily at low granularity to assess whether this lower-cost approach could be applied across a wide portfolio to provide meaningful outputs
Piloting partner(s)	New Forests partnered with TNFD for its metrics pilots, as well as local project partners such as SCNRM, PF Olsen, and BirdLife Australia and geospatial consultants including NatureHelm



Figure 1: New Forests’ sites across (from top to bottom): Sub-Saharan Africa, California and Western Australia

B) How and why the piloting project was completed

New Forests participated in the pilot to (i) test whether the State of Nature metrics can provide a standardised, portfolio-wide view of baselines and trends over time, (ii) demonstrate benefits of sustainable forest and agricultural management, and (iii) connect with other initiatives including TNFD and International Sustainable Forestry Coalition's (ISFC) Forestry Natural Capital Project, to increase harmonisation.

Across the global pilot, New Forests engaged two global geospatial consultancies to calculate the metrics. Based on the asset's specific geolocation, the calculations used satellite data primarily at low granularity, as defined by the NPI guidance, and supplemented ground-based species data sources (game cameras, acoustics, bird surveys, and citizen science).

In addition, for the landscape-scale pilot in the South Coast of Western Australia, New Forests collaborated with SCNRM, PF Olsen, and BirdLife Australia and held workshops with a wide range of regional stakeholders, including local Aboriginal Corporations, catchment managers, research organisations, government representatives, and industry groups, to obtain feedback on whether satellite-based results reflected on-the-ground realities and to explore practical use cases for metrics.



Figure 2: New Forests' forestry in Africa

C) Key measurement approaches and tools used

	Ecosystems (extent and condition)	Species
Approaches	- Focused on using published datasets, primarily satellite-based - Calculated change in extent for all ecosystems (i.e. not just natural) as this is important for New Forests' management decision-making - Tested low and high granularity approaches for condition. The low condition site condition calculation relied solely on satellite datasets, while the high granularity site condition calculation incorporated species ranges and richness, invasive species control and functional connectivity to improve responsiveness to management interventions	- Used STAR-t score for species extinction risk - For species populations, satellite-based habitat assessments were combined with ground-based species information
Tools / data sources	- Ecosystem extent: SBTN Natural Lands Map, Dynamic World (Google Earth Engine) - Low granularity ecosystem condition: Biodiversity Intactness Index, Dynamic World, GWL_FCS30 (global 30m wetland map) - High granularity ecosystem condition: utilised NatureHelm's Biodiversity Management Platform, which incorporates Dynamic World, IBAT, and other public and private datasets	- IBAT: STAR layers, species range maps - Ground-based species datasets: game cameras, acoustics, bird surveys and citizen science

D) Key challenges encountered and how the framework was adjusted to ensure practicality

		NPI notes: How feedback was incorporated
Ecosystem Extent	Satellite classification limitation (plantation vs. natural): Satellite data could not reliably differentiate plantation forestry from other forest types, which resulted in all forests being classified as “natural” when plantations should be “semi-natural”. This could create inaccurate loss/gain signals when plantations are harvested and replanted.	The requirement to categorise ecosystems into natural vs semi-natural was removed and the guidance instead advises breaking down data by ecosystem type and land use to give better visibility of changes. At the medium granularity level, ground-truthing site data will also help confirm classification accuracy, as will improvements in satellite data.
All indicators	Landscape boundary setting: New Forests noted that standardised buffers (for instance, 50 km buffer) for assessing landscape condition may not provide meaningful information depending on surrounding landscape composition. New Forests calculated landscape condition based on the catchment, which it described as more significant for ecosystem function and more relevant to regional stakeholders.	Further clarity in the guidance on landscape boundary setting was developed to support companies in setting meaningful parameters for their assessments. This includes referring companies to best practice methodologies, such as those of the International Finance Corporation, and example data sources for catchments.

E) Why is it important for companies to measure state of nature metrics?

From an asset manager perspective, based on the results of the pilot, New Forests determined the metrics can provide a standardised view of the state of nature across a complex portfolio to assess whether assets are contributing to nature positive outcomes and to inform prioritisation and decision-making. This could include:

- Identifying areas of lower ecological condition, where restoration or targeted management may improve outcomes, and higher ecological condition, where protection, conservation or restoration may be prioritised;
- Assessing functional connectivity at the landscape scale to inform management actions and collaboration with regional stakeholders.

New Forests also identified that the metrics could support comparison across asset managers, potentially assisting them to consider sustainability outcome in investment management decision-making.

In South Coast Western Australia, the pilot suggested that low-granularity satellite calculations can help with screening and hot-spotting (e.g., to identify areas which higher nature-related risks or opportunities), provide high-level understanding of functional connectivity, and enhance stakeholder engagement on state of nature concepts. The effort also revealed that on-ground data remains essential for regional stakeholders and that moving to higher granularity levels will be important for site- or regional-level decision-making.



“Until now, measuring nature-positive outcomes across our global portfolio has relied on project or species-specific outcomes and has not facilitated a portfolio wide and balanced view. The NPI State of Nature Metrics are helping to address that by bringing a consistent methodology to compare the state of nature on our assets across time, location and asset type and how the state of nature may change over time and our management decisions impact that state.”

Jo Saleeba

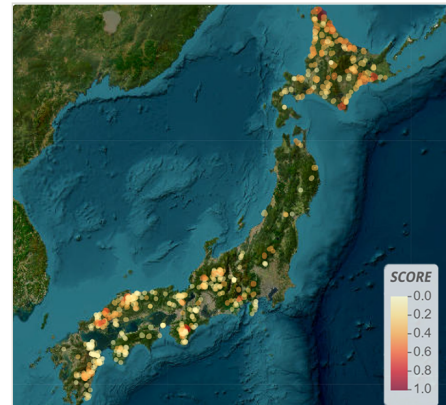
Global Head of Sustainability & Impact, New Forests

CASE STUDY: OJI HOLDINGS

Oji Holdings Corporation is a Japanese multinational focused on sustainable forest resources. It manufactures a diverse range of wood-derived products including pulp, paper, packaging, and advanced functional materials. As part of its activities, Oji Holdings owns approximately 640,000 hectares of forests globally. The group took part in the State of Nature (SoN) metrics piloting programme as part of its broader efforts to assess the value of its forests and the ecosystem services they produce, recognising that credible valuation depends on robust measurement of nature's condition

A) Where Oji Holdings applied the metrics

Location	Northern Hokkaido, Japan
Pilot site	Sarufutsu Forest
Pilot area size	1,244 hectares
Ecosystems covered	Sarufutsu Forest is one of the most biodiversity-significant forests within Oji Holdings' domestic forest estate. The study area includes natural forests, plantation forests, wetlands and rivers that provide habitat for the critically endangered Sakhalin taimen (<i>Parahucho perryi</i>).
Metrics piloted & granularity	- Ecosystem extent, site condition, condition of semi-natural habitat and species population abundance were piloted at high granularity level - Proportion of natural or semi-natural habitat, landscape condition and species extinction risk were piloted at medium granularity level
Piloting partner(s)	TNFD



Sarufutsu Forest

Figure 1: Biodiversity assessment of the approximately 650 Oji-owned forests in Japan conducted by Oji Holdings (Source: Oji Holdings)

B) How and why the piloting project was completed

In 2024, Oji Holdings launched a “Forest Value Visualization Project” in the Sarufutsu Forest in Hokkaido, Japan, together with six researchers from Hokkaido University and a nature tech partner, to establish practical approaches for quantifying natural capital and assessing value creation through conservation and restoration activities.

At the same time, Oji has been actively exploring Natural Capital Accounting and the emerging concept of “Nature on the Balance Sheet”, which seeks to connect the value of natural capital with economic and financial decision-making. Oji considers credible valuation as possible only if the underlying condition of nature can first be measured in a scientifically robust way, hence its piloting of the State of Nature (SoN) Metrics.

Oji mainly used biodiversity and environmental datasets collected during 2024-25, through acoustic sensors, camera traps, environmental DNA (eDNA), drones and cameras. This data was processed with artificial intelligence and integrated with satellite imagery and GIS-based analysis. The project was undertaken with technical support, including from taxonomic experts.



Figure 2: Ecotone (boundary) between Forest and Wetland observed in the Sarufutsu Forest (Source: Oji Holdings)

C) Key measurement approaches and tools used

	Ecosystems	Species
Approaches	- Ecosystem extent: created detailed ecosystem maps based on high-resolution satellite imagery and existing land cover, habitat, or forestry maps (GET Level 6 equivalent) and verified with ground visits - Site condition: measured through comparison of observed species composition, functional diversity, and habitat structure against expert-defined reference states, expressed on a standardised 0–1 scale reflecting alignment with expected ecological conditions - Landscape condition: applied the CPLAND index (Core Area Percentage of Landscape) to measure habitat fragmentation	- Species Extinction Risk: Estimated STAR-t - Species Population Abundance: tracked relative abundance of selected priority species over time using site-level field observations, with changes indicating trends in species of ecological importance within the site. Monitored taxa included birds, amphibians, mammals (including bats), vascular plants, trees and fish.

C) Key measurement approaches and tools used (continued)

	Ecosystems	Species
Tools / data sources	- Ecosystem extent & landscape condition: ecosystem map verified with ground data and Dynamic World land cover dataset - Site condition: ground-level species data, expert-derived lists of key indicator species, GBIF, Red List, Avonet, Planet (biomass dataset), fractional vegetation cover data (derived from ESA Sentinel 10m data)	- Species Extinction Risk: IBAT; - Species Population Abundance: primary, ground-level species data collected in 2024 and 2025, including passive acoustic monitoring, ground-level super-high-resolution photography, camera traps, drone imagery

D) Key challenges encountered and how the framework was adjusted to ensure practicality

		NPI notes: How feedback was incorporated
Ecosystem Condition	Baseline and reference sites in dynamic ecosystems: plantation forests are dynamic ecosystems that change throughout the forest rotation cycle and support different biodiversity values over time.	Additional indicators are provided in the guidance to support with measuring shifting mosaic habitats and ensuring the biodiversity value is maintained over time at the landscape-scale.
All indicators	Buffer-zone assessments: because neighboring land is often owned by third parties, obtaining field-based biodiversity data of similar quality was not feasible. Consequently, Oji Holdings had to rely more on regional datasets and modelled information than on direct observations.	Further guidance was provided on the use of remote-sensing data for ground-truthing regional datasets. Additional guidance was developed for defining appropriate buffer zones and ground-truthing is now only required across landscapes at the high granularity level.
All indicators	Scalability: Oji considers that while detailed biodiversity assessments are valuable, applying the same approach across hundreds of thousands of hectares of managed forests would be difficult for many companies from a resource perspective.	The measurement guidance refers to credible existing frameworks (e.g. TNFD) for how companies can prioritise their measurement efforts. Three different granularity levels of metrics were maintained to enable companies to select the most appropriate for their use case (whilst being transparent on the rationale). Different levels can be used for different locations within a portfolio, and levels can be increased over time with reporting maturity and growing data/tools.

E) Why is it important for companies to measure state of nature metrics?

Oji Holdings considers the SoN Metrics to be a key global effort to establish a common language for measuring nature across sectors and geographies. They are expected to play an important role in the development and application of Natural Capital Accounting systems.

Recognising and rewarding investments in conservation, restoration, and sustainable land management requires credible measurement of changes in the state of nature. In this context, SoN metrics provide essential measurement infrastructure, linking ecological outcomes to economic value.

By enabling more robust and consistent quantification within Natural Capital Accounting systems, Oji highlighted that SoN metrics can support the integration of natural capital considerations into corporate decision-making, disclosure practices, and, ultimately, financial systems.



“If you want to see the value from something, you need to measure it. At Oji we are aiming to use the State of Nature Metrics to help quantify the value of nature and connect this to society.”

Yuya Toyoshima

Manager, Oji Forest Value-Creation & Promotion Dept., Oji Holdings

CASE STUDY: SIBELCO

Sibelco is a global material solutions company specialised in mining, processing and selling industrial minerals. The company piloted the State of Nature metrics to minimise the impact of its quarry management on nature and to improve nature outcomes through restoration where possible.

A) Where Sibelco applied the metrics

Location	• Borneo, Indonesia • Cheshire, UK
Pilot site	Two owned and operated quarry sites: • Capkala clay quarry (Indonesia) • Bent Farm silica quarry (UK)
Pilot area size	• Capkala: ~200 ha • Bent Farm : 113.6 ha
Ecosystems covered	• Capkala: Wet, peaty forest type within the highly biodiverse Borneo environment. The quarry is slowly expanding within its permit boundary, with the environment around the quarry also changing due to deforestation, illegal mining, and palm oil plantations • Bent Farm: Agricultural area in a landscape consisting of agriculture, settlements, wetlands and moorlands
Metrics piloted & granularity	• Capkala: ecosystem extent and proportion of natural or semi-natural habitat were measured at medium granularity level; site condition and species population abundance at low granularity • Bent Farm: ecosystem extent was measured at high granularity level; proportion of natural or semi-natural habitat, site condition and condition of semi-natural habitat at medium granularity; landscape condition at low granularity
Piloting partner(s)	BirdLife International



Figure 1: Sibelco pilot site locations

B) How and why the piloting project was completed

Sibelco considered this pilot as necessary to help them decide on which metrics to use for monitoring the state of nature, which will support our biodiversity strategy and turned out to be useful as part of preparing for upcoming EU Corporate Sustainability Reporting Directive (CSRD) requirements.

The two sites selected provided a good comparative test case, as data availability was much higher for the Bent Farm site than for the Capkala site so different approaches were required. Free-to-access QGIS mapping software was utilised and Sibelco gathered open-source data inputs. All indicators were measured with the support of the Flemish Institute for Technological Research (VITO) and BirdLife International.

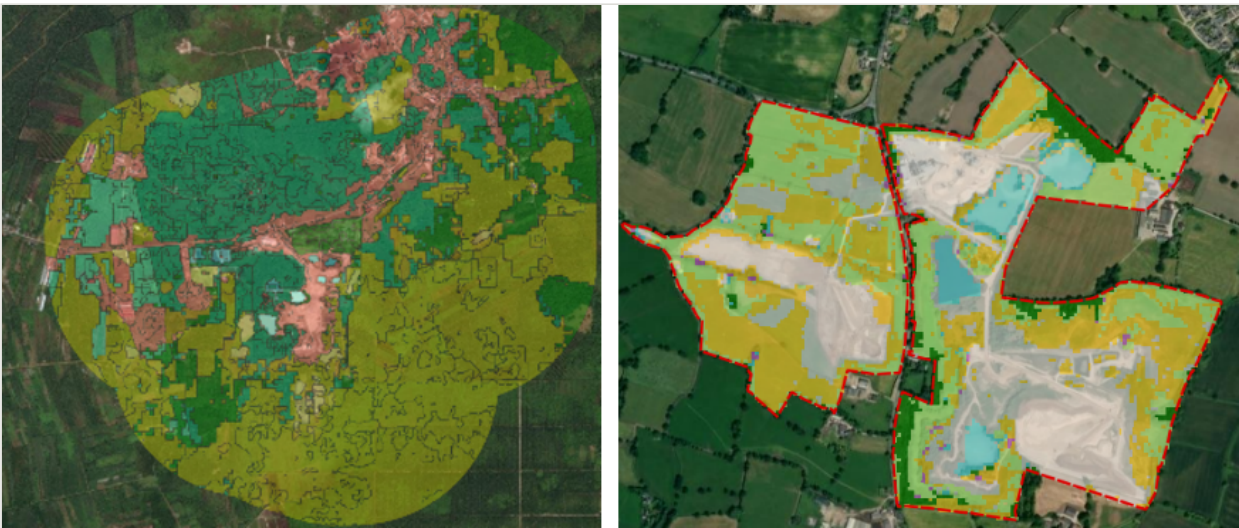


Figure 2: Ecosystem extent outputs for Capkala (left) and Bent Farm (right)

C) Key measurement approaches and tools used

	Ecosystems	Species
Approaches	- Developed ecosystem extent maps using QGIS, supported by VITO's mapping technology for the Bent Farm site - These ecosystem extent maps were overlaid with existing maps of condition to calculate the site condition metrics and were input to the Fragstats software to calculate structural connectivity for landscape condition	Used a species list based on Map of Life, checked the presence of these species with local personnel, and linked ecosystems with species to estimate how ecosystem extent changes can impact the species
Tools / data sources	- Ecosystem extent: Google Satellite, Sibelco's own land use mapping based on satellite imagery and local knowledge, UMD Global Land Cover and Land Use, Global Ecosystem Typology. Ground-truthing with satellite imagery and knowledge of local colleagues - Site ecosystem condition: Forest Structural Condition Index - Landscape ecosystem condition: Fragstats software	Map of Life species range and distribution maps

D) Key challenges encountered and how the framework was adjusted to ensure practicality

		NPI notes: How feedback was incorporated
Ecosystem Extent	Data availability for ecosystem classification: Sibelco found no detailed ecosystem classification for its Capkala site.	Global Ecosystem Typology Level 3 has been incorporated as an option at medium granularity. The Global Ecosystems Atlas plans to release global terrestrial maps at this level by the end of 2026.
All indicators	Investment required: Sibelco highlighted that piloting the State of Nature metrics required notable time and resource input, especially for condition and species metrics.	A series of guidance updates have been made to streamline the measurement process, including the development of a “base map” approach, whereby one core GIS layer can be input to multiple metrics, and of a Species Selection Filter.

E) Why is it important for companies to measure state of nature metrics?

This piloting allowed Sibelco to learn more about the natural environment of their sites and to identify key restoration opportunities. For example, important pockets of pristine natural ecosystems were identified on the Capkala site and addressing fragmentation and connectivity was highlighted as a priority for improving the state of nature on the Bent Farm site.

Overall, Sibelco highlights that State of Nature Metrics facilitated better estimations of nature-related impacts, risks and opportunities. They felt that the piloting programme helped ensure the metrics were suitable for companies to use.

Sibelco considers nature metrics as essential in their license to operate, as they show that the Group is proactively managing nature impacts across the lifetime of their quarries.



“State of nature metrics for us are essential in our license to operate.”

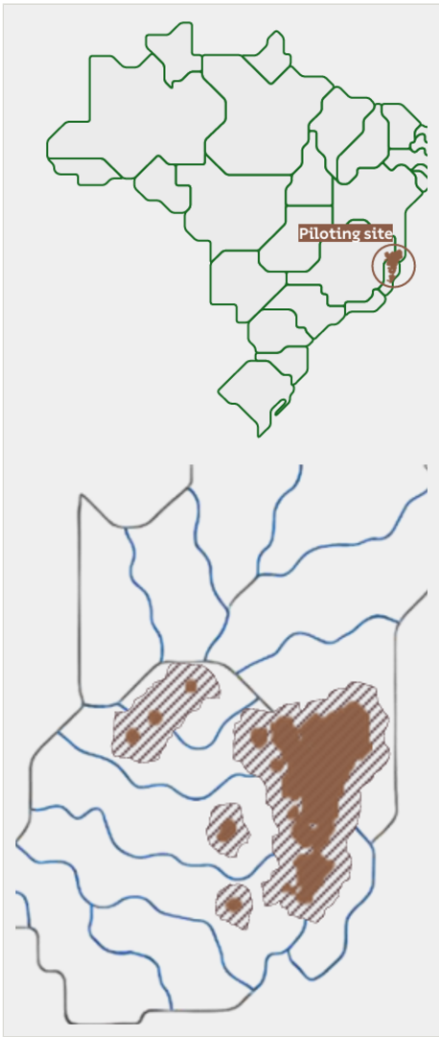
Wies Vanstockem
Manager Biodiversity, Sibelco

CASE STUDY: SUZANO

Suzano is a global paper and pulp manufacturing company. Suzano piloted the State of Nature metrics to showcase their contribution to reversing biodiversity loss. Moreover, the pilot offered an opportunity to test science-based indicators that go beyond compliance, helping them explore how measurable, transparent metrics can guide strategic decisions and align with international frameworks such as TNFD and the Kunming-Montreal Global Biodiversity Framework.

A) Where Suzano applied the metrics

Location	Bahia and Espírito Santo States, Brazil
Pilot site	Forestry landscapes, Suzano-owned areas intersecting the Atlantic Forest ecological corridor of Suzano’s long term commitment in Bahia and Espírito Santo
Pilot area size	1.2 million hectares, incl. 163k ha of site area, 373k ha of site buffer, 672k ha of surrounding area
Ecosystems covered	Atlantic Forest (Mata Atlântica). The Atlantic Forest has high levels of endemism (60% of its species are endemic) and is under significant threat, highlighting the importance of this corridor.
Metrics piloted & granularity	Ecosystem extent and landscape ecosystem condition were piloted at medium granularity level. Site ecosystem condition and species extinction risk were tested at high granularity level.
Piloting partner(s)	IUCN, TNFD



- Site:** Suzano-owned farms intersecting the biodiversity corridor.
- Buffer:** 3 km around the site and biodiversity corridor.
- Surrounding area:** Watersheds overlapping the buffer area.

Figure 1: Suzano-owned areas intersecting the ecological corridor in Bahia and Espírito Santo States

B) How and why the piloting project was completed

Suzano joined the pilot to (i) overcome the lack of standardised nature metrics to demonstrate ecosystem enhancement, (ii) align with global frameworks (TNFD, GBF) to support science-based decision-making, (iii) test real-world use of State of Nature Metrics to move beyond commitments to actions and (iv) drive strategic decisions. For assessments, Suzano relied on various datasets and built on its own biodiversity monitoring program. Threat calibration and prioritisation were validated through workshops with over 25 stakeholders, including researchers, NGOs, and government representatives. Metrics were processed using GIS and R-based workflows, adapted to Brazilian biomes and operational realities.

Note for Figure 2: The red line represents the Suzano's long term commitment to preserving the Atlantic Forest ecological corridor.

C) Key measurement approaches and tools used

	Ecosystems	Species
Approaches	- Combined spatial datasets from multiple sources with Suzano's biodiversity monitoring program data - Correspondence mapping was conducted to align ecosystem classifications from the from available data sources with the Global Ecosystem Typology (GET) Levels 3 and 4, and for classifying natural and non-natural areas	Applied the calibrated STAR metric (IUCN) using IBAT data and local fauna records and validated via stakeholder workshops
Tools / data sources	- Ecosystem mapping and classification: IBGE, WWF Ecoregions, MapBiomas, SBTN Natural Lands Map - Site condition: Sentinel-2 derived vegetation indices - Data from Suzano's biodiversity monitoring program	- IBAT data - Data from Suzano's biodiversity monitoring program

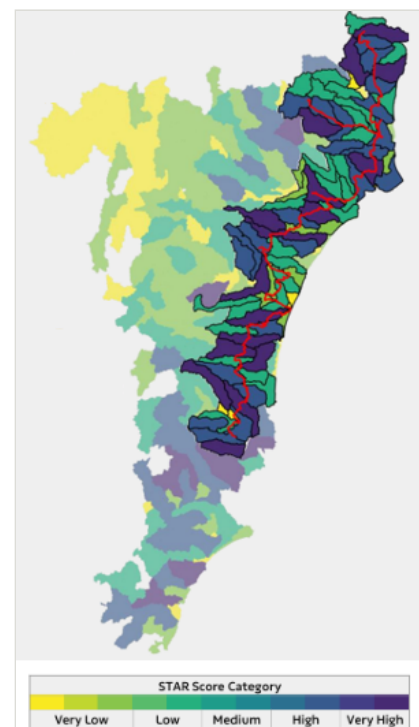


Figure 2: STAR Score of the Project Area.

Note for Figure 2: The red line represents the Suzano's long term commitment to preserving the Atlantic Forest ecological corridor.

D) Key challenges encountered and how the framework was adjusted to ensure practicality

		NPI notes: How feedback was incorporated
All indicators	Cross-mapping datasets: Suzano's main challenge was adapting global methodology to Brazilian datasets. The Group leveraged their long-term monitoring data to complement global sources and invested in internal capacity for spatial analysis and biodiversity assessment.	The measurement guidance was updated to recommend applying a particular GET Level or national equivalent to allow for flexibility in recognised approaches. The Global Ecosystems Atlas also plans to publish global Level 3 maps for terrestrial areas by the end of 2026.
	Managing large volumes of data / time for data processing: Suzano observed that the volume of data analysed often required significant processing time, which could present challenges for the large-scale implementation of these metrics, especially for land-intensive companies.	Additional guidance has been added to support companies assessing particularly large sites. A call to action will also be shared for tech and tools developers to consider how they can support companies in calculating the metrics.

E) Why is it important for companies to measure state of nature metrics

Overall, Suzano found that the State of Nature Metrics provide a science-based framework to translate high-level biodiversity commitments into measurable, actionable targets. They noted that the metrics enabled companies to demonstrate progress transparently to stakeholders and investors. By aligning with global standards, these metrics strengthen resilience, support compliance with emerging disclosure frameworks, and enhance credibility in sustainability reporting.

Through its piloting, Suzano found that steps to improve its existing ecosystem condition indicator were needed to accurately reflect the outcomes of its restoration efforts. The metrics have also enabled Suzano to confirm the presence of threatened species in the pilot area, underscoring the need for threat reduction actions and collaborative, landscape-level initiatives.



“Treat the process as iterative – begin with pilots, learn from challenges, and adapt methodologies to your operational context”

Beatriz Lyra
Sustainability Coordinator, Suzano

CASE STUDY: VALE

Vale S.A is a global mining company, with operations that include iron ore extraction in Brazil. At its Carajás operations, Vale applied state of nature metrics to strengthen how it measures ecosystem impacts, recovery and biodiversity performance.

A) Where Vale applied the metrics

Location	Carajás, Pará, Brazil, within the Carajás National Forest (sustainable use protected area)
Pilot site	N4N5 Mine (Amazon biome), characterised by an advanced pit area illustrating iron ore mining in the Carajás region
Pilot area size	10,462 hectares (mine site plus buffer. Restoration/compensation areas outside the buffer were not fully included)
Ecosystems covered	Dense and open submontane forest, plus ferruginous rocky fields (“canga” vegetation) on iron-rich outcrops with high biodiversity and endemic species
Metrics piloted & granularity	- Ecosystem extent and classification, site ecosystem condition and species extinction risk - All tested at low granularity level
Piloting partner(s)	TNFD, GRI

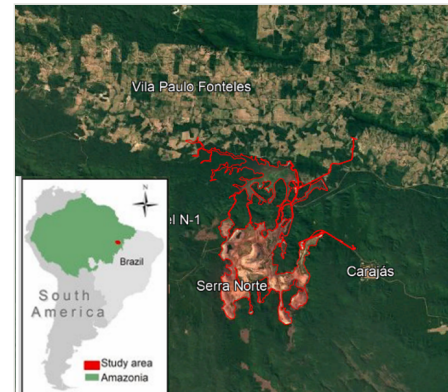


Figure 1: Carajás, Pará (Brazil), N4N5 Mine. (Source: Vale)

B) How and why the piloting project was completed

Vale joined the terrestrial metrics pilot to support implementation of its nature and biodiversity strategy, where identifying robust, science-based, and operational metrics was a key challenge. The project had three key objectives: (i) refining the methodology used by the Vale Technological Institute (ITV), (ii) strengthening robustness and alignment with corporate reporting needs (including TNFD impact assessment and GRI 101 Biodiversity reporting), and (iii) supporting its No Net Loss/Net Gain journey.

Vale built on its existing Forest Carbon Emissions and Removals Inventory, which tracks annual land-use and vegetation cover change. This monitoring was extended to assess the area and condition of vegetation impacted by operations, as well as areas protected or restored by the company.



Figure 2: Diversity of ecosystems and habitats. (Source: Vale)

C) Key measurement approaches and tools used

Ecosystems		Species
Approaches	- Ecosystem extent: Classified and mapped ecosystem types using a combination of land use/land cover and national vegetation typologies; validated and adjusted classifications using local expert knowledge and higher resolution imagery - Ecosystem condition: Developed a tailored condition index based on locally relevant degradation drivers, including fire frequency, distance to edge, and secondary forest age	Species extinction risk: - Compiled site-level records of threatened flora and fauna species (IUCN and national lists) from annual monitoring and rescue/collect actions - Complemented with external occurrence data where available; - Integrated calculations into Vale’s internal biodiversity risk analysis platform Biolink
Tools / data sources	- Extent and condition: MapBiomass Collection 9 land cover data (Landsat-based, 30m); Instituto Brasileiro de Geografia e Estatística Brazilian (IBGE) Vegetation map (phytoecological regions) - Ecosystem condition: MODIS fire data - Expert review/verification with field knowledge and high-resolution imagery	Species extinction risk: - Site monitoring datasets used for GRI endangered species indicator - IUCN red list - GBIF - Biolink proprietary platform

D) Key challenges encountered and how the framework was adjusted to ensure practicality

		NPI notes: How feedback was incorporated
Ecosystem Extent	Ecosystem classification: Due to very high levels of endemism and diversity in the project region, it was found that national ecosystem maps were more accurate than standard global datasets, so Vale utilised these instead.	Flexibility was maintained in the ecosystem classification guidance to use the IUCN Global Ecosystem Typology Level or national equivalent, enabling users to apply the most accurate dataset for their site.
Ecosystem Condition	Ecosystem condition: Vale tested several recommended forest integrity tools but found they misclassified transition forests and iron-rich outcrops. Vale aggregated relevant data sources based on local degradation drivers to develop a tailored condition index, scoring from 0-100.	Clear criteria were incorporated into the guidance for selecting robust ecosystem condition datasets. This helps to ensure there is sufficient flexibility to measure locally specific drivers of condition whilst ensuring robustness and comparability.
All indicators	Boundary setting: Vale noted that defining an adequate buffer for a site's area of influence can be challenging and sometimes need extra time and/or iteration.	Additional guidance was developed advising companies to align their site metric boundaries with their direct operations and incorporating area of influence into their landscape buffer boundary. Reporting area of influence separately is noted as best practice.

E) Why is it important for companies to measure state of nature metrics?

Vale emphasized that the state of nature metrics are science-based, yet practical and can be implemented across sites with different levels of maturity, helping companies understand ecosystem extent and condition over time and improve biodiversity management performance.

Vale also highlighted that results are strengthened by transparent decision-making and calibration, especially in megadiverse contexts where coarse global datasets can miss critical local habitat variation.

- Decision-useful tracking: Measuring ecosystem extent, condition, and extinction risk supports monitoring performance and informs biodiversity management decisions.
- Scalable starting point: Companies can begin with existing or public datasets, then improve robustness as knowledge and site data evolve
- Credibility through transparency: Tracking and documenting methodological decisions helps reduce greenwashing risk and supports trustworthy disclosure.



“Start with the data that you have now... The most important thing is to start.”

Leticia Guimarães
Head of Biodiversity, Vale

APPENDIX B: CONSULTATION AND TESTING FINDINGS

The NPI has adopted an iterative, multi-phase process to build consensus on a minimum set of indicators and metrics for measuring changes in the state of nature. This process has been deliberately designed to be inclusive, with key touchpoints to capture broad stakeholder input—including companies, experts, and other actors—through public consultations, piloting programmes, and feasibility assessments.

Each phase builds on the previous one, meaning that refinements introduced in earlier versions (e.g., between Versions 1 and 2) may be further adjusted in subsequent iterations as insights are consolidated and tested in practice.

The summary tables below are presented in chronological order to provide transparency on this progression and to track how the metrics have evolved over time (Figure B1).

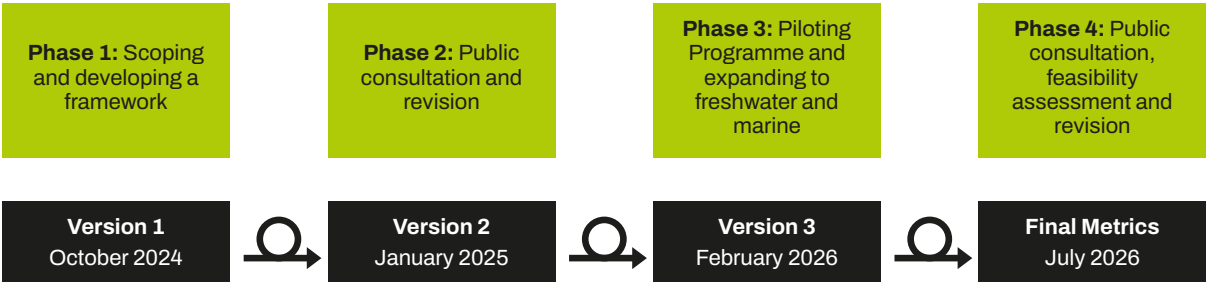


Figure B1: State of nature indicators and metrics development phases

PHASE 1: SCOPING AND DEVELOPING A FRAMEWORK (MAY TO SEPTEMBER 2024)

Between May and September 2024, following agreement by the 27 core NPI organisations on the objectives of the State of Nature (SoN) metrics, over 600 metrics were assessed against the seven criteria. Extracted metrics were subsequently refined through workshops and focus groups involving targeted stakeholders from corporate and finance, standard setters, professional services, NGOs, and academia.

Below are listed the five priority feedback themes emerging from the Focus Groups and how they were incorporated by NPI.

Table B1: Priority themes identified by the Focus Groups

FEEDBACK THEME: OVERARCHING GOALS OF THE WORK	
What we heard	How we responded
Attribution and contribution and how they are communicated need to be considered (claims)	The topic of credibly demonstrating and communicating nature positive outcomes is being addressed in a dedicated workstream, which will build on the metrics once complete

**FEEDBACK THEME:
OVERARCHING GOALS OF THE WORK**

Metrics should show contribution to nature-positive outcomes

This was a core objective of the project. However further guidance on demonstrating and communicating nature positive outcomes will also be needed to fully address this.

**FEEDBACK THEME:
FRAMING, TERMINOLOGY AND ALIGNMENT**
What we heard

Alignment with industry standards and consistent definitions is important for uptake

How we responded

(i) Existing standards were reviewed to identify state of nature metrics already in use and these were added to the longlist of metrics for review;
(ii) “Aligned”, i.e. with international standards and frameworks, including the TNFD and GBF, was incorporated as one of the core design criteria for the metrics, and the longlist of available metrics were reviewed against this;
(iii) Where definitions were needed, the NPI looked to the most credible and widely adopted existing sources, e.g. CBD, IPBES, TNFD.

Metrics should align with international policy frameworks and relevant multilateral or national initiatives

The indicators chosen for the framework align closely to the wording of elements of Goal A of the CBD GBF (see Table 5.3).

**FEEDBACK THEME:
UNDERSTANDING METRIC CATEGORIES AND
DATA CAPTURE**
What we heard

Clarity on data types and choice of metric methodologies is needed

How we responded

The metrics review focussed on ensuring data and methodologies were available, however the need for further measurement guidance was noted for future work.

**FEEDBACK THEME:
DATA AND INDICATORS FOR FINANCE AND
SUPPLY CHAINS**
What we heard

Data availability is crucial for universal metrics

How we responded

Data availability was considered a criterion as part of the review of the 600+ existing metrics and indicators.

Current metrics focus on known assets, which may exclude non-asset owners

We have framed this in terms of traceability and are focussing on known supply chain components first.

**FEEDBACK THEME:
INCENTIVISING HIGH-STANDARD METRICS**
What we heard

It is important to incentivise higher standards and primary data use

How we responded

The maturity level approach was developed to drive an accessible entry point followed by improvement in metric calculation over time. Naming the middle maturity level as Standard was intended to ensure progression beyond the entry-level tier.

Phase 1 resulted in the following framework:

			State of Nature (SON) Indicators and Metrics			Data type
Indicators (IND)			Entry-level	Standard	Advanced	
Universal	Ecosystem	Ecosystem Extent (Change & Classification) (IND 1)	SON E1	SON S1	SON A1	Individual
		Ecosystem Condition (IND 2)	-	SON S2	SON A2	Individual
		Landscape Intactness (IND 3)	SON E3	SON S3	SON A3	Contextual
	Species	Species Extinction Risk (IND 4)	SON E4	SON S4	SON A4	Contextual
	Natural processes	Planned for future integration				
Case-specific	Ecosystem	Extent of Highly-Threatened Ecosystems (Change & Classification) (IND 5)	SON E5	SON S5	-	Individual
		Condition of Highly-Threatened Ecosystems (IND6)	SON E6	SON S6	-	Individual
		Proportion of Natural or Semi-Natural Habitat (IND 7)	SON E7	SON S7	-	Individual
		Condition of Semi-Natural Habitat (IND 8)	-	SON S8	SON A8	Individual
	Species	Species Population Abundance (IND 9)	SON E9	SON S9	SON A9	Individual
	Natural processes	Planned for future integration				

Figure B2: First version of the SoN indicators, prepared in September 2024 for public consultation in Phase 2

PHASE 2: PUBLIC CONSULTATION AND REVISION (OCTOBER 2024-JANUARY 2025)

Once the initial framework was developed defined, NPI initiated a public consultation phase to gather feedback on its first iteration between October and November 2024. This included both in-person engagement, through over 15 events attended by more than 700 participants, and an open consultation process that gathered feedback from over 130 organisations.

Tables B2-B6: Summary of stakeholder feedback received by theme and how it was addressed**FEEDBACK THEME:****CLARITY AND STRUCTURE OF THE FRAMEWORK****What we heard**

Some stakeholders suggested the draft framework had a clear and logical structure and could help organise thinking around measuring the state of nature. The split between Universal and Case-specific Indicators was considered helpful.

However, others had concerns that the framework was overly complex and requested additional guidance on all elements of the framework. Some stakeholders were also unclear on the scope and objectives of this initial phase of work to identify a minimum set of SoN metrics.

The original Metric Maturity Scale included 'Entry-level, Standard, Advanced' metrics that users would select based on their technical and resourcing capacity. Some stakeholders argued scale should be linked to use case rather than the users' resourcing capabilities (e.g., smaller scale analyses such as project-level outcome monitoring might require the application of higher maturity levels than a global scale risk assessment), while others were supportive of the lower barrier to entry with maturity advancing over time.

How we responded

- Provided more detail on the project scope and objectives, highlighting the iterative approach to develop and refine the metrics
- Refined the focused use cases and included new visualisations to communicate priority focus areas more clearly. Added a table outlining other example use cases
- Renamed the 'Metric Maturity Scale' to 'Granularity Levels'. The tiered levels included Low, Medium and High Granularity levels. The updated approach could thus be more easily integrated into existing frameworks and standards, and applied to different use cases rather than focusing solely on user capacity
- Simplified the structure of the framework. Improved communication of the metrics table by using subheadings and language that is more accessible to a general audience
- Simplified the Case-specific Triggers to a single set of criteria that stayed consistent across the Granularity Levels. This aimed to reduce complexity and improve navigability
- Clarified explanations of the key elements of the framework, including additional visual aids, diagrams and flow charts
- Clarified and refined definitions of key terminology and improved accessibility to the glossary.

FEEDBACK THEME:**PRACTICALITY FOR ADOPTION****What we heard**

Feedback on practicality for implementation was highly polarised between and within stakeholder groups. Positive feedback included the broad applicability of the metrics to be adopted by a range of users. Entry-Level (now called 'Low Level') metrics were seen as a helpful tool for less technically advanced users. There was also strong support for piloting the metrics to demonstrate their practicality.

In comparison, some stakeholders raised concerns about potentially high costs and technical complexity of the metrics. For example, absolute abundance measurements using direct counts were considered resource-intensive that might not be possible or practical to conduct by many organisations. Stakeholders suggested ground-truthing at the Low Granularity level metrics would be cost prohibitive and conflicted with their intent to be accessible for all types of users.

Many stakeholders emphasised the need for clear guidance to help users understand and implement the metrics effectively. However, some stakeholders supported maintaining a low level of prescriptiveness at this stage, to allow flexibility when testing measurement methodologies and data sources in the piloting phase.

How we responded

- Removed ground-truthing from the Low Granularity level metrics
- Replaced absolute abundance measurements with relative abundance. Direct counts required only in very specific circumstances
- Removed some of the technical measurement methodology requirements until these were tested and validated through piloting testing
- Clarified rationale for low prescriptiveness at this stage to allow flexibility in the pilot testing phase
- Clarified that detailed technical guidance will be developed in collaboration with core group partners during the piloting phase.

**FEEDBACK THEME:
INDICATOR COVERAGE**

Some stakeholders noted that the indicators offer a holistic and comprehensive approach to measuring terrestrial ecosystems and species. They recognised that the Universal and Case-specific Indicators help to balance the need for consistent reporting with the specificity needed for priority ecosystems and species.

Some stakeholders felt that critical indicators were missing, such as ecosystem connectivity and fragmentation, genetic diversity, species richness, and species diversity. There was also a need to clarify how the indicators align with the core elements of ecosystem condition, including composition, structure, and function.

Some stakeholders also felt there was a lack of clear consideration of the abiotic elements of nature (e.g. water, soil and air quality), ecosystem services and social value.

- Clarified the SoN metrics are not intended to be stand-alone metrics. They are intended to be embedded into the broader suite of metrics many organisations already use to measure and report their pressures, or impacts, on nature; their responses to manage their pressures; and changes to water, soil and air quality, all of which are also vitally important
- Clarified that the Framework provides a 'minimum set' of metrics for measuring the living or biotic components of nature, and organisations will need to consider whether other indicators and metrics should be measured for their specific context
- Provided more information on the indicators, including their rationale and alignment with the GBF
- Revised the indicators to distinguish Site Condition and Landscape Condition. Clarified the difference between these two scales and why it is important to measure both
- Ensured that ecosystem connectivity and fragmentation are captured within the Landscape Condition metrics
- Provided more detail on measuring ecosystem condition, including links to existing, relevant guidance.

**FEEDBACK THEME:
4. METRICS**
What we heard

Some stakeholders highlighted that the metrics are science-based, comprehensive, and supported by globally accepted classifications, such as the Global Ecosystem Typology (GET).

Stakeholders felt the metrics could be auditable and can be backed by empirical data. Additionally, the metrics were seen as adaptable across different contexts and they support flexibility by avoiding excessive prescriptiveness.

However, there were several areas of concern raised by stakeholders. Some felt that the metrics were too abstract and lack clear detail, particularly the condition metrics. The lack of prescriptiveness was seen as a risk for consistent measurement and reporting.

Data availability and affordability at the specified resolution and periodicity were identified as potential barriers to implementation.

Stakeholders suggested adopting a single metric across all Maturity (now Granularity) levels, but with different measurement and reporting methods.

Some stakeholders flagged their concern that the metrics alone would not be sufficient to demonstrate nature-positive outcomes.

Additionally, there were requests for detailed technical guidance, case studies, and direction to credible data sources to support the implementation of the metrics.

How we responded

- Simplified the language and presentation of the metrics tables to improve clarity
- Revised the metrics to remove certain specifications on data resolution and periodicity. These requirements were tested during the pilot testing phase
- Acknowledged the role of external initiatives, such as the TNFD's Nature Data Public Facility scoping, in helping to provide clarity on credible data sources
- Clarified that these metrics were in draft for piloting purposes. The aim was to continue to refine the metrics through consultation and pilot testing in 2025
- Clarified that technical guidance would be developed in collaboration with framework and standard setters during the piloting phase
- Clarified that the indicators and metrics were just one piece of the nature assessment puzzle and were not intended to be stand-alone, but instead to be embedded within existing frameworks.

FEEDBACK THEME:**5. ALIGNMENT WITH EXISTING FRAMEWORKS**

Some stakeholders noted that the metrics were well-aligned with existing frameworks, which enhanced their credibility and applicability. They appreciated the alignment with established environmental accounting standards and data sources, such as the IUCN GET and the UN SEEA EA. This alignment was seen as beneficial and stakeholders suggested that it should be emphasised further.

However, some stakeholders found it unclear how the metrics could be relevant for users already applying existing global reporting frameworks or standards. Additionally, there was a call for more consistent terminology to facilitate better alignment and understanding. This would help ensure that the metrics are easily integrated and understood within the context of existing frameworks and standards.

- Strengthened focus on supporting GBF implementation, including outlining the link between the indicators and the GBF targets and headline indicators
- Strengthened narrative around the pressure-state-response model and how these metrics complement those already widely in use, including an updated visual
- Provided more detailed explanation of how metrics were intended to be embedded and aligned with existing frameworks and standards, including via a new visual. Interoperability between the SoN metrics and existing frameworks was not articulated in detail because the metrics were designed for embedding within these frameworks rather than standalone use.

Refinement of the indicators and metrics in Phase 2 resulted in the following framework for piloting in Phase 3 (Figure B3).

Figure B3: SoN indicators and metrics at the end of Phase 2 (January 2025)

Indicators (IND)		Metrics	Granularity level	Case-specific metric triggers
Ecosystem Extent	Ecosystem Extent & Classification (IND 1)	Area of loss, gain and net change in extent (ha)	Low, Medium, High	N/A
	Extent of Priority Ecosystems (IND 1.1)	Area of loss, gain and net change in extent (ha)*	Medium, High	Priority ecosystem trigger criteria
	Proportion of natural or semi-natural habitat (IND 2)	Area of loss, gain and net change in average proportion of natural and semi-natural habitats within each km2 (%)	Low, Medium, High	Intensive land use biome trigger criteria
Ecosystem Condition	Site Condition (IND 3)	Area and change since baseline by condition class (ha per condition class)	Medium (under development), High	N/A
	Condition of Priority Ecosystems (IND 3.1)	Value and change since baseline by condition class (ha per condition class)*	Medium, High	Priority ecosystem trigger criteria
	Landscape Condition (IND 4)	Values and change in a) landscape intactness, b) structural connectivity, and c) functional connectivity	Low, Medium, High	N/A
	Condition of semi-natural habitat (IND 5)	Area and change since baseline of natural and semi-natural habitat by condition class (ha per condition class)	Medium, High	Intensive land use biome trigger criteria

PHASE 3: PILOTING PROGRAMME AND APPLYING TO FRESHWATER AND MARINE REALMS (FEBRUARY 2025 – FEBRUARY 2026)

At the start of Phase 3, NPI developed technical guidance to support the practical implementation of the metrics, initially tailored to the needs of the terrestrial Piloting Programme. This guidance was iteratively refined throughout the piloting phase based on real-world testing and feedback, with a particular focus on identifying the level and type of support organisations require to effectively apply the metrics. Key areas of exploration included how to operationalise the metrics across different use cases (e.g. supply chains and portfolios), and how to ensure that guidance is clear, actionable, and accessible to organisations with varying technical capacities.

In 2025, 29 companies from a range of sectors participated in the terrestrial Piloting Programme, consisting of measuring SoN metrics on over 50 sites across 23 countries. See [Section 3](#) for more details on the piloting scope and process. Table B7 outlines the key feedback themes and how they were addressed.

Table B7: Key findings of the piloting programme

FEEDBACK THEME: 1. METRICS	
What we heard	How we responded
Data availability was a concern across metrics	Example data sources were added to the guidance for each metric and granularity level
Ecosystem classification: classifying ecosystems was challenging due to limited coverage of existing available maps and so identifying the correct ecosystem types was found to be time consuming	The measurement specifications were simplified to minimise manual classification needed at low granularity and lower the GET level at medium
Species metric specifications: robustness, comparability and feasibility of the species abundance metric was a concern due to the breadth of priority species criteria	A Species Selection Filter and application guidance was developed to help companies robustly identify focus species to measure
Technical expertise needed: Coding and technical expertise requirements for condition metrics Resource (time and expertise) for data collection and threat assessment for species metrics	The low granularity level was reframed as a “preparatory” level and made more accessible to users with limited resource and expertise, e.g. by applying measurement specifications that can be more readily met with existing datasets/tools such that minimal data manipulation is required
Difference between Natural and Semi-Natural: meaningfulness of grid-based approach; accuracy of datasets	The requirement to differentiate between natural and semi-natural was removed. Specific metrics for the intensive land use biome (focusing on semi-natural areas) were separated out from the universally applicable metrics framework but kept in the guidance
Level of influence over metric outcomes: concern over being held responsible for contextual or landscape-level metrics	The framework was restructured into site versus landscape-scale metrics to emphasise the differing levels of control the company would have over the outcomes, similar to Scope 1 versus Scopes 2 and 3 in carbon reporting.
FEEDBACK THEME: 2. OTHER TECHNICAL TOPICS	
What we heard	How we responded
Granularity levels: relevance of having three granularity levels and their complexity was questioned	Three granularity levels were maintained but the low level was made more accessible and reframed as a “preparatory” level. Simple measurement specification tables were included in the guidance to clarify the differences between each granularity level
Spatial concepts: data and resource constraints were associated with large buffer areas around sites for measurement	Metric-specific buffers were removed and the scoping boundaries clarified for sites and landscapes, such that sites aligned with the company’s area of direct control
Ground truthing: ground-truthing was challenging where it was not possible to gain access to the areas, e.g. in the wider landscape	Guidance was added to explain remote ground-truthing options and the specifications updated to only require ground-truthing in the wider landscape at the high granularity level

FEEDBACK THEME:**2. OTHER TECHNICAL TOPICS**

Frequency: lack of regular updates for condition and species data makes frequent reporting a challenge

The frequency of reporting was determined to ultimately be the remit of reporting standards or regulators. However, further examples of data sources were added to the guidance and the requirement to report the change in species extinction risk was removed from the metric and instead encouraged where feasible in the guidance

Low traceability contexts: limited feasibility of measurement if it is not possible to access location data

Landscape-scale metrics provided an option where it was not possible to access site locations but information such as sourcing region was available.

FEEDBACK THEME:**3. GUIDANCE****What we heard****How we responded**

Outputs: lack of clarity on what metric outputs should look like

New guidance added on the outputs of each metric, principles for transparency and an example dashboard

Tools and databases: need for automated and open access data and tools

Further examples of data and tools were added to the guidance. It is intended that delivering consensus on metrics would hopefully drive increased investment in aligned data and tools

Guidance structure: need for greater clarity through summaries, conciseness and visual guides

A streamlined guidance document was developed following the piloting with a clearer structure and visualisations

Following the development of the SoN metrics framework, the NPI initiated a gap analysis and a draft integration approach to apply them to the freshwater and marine realms. The objective was to align as far as possible with the existing metrics framework, preserving the initial focus on biotic indicators while making targeted updates where needed to address the specific challenges associated with the freshwater and marine realms. See [Section 3](#) for more details of the process followed.

After testing and refining proposed adaptations to the framework for its application to freshwater, and with consultancy input and feedback sessions with companies and experts, the NPI identified several key particularities for the freshwater realm, described in Table B8, and for marine, described in Table B9.

Table B8: Freshwater

**FEEDBACK THEME: 1. DATA AVAILABILITY****What we identified****How we responded**

Data availability was more limited for:

Ecosystem extent

Ecosystem condition

Species populations

Across all three challenge areas, relevant examples of data sources metrics and external guidance were included in the measurement guidance to support users

Data availability was limited for smaller water bodies: It was identified that smaller water bodies may not be visible in spatial layers for ecosystem extent and condition as they can be of much smaller width than the minimum resolution (30m).

To ensure that the state of these systems is assessed where relevant, a realm-specific criteria to incorporate an indicator species as a proxy for the state of nature was incorporated into the Species Selection Filter.

**FEEDBACK THEME:
2. VOLUME**

Need to account for the depth and flow of freshwater systems (vs solely area-based measurement) in assessing the state of nature

A volumetric measurement component for determining the condition class was added into the measurement specifications for the site ecosystem condition metric at medium and high granularity, accompanying the existing area-based measures. While abiotic, this was included to ensure that ecosystem extent measurements accurately represented freshwater environments, where extent is inherently three-dimensional with depth, flow and volume defining the true scale of the system.

**FEEDBACK THEME:
3. CONNECTEDNESS**
What we identified
How we responded

Need for inclusion of migratory species

Migratory species were included in the Species Selection Filter prioritisation guidance. Data sources such as Global Swimways may be helpful for companies in understanding the significance of systems in their assessment area for freshwater migrations

The state of nature in the freshwater realm can be impacted by diverse and diffuse impacts

Boundary-setting guidance was clarified to specify the role of watersheds and areas of influence in the analysis. Note that the attribution of impact is not mandated for state of nature measurement, hence the importance of also measuring pressure and response metrics alongside state

**FEEDBACK THEME:
4. SEASONALITY**
What we identified
How we responded

Larger natural fluctuations in the state of nature may be present in freshwater systems, e.g. due to inter- or intra-annual seasonality

While such fluctuations may be more visible in freshwater systems, they can be important in all realms and seasonality was identified as an area for future further technical guidance development, e.g. relating to measuring average population sizes or using dynamic baselines

Table B9: Marine


FEEDBACK THEME: 1. DATA AVAILABILITY
What we identified
How we responded

Limited accessibility/availability of relevant data for the marine realm

Marine-specific measurement specifications were developed to allow for the use of coarser data across space and time (e.g. lower minimum spatial resolutions and GET classifications), focusing on ecosystems for which datasets are readily available, using proxy indicators in some cases, and providing additional flexibility in specifications through giving ranges. The guidance also provided more flexibility around measuring ecosystem connectivity, suggesting that this is pursued only where feasible given the available data and significance of drivers of change in the state of nature. In the case of site ecosystem condition, incorporating a relevant abiotic proxy that may be easier to measure was also advised for high granularity approaches

FEEDBACK THEME: 2. DEPTH-STRUCTURE

The **volumetric and depth-structured** nature of the marine realm needs to be considered

Area-based metrics were maintained to allow for alignment and comparability with the other realms, however incorporating appropriate proxies was noted as an option help address the unique impacts on the state of nature in a volumetric and depth-structured space. Volumetric considerations were added as additional guidance for marine habitats, in particular relating to species measurements where habitat-derived or remote-sensed measurements may not be able to estimate population sizes effectively

FEEDBACK THEME: 3. CONNECTEDNESS AND DIFFUSE IMPACTS

What we identified

The state of nature in the marine realm can be impacted by diverse and diffuse impacts

How we responded

Diffuse marine impacts are addressed through the core framework via: (i) application of seascape-scale metrics alongside site-scale metrics; (ii) guidance on structural and functional connectivity between marine ecosystems; and (iii) noting the importance of calculating state of nature metrics alongside relevant pressure and response metrics.

At the end of Phase 3, refinements were completed to produce a revised indicators and metrics table as outlined in Figure B4.

Metrics				
	Ecosystem extent	Ecosystem condition	Species extinction risk	Species populations
Site	Area (absolute and percentage) of loss, gain and net change in extent of natural ecosystems (ha, %)	Area and change by condition class (ha, %)	Species extinction risk measurement showing the contributions of the site to global extinction risk	Number and proportion of priority species with populations that are 1) declining, 2) slowing in decline, 3) stable, and 4) increasing.
Landscape/ Seascape	Area (absolute and percentage) of loss, gain and net change in extent of natural ecosystems (ha, %)	Values and change in structural and functional connectivity between natural ecosystems	Species extinction risk measurement showing the contributions of the landscape/seascape to global extinction risk	Number and proportion of priority species with populations that are 1) declining, 2) slowing in decline, 3) stable, and 4) increasing.*

**Important note: To be measured where possible, however it is recognised that further work on data availability needs to be undertaken to make measurement more feasible.*

Figure B4: SoN metrics at the end of Phase 3 (February 2026)

PHASE 4: PUBLIC CONSULTATION, FEASIBILITY ASSESSMENT AND REVISION (MARCH 2026 – JULY 2026)

From February and March 2026, the NPI conducted its final consultation. A total of 111 submissions were received. The main feedback themes on the overall framework are outlined in Table B10.

Table B10: Second public consultation – feedback themes on the overall framework

FEEDBACK THEME: 1. DATA AVAILABILITY	
What we heard	How we responded
Data coverage, quality, accessibility, update frequency, and capability to use data are uneven across regions, sectors, and organisations, making metrics difficult to implement consistently at scale	A data accessibility assessment was completed, see Section 6 , to confirm that sufficient data is available to calculate the metrics. Within the guidance, illustrative examples of available data sources have been provided for the different metrics
Call for action: Action needed from funders and data developers to fill key gaps remaining, see Section 7	
FEEDBACK THEME: 2. HOW METRICS LINK TO MAKING CLAIMS	
What we heard	How we responded
Claims are disconnected from the metrics and measurement guidance development, so it is unclear how “nature positive” claims are linked to results and how they are verified/approved	As communicating and demonstrating outcomes requires an evidence base built on common metrics, the NPI is first completing the development of the metrics before moving on to build consensus around making credible claims. The NPI website and newsletter will provide updates and engagement opportunities.
FEEDBACK THEME: 3. SPECIES EXTINCTION RISK METRIC SUITABILITY CONCERNS	
What we heard	How we responded
The Species Extinction Risk metric is difficult to implement at scale because key data inputs are costly and updated infrequently/inconsistently	Additional framing was introduced to clarify that measuring <i>changes</i> in extinction risk is not mandated in the metric descriptor, but that the metric provides important context within a holistic set of aligned metrics. For very small sites where the cost burden can be high and the ability to influence the extinction risk potentially much lower, an option is provided to focus on the species populations metric only.
Call for action: Increasing data accessibility, methodologies, frequency of update and comparability over time will further help to improve the practicality of this metric	

FEEDBACK THEME:**4. UNCLEAR SCOPE OF ECOSYSTEM TYPES, ESPECIALLY SEMI-NATURAL**

The framework does not clearly define which ecosystems are in scope or how to classify them, leaving ambiguity around “natural” vs “non-natural”

Metric wording and guidance definitions were updated to clarify the inclusion of semi-natural ecosystems. Clearer definitions were provided, drawing on credible external sources, and additional guidance was developed on ecosystem classification, with example datasets, in the base map preparation step.

FEEDBACK THEME:**5. ALIGNMENT WITH EXTERNAL FRAMEWORKS****What we heard**

Interoperability with existing standards and frameworks is not clear, creating uncertainty about comparability and duplication

How we responded

A cross-mapping of data needs was included in the guidance to show how the underlying data collated by the company to implement aspects of existing frameworks (TNFD, GRI, SBTN, ESRS, ISSB, CDP) can be reused to calculate state of nature metrics

Call for action:

Further details on how metrics have been embedded in key frameworks and standards will be added to future guidance iterations once they have been adopted.

FEEDBACK THEME:**6. FEASIBILITY FOR SUPPLY CHAINS****What we heard**

The framework remains site-centric and lacks guidance for application across complex supply chains

How we responded

The landscape metrics are highlighted as providing a more accessible starting point where site-level location data is not available, e.g. they could be applied to sourcing areas. The data needs cross-mapping included in the guidance also highlights where value chain location data may be being collected for implementing other key frameworks and standards.

Call for action:

Traceability and value chain data transfer will be an ongoing challenge for all supply chain assessments. By embedding the metrics, commodity certifications and supply chain tool providers can help reduce the burden on downstream customers.

FEEDBACK THEME:**7. ATTRIBUTION OF IMPACTS****What we heard**

Landscape-level metrics can be misread as attributable to a single organisation despite multiple drivers

How we responded

The metric category name has been updated from “Landscape/seascape metrics” to “Landscape/seascape context metrics” to help emphasise the lack of control the company has in the landscape and the purpose of these metrics to provide information for robust nature-related dependency, impact, risk and opportunity (DIRO) assessments and decision-making.

FEEDBACK THEME:**8. SPECIES POPULATIONS METRIC FEASIBILITY CONCERNS**

The species population trend measurement is resource-intensive and requires repeated data over time

The metric descriptor was updated to emphasise that population measurements are estimates rather than absolute counts: “Number and proportion of priority species with estimated populations that are 1) declining, 2) slowing in decline, 3) stable, and 4) increasing.” The Species Selection Filter guidance was enhanced and clarified using recommendations submitted in the final consultation in order to help companies to prioritise species measurement efforts. Additional example data sources and measurement methodologies were also added to the guidance.

Call for action:

Increasing species data coverage, data sharing/accessibility and monitoring guidance will help improve the practicality of this metric.

FEEDBACK THEME:**9. ECOSYSTEM CONDITION METRIC – LACK OF COMPREHENSIVENESS****What we heard****How we responded**

Site-level standardisation: ecosystem condition classes are not clearly defined or standardised, undermining comparability

The site-level metric was updated to include reference to “considering elements of structure, function and composition” to help guide company thinking on how to apply the metric. Additional high-level principles were added for assigning ecosystem condition classes and the criteria for ecosystem condition layer selection were reviewed and further example data sources added.

Metric completeness: focus on biotic indicators risks missing abiotic decline

The project scope was not changed at this stage. The metrics are intended to be embedded within existing guidance and frameworks (e.g., TNFD, SBTN and GRI) that address abiotic elements and the guidance refers users to other relevant sources covering elements outside the project scope.

Landscape metric completeness: metric reduces condition to structural/connectivity indicators, omitting other ecological factors

This was reviewed against piloting feedback and the ecosystem condition data review. Piloting found that data layers for the ecosystem condition aspects covered in the site metric (i.e. beyond connectivity) were less mature and required ground-truthing to ensure accuracy, however users are not always able to access areas of the wider landscape to ground-truth and remote-sensing data are less useful for ground-truthing condition than for extent. For these reasons, the landscape condition metric descriptor was not extended at this time, but the guidance was updated to encourage users to extend their measurements where feasible.

Call for action:

Further work is needed to standardise ecosystem condition classification methods and datasets.

FEEDBACK THEME:**10. FEASIBILITY OF LANDSCAPE METRICS**

Landscape-level application can be challenging due to data, capacity and access constraints

The measurement specification to only apply ground-truthing for landscape metrics at the high granularity level was maintained to help address access issues. A detailed data availability review (see section 6) was completed, with gaps identified and additional examples added to the guidance. Further guidance on defining landscape boundaries was added to support companies in setting the most appropriate boundary for their context. The SoN metrics table categories have also been updated to emphasise that landscape metrics are intended to be used as contextual indicators, i.e. it is not the sole responsibility of the company to drive outcomes at this scale.

Call for action:

In the longer-term, coordinated landscape or jurisdictional-level data collection and sharing platforms will help reduce the burden on individual actors in the landscape

FEEDBACK THEME:**11. EQUITY ISSUES - FEASIBILITY FOR SMES****What we heard**

SMEs and organisations in developing countries may be more challenged to implement the framework because it can require specialist GIS/ecology capacity and access to costly or restricted datasets

How we responded

References to new or upcoming freely available data sources, we added. Improvements were made to areas of the guidance that were flagged in feedback as less clear, e.g. the Species Selection Filter, site and landscape boundary setting etc.

Call for action:

The inequitable distribution of resources and data across geographies remains a challenge. Funding of open access data and tools, as well as the development of accessible tools to aid in calculating the metrics, will help reduce internal capacity requirements. Larger organisations also have a role to play in supporting SME suppliers.

FEEDBACK THEME:**RISKS ASSOCIATED WITH MEASURING NET CHANGE****What we heard**

Allowing “net change” (or net-positive framing) in the wording of the ecosystem extent metric can hide ongoing loss and enable misleading outcomes by netting gains against losses, creating misalignment with gross-deforestation norms and potentially lowering ambition

How we responded

The ecosystem extent metric descriptor wording was updated to remove the need for netting and all ecosystem metrics clarified to emphasise the breakdown by type. The metric is now worded as: “Ecosystem extent metric: Area, losses, and gains in extent of natural ecosystems (including semi-natural) by type (ha, %)”.

FEEDBACK THEME:**13. FEASIBILITY FOR THE FINANCIAL SECTOR**

Metrics are not yet feasible for financial institutions due to limited guidance on portfolio-level application, aggregation, and progression where site-level data is lacking

A review of piloting feedback and data availability was conducted and identified that application is currently more feasible for asset managers and asset owners with location-specific data (e.g. listed equities, real assets), however feasibility for other asset classes (e.g. loans, private markets, sovereign exposures) will improve over time once increased client data becomes available. For this reason, TNFD has proposed that financial institutions start by disclosing their portfolio exposure to high nature-related impact and dependency sectors and to sensitive locations, versus disclosing outcome metrics, in the immediate term. Engagement was undertaken with leading nature finance initiatives to exchange learnings from ongoing respective workstreams, including sharing NPI financial sector piloting insights.

Call for action:

Sector specific guidance developed by appropriate organisations is needed to support metric application to further asset classes.

FEEDBACK THEME:**14. FEASIBILITY FOR THE FORESTRY/AGRI SECTOR****What we heard**

The framework is challenging to apply at scale in forestry and agriculture supply chains because key metrics—especially species extinction risk and species populations—are not practical across many production sites and large or dispersed managed areas

How we responded

The inclusion of semi-natural ecosystems (see topic 4) in the scope of ecosystem metrics was clarified, addressing confusion around whether many forestry and agriculture sites would be captured. See also topics 3 and 8 on species. Further explanation added in the guidance on appropriate additional metrics to help capture the state of nature across mosaic landscapes. Forestry piloting case studies were also published separately to share learnings and demonstrate practicality.

FEEDBACK THEME:**15. DEGRADED 2020 BASELINE****What we heard**

Issues raised included: (i) 2020 is too recent and could embed existing degradation or impacts, (ii) the CBD (Convention on Biological Diversity) advises using baseline years between 2011-2020, (iii) data may not be available for 2020.

How we responded

Existing flexibility in the measurement guidance was maintained, e.g. pre-impact assessments can be applied where needed and baselines later than 2020 are appropriate if no data is available. Additional wording was added on the CBD baselines option. Baseline credibility was also noted as a key topic for consideration in the workstream on credibly demonstrating and communicating nature outcomes.

FEEDBACK THEME:**16. INCORPORATING DIFFERENT KNOWLEDGE TYPES**

Respondents noted that without clearer guidance on how Indigenous and local knowledge should be respected, governed, and used alongside scientific data, the ecological integrity, legitimacy, and real-world applicability of the framework may be weakened—particularly in regions where such knowledge is central to ecosystem management.

Maintained existing references to guidance on responsible stakeholder engagement and added additional references to existing guidance relating to the incorporation of different knowledge types into environmental assessments.

Further state of nature metric-specific guidance or practices on this topic require respectful, equitable and inclusive development in partnership with knowledge holders and should be tailored to local context and values.

FEEDBACK THEME:**17. MORE (MODERN) EXAMPLE TOOLS AND DATA SOURCES****What we heard**

Respondents noted the need for incorporating newer techniques, particularly eDNA, into the guidance. There were also many requests or suggestions for more data sources.

How we responded

As per the scope of the Executive Summary Guidance, only a few illustrative examples for each case will be listed in this document but newer techniques may be added where appropriate. It is important to note that identifying new techniques for inclusion in the guidance is a complex process requiring appropriate governance. Further comprehensive lists of data sources were highlighted as a need for further work.

FEEDBACK THEME:**18. MEASUREMENT FREQUENCY****What we heard**

It was noted that no guidance has been provided on the frequency of monitoring and reporting.

How we responded

This was a proactive decision to avoid overlap/confusion with the mandates of reporting frameworks. Consideration of ecologically appropriate and practical frequency of reporting was added into the appendix on principles for embedding the metrics. Species monitoring frequency guidance was identified as an area for further technical work (see section 7).

FEEDBACK THEME:**19. MISSING ECOSYSTEM COLLAPSE RISK METRIC****What we heard**

The review highlighted that there is currently no ecosystem equivalent to species extinction risk and an overall misalignment with the GBF Monitoring Framework, which utilises the Red List of Ecosystems Index (RLEI).

How we responded

Updated the guidance to show how ecosystem condition measurement at high granularity aligns with RLEI measurements and to encourage the use of RLEI condition assessments at medium granularity if they are available.

The principles for embedding metrics were updated to emphasise “consideration of species and ecosystem risk” in the prioritisation of locations for assessment to ensure that measurement efforts focus on where the level of risk is highest.

As part of the public consultation, respondents were invited to provide recommendations for the Species Selection Filter. 72 respondents provided feedback on this question.

Table B11: Species Selection Filter recommendations

FEEDBACK THEME: NEED FOR CLARIFICATIONS AND SPECIFICATIONS	
What we heard	How we responded
Need to clarify key definitions and criteria, and ensure language is accessible —particularly “locally important species,” “potential impacts,” and “species covered by ecosystem extent or condition metrics”—to reduce ambiguity and ensure consistent application across users and contexts	Explanatory text was provided for all key terms in the filter to ensure it is clear and accessible and to reduce ambiguity.
Strengthen safeguards against selective species choices by requiring clear documentation and disclosure of inclusion and exclusion decisions, improving auditability and credibility of species population metrics	The transparency guidance was updated to recommend disclosing criteria and justification for species selection.
Clarify alignment with formal external frameworks to ensure coherence and avoid duplication for organisations operating across multiple standards	Further references to frameworks and resources, including Critical Habitat/IFC Performance Standard 6, TNFD and IUCN, were added.
FEEDBACK THEME: SCOPE AND ECOLOGICAL RELEVANCE	
What we heard	How we responded
Ensure representation of diverse taxonomic and functional groups , including keystone, indicator, common, cryptic, and migratory species, so that species critical to ecosystem functioning and resilience are not inadvertently excluded or deprioritised.	Keystone and indicator species were included as an optional addition in the first level of the filter and explanatory notes provided on their identification.
Embed materiality and impact relevance explicitly in species selection , ensuring prioritised species reflect actual nature-related risks and pressures rather than ease of monitoring	“Material to business” species were included within “locally important species” in the first part of the filter. These should be depended upon or financially material species, as assessed by a dependency assessment, e.g. see TNFD’s LEAP guidance.
Include vulnerable (VU) species alongside Critically Endangered (CR) and Endangered (EN) species, in line with the IUCN Red List definition of threatened species, to strengthen precaution and enable earlier detection of population decline	VU species were included as an optional addition in the first level of the filter.
Strengthen the role of Indigenous peoples in defining locally important species, with clear expectations for engagement, validation, and transparency	“Important to local communities” species were included within “locally important species”, referencing the incorporation of local, and where relevant, Indigenous knowledge, as well as consideration of community or societal material and cultural importance.

**FEEDBACK THEME:
DATA SOURCES, EVIDENCE AND IMPLEMENTATION
SUPPORT**
Provide more data sources and guidance for data

poor areas: recognise and authorise a broader and more appropriate range of biodiversity data sources—including regional and national datasets—and address accessibility, licensing, and taxonomic bias so species selection is not constrained by limitations of global databases alone

Added further example data sources to ensure coverage and accessibility.

Strengthen realm-specific guidance for marine and freshwater contexts, including appropriate indicators, data sources, and functional considerations distinct from terrestrial systems.

Additional examples and explanation were added for these realms where available.

Provide additional practical decision-process tools, guidance and examples—such as decision trees, templates, and worked examples— to enable consistent, transparent, and confident application in real-world contexts

This was out of the scope of the initial measurement guidance but was noted for further work in future.

This feedback resulted in the following enhancements to the Species Selection Filter, along with accompanying guidance updates:

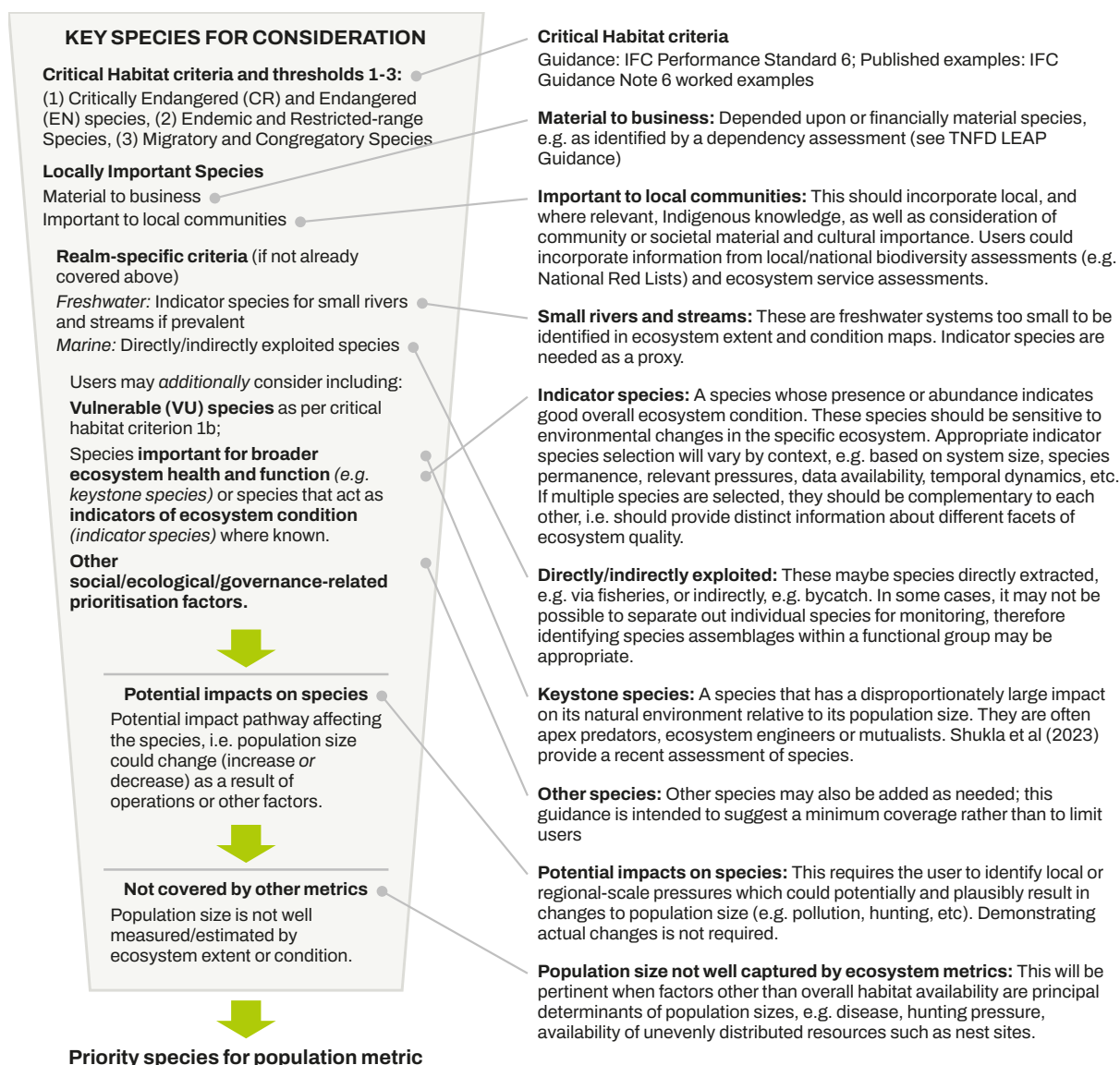


Figure B4: Species Selection Filter updated after the public consultation

In the final public consultation, the NPI Secretariat asked the respondents whether using the species populations metric as a proxy for ecosystem health for smaller freshwater systems that may not be captured in spatial datasets was a credible and practical approach. Overall, 75% of respondents (out of a total of 72) agreed or partially agreed, and 58 provided qualitative feedback to explain their answers.

In parallel, 7 organisations, supported by EY, participated in a desk-based feasibility assessment, enabling the NPI to gather additional feedback on the applicability of the SoN metrics to the freshwater realm (see [Section 3](#)).

Together, these two exercises allowed the NPI to identify several key feedback themes on the SoN metrics for freshwater:

Table B12: Feasibility assessment and public consultation: Freshwater

 FEEDBACK THEME: PROXY INDICATOR FOR SMALL RIVERS/STREAMS	
What we heard	How we responded
Concerns were raised around whether enough data is available for indicator species and that the guidance on using the proxy was limited. Abiotic proxies were noted as absent	Updated the Summary Guidance to explicitly state that indicator proxies should not be interpreted as a standalone or complete representation of freshwater ecosystem condition Strengthened guidance on indicator species selection Updated Transparency section guidance to explicitly call for explanation of proxy approaches taken Abiotic metrics remain out of scope of the project.
For future guidance: Technical guidance for manual mapping of small rivers and streams Making mapping of smaller freshwater systems accessible to users Guidance on the interplay between biotic and abiotic metrics for pressure and state	
FEEDBACK THEME: SITE VS. LANDSCAPE BOUNDARY	
What we heard	How we responded
Site vs landscape boundary definition remains confusing for companies	Clarified site vs landscape vs area of influence approaches in guidance (for all realms) Clarified that boundary approaches should be fit-for-purpose and transparently documented, rather than uniform across all freshwater systems Included references to World Bank e-flows guidance for precedents to support companies.
For future guidance: More detailed, sector- or system-specific boundary rules would be helpful in future detailed guidance. Worked examples for different freshwater contexts (e.g. free-flowing rivers, regulated rivers, reservoirs)	
FEEDBACK THEME: FRESHWATER ECOSYSTEM DIFFERENTIATION	
What we heard	How we responded
Users are unclear how freshwater ecosystems should be differentiated (e.g. rivers, streams, lakes, reservoirs), and how this differentiation should link to existing national or regional freshwater classification systems	Clarified that existing national or regional freshwater ecosystem classifications may be used to inform differentiation where these are well established. Added further references to freshwater data sources for basemap development.

**FEEDBACK THEME:
FRESHWATER ECOSYSTEM DIFFERENTIATION**
For future guidance:

Illustrative freshwater examples showing how differentiation works in practice

Additional guidance for complex or mixed freshwater systems where classification is less clear

**FEEDBACK THEME:
DATA AVAILABILITY**
What we heard

Data availability and cost constraints remain a core barrier in freshwater systems

How we responded

Added freshwater-specific examples where available

For future guidance:

Call to action to help fill key gaps, in particular freshwater ecosystem condition layers (see [Section 7](#))

**FEEDBACK THEME:
PROPORTIONAL APPLICATION TO SMALL
SITES AND LARGE PORTFOLIOS, AND
MONITORING/RESOURCE BURDEN**
What we heard

The feasibility assessment scores reflected high staff-time and expertise requirements for several indicators, particularly extinction risk, species populations, and some landscape indicators. Respondents highlighted uncertainty around how to scale assessments without losing credibility or creating disproportionate burden.

How we responded

Added a highlight box under box on “Applying to multiple sites” covering advice on rolling out over time and aspects where efficiencies can be achieved when measuring for multiple sites. Clarified that measurement effort should fit the intended use case, and should be proportionate to site scale, pressures, and should consider data availability; particularly for small rivers and streams. Added references to existing freshwater monitoring guidance.

For future guidance:

Worked examples illustrating proportional portfolio application in practice

Guidance on how to assess at different spatial scales

**FEEDBACK THEME:
LINK TO OPERATIONAL USE CASE**
What we heard

Respondents felt that freshwater metrics were sometimes disconnected from operational decisions, reducing their usefulness for prioritisation and management

How we responded

Noted that use case guidance is not covered in the measurement guidance in scope table. Noted importance of reviewing metrics alongside pressure and contextual information and reinforced that metrics are designed to support decision-usefulness across planning, prioritisation and monitoring, rather than serve as isolated reporting outputs

For future guidance:

Further guidance on use cases and interpretation of metrics may be developed by appropriate organisations, frameworks and standards

**FEEDBACK THEME:
UPDATE FREQUENCY AND TIMELINESS OF
DATASETS**
What we heard

There was a lack of consistent datasets beyond fish, which makes it harder to detect change over time, compare across taxa or use the metrics for timely decisions. Respondents also noted that species extinction risk data is updated less frequently.

How we responded

Clarified that update frequency should be considered when selecting data sources and disclosed. Noted that annual or frequent dataset updates are not always required, depending on the use case, recognising that many robust freshwater datasets update less frequently. Users encouraged to document known temporal limitations (e.g. update lag, irregular refresh cycles) as part of their methodological transparency

**FEEDBACK THEME:
UPDATE FREQUENCY AND TIMELINESS OF
DATASETS**

For future guidance:
Further guidance needs to be developed on monitoring frequency, noting that different metrics will require different frequencies and may also differ from standard reporting cadences

**FEEDBACK THEME:
FURTHER FRESHWATER-SPECIFIC GUIDANCE
NEEDED**

What we heard	How we responded
More freshwater-specific guidance, worked examples and case studies are needed	Additional guidance and data sources added for freshwater, e.g. highlighting examples of key characteristics that influence freshwater metric interpretation. Worked examples and case studies were out of scope of the initial measurement guidance but were identified for further work.

For future guidance:
More detailed freshwater-specific technical guidance by system type (e.g. rivers, streams, reservoirs)
Worked examples illustrating freshwater application across different contexts

Similarly to the freshwater realm, feedback on applying SoN metrics in the marine realm was gathered through the public consultation and a feasibility assessment.

Two questions relative to marine metrics were included as part of the public consultation:

- 1.To what extent does proposing a lower maximum Global Ecosystem Typology level, with a flexible spatial resolution range that depends on ecosystem type and data availability for marine metrics, address data availability concerns?
- 2.To what extent does adding pressure-specific additional metrics and measurement options to account for diffuse pressures from activities impacting priority ecosystems, activities in intensively used marine ecosystems and activities that exploit populations or cause indirect mortality help address challenges related to diffuse impacts?

Out of the 66 respondents to the first question, 65% agreed or partially agreed. Regarding the second question 63% of respondents, again out of 66, agreed or partially agreed. 33 respondents provided qualitative feedback to explain their answer.

Marine feasibility assessments were carried out by 11 organisations, in partnership with the World Economic Forum (WEF) and the Ocean Risk and Resilience Action Alliance (ORRAA) – see details in [Section 3](#).

Out of the two exercises, NPI has drawn the following conclusions on the SoN metrics for the marine realm:

Table B13: Feasibility assessment and public consultation: Marine

 FEEDBACK THEME: DATA AVAILABILITY	
What we heard	How we responded
Fewer (18%) respondents considered that data availability concerns had been fully addressed. Key concerns included limited condition datasets, issues relating to the GET ecosystem map, sparse data for offshore and deep-sea environments, limitations of satellite data for subsurface habitats, and a regional bias towards tropical ecosystems. Respondents also noted that, while the framework provides flexibility regarding resolution, it offers insufficient guidance on how to proceed where data is unavailable. Concerns were also raised regarding the use of low-resolution datasets and proxies.	Additional information on marine data sources was incorporated into the guidance, with reference to upcoming sources where known The guidance acknowledged the limitations of proxies and clarified their role as an interim solution, in addition to the biotic aspects Minimum site sizes were more clearly specified in the guidance to ensure low resolution datasets are not applied inappropriately A call to action was developed to highlight key marine data gaps (see Section 7)
FEEDBACK THEME: DIFFUSE, DYNAMIC SYSTEMS	
What we heard	How we responded
Marine ecosystems are highly dynamic across both space and time, shaped by mobile water masses, migratory species, larval dispersal, and pronounced seasonal and interannual variability. Assessment approaches based on fixed spatial units or static boundaries struggle to capture these dynamics, and diffuse marine impacts are difficult to attribute to individual sites. Marine ecosystems also require consideration of depth, vertical stratification, and seabed characteristics. Horizontal, area-based, and satellite-based approaches do not adequately capture the three-dimensional structure required to assess ecosystem extent and condition.	The guidance was updated to emphasise the importance of: reporting state of nature metrics alongside relevant pressure and response metrics, to help capture diffuse impacts applying seascape metrics to better capture diffuse impacts arising from the site applying relevant additional metrics, where applicable, to capture diffuse impacts on the state of nature the limitations associated with three-dimensional structure, and the need to consider whether data or metrics at different depth strata are required
For future guidance: Volumetric or three-dimensional approaches to ecosystem extent measurement Guidance on integrating bathymetric (seabed topology) data into ecosystem classification Guidance on how to address species that move between depth zones	

**FEEDBACK THEME:
SITE AND SEASCAPE BOUNDARIES**

Feasibility assessments highlighted the need to clarify site-level versus seascape-level boundaries, particularly for operations such as offshore wind. There was also confusion as to whether seascape metrics could result in double counting by multiple actors operating within the same area; this issue was addressed in the overarching consultation feedback responses, for example through renaming these as “Landscape/seascape context” metrics.

Sources of further guidance were added for site boundaries relating to other key marine operation types, such as aquaculture lease areas, shipping route corridors, and offshore wind.

Guidance on seascape boundaries was added, including the recommendation to consider relevant marine jurisdictions or uses, and that national and international marine spatial planning (MSP) practices may also help guide the definition of seascape boundaries.

**FEEDBACK THEME:
CONTEXT DEPENDENCY**
What we heard

Given the substantial variation across marine ecosystems, for example between nearshore or coastal environments and offshore or pelagic systems, respondents questioned the extent to which a single approach can be appropriate. Elements of the dynamic systems described under key topic 2, such as seasonal and interannual variability, may also be considered manifestations of context dependency

How we responded

Consideration of environmental context was incorporated into the principles guiding appropriate data source and measurement approach selection. This encourages the use of the best measurement approaches in different ecosystems whilst ensuring the metric outcomes can be aggregated into the core universal metrics.

For future guidance:

Seasonality and temporal variation were identified as important priorities for further technical guidance development, including in relation to dynamic baselines.

More detailed guidance on coastal versus pelagic measurement methods could also be helpful, as could recommended monitoring frequencies by ecosystem type and metric (e.g. coral reef condition vs mangrove extent vs deep-sea condition)

**FEEDBACK THEME:
ECOSYSTEM CONDITION MEASUREMENT**
What we heard

The requirement for site condition measurement to include at least one measure of species composition, ecosystem function, and an abiotic stressor was considered particularly challenging in the marine context. The metric was also unavailable at preparatory level, creating a high barrier to entry. Few validated marine integrity indices currently exist. Abiotic data are highly variable across space and time, and three respondents noted that such data may not constitute appropriate proxies for marine state of nature.

How we responded

Additional potential data sources for the biotic components of marine condition were included, including biome-specific sources where global datasets are unavailable, and options were added at preparatory and medium level. The guidance clarifies what is feasible to calculate for marine ecosystems at each granularity level

Specific guidance and examples were provided to clarify what constitutes an acceptable abiotic stressor measure for different marine ecosystem types across all granularity levels

For future guidance:

The guidance will continue to be updated as additional data sources become available

**FEEDBACK THEME:
SPECIES MEASUREMENT**

Respondents raised that species mobility in the marine realm poses significant challenges for the measurement and meaningfulness of site-level species metrics, and alternative options were proposed. Additional detail was requested on data collection and ground-truthing methodologies.

Cryptic species monitoring and other marine ground-truthing methods were included as example data sources and collection approaches, where appropriate
The guidance was updated to note that applying the metrics at seascape scale can help capture the dynamic nature of marine systems
Species mobility is also a factor in terrestrial and freshwater systems so further guidance should consider all three realms

For future guidance:

Guidance on indicator species and mobility considerations

**FEEDBACK THEME:
PRESSURE-RELATED METRICS**
What we heard

The feasibility assessment raised questions regarding when the additional pressure-related metrics included in Appendix A of the draft guidance should be applied and how they should be interpreted. It was also noted in the consultation that purely pressure-based metrics are not robust substitutes for marine state of nature metrics.

How we responded

The additional metrics were moved from the appendix into the relevant sections of the main guidance, with clearer explanation of when they should be applied
Three additional indicators were removed as they constituted pressure metrics and therefore fell outside the NPI's scope, instead sitting within the remit of frameworks and standards such as SBTN

**FEEDBACK THEME:
BASELINE SETTING**
What we heard

The 2020 baseline year was identified as problematic in cases where marine data only became available after 2020.

How we responded

The baseline approach was already flexible where data is unavailable, a minor update therefore sought to reinforce this point and gave marine data as an example.

**FEEDBACK THEME:
GUIDANCE IMPROVEMENTS**
What we heard

Requests were made for additional marine data sources, decision trees, worked examples, and case studies.

How we responded

Further example metrics, tools, and data sources for marine ecosystems were incorporated into the guidance where already available, drawing on the examples identified through the feasibility assessment and marine metrics research.

For future guidance:

WEF and ORRAA are leading the development of worked examples and case studies.

APPENDIX C: ALIGNMENT WITH GBF MONITORING FRAMEWORK

A technical assessment was undertaken to evaluate the alignment between the State of Nature (SoN) Indicators and Metrics and the Kunming-Montreal Global Biodiversity Framework (GBF) monitoring framework headline indicators. Through these initiatives, the metrics should help accelerate implementation of Target 15 and support private sector contributions to all 23 targets and the mission of the GBF. The assessment examined the extent to which the SoN metrics developed to support site- and landscape level biodiversity monitoring by businesses and other organisations are consistent with the GBF's globally agreed indicators and underlying data for tracking country-level progress towards biodiversity conservation goals. The review assessed both conceptual alignment (whether the metrics measure the same aspects of nature) and operational alignment (whether the metrics are measured in the same ways).

The assessment found that SoN metrics for ecosystem extent and species extinction risk are fully and substantially aligned, respectively, with corresponding GBF headline indicators on extent of natural ecosystems (A.2) and Red List Index (A.3). It also identified methodological alignment for *site ecosystem condition* with GBF indicator Red List of Ecosystems (A.1), particularly at high granularity, to contribute to underlying data on assessments. The GBF monitoring frameworks lacks a headline indicator specifically for species populations, but the SON metric for species populations is *potentially aligned* with several component indicators and elements of existing headline indicators (e.g., A.4 Proportion of populations within species with an effective population size greater than 500, Living Planet Index, A.3 Red List Index, A.1 Red List of Ecosystems). It also identified opportunities to strengthen alignment. Collectively, these recommendations aim to enhance biodiversity monitoring systems and enable data generated by businesses and other stakeholders to contribute more effectively to national and global reporting under the GBF.

The full paper is available on the Convention on Biological Diversity's website, [here](#).

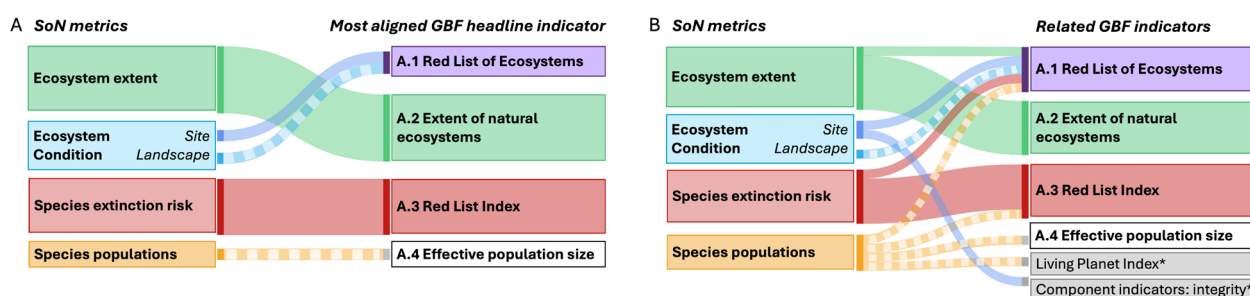


Figure A3.1: Alignment of NPI SoN metrics with GBF indicators. (Source: Alignment of the State of Nature Metrics with the monitoring framework of the Kunming-Montreal Global Biodiversity Framework. October 2026).

Alignment of NPI SoN metrics with (A) the most aligned GBF headline indicators, and (B) all aligned or potentially aligned headline and component indicators, with component indicators marked in grey and with an asterisk; weight indicates levels of alignment from Table 3 (thick = full or substantive alignment, thin = methodological, dashed = potential for methodological alignment).

Table A3.1: Elements of GBF Goal A and associated GBF headline indicators and SoN metrics

GBF GOAL A ELEMENT	GBF HEADLINE INDICATOR	SON METRIC
The integrity of all ecosystems is maintained, enhanced, or restored	A.1 Red List of Ecosystems*	Ecosystem condition (site)
The connectivity of all ecosystems is maintained, enhanced, or restored	A.1 Red List of Ecosystems*	Ecosystem condition (landscape)
The resilience of all ecosystems is maintained, enhanced, or restored	A.1 Red List of Ecosystems	—
The area of natural ecosystems is substantially increased by 2050	A.2 Extent of natural ecosystems	Ecosystem extent
Human induced extinction of known threatened species is halted, and, by 2050, the extinction rate and risk of all species are reduced tenfold	A.3 Red List Index	Species extinction risk
By 2050, the abundance of native wild species is increased to healthy and resilient levels	—	Species populations
The genetic diversity within populations of wild and domesticated species, is maintained, safeguarding their adaptive potential.	A.4 Proportion of populations within species with an effective population size greater than 500*	—

*GBF indicators marked with an asterisk were considered to provide only partial coverage of the element.

APPENDIX D: GLOSSARY

Term	Definition
Absolute abundance (of a species)	The number of individuals per species in an area. Describes the representation of a species in an ecosystem. Can be measured in different ways including direct counts or distance sampling.
Abundance indices or estimators	Abundance defines the size (i.e., the number of individuals) of a population. Abundance indices involve methods such as observations relating to the presence of organisms (e.g., number of rodents trapped within a unit of time) rather than to the direct counts of individuals. Abundance estimators are direct counts of organisms, e.g., counting plants in a quadrat (Smith and Smith, 2015).
Anthropogenic ecosystems	Ecosystem types created and maintained through human interventions, i.e. human interventions are the primary determinant of the composition, structure and functioning of the ecosystem (CBD, 2026).
Area of habitat	Habitat available to a species within its distribution range, also known as extent of suitable habitat. Consistent with the definition of habitat itself as ‘the area, characterised by its abiotic and biotic properties, that is habitable by a particular species’ (Brooks et al 2019).
Area of influence	The geographic area over which a project or activity has the potential to cause environmental, social, or economic impacts—either directly, indirectly, or cumulatively. This area may extend beyond the project footprint and includes zones affected by associated infrastructure, supply chains, and induced activities.
Associated Facilities	Additional infrastructure that would not have been constructed or expanded if the organisations activity did not exist and without which the activity would not be viable. For example, a road to service a mine or a logistics storage area.
Baseline	Starting point or benchmark against which changes in the state of nature attributed to your business activities can be compared (TNFD)
Base map	A foundational layer on a map that is the basis of GIS visual and geographic context. (ESRI) In this guidance, the base map is used as the basis of ecosystem metric calculations.
Biodiversity	Biological diversity or biodiversity means 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 (from Convention of Biological Diversity, 1992).
Biomes	A biome is “a biotic community finding its expression at large geographic scales, shaped by climatic factors and characterised by physiognomy and functional aspects, rather than by species or life-form composition.” (UN SEEA-EA).
Biotic and abiotic condition variables	Biotic components of ecosystem condition cover the living components of nature, including structural, compositional and functional characteristics (UN SEEA-EA). Abiotic components of ecosystem condition include chemical and physical state characteristics (UN SEEA-EA).
Boundaries	The defined geographical limits or scope within which an assessment or monitoring effort is conducted.
Composition	Indicators which measure what species are present in an assemblage and their relative abundances within an ecosystem (Align).
Condition class	A classification of a continuous measure of condition (i.e., from 0-1) into discrete categories (‘bins’), which may be associated with qualitative descriptors and used for simplified reporting. Where condition classes are used, the classification must be described, and the underlying continuous values must also be reported alongside. The bins should be determined based on ability to demonstrate meaningful change.
Connectivity	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. (IPBES)

Core area	The portion of a patch of natural or semi-natural habitat that is 15m or more from the closest patch edge.
Cumulative impacts	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. (TNFD)
Data	The underlying primary, secondary or proxy information gathered to assess the chosen variables, indicators and metrics.
Direct counts	In the context of assessing species population abundance, it refers to actual measurements of individuals of a species in the field.
Direct impacts and Indirect Impacts	Direct impacts are immediate effects caused by an activity or process, such as habitat loss from land clearing. Indirect impacts are triggered in response to the presence of your business projects or operations, rather than being directly caused by them (Capitals Coalition).
Ecoregion	A large area of land or water that contains geographically distinct natural communities, species, and environmental conditions. Ecoregions share similar climate, geology, and ecological dynamics, and they serve as units for conservation planning and ecological assessment.
Ecosystem assets (for condition measurements)	Contiguous spaces of a specific ecosystem type characterised by a distinct set of biotic and abiotic components and their interactions (UN-SEEA-EA). This breakdown is used for some high granularity measurements in the metrics framework.
Ecosystem classification	Ecosystem classification as per IUCN's global standard for ecosystem classification, the Global Ecosystem Typology, is a hierarchical classification that defines major groups of ecosystems distinguished by their functional properties in three upper levels and different compositional expressions of these ecosystem functional groups in three lower levels (IUCN GET).
Ecosystem condition class	Ecosystem condition describes the quality of an ecosystem, measured in terms of its abiotic (non-living) and biotic (living) characteristics across a range of temporal and spatial scales (UN-SEEA-EA). An ecosystem condition class is a particular quality category, e.g. composed of a range of condition scores from X-Y
Ecosystem condition variables	Ecosystem condition variables are quantitative metrics describing individual characteristics of an ecosystem asset. Condition variables have a clear and unambiguous definition (measurement instructions, formulae, etc.) and well-defined measurement units that indicate the quantity or quality they measure. Examples of variables are the number of bird species, tree coverage (%), turbidity (UN-SEEA-EA).
Ecosystem extent	The size of an ecosystem asset (UN-SEEA-EA).
Ecosystem type	Defined as per the IUCN Global Ecosystem Typology (IUCN GET).
Extinction risk	Threat status of a species and how activities/pressures may affect the threat status. The indicator may also measure change in the available habitat for a species as a proxy for impact on local or global extinction risk (European Commission / TNFD).
Footprint	The environmental impact or effect of an activity, process, or organisation, often measured in terms of resource use (e.g., water, carbon, land area) or impacts on biodiversity and ecosystems.
Framework	A structured approach or system of concepts, principles, and methodologies that provides a foundation for understanding or addressing specific challenges or processes. It is used to guide decision-making, assessment, or analysis.
Function	Indicators measure a process that the ecosystem completes or reflects the ability to undertake these processes, e.g., net primary production, water filtration (taken from ALIGN).
Granularity level	The scale or level of detail/precision in a set of data. The granularity levels in the metrics framework include considerations around spatial resolution, scale of classification categories and preciseness of measurement approaches/proxies. In the State of Nature Indicators and Metrics Framework there are three granularity levels: preparatory, medium, and high.
Ground-truthing	Ground truthing involves verifying the accuracy of data obtained from remote sensing by comparing it with actual measurements taken on-site at ground level, or with very high-resolution imagery, using appropriate statistical methods.

Impacts (on nature)	Changes in the state of nature (quality or quantity) that can affect its ability to supply ecosystem services. Impacts can be positive or negative, and stem from company activities either directly, indirectly, or cumulatively. (TNFD).
Indicator	A quantitative or qualitative factor contributing to understanding the state of nature, including positive upwards or downwards trends (e.g. ecosystem extent and ecosystem condition). Can be measured through one or multiple metrics (TNFD).
Intensive land use biome	Land use systems that include major anthropogenic enterprises of cropping, pastoralism, plantation farming, and urbanisation. Human intervention is a dominating influence on this biome, also known as the “anthrome” (IUCN GET).
Interaction (with nature)	An organisation interacts with nature, when its sites of operation or influence, overlap with the spatial extent of ecosystems, and thus its activities have the potential to impact state of nature.
Land-cover	The observed physical cover on the earth’s surface, including vegetation (natural or planted) and human constructions (FAO).
Land-cover products	Data products, typically obtained through remote-sensing techniques, which represent the observed (bio)physical cover on the Earth’s surface (i.e., land-cover) at a specific point in time.
Landscape/seascape	Defined geographic areas with common ecological and socioeconomic characteristics. They may be delineated based on watersheds, ecosystems, jurisdictional boundaries, company sourcing areas, or in other ways (Accountability Framework Initiative)
Landscape condition	The health and functionality of a landscape, taking into account the integrity of its ecosystems, biodiversity, land use patterns, and ecological processes.
Landscape intactness	A measure of the average state of the ecosystem types in a landscape, compared to a reference condition, or to a state of collapse, measured using habitat configuration, proportion of extent at the reference condition, or the value of ecosystem-specific condition values relative to their reference levels.
Location	A site, Production Unit of Origin, or Sourcing Area, including any Associated Facilities.
Materiality	The importance or relevance of an issue or factor in terms of its potential impact on decision-making or outcomes. In environmental assessments, materiality refers to the significance of a given environmental or social issue.
Measurement	The process of collecting data for baseline setting, monitoring and reporting.
Metric	A system or standard of measurement used to indicate the current state or condition of a site, ecosystem or landscape (e.g. Mean Species richness or Extinction risk Methodologies) (adapted from TNFD).
Natural ecosystems	Ecosystems where the impact of humans on ecosystem composition, structure and function are low compared to natural factors. Natural ecosystem types in this broad sense can include ecosystems modified by human interventions but with natural compositional, structural and functional characteristics still to some degree present and recognisable. These are referred to as semi-natural ecosystems in some contexts. It also includes instances of natural ecosystem types that are in a range of condition states, from pristine ecosystems in excellent condition or with high integrity, through to those in poor condition, degraded, or with low integrity (CBD, 2026).
Natural habitat	Areas composed of viable assemblages of plant and/or animal species of largely native origin and/or where human activity had not essentially modified an area’s primary ecological functions and species composition (IPBES, 2019).
Nature	The natural world, with an emphasis on the diversity of living organisms (including people) and their interactions among themselves and with their environment (TNFD).
Piloting participant	A company or organisation that is testing or implementing this guidance in a pilot phase to assess its applicability and effectiveness.
Pressure metrics	Measures of human activities that directly or indirectly change the state of the environment and ecosystem.
Production unit of origin	Specific mapped production units (e.g., farms, ranches, mines, factories or plants, fields, plantations, forest management units) (SBTN).
Proximity	Here, proximity is used to define closeness in space.

Proxy metric	A calculation or metric that can be used to represent the value of something, in this case the value of a particular element of the state of nature.
Reference condition	A reference condition is the condition against which past, present and future ecosystem condition is compared to in order to measure relative change over time. It represents the condition of an ecosystem that is used for setting the high level (or one endpoint) of reference levels of the variables that reflect high ecosystem integrity. The reference condition corresponds to a state where all condition indicators have a (spatially averaged) value of 1 (100%) (UN-SEEA-EA).
Reference level	The value of a variable at the reference condition, against which it is meaningful to compare past, present or future measured values of the variable (UN-SEEA-EA).
Relative abundance (of species)	Relative abundance is a proxy of the true size of a species population (Smith and Smith, 2015). Assemblage composition uses information on the relative abundance of species within an ecosystem (Align).
Remote sensing	The acquisition of information about an object, area, or phenomenon without making physical contact, typically through the use of satellites, drones, or aerial sensors to monitor land cover, biodiversity, or environmental conditions.
Semi-natural habitat	A habitat within or outside a crop made up of a community of primarily native, non-crop plant species, which human activity may modify but is able to contribute to enhanced ecosystem services (adapted from IPBES, 2019).
Site	Area of direct operations or influence, e.g. farm, ranch, mine site, infrastructure development, factory, office.
Site buffer	A buffer zone placed around the site area.
Site condition	The specific state or quality of a location or area, especially in relation to environmental, ecological, or land-use factors. Typically measured by structure, composition, and function.
Sourcing area	A known area or region where the material was produced or extracted, but that the specific production unit of origin is not known. Sourcing area boundaries could include a sourcing radius from a first point of collection or processing facility (e.g., a radius from a palm oil mill), a defined production landscape (e.g., the area covered by a smallholder cooperative), or a subnational jurisdiction (e.g., municipality) (SBTN).
Spatial resolution	Spatial resolution refers to the level of detail in spatial data (e.g., in remote sensing it is the size of one pixel). For landcover data products, the spatial resolution refers to the minimum resolution of the landcover product or data layer; remotely sensed input data for the landcover product or data layer should have at least the same, and normally finer, resolution.
Species	A group of organisms that share common characteristics and can interbreed to produce fertile offspring. Species are the fundamental unit of biodiversity and are classified into various taxonomic categories.
Species extinction risk score	A spatialised measure of the relative importance of a defined area to preventing or driving extinction of the threatened species present, calculated based on the summed proportions of the global population of each threatened species present within a location, optionally compared to a reference level, and optionally weighted by threat status. The proportion of the global population may be inferred using proportion of species' ranges or proportion of area of habitat.
Species important for ecosystem function	Species considered indicators of healthy ecological systems that can help to maintain the functioning of key ecosystem services. This can include taxa of importance for ecosystem service provision, functionally important groups or indicator species of ecosystem integrity. The definition will be locally specific but could for example include pollinator species, species of importance for pest control and farmland birds.
Species population abundance	Measures changes in the number of individuals of a species within a specific area (ALIGN).
Species range	The current known limits of distribution of a species, accounting for all known, inferred or projected sites of occurrence (Brooks et al. 2019).
State of nature	The condition and extent of ecosystems, and species population size and extinction risk, including positive or negative changes. (TNFD)

Surrounding area	At entry and standard level, a buffer of 50km around the location, unless the location is small and entirely within the <u>Urban and industrial ecosystems biome</u> , in which case a 5km buffer maybe used. At advanced level, a polygon surrounding the location defined using the concept of an Ecologically Appropriate Area of Analysis (<u>IFC</u>) may be used.
Threatened	Species or ecosystems meeting the criteria for Critically Endangered, Endangered or Vulnerable under the IUCN Red List Categories and Criteria, or the IUCN Red List of Ecosystems Categories and Criteria respectively, whether at global or national scale (<u>IUCN</u> ; <u>IUCN RLE</u>).
Traceability	The ability to track and verify the origins, movements, or changes of a product, material, or environmental attribute throughout its lifecycle. Traceability ensures transparency and accountability in supply chains, particularly in sustainable sourcing or land-use practices.
Trigger Criteria	A set of conditions categorised by Priority Ecosystems, Priority Species, and the Intensive Land Use Biome that if met, trigger the use of the corresponding Case-specific Indicators and metrics. Triggers and the associated indicators and metrics are needed to provide a higher level of confidence in the outcomes where biodiversity is most valuable or at risk. The trigger criteria aim to strike the right balance of capturing critical ecosystems and species already under threat with those that could become threatened if action is not taken. The criteria also aim to be flexible to include species and ecosystem of local importance, which may not necessarily under threat but are highly valuable to the local environment and/or local stakeholders.
Universal indicators	State of nature indicators that apply to all users in any context.

