



Convention on Biological Diversity

Distr.: General
14 October 2026
English only

Conference of the Parties to the Convention on Biological Diversity Seventeenth meeting

Yerevan, 19–30 October 2026

Item 9 (b) of the provisional agenda*

Planning, monitoring, reporting and review: monitoring framework for the Kunming-Montreal Global Biodiversity Framework

Study on the alignment of the State of Nature metrics with the monitoring framework of the Kunming-Montreal Global Biodiversity Framework**

Note by the Secretariat

Introduction

1. In decision 15/5, the Conference of the Parties adopted a monitoring framework for the Kunming-Montreal Global Biodiversity Framework. Technical updates to the framework were later agreed in decision 16/31. The monitoring framework includes an agreed set of headline and binary indicators to support consistent reporting and the analysis of collective progress.
2. The Nature Positive Initiative has undertaken a consultation process to develop and pilot a set of State of Nature metrics to measure declines and recoveries in nature with the aim of supporting their use by all actors, including businesses and financial sectors. On the basis of this consultation process the Nature Positive Initiative, in collaboration with the Secretariat, prepared a study on *Initial Measurement Guidance: State of Nature Metrics*, published in October 2026, that provides information on the alignment of the State of Nature metrics with the monitoring framework for the Kunming-Montreal Global Biodiversity Framework. This study, which is contained in the present document assesses areas of convergence and divergence between the monitoring framework and the State of Nature metrics and identifies opportunities to enhance coherence between the two.
3. An initial version of the study included in this note was made available for peer review through notification No. [2026-064](#). 89 Review comments were received from 4 Parties and 12 observer organisations¹. Detailed information on the peer review comments and responses to them are contained in Annex 2 of the study. The initial version of the study was revised in response to the peer review comments, updates to the Nature Positive Initiative's State of Nature metrics and guidance;

*CBD/COP/17/1/Rev.1.

**The present document is being issued without formal editing.

¹ The submitted review comments are accessible from notification No. [2026-064](#).

and updates to the meta-data for headline indicators of the monitoring framework for the Kunming-Montreal Global Biodiversity Framework ([CBD/SBSTTA/28/INF/4](#)). Common themes raised and addressed through the peer review process were:

(a) Reviewers were generally positive about the intent of the assessment, though many of the comments focused on the State of Nature metrics rather than on the content of the study;

(b) Reviewers noted that the importance of national monitoring systems, methodologies and biodiversity data need stronger recognition. In particular, the submissions from Parties focussed on the need to align global standards and data with national standards and data. This was particular noted in terms of national ecosystem classifications and maps that underpin assessments of ecosystem extent. In response to these types of comments the report was revised to highlight the role of national data in calculating and reporting on headline indicators, and therefore on the need for state of nature metrics to also align with national standards, as well as global standards. The report was also revised to include recommendations on using high granularity measures for the State of Nature metrics so that they can better align with both national standards and data and the headline indicators in the monitoring framework for the Kunming-Montreal Global biodiversity Framework.

(c) Reviewers requested further clarification on the relationship between the alignment and interoperability of the State of Nature metrics and monitoring framework for the Kunming-Montreal Global Biodiversity Framework. Some comments called for a full assessment of interoperability rather than just alignment, others noted that evaluating interoperability would require national standards and data platforms to be included. In response to these types of comments, it was clarified in the study that, within the scope of the study, it would not be possible to assess options for full interoperability between the State of Nature metrics and monitoring framework for the Kunming-Montreal Global Biodiversity Framework, owing to the level of detail needed to undertake such as assessment. It would require information for each country, as well as global standards. As such the study can only be used as an assessment of the potential for interoperability.

(d) Reviewers requested the inclusion of more detailed information in the guidance on the use of the State of Nature metrics to enable them to be more consistently applied and suggested the need for a level of detail comparable to the metadata for the indicators in the monitoring framework for the Kunming-Montreal Global Biodiversity Framework. This included requests for more detailed information on how to estimate species population metrics, and on how to draw on already developed data standards. In response to these comments, text has been included in the study to recognize this issue. While the State of Nature metric guidance has provided greater detail, the methods remain links or suggestions. This remains a gap and is highlighted in the study as such.

(e) Reviewers requested the inclusion of additional guidance and information on methods to enable scaling site level information to broader scales, such as to the level of landscapes, and ecosystems, and to national and global levels. Similarly, there were requests for more detailed guidance on quantifying contributions to the goals and targets of the Framework, particularly for ecosystems. It was not possible to address these issues within the scope of the study and it remains highlighted as a gap.

(f) Reviewers highlighted existing standards that should be strengthened in the State of Nature metric guidance to avoid duplication and to enable data collected through the application of the State of Nature metrics to be used more broadly. This point, which was already a recommendation in the study, was strengthened. More references to other standards have also been included in the revised State of Nature Metrics Guidance (October 2026) in response to peer review and the first version of this study, however the use of any one specific standard has not been recommended.

(g) Reviewers express general support for open access to data but also noted the unrestricted open access to data is unrealistic or inappropriate in some cases. Particular concerns around open access data were raised in relation to the business and financial sector owing to confidentiality licensing and data ownership rules that might be in place. Similarly some reviewers noted that open

access to data may not be permitted under national legislation, and access and benefit-sharing agreements and that it may not be appropriate to provide open access for some sensitive biodiversity information. Further some reviewers also raised issues related to the traditional knowledge of indigenous peoples and local communities and their rights. These points have included in the study and recommendations have been included on the application of FAIR and CARE principles for data stewardship.



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**NATURE
POSITIVE
INITIATIVE**

Alignment of the State of Nature Metrics with the monitoring framework of the Kunming-Montreal Global Biodiversity Framework

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Revision process: A first version of this document was published on the CBD website in August 2026 (<https://www.cbd.int/notifications/2026-064>), inviting peer review. Comments were received from four parties and twelve observers to the CBD (total 89 comments). The Nature Positive Initiative (NPI) State of Nature metrics and guidance document were revised following a broader NPI public consultation in February 2026, recommendations from the August 2026 version of this document, and the peer review process; the revised metrics and guidance, *Initial Measurement Guidance: State of Nature Metrics*, was published on 13th October 2026. This document is now being shared as a final analysis, responding to the peer-review process and updates in the NPI State of Nature metrics and guidance document, ahead of COP17.

Document Purpose

The Kunming-Montreal Global Biodiversity Framework (**GBF**) was adopted by 196 Parties to the UN Convention on Biological Diversity in 2022, with a 2030 mission 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*”. The GBF comprises four goals – to conserve and restore nature (Goal A) and its benefits (B), share benefits fairly (C), and invest and collaborate (D) – and 23 targets for actions needed to meet the goals (1), including restoring (Target 2), protecting (Target 3) and mainstreaming biodiversity (Target 14). The role of the private sector is recognised in Target 15, which calls for businesses to monitor, assess and disclose their risks, dependencies and impacts on biodiversity, to reduce negative impacts and increase positive impacts. The GBF also includes a **monitoring framework**, developed by consensus alongside the Framework, which includes an agreed set of 27 headline indicators that all Parties should use in their national reports, to support consistent reporting (2, 3). Parties can also report using optional indicators in the monitoring framework (referred to as component and complementary indicators) and national indicators.

The definition of Nature Positive – to halt and reverse nature loss – aligns with the GBF mission (4, 5). During 2024-2026, the **Nature Positive Initiative (NPI)** undertook a consultation process and pilot testing to develop a set of **State of Nature (SoN) metrics** to measure declines and recovery in nature. The SoN metrics are intended to be grounded in science and practical to implement by all actors, particularly the private sector. They will support a range of use cases, such as voluntary assessment and disclosure, regulatory compliance, the development, implementation and tracking of corporate nature-positive strategies and targets, and the alignment of financial flows with positive outcomes for nature. Interest from the private sector in these use cases is growing, through voluntary approaches such as the Taskforce on Nature-related Financial Disclosure (TNFD), Global Reporting Initiative (GRI), the Science-Based Targets Network (SBTN), and the potential for future disclosure requirements of the International Sustainability Standards Board (ISSB). The SoN metrics were developed with these use cases in mind and for embedding within these frameworks. 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.

Biodiversity monitoring systems and on-ground outcomes will be best served if the GBF monitoring framework, especially its headline indicators, and SoN metrics used by the private sector are aligned. The purpose, use and scale of SoN metrics and GBF monitoring framework differ: the purpose of the GBF monitoring framework is national-level monitoring, while the purpose of the SoN metrics is site-and landscape/seascape-level, cross-sector, and especially private sector monitoring. Bridging these scales, sectors and purposes requires that the same definitions, standards and foundational data be used in the frameworks.

The purpose of this document is first to assess alignment between the SoN metrics and GBF monitoring framework, and then to provide recommendations, in order to: 1) align underlying data of the SoN metrics sufficiently with underlying data for the GBF headline indicators, in terms of data sources and data generated, to maximise opportunities and efficiencies in investment in monitoring by all actors, and reduce risk of parallel monitoring systems; and 2) align on-ground outcomes for biodiversity across scales and uses, so that actions using SoN metrics contribute to broader societal goals and targets in the GBF. We do not assess full interoperability, because this would require greater detail on both SoN metric standards and relevant national and international standards, platforms and processes for integrating information; rather we assess the potential for interoperability by assessing conceptual and methodological alignment. The document is not intended to review either the SoN metric nor GBF headline indicators for their capacity to monitor biodiversity more broadly or progress towards GBF goals and targets, which can be found elsewhere (e.g., 9). The assessment focuses on the GBF headline indicators because these were negotiated and agreed by Parties to the Convention for national reporting. Where relevant, it also considers optional component indicators in the GBF monitoring framework, which were not negotiated nor mandated, but provide a list of possible indicators. Our review does not consider national indicators, which Parties may also use in their national reports to the Convention. It provides background and technical information on the alignment of the Global Biodiversity Framework (GBF) indicators and the State of Nature (SoN) metrics, identifies opportunities to strengthen this alignment, and is intended to support non-state actor contributions to the GBF and Target 15 through improved coherence between the frameworks.

Executive Summary

The Nature Positive Initiative (NPI) State of Nature (SoN) metrics cover indicators of ecosystem extent, ecosystem condition, species extinction risk and species populations. The metrics can be assessed with varying levels of detail, termed ‘granularity’, which allow actors to start with simpler measures while progressing towards more ecologically meaningful or technically advanced measures through time. For more information on the process for developing and consensus-building for these metrics, see

Background.

The assessment focused primarily on alignment with GBF Goal A, which focuses on outcomes for nature, and GBF headline indicators that measure the state of nature, rather than threats (e.g. pollution), actions (e.g. restoration) or benefits (e.g. ecosystem services). Optional indicators in the GBF monitoring framework (complementary and component indicators) were also considered where relevant, noting that these were rarely used by parties in their 7th National Reports (6). The Executive Summary focuses on the most closely aligned indicators (see Figure 1), but additional relationships between SoN metrics and the GBF monitoring framework, such as potential for methodological alignment with other indicators, are discussed in the technical assessment below (see Figure 3).

Alignment between the SoN metrics and GBF headline indicators was assessed on conceptual and operational dimensions, based on the indicator methodologies described in the GBF indicator metadata (7) and *Initial Measurement Guidance: State of Nature Metrics* (8). The combination of these two dimensions provides four categories of alignment, shown in Table 1, along with a summary of key

findings. This report provides recommendations for strengthening alignment – for example where alignment is only at high granularity, we provide recommendations to strengthen alignment across medium and low granularity levels.

<i>Dimension</i>	<i>Key Question</i>	<i>What is checked</i>
<i>Conceptual</i>	<i>Are they measuring the same aspects of nature?</i>	<i>Intent or purpose, core concepts, definitions</i>
<i>Operational</i>	<i>Are they measured the same way?</i>	<i>Data, methods, scale, units, disaggregation, baselines, at different granularity levels</i>

Table 1. Combination of conceptual and operational dimensions gave four levels of alignment, which rank from highest (top) to lowest (bottom). The righthand column shows the examples from the key results for pairs of SoN Metrics and GBF indicators, with the SoN granularity level in brackets.

<i>Alignment level</i>	<i>Conceptual alignment</i>	<i>Operational alignment</i>	<i>Use in practice</i>	<i>SoN – GBF (granularity level)</i>
<i>Fully aligned</i>	Same intent, definitions, concepts	Same methods, data, outputs	Directly comparable	Ecosystem extent & A.2 (all)
<i>Substantively aligned</i>	Similar intent and core concepts	Some differences in method, scope, or scale	Measuring the same aspect of nature, with minor differences; comparable with interpretation	Extinction risk & A.3 (all)
<i>Methodologically aligned</i>	Different intent, core concepts or definitions	Some shared data or methods	Similar methods but different purpose, so not directly comparable	Ecosystem condition (site) & A.1 (high)
<i>Potential for alignment</i>	Some conceptual links across intent or definitions	Potential for shared data or methods with further clarification or development	With adjustment would align across methods or data	Species populations & A.3 (med-high), A.4 (high), Ecosystem condition (landscape/seascap e) & A.1 (med-high)

Figure 1. Alignment of NPI SoN metrics with GBF headline indicators

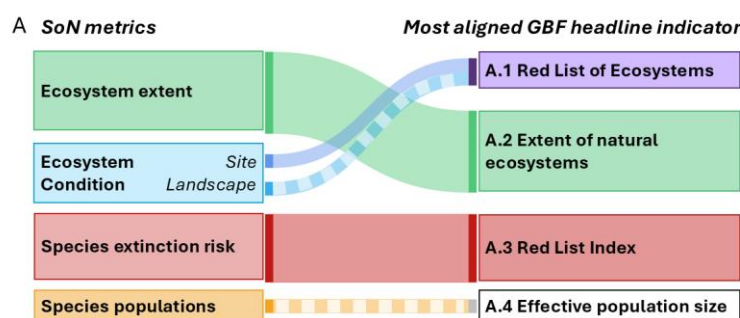


Figure 1. Alignment of NPI SoN metrics with GBF headline indicators, showing the most aligned indicator; line width indicates levels of alignment from Table 1 (thick = full or substantive alignment, thin = methodological alignment, dashed = potential for methodological alignment); all relationships between SoN metrics and GBF headline indicators, and key component indicators, are shown in Figure 3.

Key findings

Full or substantive alignment: Two SoN metrics align either fully or substantively with GBF headline indicators (Table 1, Figure 1), supporting comparable analysis, monitoring and reporting on biodiversity for ecosystem extent and species extinction risk across use cases.

- Ecosystem extent is fully aligned in terms of intent, key concepts and methodologically with GBF indicator A.2 extent of natural ecosystems.
- Species extinction risk is substantively aligned with GBF indicator A.3 Red List Index. The intent and key concepts of both are highly related – to reduce extinction risk – and they use similar datasets and methods in their measurement.

Methodological alignment: the SoN metrics for ecosystem condition are methodologically aligned to GBF indicators. They do not fully align with any GBF headline indicator (Table 1, Figure 1). The GBF monitoring framework does not include a headline indicator for ecosystem condition because Parties judged that there was not an agreed, established method for an indicator; however, some optional indicators (9) address related concepts, which align to varying degrees with SoN metrics.

- **SoN metrics for site-level ecosystem condition at high granularity** are methodologically aligned with GBF headline indicator A.1 Red List of Ecosystems (an indicator of ecosystem collapse risk). Although their intent differs, they use similar standards and approaches at high granularity, allowing the SoN metrics to contribute to underlying data for the GBF indicator. The SoN metric at medium granularity is potentially aligned. Alignment at high and medium granularity can be strengthened by following best practice in Red List of Ecosystem Guidelines (16) for selecting condition variables and defining condition classes, and by drawing on existing Red List of Ecosystem assessments. Landscape-level ecosystem condition is potentially methodologically aligned, but clarification on data and methods is required.
- **SoN metrics for site-level ecosystem condition at preparatory granularity** are fully aligned with several of the optional (component and complementary) indicators for ecosystem integrity listed in the GBF monitoring framework that use pressures, such as land-use, as proxies for condition; such indicators can be used at preparatory levels only, as the SoN metrics are intended to measure state rather than pressures, given pressure metrics are in the frameworks in which they are to be embedded.

Potential for alignment: The GBF monitoring framework does not include a headline indicator for species populations, but the SoN metric for species populations is potentially aligned with several GBF headline and component indicators:

- *A.1 Red List of Ecosystems*, through data on change in key biota for specific ecosystem types
- *A.3 Red List Index*, through data on change in abundance or absolute abundance of species
- *A.4 Proportion of populations within species with an effective population size greater than 500* (an indicator of genetic diversity), through data on absolute abundance of populations
- Component indicators, *Living Planet Index* and *Wild Bird Index* through data on change in population size
- In all cases, the guidance for the SoN metric requires further development and detail to more fully align with data standards, science and best practice for each of these indicators, which could allow it to become methodologically or even fully aligned.

Opportunities, gaps and ways forward

This assessment has been updated based on the *Initial Measurement Guidance: State of Nature Metrics* published on 13 October 2026, as well as peer-review feedback. The earlier version of this alignment assessment (August 2026), based on the February 2026 consultation draft of the NPI SoN metrics, identified several areas where greater alignment could be achieved, including the treatment of baselines and guidance for ecosystem extent, condition and species monitoring. The October 2026 *Initial Measurement Guidance: State of Nature Metrics* addresses a number of these issues, and the assessment below reflects those revisions. Remaining gaps and opportunities relate principally to ecosystem collapse risk, further methodological alignment for ecosystem condition and species populations, interoperability and data sharing, and methods for connecting site- and landscape-level monitoring with national and global monitoring.

Gaps: Three principal alignment gaps between the SoN metrics and GBF indicators remain:

1. The lack of a SoN metric equivalent to A.1 Red List of Ecosystems, which captures concepts of ecosystem risk, resilience and threatened ecosystems. Its inclusion in the NPI SoN metric set would increase alignment with the GBF, guiding priorities for action and monitoring for threatened ecosystems, similar to the way that extinction risk guides priorities for species.
2. The lack of GBF headline indicators for ecosystem condition and species populations, which presents opportunities for strengthening methods and data for measuring change (see below).
3. Differences in scope, scale and purpose of the frameworks, which presents opportunities for developing methods for bridging this gap for effective monitoring across use cases.

Opportunities: The GBF monitoring framework does not include headline indicators for ecosystem condition and species populations (9), providing opportunities to develop standards, databases and data streams from SoN metrics that could underpin future headline indicators to fill this gap. SoN metrics that are methodologically aligned with GBF headline indicators could provide additional data to support their ongoing implementation, if their alignment is strengthened; for example, SoN condition metrics at higher granularity could improve data availability for A.1 Red List of Ecosystems. They could also provide the foundations for new indicators for condition. Further opportunities include increasing available data on actions such as restoration (Target 2), private protected areas (Target 3), and for other biodiversity data platforms (e.g. GBIF).

Recommendations and remaining opportunities for strengthening alignment. Based on the revised October 2026 Guidance for the SoN metrics (8), the principal remaining recommendations are:

1. **Ecosystem collapse risk and threatened ecosystems:** Include ecosystem risk in the NPI metric set to align monitoring, data compilation and on-ground biodiversity outcomes with the GBF, by

prioritising monitoring and action for threatened ecosystems. Although updates have been made to strengthen the connection between the SoN metrics and ecosystem collapse risk and the Red list of Ecosystems, in particular in measuring ecosystem condition and by adding a new principle for embedding to prioritise locations for measurement based on ecosystem risk, this remains a gap in alignment with the GBF.

2. **Ecosystem condition:** Strengthen methodological alignment with the Red List of Ecosystems (which underpins A.1) and UN SEEA Ecosystem Accounting, particularly for the selection of ecologically meaningful condition variables and methods for combining variables at medium granularity.
3. **Species populations:** Further specify standards for monitoring and data analysis for species population trends, including treatment of sampling effort, detectability and trend estimation, to adhere with best practice in that underpins GBF indicators, including the Red List of Threatened Species and Living Planet Index. Clarify the relationship with GBF indicator A.4; population trend is not equivalent to effective population size, although absolute abundance data collected at higher granularity may potentially contribute relevant underlying information.
4. **Strive for higher granularity:** Continue to strongly encourage organisations to use high granularity approaches across all metrics, particularly as data coverage and availability increases across all metrics, and methods for measuring and evaluating contributions to global goals develop. In particular, recommending high granularity measurement of site condition in threatened ecosystems would also strengthen alignment with the GBF, by considering ecosystem risk and aligning methodologically with standards for A.1 Red List of Ecosystems.
5. **Align with other data standards for biodiversity and action,** including standards for other GBF headline indicators (in addition to those reviewed in this report, e.g. for restoration), international biodiversity data platforms such as GBIF, and national databases and processes, to capitalise on data gathered when applying NPI SoN metrics.
6. **Share data to build national and global monitoring capability:** By making data available on open access platforms, including via relevant national systems and global platforms such as GBIF, in line with Transparency principle 5 in the *Initial Measurement Guidance: State of Nature Metrics*, subject to data stewardship principles (FAIR and CARE). This would increase the potential for site- and landscape-level monitoring to contribute to national and global biodiversity monitoring and GBF implementation. Promoting the sharing of public-private data for both organizational use cases will increase efforts to fill monitoring capability.
7. **Future methodological development:** Revise and update the SoN metrics and guidance in response to ongoing improvements in national and international data standards, data infrastructure, data availability, technology and reporting frameworks. This will ensure the SoN metrics can adapt to improve pathways for translation to support GBF indicators and national monitoring.

1 Background

1.1 Nature Positive Initiative's State of Nature (SoN) Metrics

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” (4), by increasing the abundance, diversity, integrity and resilience of species, ecosystems and natural processes. More simply, it means ensuring more nature in the world in 2030 than in 2020 and continued recovery after that.

The **Nature Positive Initiative (NPI)** is a coalition of many of the world's largest conservation organisations, business and finance coalitions, disclosure and target setting frameworks, and organisations representing Indigenous knowledge, local government, and scientific institutes. It focuses on promoting nature positive as a global goal for nature as well as providing practical guidance to ensure it is a measurable goal.

Why focus on state metrics? Metrics for the state of nature are essential for monitoring whether efforts are contributing to nature's recovery, a fundamental aspect of any comprehensive nature strategy. Pressure and response metrics are already relatively well-established, but a gap exists around measuring the state of nature. It is important to note that state metrics are not intended to replace pressure and response metrics, but rather to complement them. NPI's goal was to reach broad agreement on a small set of metrics (State of Nature, SoN, Metrics) through a consultation and consensus-building process on a set of measurable indicators and metrics that capture the effectiveness of efforts to halt nature loss and set it on a path to recovery. These metrics were intended to be: (i) credible and science-based; (ii) responsive; (iii) to be able to incorporate new data and techniques; (iv) aligned with existing standards and frameworks; (v) accessible and affordable; and (vi) auditable. These are similar to criteria for selecting the GBF indicators (3).

The main objective was to design a minimum set of metrics for broad and consistent adoption, focusing on the biotic elements of nature, that can be used across a variety of use cases, by stakeholders of varying capacity, and across different environmental and social contexts. These metrics are designed to measure the state of nature and support a range of potential use cases including voluntary assessment and disclosure, regulatory compliance, the development, implementation and tracking of corporate nature-positive strategies and targets and the alignment of financial flows with positive outcomes for nature. While corporates and financial institutions are the initial focal users, sustained nature-positive outcomes will require collaboration across a wide range of user types, e.g. national and sub-national governments, landowners and land stewards, and thus metrics are designed such that they are not only applicable to the focal users. Metrics should be measured at the scale and granularity level appropriate for the decision-making for the particular use case.

NPI consultation and consensus-building process: Launched in May 2024 with the aim of rapidly building agreement on a set of state of nature metrics, the development process will complete in 2026. In 2024, a consultation was launched on the first draft state of nature metrics (130+ organizational responses). A Piloting Programme ran from May-October 2025 and focussed on corporate and financial institution application of metrics across 29 companies, 50 sites, and 23 countries. Participants were selected to cover a broad range of sectors (mining & quarrying, energy & fuel, finance, forestry & agriculture, manufacturing & chemicals, and infrastructure) and geographies. Each participant had a piloting partner from one of six core NPI organisations, to help guide their approach. In February-March 2026, additional feasibility assessments were conducted with 17 companies to further test the application of the metrics and guidance for freshwater and marine ecosystems. Feedback from piloting companies, feasibility assessments and a final consultation process (111 responses) have led to the emergence of a final metrics set for adoption and embedding into disclosure and target-setting frameworks and standards (8, 10), published in October 2026.

The result of this final consultation process was a set of four indicators, measured at site and landscape/seascape scales, providing essential additional context (Figure 2) (8, 10). Most of the metrics are measured in the same way for site and landscape scales, with the exception of ecosystem condition. Site ecosystem condition focuses on compositional and structural attributes of the ecosystem, while landscape/seascape condition focuses on connectivity, which can only be measured at broader scale, beyond the site, to contextualize site-based metrics.

Figure 2. State of Nature (SoN) indicators and associated metrics

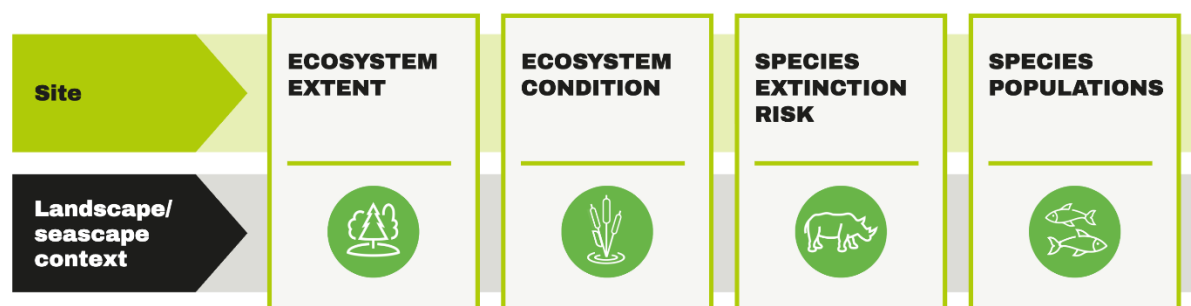


Figure 2. State of Nature (SoN) indicators and associated metrics, as the aspects of the state of nature measured (8).

The metrics can be assessed with varying levels of detail, termed ‘granularity’. This allows for differing levels of capacity and data availability. It allows actors to start with simpler measures while progressing towards more ecologically meaningful or technically advanced measures through time, as appropriate for the use case. There are three levels of granularity: ‘preparatory’, medium and high, which increase in spatial and classification resolution, data needs, ecological complexity, and/or include ground-truthing.

Table 2. SoN metric descriptors: broad approach and units of measurement (8)

	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*
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**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.*

1.2 Kunming-Montreal Global Biodiversity Framework (GBF) and its indicators

In December 2022, the Conference of the Parties to the UN Convention on Biological Diversity adopted the Kunming Montreal Global Biodiversity Framework (GBF) – a transformative framework intended to halt and reverse biodiversity loss. The GBF comprises four goals to 2050, 23 targets for 2030 outlining the actions needed to achieve the goals, and a set of cross-cutting principles (outlined in section C) that apply across the framework as a whole (1). The framework is supported by a monitoring framework, comprising 27 headline indicators, a minimum set of high-level indicators that capture the overall scope of the GBF goals and targets, which all 196 parties agreed to use to report on progress (2, 3) – these are the main focus of this alignment assessment. The headline indicators are intended to be calculated using national data, following published meta-data and international standards (2), or using global data (e.g. IUCN Red List) or national data that has been compiled into global datasets (e.g. by FAO or in Protected Planet, <http://www.protectedplanet.net>), where available. The monitoring framework also includes binary indicators, which fill gaps in the headline indicator set (11). Parties can also report using national indicators, or with the optional indicators listed in the monitoring framework (termed component and complementary indicators) that cover other aspects of the targets and goals (11). The headline indicators for each goal and target can be found in key GBF documents (1, 2, 7), and the GBF website, <https://www.cbd.int/gbf>.

The assessment focused primarily on alignment with GBF Goal A and GBF headline indicators that measure the state of nature:

GBF Goal A: The integrity, connectivity and resilience of all ecosystems are maintained, enhanced, or restored, substantially increasing the area of natural ecosystems by 2050; Human induced extinction of known threatened species is halted, and, by 2050, the extinction rate and risk of all species are reduced tenfold and the abundance of native wild species is increased to healthy and resilient levels; The genetic diversity within populations of wild and domesticated species, is maintained, safeguarding their adaptive potential.

We did not assess in detail alignment with GBF headline indicators related to threats (e.g. pollution, GBF target 7), benefits from ecosystems (e.g. ecosystem services, headline indicator B.1), or actions (e.g. spatial planning), because these were considered out of scope for the SoN metrics (10). Nor do we evaluate the headline indicator for target 15 (15.1 Number of companies disclosing their biodiversity-related risks, dependencies and impacts). However, we secondarily considered relationships between the SoN metrics with GBF targets and associated headline indicators (e.g. Target 2 on restoration and indicator 2.1 *Area under restoration*, and protection, headline indicator 3.1), and relevant component indicators, particularly where actions by businesses and other actors could contribute to achieving these targets or where data collected in monitoring SoN metrics could contribute to data-streams that support national reporting.

The focal GBF headline indicators:

This section gives an overview of the GBF headline indicators being assessed, their methods and their data requirements; their associated Goal A elements are shown in the Annex.

- **A.1 Red List of Ecosystems** is an indicator of ecosystem collapse risk (7), that summarises the proportion of ecosystem types in each risk category (e.g. Endangered). The indicator data is underpinned by assessments using the IUCN Red List of Ecosystems criteria, which identify ecosystems most at risk based on change in ecosystem area and integrity. The indicator can be reported at national or global levels, and by ecosystem group, using the Global Ecosystem Typology

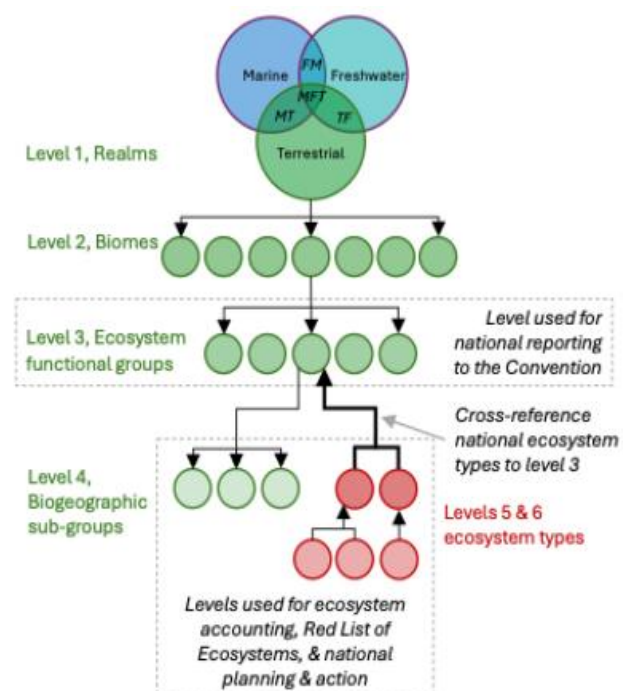
(Box 1, 12). Ideally national data (i.e. national Red List of Ecosystem assessments) should be used, with national ecosystem classifications cross-references to the Global Ecosystem Typology (Box 1), but global or regional data can be used to report where available. Indicator A.1 addresses multiple elements of Goal A by assessing how change in area, integrity and connectivity affect ecosystem risk status, which is related to ecosystem resilience (table 4). Along with A.2, this is also a headline indicator for Target 1, to plan and manage all areas to reduce biodiversity loss.

- **A.2 extent of natural ecosystems** is an indicator of the extent of natural ecosystems vs anthropogenic ecosystems as a proportion of overall area, and to track changes in this proportion over time (7). “Natural ecosystems” are ecosystem types where the impact of humans on composition, structure and function are low compared to natural factors; they can be modified, but with natural characteristics at least partially present and recognisable, and are referred to as semi-natural ecosystems in some contexts (7). In contrast, anthropogenic ecosystem types are those created and maintained through human intervention, which are the primary determinants of the ecosystem’s composition, structure and functioning (7, 12). The indicator can be disaggregated by ecosystem group using the Global Ecosystem Typology (Box 1, 12). UN SEEA Ecosystem Accounting (13), the international statistical standard for natural capital accounting, provides the conceptual framework and methodology for the compilation of this indicator, but the indicator can be calculated using other data sources, such as from national, regional or global ecosystem maps. Ideally the indicator should be calculated using national data, e.g. a national ecosystem classification and map, and cross-referenced to the Global Ecosystem Typology for CBD reporting purposes (Box 1). Indicator A.1 addresses elements of Goal A to increase the “area of natural ecosystems by 2050”. Along with A.1, this is also a headline indicator for Target 1.
- **A.3 Red List Index** is an indicator of species’ extinction risk (7). It measures the overall level of extinction risk of sets of species (i.e. how threatened they are on average), and the rate at which this risk changes over time, based on national Red Lists (31) or global Red Lists (e.g. IUCN Red List of Threatened Species, <https://www.iucnredlist.org/>). It is calculated in the same way as GBF indicator A.1 Red List of Ecosystems and provides a complementary assessment of the state and trajectory of biodiversity. The indicator data comes from species risk assessments using the IUCN Red List of Threatened Species Categories and Criteria (14) and is compiled from data on changes over time in the Red List category for each species, excluding any changes driven by improved knowledge or revised taxonomy. A species risk status (e.g. Endangered) is determined by the Red List criteria, which include its distribution or population size or magnitude of declines in distribution and population size. A.3 is also a headline indicator for Target 4 to halt species extinction, protect genetic diversity, and manage human-wildlife conflicts.
- **A.4, Proportion of populations within species with an effective population size greater than 500**, is an indicator of genetic diversity (7). Effective population size (N_e) is a measure of the rate of loss of genetic diversity within populations of wild species. A population size above 500 will maintain genetic diversity within populations, while smaller populations are susceptible to rapid loss of genetic diversity and extinction due to genetic threats. The indicator requires defined population boundaries and census data for each population for each species being included in the indicator. A.4 is also a headline indicator for Target 4 to halt species extinction, protect genetic diversity, and manage human-wildlife conflicts.

We also consider, where relevant, some of the recommended disaggregation for the GBF indicators (2) – these are standardised methods for presenting the GBF indicators in greater detail; for example, A.2 Extent of natural ecosystems can be presented as an overall aggregate measure (proportion of natural vs anthropogenic ecosystem extent), or disaggregated by biome or ecosystem functional group using the Global Ecosystem Typology (12) (e.g. mangroves, coral reefs, lowland tropical rainforest), for insights into the relative abundance or scarcity of different natural ecosystem types and their change over time.

Box 1. The Global Ecosystem Typology

The **Global Ecosystem Typology** is an ecosystem classification framework (<https://global-ecosystems.org>) and is used by both the SoN metrics framework and recommended in the GBF monitoring framework for globally consistent disaggregation of all ecosystem-related indicators (2, 7). The typology is hierarchical. The three upper levels of the typology – realms, biomes and ecosystem functional groups – classify ecosystems based on their functional characteristics, rather than based on which species live in them. The lower levels (4-6) differentiate ecosystems by composition, such as different national ecosystem types (levels 5 and 6 – in red in the figure, right), or bioregional sub-groups (level 4, which divide level 3 by ecoregion). Examples of level 6 include different types of deciduous temperate forest in Finland (15), such as heath forests with deciduous trees, and herb-rich ash forests. Each realm includes one biome and multiple ecosystem functional groups that are anthropogenic, which helps to distinguish natural and anthropogenic ecosystem types for GBF headline indicator A.2.



The typology does not replace national ecosystem classifications, maps and knowledge – these are the foundation for national planning and action (33) and provide the underlying data for national reporting on headline indicator A.1, A.2 and B1. Rather, the Typology provides a common language for grouping similar ecosystems around the world, such as lowland tropical rainforests or seagrass meadows, by cross-referencing national ecosystem types (levels 5-6) to level 3 ecosystem functional groups. In the GBF monitoring framework, Parties are recommended to report many headline indicators, including the headline indicators presented in this document disaggregated to level 3 (ecosystem functional group) based on national data. Levels 5-6 (e.g. national ecosystem maps) are often already developed and used in policy and management at the country level. Ecosystem accounting (which underpins headline indicators A.2 and B.1) and Red List of Ecosystems assessments (headline indicator A.1) are typically applied at level 5-6. SoN metrics for ecosystem extent and condition propose using levels 5-6 at high granularity, level 3-4 at medium granularity, and a natural/anthropogenic differentiation at preparatory granularity.

1.3 Approach to assessing alignment with the GBF

We assessed *conceptual* and *operational* alignment between SoN metrics and the GBF headline indicators, using definition and descriptions in SoN documents (8, 10), and the metadata for the GBF indicators (7), as well as scientific publications for relevant indicators, standards and datasets (e.g., 12-14, 16). It should be noted that the SoN guidance is meant to be iterative and updated as new methodologies emerge, while the metrics stay consistent. As stated earlier, this is the second version of this report. The first version, published in August 2026, reviewed alignment between the February public consultation guidance for the NPI SoN metrics, and the 2025 metadata for the GBF headline indicators. Both have

since been revised. The NPI SoN guidance was revised after public consultation, in response to the recommendations from Version 1 of this alignment report (see Annex 2), and peer-review. The revised metadata for the GBF headline indicators were published at SBSTTA in August 2026. The alignment assessment and recommendations in this report have been updated to reflect these changes. Because the NPI document provides overview guidance, alignment for some metrics remains uncertain (marked as potential) due to lack of detail.

- To assess conceptual alignment, we reviewed metric or indicator intent or purpose, including the focal aspects of biodiversity, core concepts, and key terms and definitions (from refs 3, 7, 8, 10).
- To assess operational alignment, we examined the data and methods used to estimate the indicator/metric, the scale and units of measurement, across different levels of granularity for SoN metrics, or recommended disaggregation for GBF indicators (e.g. by ecosystem type for A.2). This included considering how metrics operate across different spatial scales, including site-level applications versus broader ecosystem or landscape/seascape-level assessments. This includes the capacity for data to be shared between indicators. We also compared baselines for measuring change. As stated earlier, this does not assess full interoperability, as this would require much greater detail for how data are collected, analysed and stored, including at national levels, than are provided for either the GBF headline indicators or SoN metrics.
- The two dimensions were combined to develop an alignment scale (from highest at the top to lower at the bottom in Table 3). We assessed alignment for each SoN metric with the most related GBF indicators individually, and then the sets as a whole to evaluate gaps and opportunities. For all SoN metrics except *ecosystem condition*, site and landscape/seascape metrics are calculated in the same way, using the same data sources, so were evaluated together. For *ecosystem condition*, we evaluated site and landscape/seascape metrics separately, as they are conceptually different, aiming to measure different aspects of condition at different scales, and are measured using different approaches and data.

Table 3. The combination of conceptual and operational assessment provided four categories of alignment, which rank from highest (top) to lowest (bottom) alignment. The righthand column shows the key results of the analysis for pairs of SoN Metrics and GBF indicators, with the SoN granularity level in brackets.

<i>Alignment level</i>	<i>Conceptual alignment</i>	<i>Operational alignment</i>	<i>Use in practice</i>	<i>SoN – GBF (granularity level)</i>
<i>Fully aligned</i>	Same intent, definitions, concepts	Same methods, data, outputs	Directly comparable	Ecosystem extent & A.2 (all)
<i>Substantively aligned</i>	Similar intent & core concepts	Some differences in method, scope, or scale	Measuring the same aspect of nature, with minor differences; comparable with interpretation	Extinction risk & A.3 (all)
<i>Methodologically aligned</i>	Different intent, core concepts or definitions	Some shared data or methods	Similar methods but different purpose, so not directly comparable	Ecosystem condition (site) & A.1 (High)

				<i>Ecosystem extent & A.1 (High)**</i>
Potential for alignment	Some conceptual links across intent or definitions	Potential for shared data or methods with further clarification or development	With adjustment would align across methods or data	Species populations & A.3 (med-high), A.4 (high), Ecosystem condition (landscape/seascape) & A.1 (med-high), <i>LPI (med-high)**</i>

***Note, the following additions were added from the Executive Summary Table 1, as this adds additional technical detail for components of headline indicators, or component and complimentary indicators.*

2 Technical assessment of indicator alignment

2.1 Results summary

We found that two SoN metrics had full or substantive alignment with GBF headline indicators (Table 3 and Figure 3), enabling streamlined analysis, monitoring and reporting on biodiversity for ecosystem extent and species extinction risk. The SoN metrics for ecosystem condition and species populations do not align directly with any GBF headline indicator but are methodologically aligned or have potential for methodological alignment to GBF headline, component and complementary indicators. The GBF monitoring framework does not include headline indicators for ecosystem condition and species populations, although the concepts are covered by some component and complementary indicators (9), which were rarely used by parties in their 7th National Reports (6, 30). Below we report on alignment by SoN metric.

Figure 3. Alignment of NPI SoN metrics with the most aligned GBF headline indicators and related GBF indicators

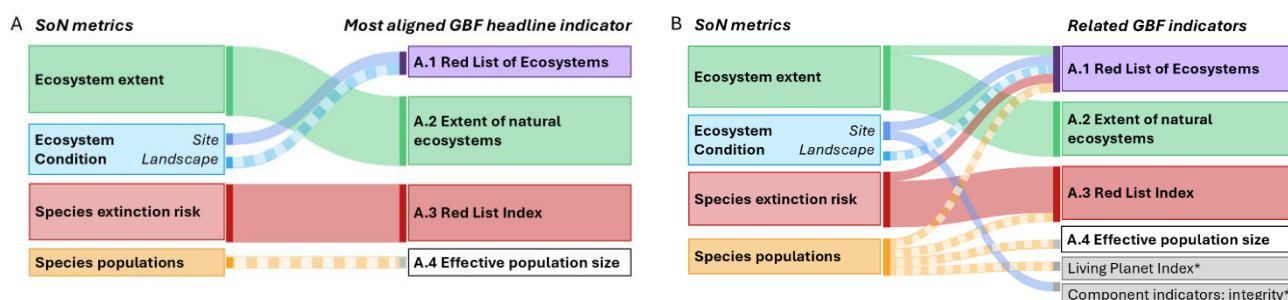


Figure 3. Alignment of NPI SoN metrics with (A) the most aligned GBF headline indicators, and (B) all aligned or potentially aligned headline and component indicators, with component indicators marked in grey and with an asterisk; weight indicates levels of alignment from Table 3 (thick = full or substantive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

2.2 Ecosystem extent

The SoN metric *ecosystem extent* is fully aligned with **GBF headline indicator A.2 extent of natural ecosystems**, used for GBF Goal A and Target 1, and with elements of Goal A (9) (Annex 1). It aligns strongly both conceptually and operationally, across all granularity levels, with the headline indicator as described for reporting to the Convention (i.e. at Level 3 of the Typology). High granularity measurement

aligns with the national data that underpins the headline indicator when being compiled by countries from national ecosystem maps and accounts, typically at level 5-6 of the Typology.

The SoN metric has full conceptual alignment with the GBF goals, target and indicators. The intent of both is to measure change in the extent (also referred to as distribution or area) of different types of ecosystems, including both increases and decreases. The implied NPI definitions of ecosystem extent, ecosystem type (8, 10), natural ecosystems and anthropogenic ecosystems, based on the Global Ecosystem Typology, align with those specified in the GBF glossary, and used in the GBF metadata for indicator A.2 (7).

The SoN metric ecosystem extent is fully aligned methodologically with GBF indicator A.2 across granularity levels. The metadata for GBF indicator A.2 recommends using an ecosystem accounting approach to estimate gains and losses in extent, as does the SoN metric. At the preparatory level, the SoN metric aligns only with the basic form of the GBF indicator A.2, reported as percentage natural vs anthropogenic, with no further disaggregation by ecosystem group or biome. This is the least informative version of both the SoN metric and GBF indicator in terms of biodiversity change. At medium granularity, the SoN metric has the same recommended level of the Global Ecosystem Typology (level 3, ecosystem functional group, Box 1) as A.2 for CBD reporting.

At high granularity, the SoN metric should be measured at levels 5-6 of the Typology. This is a finer ecosystem resolution than required for reporting on the GBF indicator but is the same level of detail recommended for ecosystem accounting and Red List of Ecosystems, the underlying data of GBF headline indicators A.2 and A.1, respectively. Therefore, the SoN metric at high granularity is consistent with the GBF metadata recommendation to use national ecosystem maps (level 5-6) in national reporting to the CBD. This may require alignment of the SoN metric with national processes and standards for ecosystem classification and mapping to enable consistency with national databases. Existing Red List of Ecosystems assessments can also provide data and information on ecosystem maps and descriptions to support high granularity assessment.

A benefit of applying the high granularity approach described in the SoN metric guidance is its capacity to capture important biodiversity patterns, including rare, narrowly distributed or patchy ecosystems that are often poorly mapped. These include streams, small wetlands or snow patches (29). Box 2 of the *Initial Measurement Guidance: State of Nature Metrics* addresses the issue by advising higher granularity approaches for smaller sites. A combination of ecosystem maps, local expert knowledge, inference from indicative maps (such as the Global Ecosystem Typology) and/or fieldwork may be needed to ensure that such ecosystems are included in assessments, particularly when using lower resolution ecosystem maps (e.g. 100m). Ground truthing is required at medium and high for site-level SoN metrics.

SoN metric *ecosystem extent* is also *methodologically aligned* with **GBF indicator A.1 Red List of Ecosystems**, for high granularity and potentially medium granularity (depending on the ecosystem classification used). Red List of Ecosystems assessments underpin GBF indicator A.1 and include data on change in ecosystem distribution or extent to assess collapse risk. High granularity guidelines for the SoN metric apply level 5-6 of the Typology, while medium granularity uses levels 3 or 4. Level 4 (regional subgroups) is the 'coarsest' level recommended for Red List of Ecosystem assessments, based on proxies for compositional differences of ecosystems (e.g. ecoregions). Level 4 is typically only applied for global assessments rather than national biodiversity assessments, where levels 5-6 (global or local ecosystem types) are preferred. The methods for calculating change are largely similar, although the timeframes differ: the Red List of Ecosystems assesses change over set time periods (e.g. 50 years) to allow a comparable estimate of risk between ecosystem assessments.

2.3 Ecosystem condition

No GBF headline indicator directly measures condition (or the related concept of integrity used in the GBF) and connectivity. The GBF monitoring framework did not include a dedicated measure for condition because many Parties felt this area needed further methodological work before an indicator could be adopted. Notably, there are few globally applicable, operational datasets recommended for directly measuring site condition in the SoN metric guidance at medium and high granularity (8), showing that this is a broader data and knowledge gap.

The most closely aligned GBF headline indicator is **GBF indicator A.1 Red List of Ecosystems**, which includes change in condition in the ecosystem risk assessments that underpin the indicator. We therefore evaluated SoN metrics for ecosystem condition at site and landscape levels for alignment with underlying data needs for GBF indicator A.1, noting that none of the SoN metrics align fully or substantively with GBF indicator A.1. Several optional (component or complementary) indicators listed in the GBF monitoring framework relate to condition and connectivity, which we discuss below.

The overall intent of the SoN condition metrics and GBF indicator A.1 Red List of Ecosystems differ. A.1 is an indicator of collapse risk. While collapse risk is a function of change in ecosystem extent and condition, it places both in the context of how close the ecosystem type is to collapse. The SoN metrics for ecosystem extent and condition focus at site to landscape/seascape scales, and without context about how threatened the ecosystem type is, its proximity to collapse or priorities for actions to reduce risk; this would require additional guidance or elements to be captured in framework and standard prioritization steps. The revised *Initial Measurement Guidance: State of Nature Metrics* published in October 2026 recognises this need, encouraging organizations that are integrating SoN metrics apply principles of double materiality and consideration of species and extinction risk when prioritizing locations for measurement (Appendix A in 8).

The SoN condition metric at site level is *methodologically aligned* and at the landscape/seascape level is *potentially aligned* with **GBF indicator A.1 Red List of Ecosystems**. Alignment varies across high and medium granularity at the site level due to ecosystem classification levels, and recommended methods for the metrics, which we analyse separately in the next sections. For both condition metrics, methodological alignment is limited by recommended ecosystem classification levels. As stated above (see ecosystem extent and Box 1), the Red List of Ecosystems is applied at levels 4-6 of the Typology, preferably at levels 5-6 (global or sub-global ecosystem types). Level 4 (regional ecosystem subgroups) are derived by subdividing Level 3 ecosystem groups using proxies for compositional differences of ecosystems, such as ecoregions. Levels 5-6 of the Typology are used in high granularity assessments of condition metrics, whereas levels 3-4 of the Typology are used in medium granularity assessments. Preparatory granularity does not differentiate for ecosystem type or group, only natural/anthropogenic classes. Level 3 and 4 are unlikely to differ at the site or even landscape scale, unless crossing ecoregional boundaries. Thus, all tropical lowland rainforests, for example, would be treated the same, rather than differentiated by ecosystem type, along with compositional differences. This would be important when considering compositional and functional changes in different ecosystem types, particularly at the site level.

2.3.1 Ecosystem condition (site)

Ecosystem integrity, condition and degradation – broadly analogous concepts in the context of the GBF and SoN metrics – form a core concept across the GBF. Integrity and degradation are highlighted in Goal A of the GBF, Target 1 (plan and manage all areas to reduce biodiversity loss, including areas of high ecological integrity), Target 2 (restore 30% of degraded ecosystems) and Target 3 (protect 30% of land, water and seas). Definitions of condition (in the NPI documents and in SEEA EA), and integrity and degradation (terms used by the GBF and the Red List of Ecosystems) are well aligned across the SoN metrics for site condition, GBF and GBF indicator A.1 Red List of Ecosystems guidelines (16).

SoN metric *ecosystem condition (site)* is *methodologically aligned* with **GBF indicator A.1 Red List of Ecosystems**, at high granularity, and potentially medium granularity (depending on the ecosystem classification and condition method used). This is due to ecosystem classification levels (see above), and recommended methods for the condition metric. Broadly, the approach to measuring change in condition (Area, losses, and gains for each condition class (ha, %), by ecosystem type, considering elements of structure, function and composition) is similar to the approach used in Red List of Ecosystems assessments. Red List of Ecosystems assessments measure change in condition across two dimensions: relative severity of change, and extent of the ecosystem type affected, similar to the condition class approach proposed for the SoN metric. However, RLE does this across the whole distribution of the ecosystem type, rather than at a site level, and measures change over fixed timeframes (historical change, the last 50 years or up to 50 years into the future).

High granularity specifications suggest using methods that draw on Red List of Ecosystems Guidelines (16) and UN SEEA Ecosystem Accounting guidance (13), which is largely compatible with the Red List of Ecosystems (17). For example, the Red List of Ecosystems guidelines provide principles for indicator selection, as well as practical examples of ecosystem-specific indicators, which can differ greatly across marine, terrestrial and freshwater ecosystems (see table 11 in 16), while the SEEA EA guidance includes principles and a typology of condition indicators to guide selection (13, 18). These include that condition measures should generally be based on the simplest, most informative and direct variable; that any combination of two or more interdependent variables should be ecologically and mathematically justified, and based on robust, transparent rules; and that the use of additive composite indices to combine condition variables is discouraged, because they can mask important ecological changes.

Several aspects of the NPI guidance (8) at medium granularity suggest that methods for site condition may align with Red List of Ecosystems standards, or have potential for methodological alignment, but require clarification. Pressure-based methods should not be used, aligning with Red List of Ecosystems standards, but potential datasets include composite indices, which may not align, depending on the composite index method (17). Applying best practice described in the Red List of Ecosystems guidelines to medium granularity metrics, methods and datasets would strengthen alignment with the GBF monitoring framework. The guidelines and existing Red List of Ecosystems assessments provide example indicators that could be applied in these contexts.

Several proposed methods for this metric at the preparatory granularity levels are also listed as GBF component and complementary indicators (2), which are optional for Parties to use, though few have made use of them (6, 30). These include the Ecosystem Integrity Index and Mean Species Abundance. Because they use pressures (e.g. land-use or human modification indices) as proxies for condition, they are not recommended for medium or high granularity levels but are aligned with GBF optional indicators at preparatory granularity.

2.3.2 Ecosystem condition (landscape/seascape context)

Ecosystem condition at the landscape/seascape level has a different intent from the site level and is measured using different metrics and methods. Landscape/seascape condition metrics focus on structural and functional connectivity between natural ecosystems across the landscape/seascape, including the site. Connectivity is a core concept in Goal A of the GBF and Target 3 (protect 30% of land, water and seas, including specifying that they are “well-connected”). The definitions of connectivity in the GBF and NPI documents are comparable. There is no GBF headline indicator for connectivity, although the GBF monitoring framework includes several connectivity-based indicators as optional component or complementary indicators (2). However, none of these is currently listed as potential methods for estimating the SoN metric ecosystem condition at landscape scales (8). Connectivity, or conversely fragmentation measures, can be included in the Red List of Ecosystems assessments (16), which underpin GBF indicator A.1 Red List of Ecosystems.

The SoN metric for landscape/seascape *condition* is *potentially aligned* with **GBF indicator A.1 Red List of Ecosystems**, at high granularity, and potentially medium granularity. This is due to ecosystem classification levels (see above), and recommended methods for the connectivity metric. The Red List of Ecosystems guidelines (16) suggest a range of connectivity metrics with justification for how and why they are ecologically meaningful. These differ from those listed as example measures, but in principle could be used to guide selection of measures to estimate the landscape/seascape condition metric. Generally, following the Red List of Ecosystems guidelines would strengthen alignment and scientific robustness of this metric, and would provide consistency with the high granularity guidance for the site condition metric.

2.4 Species extinction risk

The SoN metric *species extinction risk* is **substantively aligned** with **GBF indicator A.3 Red List index**, due to alignment of intent, concepts and definitions, and application of similar or the same data in measurement. The metrics at site or landscape scale are largely the same so are discussed together, though see some minor differences listed below.

Goal A of the GBF seeks to reduce extinction risk and rate. The intent of GBF indicator A.3 *Red List Index* is to measure the overall level of extinction risk of sets of species (i.e. how threatened they are on average), and in the rate at which this risk changes over time, based on global Red Lists (e.g. IUCN Red List of Threatened Species) or national Red Lists (31). The SoN metric species extinction risk seeks to measure the *contributions* of a site or landscape to the global extinction risk, and changing the trajectory of average extinction risk as measured by GBF indicator A.3. The key concepts of extinction risk are the same.

The underlying methodology and examples measures are also methodologically aligned, drawing on the same or similar datasets, in particular STAR, the Species Threat Abatement and Restoration metric, both estimated and calibrated (19), and LIFE, Land-cover change Impacts on Future Extinctions (16). STAR is an optional complementary indicator in the GBF monitoring framework (2). They rely on similar or the same sets of species and data, in particular species comprehensively assessed in the IUCN Red list of Threatened Species; at present both have taxonomic and ecosystem biases, being dominated by terrestrial vertebrates, though data for marine and freshwater ecosystems will soon be available. All three use the same or similar species habitat maps (referred to as Area of Habitat maps), linked with landcover classifications and species associated with the IUCN habitats classification scheme², drawing on the global IUCN Red List of Threatened Species database. Both A.1 Red List Index and STAR also use species risk categories from the IUCN Red List of Threatened Species database, while STAR also uses information from the same database on threats affecting listed species. These may differ from national Red Lists in terms of taxonomy (e.g. where countries list sub-species), threat levels, which species are included in the database and thus index (e.g. in South Africa plants are included in the national Red List Index and STAR, but not in the global index and STAR) (31, 32). These may drive differences in the values for both Red List Index and STAR, and likely LIFE, when calculated at national levels, and thus differences in national and global priorities.

Data on threatened species (e.g. from the IUCN Red List of Threatened Species database) have been used in Red List of Ecosystems assessments (e.g. in South Africa (20)), providing a potential pathway to methodological alignment between the SoN metric for species extinction risk and GBF indicator A.1, but this remains under-explored. They may be considered at least conceptually related.

² Note that the IUCN Habitat Classification scheme differs from the Global Ecosystem Typology (box 1); the latter is a function-based classification, with metadata including descriptions, conceptual assembly models and indicative spatial maps, which are lacking for the former.

Relatively minor differences can be found in the guidance for site vs landscape extinction risk metrics, all having more demanding requirements for site vs landscape extinction metrics:

- 1) Spatial resolution of data (finer for the site metric)
- 2) The need to ground truth at medium granularity (not required for the landscape metric, except for high granularity)
- 3) Example measures: calibrated vs estimated STAR (for medium), and using species area of habitat or range maps for site

2.5 Species populations

The SoN metric species populations at site and landscape/seascape level are the same conceptually and follow similar approaches (with more demanding requirements for site vs landscape level), so are discussed together. This metric reports on the number and proportion of priority species with populations that are declining, slowing in decline, stable and increasing, and is intended to report on the health of populations of priority species.

The SoN metric species populations has potential to align conceptually with elements of GBF Goal A (“the abundance of native wild species is increased to healthy and resilient levels”). No GBF headline indicator that directly measures abundance, although it is addressed by component indicators. The SoN metric species populations has **potential for alignment** with several GBF headline indicators and component indicators. These include:

- *A.1 Red List of Ecosystems*, through data on change in key biota that play important functional roles in specific ecosystem types;
- *A.3 Red List Index*, through data on change in abundance or absolute abundance of species
- *A.4 Proportion of populations within species with an effective population size greater than 500* (an indicator of genetic diversity), through data on absolute abundance of species. Although genetic diversity was considered out of scope for the SoN metric set, A.4 relies on the proxy of population size to estimate the rate of loss of genetic diversity within populations.
- Component indicator, *A.CT.10 Living Planet Index*, which measures average trends in abundance in monitored populations globally, and the related component indicator *A.CT.11 Wild Bird Index*. Living Planet Index reports also include summaries of the proportion of populations that are increasing, stable and decreasing, similar to the SoN metric (e.g., 34).

In all cases, the guidance for the SoN metric requires further development and specification to align with data standards and best practice for each of these indicators, to become methodologically or even fully aligned. Relevant examples of such standards have been highlighted in the SoN guidance but not mandated, including the Living Planet Index Guidance for National and Regional use and Guidance for Using the IUCN Red List Categories and Criteria. For example, the Living Planet index requires a population to be consistently monitored using the same technique for 2 or more years to be included in the database; thus, the metric may align with the indicator at medium and high granularity levels (using relative abundance measures), and data collected through applying this metric could be contributed to the Living Planet Index database, if it complies with the accepted approaches. Similarly, trends in population size, and estimates of absolute population size, contribute to IUCN Red List of Threatened Species assessments that underpin GBF indicator *A.3 Red List Index*. This metric could potentially align methodologically with A.3 at medium and high granularity, if standards set out in the Red List guidelines (14) are adhered to, for example on defining populations and individuals, and accounting for sampling effort and detectability in monitoring. The Red list guidelines are also used in GBF headline indicator A.4 on effective population size.

The selection of priority species for monitoring for population trends is guided by a prioritisation process, outlined in the *Initial Measurement Guidance: State of Nature Metrics* (8). This relies in several places on the global IUCN Red List of Threatened Species (which underpins GBF indicator A.3 Red List Index, and suggested methods for measuring SoN metric extinction risk), including risk status, species range maps and threats. The impacts of these dependencies on outcomes should be explored, such as dependence on a narrow set of data sources that can bias indicator outcomes (21). The revised *Initial Measurement Guidance: State of Nature Metrics* (October 2026) includes a broader set of criteria for selecting priority species, which includes national, local or Indigenous priorities, such as rare, endemic or culturally significant species. As noted above in the section on the species extinction metric, national species Red Lists can differ from global Red Lists, which may affect priorities and protection status of species.

3 Gaps, opportunities and ways forward

The analysis in this report shows areas of strong alignment, relating to measurement of ecosystem extent and species extinction, and methodological or potential alignment in ecosystem condition and species populations. It also reveals areas of difference between the NPI SoN metrics and the GBF monitoring framework (Figures 3 and 4), in particular the lack of a SoN metric for ecosystem risk or threatened ecosystems, the lack of GBF headline indicators for ecosystem condition and species populations, and differences in scope and spatial scale due to their use-cases. The *Initial Measurement Guidance for State of Nature Metrics*, published in October 2026, has strengthened alignment in several areas identified in the first version of this assessment (August 2026), including the treatment of baselines (see Annex 2). Several recommendations were partially addressed on ecosystem extent and species monitoring by adding additional references to existing methodologies. These gaps remain after revisions and present opportunities to strengthen connections between private-sector, national and global biodiversity monitoring. We also note that gaps in data, metrics and reporting remain for some ecosystem groups, in particular marine ecosystems, across both frameworks (6, 8). By adopting existing data standards and sharing standardised data generated from private sector assessments using the SoN metrics, the NPI SoN could expand the amount and quality of standardised data available for existing indicators and potentially new indicators to fill those gaps, as well as improving alignment. However, there is a risk of generating parallel reporting systems and data that remain disconnected across corporate, national and international biodiversity information systems, if the metrics are not implemented in line with GBF metadata, standards and wider best practices. This section discusses key gaps and opportunities and provides recommendations for increasing alignment.

Figure 4. Alignment between NPI SoN metrics and goal elements of the GBF

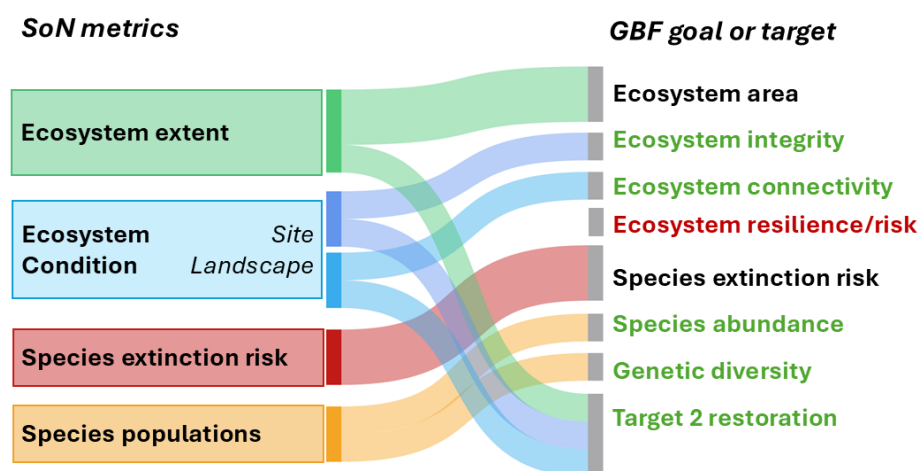


Figure 4. Alignment between NPI SoN metrics and goal elements of the GBF, where black shows coverage by GBF headline indicators represented by either GBF indicators or SoN metrics, showing aligned elements (black), opportunities (green) and gaps (red).

3.1 Gaps in alignment with the GBF

Ecosystem collapse risk and threatened ecosystems: None of the SoN metrics aligns fully with GBF indicator A.1 Red List of Ecosystems, although ecosystem extent and condition are methodologically related at high (and potentially medium) granularity. A.1 Red List of Ecosystems is an integrative indicator that places degree change in extent and condition in the context of risk of ecosystem collapse. This is similar to the way in which changes in species abundance and distribution are criteria for assessing species extinction risk in the Red List of Threatened Species, underpinned by ecological theory (25). The definition of nature positive (4, 5) includes resilience of ecosystems, similar to Goal A of the GBF (see Annex). Risk and resilience are “two sides of the same coin; collapse occurs when resilience is lost, and resilient systems are less likely to collapse” (26). Threatened ecosystems are also included in legal mechanisms in many countries, e.g. off-sets, spatial planning and regulation, so relate to transition risks, as well as dependency-related physical or systematic risks associated with collapse risk (27). While data coverage is currently limited for the Red List of Ecosystems (all or most ecosystems assessed in ~60 countries), it is increasing rapidly (6).

→ **Remaining recommendation:** Include ecosystem risk in the NPI metric set to align monitoring, data compilation and on-ground biodiversity outcomes with the GBF, by prioritising monitoring and action for threatened ecosystems. Although updates have been made to strengthen the connection between the SoN metrics and ecosystem collapse risk and the Red list of Ecosystems, in particular in measuring ecosystem condition and by adding a new principle for embedding to prioritise locations for measurement based on ecosystem risk, this remains a gap in alignment with the GBF.

Use case differentiation – scope and spatial scale: The SoN metrics and GBF headline indicators are designed for different, but complementary, applications. The SoN metrics are primarily designed for application at site to landscape/seascape scales, supporting decision-making by private sector actors and local managers. In contrast, GBF headline indicators are intended to operate at broader spatial scales, including across entire ecosystem types, species’ full ranges, and at national to global levels. These differences in use-case are reflected in spatial resolution requirements. The SoN metrics apply more stringent and explicit guidance on spatial resolution (e.g. ~10 m for ecosystem extent and condition), enabling fine-scale, decision-relevant insights. In comparison, GBF indicators do not prescribe specific spatial resolutions, reflecting their focus on aggregated, multi-source datasets compiled for national and global reporting. While the species extinction risk metrics bridge site and global scales —by estimating site-level contributions to overall extinction risk using approaches such as STAR or LIFE (4, 19) — these rely on assumptions about contributions of different sites, actions and actors. Equivalent approaches are

not yet well established for ecosystem-level data (e.g. from Red List of Ecosystems or ecosystem accounts), limiting the ability to consistently translate site-level condition or population data into national or global indicators.

→ **Remaining recommendation:** Different scopes and scales of measurement are appropriate for different decision-making contexts. This highlights both a key strength of the SoN metrics in providing granular data, and a gap in methodologies needed to systematically scale these data to align with GBF reporting frameworks. Filling this gap will require development and documentation of approaches for scaling from standardised site- and landscape/seascape-level SoN data, so they can contribute to national and global biodiversity monitoring, while retaining the spatial resolution required for local decision-making.

3.2 Opportunities for filling data and indicator gaps in the GBF

The NPI SoN metrics cover two elements that are important in the GBF goals and targets – trends in species populations and ecosystem condition – but not directly represented in the GBF headline indicators. These are recognised gaps in the headline indicators of the GBF monitoring framework (9), which sought to balance a practical and manageable number of headline indicators with coverage of key aspects of the GBF, as well as feasibility in terms of established methods and available data. In particular, the SoN metric specifications at high granularity have the potential to not only strengthen alignment with the GBF across all metrics, but also to build improved methods and investment in ecosystem-specific approaches for measuring ecosystem condition, which could help to develop standardised databases that support local, national and global monitoring.

→ **Remaining opportunity:** Continue to strongly encourage organisations to use high granularity approaches across all metrics to strengthen alignment with the GBF, particularly as data coverage and availability increases across all metrics, and methods for measuring and evaluating contributions to global goals develop. In particular, recommending high granularity measurement of site condition in threatened ecosystems could also strengthen alignment with the GBF, by considering ecosystem risk and aligning methodologically with standards for A.1 Red List of Ecosystems.

Similarly, increased investment in monitoring of species populations could fill gaps that hinder the Living Planet Index (22) and related national indicators (e.g., 23, 24). This requires guidance that aligns with existing standards, such as the Red List of Ecosystems (16), UN SEEA Ecosystem Accounting (13), the Red List of Threatened Species, the Living Planet Index and other established biodiversity data platforms, such as GBIF (the Global Biodiversity Information Facility, <https://www.gbif.org/>, and its Biodiversity Information Standards), as well as development of data infrastructure to compile, house and present data. Such efforts could support uptake of the Red List of Ecosystems and SEEA Ecosystem accounting; although these underpin GBF headline indicators, they are relatively new frameworks and used in less than a third of 7th National Reports (6).

→ **Remaining opportunity:** While the revised NPI guidance references key standards and frameworks to support measuring ecosystem condition and species populations in alignment with international standards, it does not mandate the application of the specific measurement protocols within them. Strengthening this would help ensure alignment for national reporting and with other established platforms for biodiversity data.

Second, many actors applying the NPI SoN metrics will undertake actions seeking to contribute to nature-positive outcomes. As well as contributing to achieving the goals and targets of the GBF, these projects could contribute data to indicators and databases that measure progress outside of the scope of the state of nature metrics guidance and focus on outcome-oriented metrics. This is particularly the case for Target 2 on restoration, which covers a wide range of actions from reducing threats (e.g. reducing invasive species or pollution) or restoring processes (such as tidal flows) to improve the condition of degraded natural ecosystems, and restoring ecosystems where they have been transformed. Actors can contribute to global

databases, such as the FAO's FERM registry (<https://ferm.fao.org/>), and/or national databases, to support national and global reporting on GBF indicator 2.1 for Target 2. Actions may include other effective area-based conservation measures (OECMs), which form part of GBF headline indicator 3.1 on protected and conserved areas (7). OECMs are defined as areas '*governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity*' and can include private protected areas and related mechanisms (28).

→ **Remaining opportunity:** An opportunity remains for private sector entities, when reporting their actions and contributions toward conservation and restoration efforts, to align to GBF reporting on other, non-state related GBF indicators. While not the focus of the state of nature metrics, these reporting efforts increase alignment more broadly.

Finally, the potential for data collected by actors as they apply the SoN metrics and underlying standards can only be reached if these data are shared openly, with governments, national and global data infrastructure (e.g. GBIF), and indigenous traditional owners, and if foundational data needed for private sector entities to report on their dependencies, impacts, risks, and opportunities, such as ecosystem maps, are available. This should be subject to safeguards for traditional knowledge, sensitive data (e.g. on locations of threatened species), and done consistently with national and international guidelines for data stewardship, e.g. FAIR (findable, accessible, interoperable and reusable) and CARE (collective benefit, authority to control, responsibility, ethics) principles.

→ **Remaining opportunity:** Metrics users should share data to build national and global monitoring capability, making data available on open access platforms, subject to data stewardship principles (e.g. FAIR and CARE). The SoN guidance references resources to support users in sharing this data.

4 Conclusion

Overall, the SoN metrics show strong alignment with the GBF monitoring framework for ecosystem extent and species extinction risk, while ecosystem condition and species populations are methodologically aligned or have potential for further alignment with relevant GBF indicators. Ecosystem extent is fully aligned with headline indicator A.2, and species extinction risk is substantively aligned with A.3. For ecosystem condition, higher-granularity approaches can contribute data relevant to A.1 Red List of Ecosystems, while species population data have potential to contribute to A.3, A.4 and relevant component indicators. The SoN metrics also address ecosystem condition and species populations, for which the GBF currently lacks dedicated headline indicators, creating an opportunity for investment in methods, data and monitoring through private-sector application to support future national and global monitoring. The principal remaining gap is ecosystem collapse risk: no SoN metric is directly equivalent to A.1. While the revised guidance strengthens connections to ecosystem risk by recommending use of existing Red List of Ecosystems assessments and standards to measure condition and to prioritise sites for measurement, this remains an alignment gap with the GBF and limits the ability to comprehensively assess ecosystem resilience and risk.

By building on this alignment through the recommendations in this report, the SoN metrics could create a bridge between private and public sector reporting: company-level disclosures on impacts and dependencies can feed into national monitoring efforts, and supporting coherence with GBF Target 15 on business reporting. In particular, drawing on existing standards and best practice for monitoring biodiversity, such as the Red List of Threatened Species Guidelines (14), Red List of Ecosystems Guidelines (16) and UN SEEA Ecosystem Accounting standards (13), will allow the users of the SoN metrics to build on decades of scientific research and practice, as well as contribute to ongoing monitoring efforts and publicly available biodiversity data and knowledge. More work will be needed to

develop new methods for bridging scales effectively, to allow both monitoring and action at local scales to contribute to national and global goals. Capitalising on the existing and potential alignment between the SoN metrics and GBF monitoring framework, while addressing opportunities and gaps, will strengthen the overall consistency and coherence between private and public sector monitoring frameworks, avoid parallel or duplicative reporting practices, and will improve the contribution of the SoN metrics to national and global reporting on biodiversity.

5 Acknowledgements

The author thanks the following for discussion: Tony Chi, Tina Parkhurst, Brendan Wintle, Billy Geary, James Nolan (The University of Melbourne), EJ Milner-Gulland (University of Oxford), Tom Brooks and Marcos Valderrabano (IUCN).

6 Annexes

Annex 1. Elements of Goal A and associated GBF headline indicators and SoN metrics

Association between each of the elements of Goal A, simplified from Affinito et al. 2025 (9), and most closely related GBF headline indicator and SoN metric. GBF indicators marked with an asterisk were considered to provide only partial coverage of the element (9).

<i>Goal A element</i>	<i>GBF headline indicator</i>	<i>SoN metric</i>
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	A.4 Proportion of populations within species with an effective population size greater than 500*	

maintained, safeguarding their adaptive potential.		
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Annex 2. Previous paper recommendations addressed through the October 2026 *Initial Measurement Guidance: State of Nature Metrics*

The earlier version (August 2026) of this alignment assessment identified additional recommendations for strengthening alignment with the GBF monitoring framework. Several were addressed during finalisation of the October 2026 *Initial Measurement Guidance: State of Nature Metrics* and are summarised below; recommendations where further work remains are presented in Section 3.3.

<i>Area</i>	<i>Recommendation (August 2026)</i>	<i>October 2026 Initial Measurement Guidance: State of Nature Metrics</i>
Baselines	Strengthen alignment by adopting a baseline window similar to the GBF rather than a fixed arbitrary baseline. All choices of baselines should be justified to ensure they are ecologically meaningful. The GBF defines “the period from 2011–2020, where data is available, as the reference period ... for reporting and monitoring progress in the implementation of the Kunming-Montreal Global Biodiversity Framework, while noting that baselines, conditions and periods used to express desirable states or levels of ambition in goals and targets should, where relevant, take into account historical trends, current status, future scenarios of biodiversity and available information on the natural state” (1). Countries are encouraged to report time-series going back as far as possible, and at minimum within the 2011-2020 window.	The Guidance advises 2020 but explicitly recognises the GBF 2011–2020 reference period, allows alternative baselines where justified, requires transparency on baseline selection, and recommends a recent pre-impact baseline where a significant impact predates the proposed baseline.
Ecosystem collapse risk and threatened ecosystems	Include ecosystem risk in the NPI metric set and/or in the prioritisation or screening steps in the frameworks and standards in which they are intended to be embedded.	It was not added as a standalone metric. In the Principles for Embedding the metrics, a consideration of species and ecosystem risk was added to reflect the need for a credible approach to prioritization of locations for measurement.

Ecosystem extent – classification and datasets	Apply high granularity approaches where possible, to capture important biodiversity patterns, including rare, narrowly distributed or patchy ecosystems that are often poorly mapped, by using local knowledge, indicative distribution maps (e.g. the Global Ecosystem Typology) and/or field work in conjunction with ecosystem maps (as recommended at medium and high granularity level); draw on existing Red List of Ecosystem assessments for ecosystem maps and descriptions, and to prioritise monitoring and action.	The base map guidance was revised to include example data sources for different realms and granularity levels. This now incorporates specific reference to Red List of Ecosystem assessments and national datasets.
Ecosystem condition	Align guidance for condition metrics with best practice in Red List of Ecosystem Guidelines (16) for selecting appropriate variables for measuring condition and combining variables into condition scores or classes; draw on existing Red List of Ecosystem assessments for data and information on ecosystem maps, descriptions and condition measures, and to prioritise monitoring and action.	The site metric descriptor was updated to clarify the core components of ecosystem condition (structure, function and composition). Additional guidance was added on delineating condition classes (referencing UN SESA) as well as additional advice to apply Red List of Ecosystem assessment data at medium granularity where this is available.
Species populations	Specify standards for data collection and analysis that adhere with guidelines and best practice in the Red List of Threatened Species guidelines that underpin GBF headline indicators A.3 Red List Index and A.4 effective population size, and component indicator Living Planet Index	The updates now recommend repeated measurements and disclosure of sampling effort, uncertainty and temporal coverage, and points users to IUCN, GEO BON and Living Planet Index guidance.
Data transparency and contribution	Strengthen transparency and encourage data generated through SoN measurement to support wider biodiversity monitoring.	The updates encourage transparency on methods, boundaries, data sources, baselines, granularity and species selection. It was updated to explicitly call for users to make their underlying data accessible for conservation science or national monitoring. Best practice guidance was referenced to support users on how to share their data to appropriate platforms.

Align with other data standards for biodiversity and action	Including standards for GBF indicators for restoration and protection, and biodiversity data platforms such GBIF, to capitalise on data gathered when applying NPI SoN metrics	The updates explicitly call for users to make their underlying data accessible for conservation science or national monitoring. Best practice guidance was referenced to support users on how to share their data to appropriate platforms.
Share data	To build global monitoring capability, making data available on open access platforms.	The updates explicitly call for users to make their underlying data accessible for conservation science or national monitoring. Best practice guidance was referenced to support users on how to share their data to appropriate platforms.

7 Cited literature

*note that two of the key documents have been updated since the original version of this report was published for peer-review: the meta-data for the headline indicators for the Kunming-Montreal Global Biodiversity Framework (reference 7, previously [CBD/COP/16/INF/3/Rev.1](#)); and the measurement guidance for the State of Nature metrics (reference 8, previously the February 2026 [draft](#)).

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