Progress Report on Indicator Selection

Ecosystems and Biodiversity (9d)

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Summary:

- Reviewing the full list of submitted indicators against the 9d elements reveals that most of the indicators can be classified as related to management with many that are cross-cutting. The indicator review found that most submissions were quantitative (~90%). Many of the proposed ecosystem and species related indicators were general and could apply to multiple ecosystem/species types. However, there are gaps in indicators related to social inclusion (especially for youth, Indigenous Peoples, and persons with disabilities)

- A preliminary list of 40 indicators was selected by experts. We have not attempted to reconcile the individual expert recommendations into a consensus list, rather opting to show the diversity of opinions.

- Indicators selected by two or more experts tend to be well-established and aligned with existing frameworks (e.g., from the Kunming-Montreal Global Biodiversity Framework, SDGs, and Sendai Framework). These include: Services provided by ecosystems, Area under restoration, Red List Index, Extent of natural ecosystems, and Coverage of protected areas.

- Indicators selected by only one expert reveal diversity in expert knowledge and perspectives. These indicators also highlight the diversity and importance of enabling conditions of finance, capacity, and technology transfer. Further discussion within the group is required to establish commonality between these indicators and agreement.

- Identified challenges and next steps include additional consideration of the need for standardization and improved metadata for some indicators; limited inclusion of Indigenous Knowledge and local knowledge systems, and gaps in tracking long-term changes and linking social and ecological dynamics.

- Existing indicator frameworks can be applied to and provide substantial support for the GGA where possible. Enhancing scientific underpinnings, supporting disaggregated reporting along existing national priorities, and developing process for monitoring and updating indicators could bridge a need for near-term implementation to more ambitious tracking.

1. Introduction

The purpose of this document is to provide a review of possible climate adaptation indicators and their alignment with the Global Goal on Adaptation (GGA) for ecosystems and biodiversity (9d). We review the indicators currently in use and submitted by the Parties and Observers, identifying key indicators across the elements of 9d. We also propose new indicators and identify gaps. We also recognize the importance of the inclusion of indicators that capture means of implementation, such as finance, technology, and capacity-building, reflecting the importance of support mechanisms in achieving adaptation goals. We have conducted our review within the overall goal of developing a manageable set of indicators to measure progress toward the GGA.

2. Indicator Selection: Approaches and Rationales

The following indicators were selected for Target 9d to track the state, adaptation, and resilience of ecosystems and biodiversity in the face of climate change. Selection emphasizes scientific validity, relevance to GGA goals, coverage of key components (conservation, restoration, protection, adaptation), and global, national, and local applicability for several criteria agreed in the GGA decisions CMA6.

2.1. Understanding the 9d elements

To identify indicators that can contribute to measuring progress towards target 9(d), the first key step is defining the main sub-elements of the target. In the opinion of this group, the definitions below are consistent with these elements and provide the necessary refinement to select and classify indicators from the list:

Reducing climate impacts on ecosystems and biodiversity: Indicators that track or measure how climate change and its drivers (e.g., extreme weather events, temperature shifts, drought, floods, wildfire, sea level rise, invasive species) directly or indirectly affect ecosystems, species, habitats, ecological processes, biodiversity status, and the sustained provision of ecosystem services. Indicators in this category can also reflect the extent to which adaptation moderates negative climate impacts or has positive effects on ecosystem integrity, biodiversity health, and the services they provide. This includes, but is not limited to, food provision, human health and medicines, water regulation, air quality improvement, pollination, recreation, and carbon sequestration).

Accelerating ecosystem-based adaptation (EbA) and nature-based solutions (NbS): Indicators that explicitly measure the extent, implementation, or effectiveness of ecosystem-based adaptation and nature-based solutions - nature-based solutions are actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services, resilience and biodiversity benefits[1]. Examples include interventions that use mangrove restoration for flood risk reduction, agroforestry for soil and water conservation, or green infrastructure for urban cooling and stormwater drainage.

Management: Indicators measuring governance arrangements, policies, institutional capacities, planning processes, financial frameworks, capacity building, technology transfer, and monitoring systems that underpin effective climate adaptation and biodiversity management. These indicators reflect enabling conditions and capacities aimed at ensuring effective, long-term conservation, sustainable use, and resilience of ecosystems, biodiversity, and the services they deliver, through informed policy and proactive management. Keywords include enablers, such as adaptation policy, coordination mechanisms, climate plans, implementation strategies, and innovation. It can also include means of implementation by covering climate finance, capacity building, and technology transfer.

Enhancement and restoration: Indicators tracking direct action including ecological restoration, enhancement, rehabilitation, afforestation, reforestation, and other active interventions intended to recover or improve ecosystem functions, biodiversity health, habitat quality, and the provision of ecosystem services. This includes restoring degraded wetlands for water purification and flood control, reforesting landscapes for carbon sequestration and erosion control, or rehabilitating habitats to support biodiversity and ecological productivity. Examples include forest regrowth, land restoration, revegetation, and wetland rehabilitation.

Conservation and Protection: Indicators that assess efforts to protect, conserve, and maintain ecosystem integrity, species populations, genetic diversity, and habitats through protected areas, conservation management actions, species conservation programs, and safeguarding measures. These indicators highlight actions designed to ensure ecosystems, biodiversity, and their services, such as fisheries productivity, genetic resource conservation, and climate regulation, are sustained, secured, and maintained in the face of climate change, without necessarily involving active restoration. Examples include conservation status, marine sanctuaries, biosphere reserves, and preservation of endangered species.

2.2 Indicators along 9d elements

[1] Definition from the resolution adopted by the United Nations Environment Assembly on 2 March 2022; https://wedocs.unep.org/bitstream/handle/20.500.11822/39864/NATURE-BASED%20SOLUTIONS%20FOR%20SUPPORTING%20SUSTAINABLE%20DEVELOPMENT.%20English.pdf

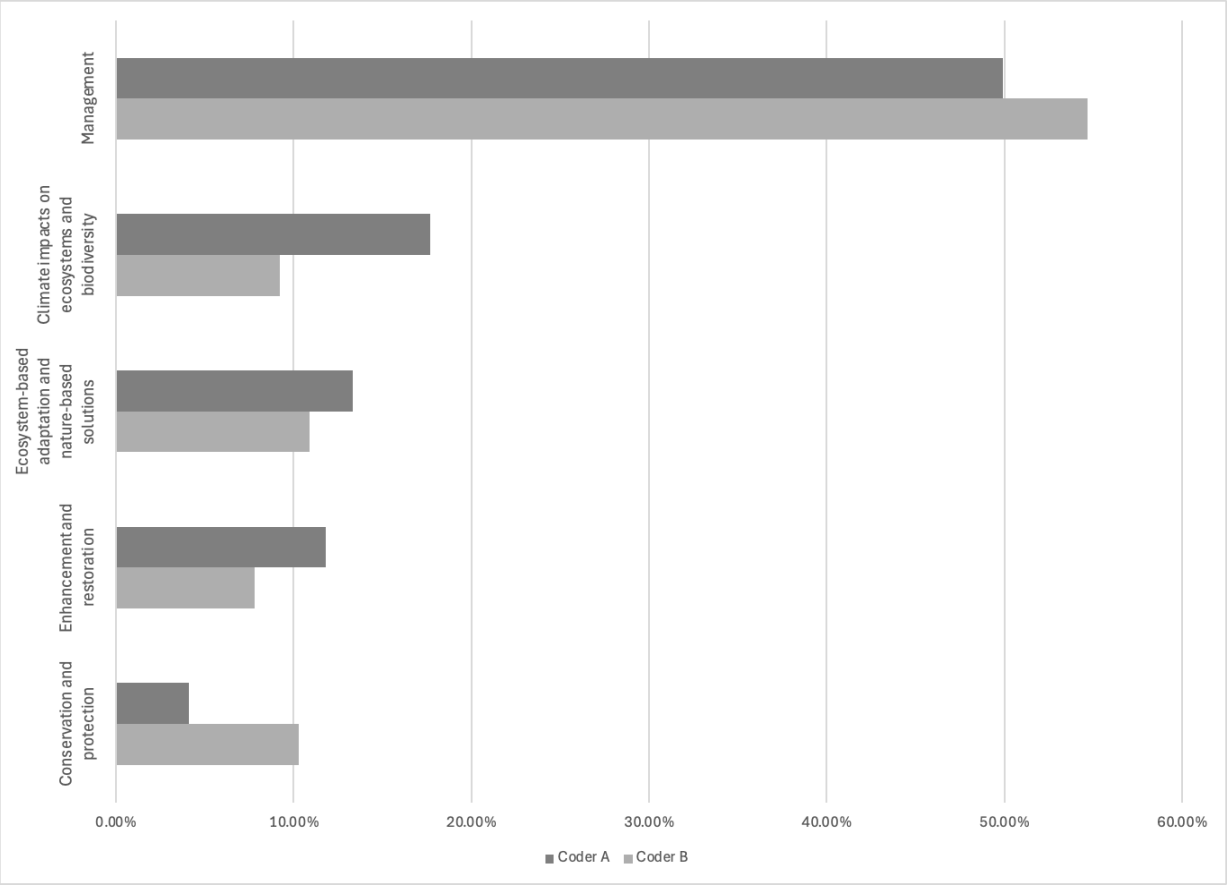
As an initial step in the analysis, the submitted indicators[2] related to ecosystems and biodiversity (9d) were carefully reviewed and clustered according to the key elements outlined in Section 2.1. This structured approach enables a comprehensive overview of how the indicators are distributed in relation to the 9d elements to evaluate whether the collection of indicators contains information on all elements. Additionally, even though this indicator collection was not developed systematically, the distribution of the indicators across the elements can still provide an indication of the state of knowledge on indicators for ecosystems and biodiversity.

Most indicators reflect a strong alignment with adaptation management, particularly those concerned with monitoring the status of implementation measures and assessing the condition of ecosystems and biodiversity. This highlights the growing emphasis on evidence-based tracking of progress in climate adaptation and ecosystem resilience. The remaining indicators show relatively equal coverage across the other elements with some differences between the coders.

Several of the indicators could also be classified under the 'cross-cutting'; or 'other' category (not shown in Figure 1). These reflect broader societal considerations, including those related to means of implementation, such as equity, finance, and governance and linkages to sustainable development. Additional metadata and contextual information to enable accurate categorization within the 9d framework.

Figure 1: Overview on indicators relevant for ecosystems and biodiversity (9d) as submitted by Parties and Observers. The indicators have been classified across the different elements of 9d. We show the level of agreement across two coders. The differences reflect judgement to which element the indicator fits best, and some indicators may relate to more than one element.

[2] We started from: https://unfccc.int/documents/642669; With duplicates, there are 1294 indicators in the refined list. Removing duplicates yields 1003.



We also looked at classifications of the key ecosystems: terrestrial, coastal, marine, inland water and mountain. Most of the indicators (60.6%) are not related to any specific ecosystem but could be inclusive of all ecosystem types. Of the remainder, 21% are related to terrestrial systems, 8.3% to coastal, 5% marine, 3.8% inland water, and less than 2% mountains.

Further investigating along the other criteria outlined, including qualitative and quantitative, elements of the adaptation cycle (e.g. input, output, outcome, impact, process), and social inclusion dimensions (e.g. gender, Indigenous Peoples, youth, disability and migrants), we find:

- Most of the submitted indicators are likely quantitative (~90%)
- The majority are likely related to output and outcome.
- Across the dimensions of social inclusion, there were very few submitted indicators (~less than 200). Of these the majority relate to gender.

However, many of the indicators as submitted can also be difficult to classify or require additional assumptions to support classification. Thus, we caution against overinterpretation of these numbers.

2.3 Explanation of indicator list and rationales of selected indicators

At this stage in our analysis, we present a list of 40 distinct indicators selected by the experts independently. 6 experts provided their top selections of indicators. Within these lists, each individual expert aimed to pick a limited number of (e.g. less than 10) relevant indicators. In some cases, the expert also aimed to select a set of indicators that balanced

the key elements as outlined in 9d and across the decision texts, including the ability to use already available data, the availability of baselines, the relevance to multiple thematic targets, and an orientation to outcome and output.

We have not attempted to reconcile the individual expert recommendations into a consensus list, rather opting to show the diversity of opinions. The proposed indicators measure various aspects related to biodiversity and ecosystems, including genetic and species diversity, ecosystem types, conservation and restoration efforts, early-warning systems, training programs, ecosystem-based adaptation and nature-based solutions as well as effective implementation and financing. The full list of indicators with rationales is available in Appendix A to this report.

- 11 indicators were selected by two or more experts. When an indicator was selected by several experts, this may point to robustness across multiple key elements of the 9d and the decision texts.

- 29 indicators were selected by a single expert. These indicators fill in key gaps not covered by more commonly selected indicators, emphasizing adaptation readiness, ecosystem functionality, and support and implementation (e.g. finance, governance, capacity).

2.3.1 Indicators selected by two or more experts

Indicators that were selected by two or more experts are generally well established, such that their properties are well understood and there is already metadata. All of the following indicators are already agreed upon in other international agreements, including the KM-GBF, the SDGs and the Sendai framework.

- "Services provided by ecosystems" (ID = 1290) and "area under restoration" (ID = 1291) were selected by 5 of the 6 experts.

  These are both headline indicators of the Kunming-Montreal Global Biodiversity Framework (KM-GBF) (Goal B/Target 11 and Target 2, respectively) adopted under the Convention for Biological Diversity. The metadata has been welcomed in CBD decision 16/31. The indicators can be disaggregated by, among other things, type of ecosystem service, by realm, biome and ecosystem functional group (Global Ecosystem Typology levels 2 and 3 or equivalent) or by protected areas or other effective area-based conservation measures and by type of restoration activity. They can also be disaggregated by Indigenous and traditional territories. These indicators are high-level, such that they can cover multiple types of ecosystems.

- "Red list of ecosystems" (ID = 1031) and "Red list index (ID = 1288) were selected by 3 of the 6 experts.

  They are also headline indicators from the KM-GBF under Goal A, Target 1 and Target 4. The Red list index is also an SDG indicator for SDG Target 15.5.1. These indicators have similar properties to the other KM-GBF indicators. They can be disaggregated by, among other things, realm, biome and ecosystem functional group (Global Ecosystem Typology levels 2 and 3 or equivalent), by migratory species, and by drivers of biodiversity loss (matched to the International Union for Conservation of Nature Threats Classification Scheme).

- Five other KM-GBF indicators were also selected by two experts:

  - "Extent of natural ecosystems" (ID = 5124)
  - "The proportion of populations within species with an effective population size greater than 500" (ID = 1289)
  - "Coverage of protected areas and other effective area-based conservation measures" (ID = 1292)
  - "Average share of the built-up area of cities that is green or blue space for public use for all" (ID = 1295)

- "Number of countries with policies to minimize the impact of climate change and ocean acidification on biodiversity and to minimize negative and foster positive impacts of climate action on biodiversity" (ID = 3279)
- "Number of countries taking action towards the full, equitable, inclusive, effective and gender-responsive representation and participation in decision-making and access to justice and information related to biodiversity by Indigenous Peoples and local communities, respecting their cultures and their rights over lands, territories, resources and traditional knowledge, as well as by women and girls, children and youth, and persons with disabilities, and the full protection of environmental human rights defenders" (ID = 2842).

- Two additional indicators selected by two experts are:

  - "Number of early-warning systems installed" (ID = 1684). It is well-established that early warning systems are an important adaptation measure that cuts across all dimensions of adaptation. This is related to the Sendai framework Goal G on early warning systems for all[3].
  - "Government spending on conservation and sustainable use of biodiversity and ecosystems over total Government Budget" (ID = 345). This indicator reflects a nation's financial commitment to biodiversity conservation and sustainable resource management, highlighting the priority given to safeguarding ecosystems within the broader economic framework, a crucial factor in supporting adaptation efforts (12a). This is Global SDG 15.a.1 (a)- proxy.

2.3.2 Indicators selected by one expert

While these indicators were only selected by one expert, this does not imply disagreement. Rather, this represents our collective point of departure for further conversation through which we will establish the commonality between these indicators and come to agreement.

Implementation and enabling conditions: These indicators reflect policy, financial, capacity, or planning foundations for adaptation and biodiversity action.

- Finance as a key enabler is highlighted across 5 indicators.
  - "Domestic public funding on conservation and sustainable use of biodiversity and ecosystems": This indicator is a headline indicator for Goal D and Target 19 of the Kunming-Montreal Global Biodiversity Framework. This is indicator D.2 under the Convention on Biological Diversity which was adopted through decision 15/5. Its metadata was welcomed in decision 16/31.
  - "International public funding, including official development assistance for conservation and sustainable use of biodiversity and ecosystems". This indicator is a headline indicator for Goal D and Target 19 of the Kunming-Montreal Global Biodiversity Framework. This is indicator D.1 under the Convention on Biological Diversity which was adopted through decision 15/5. Its metadata was welcomed in decision 16/31.
  - "Private funding (domestic and international) on conservation and sustainable use of biodiversity and ecosystems": This indicator is a headline indicator for Goal D and Target 19 of the Kunming-Montreal Global Biodiversity Framework. This is indicator D.3 under the Convention on Biological Diversity which was adopted through decision 15/5. Its metadata was welcomed in decision 16/31.
  - Investment for ecosystem and biodiversity (ID = 5302)

[3] The effort on early warnings for all is co-led by the World Meteorological Organization (WMO), the United Nations Office for Disaster Risk Reduction (UNDRR), the International Telecommunication Union (ITU) and the International Federation of Red Cross and Red Crescent Societies (IFRC).

- SDG Indicator 15.b.1: (a) Official development assistance on conservation and sustainable use of biodiversity; and (b) revenue generated and finance mobilized from biodiversity-relevant economic instruments

- Capacity and technology transfer is captured in 2 indicators
  - "Number of countries that have taken significant action to strengthen capacity-building and development and access to and transfer of technology, and to promote the development of and access to innovation and technical and scientific cooperation": This is an indicator for Target 20 of the Kunming-Montreal Global Biodiversity Framework. Target 8
  - "Number of training programmes implemented regarding ecosystem services and ecosystem restoration; Number of individuals who have received training" (ID = 7247).

The climate system: These are essential for tracking underlying physical and environmental changes. They are relevant for climate risk assessments and could also provide indications of whether adaptation needs to be adjusted to meet hazards. While these three were highlighted by one expert, the team agrees that other key indicators of the climate system could also be useful across themes.

- Rate of sea-level rise (ID = 1516)
- Mean temperature anomaly (compared to climate normal 1991 - 2020) for components (atmosphere, continents, ocean, inland water and cryosphere) (ID = 2572)
- Heat wave index and duration (atmosphere, ocean, freshwater) (ID = 1399)

Ecosystem indicators for ecosystem structure, function, and adaptive capacity: These are complementary to the biodiversity indicators, emphasizing functionality, integrity, and resilience rather than species counts or habitat areas. These include:

- Ecosystem Integrity Index (EII) (ID = 5028)
- Bioclimatic Ecosystem Resilience Index (BERI) (ID = 3277)
- Conservation of forest genetic resources (ID = 142)
- Proportion of change (delta) in adaptive capacity between two reference years for the Biodiversity and Ecosystem Services dimension (ID = 3392)
- Number of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type and scale) Source: (Adaptation Fund Strategic Results Framework 5.1) (ID = 2830)
- Proportion of fish stocks within biologically sustainable levels (ID = 6)
- Extent of natural and semi-natural ecosystems with high ecological integrity as a proportion of total area of the country

Indicators on governance and policy: These indicators relate to the adoption of policy approaches that would improve the ability to manage adaptation for ecosystem and biodiversity. This includes one indicator that has a characteristic of inclusion through the implementation of community-based adaptation.

- Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies (SDG target 1.5.4) (ID = 2590)
- Policy and/or incentives for green infrastructure as nature-based solutions (ID = 3089)
- Managed terrestrial, inland waters, coastal and marine areas under climate-resilient management practices as a proportion of the total area of the country (ID = 3284)

- Number of community-based climate adaptation strategies implemented aimed at enhancing local capacity to manage and respond to changes and hazards related to ecosystems (ID = 602)

2.3.3. Developing composite indicators for linkages to 12a and 12b

Experts also evaluated the possibility of developing composite indicators. These have the benefit of reducing the number of indicators needed as well as providing more specificity in their purpose. Two key examples include:

- "Number of countries with NAPs and NDCs that incorporate nature-based solutions (NbS) for adaptation, categorized by the stage of NbS implementation (e.g., identified, planned, piloted, scaled-up, mainstreamed) and reporting on key outcomes related to adaptive capacity, resilience, and vulnerability reduction". This indicator is based on ID = 2767, 5125, 3090 and 3280. This composite indicator assesses global progress by capturing policy commitments (NAPs/NDCs), implementation stages, and demonstrable outcomes across countries, providing a comprehensive measure of progress toward achieving adaptation goals.

- "Number of Nature-based Solutions (NbS) projects implemented, categorized by their stage of implementation (e.g., pilot, scaled-up, mainstreaming) and reporting on key outcomes related to adaptive capacity, resilience, and vulnerability reduction." This indicator is based on ID = 575, 3090 and 3353. This composite indicator tracks the progress and impact of nature-based solutions in adaptation by encompassing the number of projects, their implementation stages and their demonstrable contributions to resilience and vulnerability reduction. This indicator also aims to ensure that ecosystems contribute to climate adaptation while providing co-benefits such as biodiversity conservation and disaster risk reduction.

3. Experiences and considerations during indicator selection

Through the indicator selection process, we also reflected upon challenges and opportunities. Here, we document some of our key observations related to the practical and conceptual needs of indicator selection for the GGA.

- Existing indicators in international conventions can be applied to the GGA: Building on the KM-GBF within the Convention of Biological Diversity has substantial benefits related to reducing the burden on countries and producing effective indicators that capture the multiple benefits of nature. Where relevant, the SDGs and to a lesser extent, the Sendai framework, are also relevant to 9d. The metadata that support these indicators are already well developed and use information that is already available[4]. The trade-off is that these indicators may not capture specific properties of interest for the climate adaptation. Thus, we can consider approaches to extend and disaggregate these indicators to capture adaptation needs.

- Indices that allow for aggregation across scales and key elements of ecosystems provide flexibility and is likely cost-effective: Selected indicators that allow aggregation from local, national and global scales allow for capturing the aggregate effect on Earth system components (ocean, continents, cryosphere, and atmosphere) as well as tracking effects by ecosystem type, services, species, climate hazards and vulnerability groups. This would also assist in keeping the number of indicators manageable, and to ensure to capture regional-specific indicators in a global context. The structure of the KM-GBF monitoring framework, with headline indicators and optional disaggregated indicators as well as voluntary component and complementary indicators, could be a useful approach to consider for the GGA ecosystem and biodiversity theme (and possibly useful for other themes). This structure allows for tailoring to national contexts, such as for specific ecosystems or populations. This approach

[4] Several key indicators can be accessed at the Global Biodiversity Information Facility: https://www.gbif.org/

could also allow for the repurposing of existing national indicators, which would provide a more flexible, cost-effective and adaptable monitoring approach.

- Enhancing the scientific underpinning of indicator selection: When looking to select any set of indicators from our list, we draw on the decision texts as well as our fundamental understanding of the key components of biodiversity and nature, especially from the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).

  The indicators selected should address the three components of biodiversity as described under Article 2 of the Convention on Biological Diversity "Biological diversity" means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems"). As such the selection of indicators should address biodiversity at the species, ecosystem and genetic level.

  We can also build on IPBES assessments that recognize that nature holds a multitude of values for people. Current policy decisions that prioritize instrumental values, particularly those linked to market-based metrics often overlook intrinsic and relational values. This can lead to environmental degradation and social inequities. IPBES assessments also specifically underscore the need for approaches that consider diverse knowledge systems, highlighting those of Indigenous Peoples and local communities. In the 2022 Values Assessment, IPBES categorizes these values into three main types: 1. Instrumental values: These pertain to the tangible benefits nature provides, such as food, water, timber, and other ecosystem services that support human livelihoods and economies; 2. Intrinsic values: This category acknowledges nature's inherent worth, independent of human use or benefit, emphasizing the right of all living beings to exist; 3. Relational values: These reflect the meaningful relationships between people and nature, encompassing cultural identity, spiritual beliefs, and community well-being.

  The IPBES is also currently undertaking a methodological assessment on monitoring biodiversity and nature's contributions to people. This assessment, which will be completed in 2026 and will be considered by the IPBES Plenary at its thirteenth meeting, would be of relevance to this topic going forward[5].

4. Identification of gaps

Based on our experiences and considerations, the team has identified the following gaps. We stress that this list is a point of departure for further conversations. It does not represent a complete list of gaps. We also do not evaluate the feasibility of addressing these gaps.

- Indigenous Knowledge and local knowledge systems are not well captured in the existing list yet, it is essential for conservation and restoration efforts: These knowledge systems are particularly valuable for informing indicators related to Ecosystem-based Adaptation and Nature-based Solutions, offering place-based insights that enhance ecological and cultural relevance.

- Means of Implementation (MoI) indicators are available, but robust metadata development is missing: Clarifying definitions, measurement methodologies, and data sources would improve consistency and comparability across countries and time periods.

[5] For further information see - https://www.ipbes.net/monitoring-assessment

- Ensuring the meaningful inclusion of women, girls, youth, migrants, and persons with disabilities is critical in indicator frameworks: While some of these social groups are mentioned, more attention is needed to systematically address equity and participation across all relevant demographics. This could also include other social dimensions such as urban-rural differentials, intersectionality, and livelihood-specific vulnerabilities.

- An Earth system approach would better support the aggregation of regional or ecosystem-specific indicators into a global framework: This approach supports the capture of effects across major Earth system components (e.g., oceans, cryosphere, atmosphere), while enabling national tailoring through flexible indicator structuring.

- Many indicators fail to link social and ecological dimensions, missing key interactions: For instance, indicators often overlook how ecosystem degradation increases the vulnerability of specific groups, or how integrated conservation efforts benefit both communities and ecosystems.

- The lack of temporal and longitudinal indicators limits the ability to track progress over time: Most current metrics provide static snapshots; there is a need for indicators that measure baseline conditions, adaptive trajectories, and long-term change across decades.

- Qualitative and perception-based indicators are largely missing from existing frameworks: Few indicators capture community perceptions of risk, levels of trust in institutions, or lived experiences of adaptation, all of which are vital for designing responsive and inclusive policies.

5. Other considerations

Through our discussions, we also surfaced some additional considerations. We document them here.

1. Indicators that reflect ambition, not just activity, are more challenging to identify, particularly without specific meta-data information. This reflects more fundamental issues of how to evaluate the reduction in risk and the increase of resilience from climate adaptation. However, indicators that capture some elements of ambition along elements where links from inputs to outcomes are reasonably well established (e.g. gender responsiveness, inclusive governance, education, and availability of and access to finance) can be identified.

2. Tracking progress requires clear and consistent baselines, which are lacking in most of the submitted metrics. Adaptation monitoring and evaluation systems that incorporate longitudinal and systemic indicators can better capture change over time and across systems and are hence a robust means of implementation.

3. While a first set of indicators can be selected, dynamic, inclusive and responsive indicator development will allow for flexibility not just in reviewing performance but in revising indicators themselves in response to scientific and technical advances during the implementation. A process that includes systems to support Parties in their use, as well as regular review and refinement to ensure continued relevance and, could assist in this process.

6. Recommendations for expert work post-SBs

Reflecting on next steps, we provide the following opportunities for this group to continue to improve and refine towards a more definitive and tailored list of indicators for the GGA:

- Refine selected indicators and clarify or develop metadata for each indicator, ensuring transparency around definitions, methodologies, agreed baselines and data sources and access to support consistent use and interpretation.

- Support alignment with international standards for indicator metadata, definitions, data quality (e.g., FAIR (Findable, Accessible, Interoperable, Reusable) and CARE (Collective Benefit, Authority to Control, Responsibility, Ethics) principles and availability, and methodologies, emphasizing evidence-based approaches and the use of high-quality, qualified data, including sustained and extended - where relevant - observing systems.

- Promote the selection of indicators that enable disaggregated reporting, allowing results to be broken down by ecosystem type, ecosystem services, species, region, climate hazards, or vulnerability status, to enhance relevance and equity.

- Encourage the development and integration of regionally specific indicators into global frameworks, using inclusive approaches such as the Earth system (ocean, continents, cryosphere, atmosphere) or ecosystem-type perspectives to ensure both local relevance and global comparability.

- As this refinement progresses, there is a need to continue to work with the other dimensions and adaptation cycle to ensure interlinkages, consistency and alignment.

7. Key sources for additional information

Decision 16/31 of the Conference of the Parties to the Convention on Biological Diversity - https://www.cbd.int/doc/decisions/cop-16/cop-16-dec-31-en.pdf

Decision 16/32 of the Conference of the Parties to the Convention on Biological Diversity - https://www.cbd.int/doc/decisions/cop-16/cop-16-dec-32-en.pdf

Decision 15/4 of the Conference of the Parties to the Convention on Biological Diversity - https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf

Decision 15/5 of the Conference of the Parties to the Convention on Biological Diversity - - https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-05-en.pdf

IPBES (2022). Methodological Assessment Report on the Diverse Values and Valuation of Nature of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. Balvanera, P., Pascual, U., Christie, M., Baptiste, B., and González-Jiménez, D. (eds.). IPBES secretariat, Bonn, Germany DOI: https://doi.org/10.5281/zenodo.6522522IPBES

Appendix A: Full list of indicators and their rationales

# of experts	Main ID	Indicator	Rationale for inclusion	Related indicators
5	1291	Area under restoration	Restoration is one of the main types of nature-based solutions to climate change. This indicator addresses the middle element of the target. Restoration is also explicitly mentioned in the target. This indicator is the headline indicator for Target 2 of the Kunming-Montreal Global Biodiversity Framework. Target 2 is "Ensure that by 2030 at least 30 per cent of areas of degraded terrestrial, inland water, and coastal and marine ecosystems are under effective restoration, in order to enhance biodiversity and ecosystem functions and services, ecological integrity and connectivity." This is indicator 2.1 under the Convention on Biological Diversity and it was adopted through decision 15/5. Its metadata was welcomed in decision 16/31. It can be disaggregated by ecosystem functional group (Global Ecosystem Typology levels 2 and 3 or equivalent), by indigenous and traditional territories, by protected areas or other effective area-based conservation measures and by type of restoration activity. The indicator is high level enough that it covers multiple types of ecosystems.	Similar/identical: 158, 345, 522, 574, 809, 1031, 1034, 1047, 1050, 1290, 1377, 1503, 1507, 1511, 2474, 2762, 2831, 2835, 2981, 2983, 3086, 3088, 3098, 3276, 3284, 3483, 5031, 5037, 5044, 5045, 5119, 5123, 5231, 5312, 6724, 6800 Possible sub-indicators: 148, 171, 283, 1041, 1848, 2137, 2827, 2828, 3094, 3115, 3283, 3827, 4212, 6894, 6699, 6708, 6940, 7032, 7061, 7109, 7133, 1502, 1503, 1661, 1730, 2020, 2023, 2024, 2063, 3037, 3098, 3121, 3640, 3709, 4095, 4097, 4098, 4138, 4212, 4814, 6697, 6794, 6795, 6796, 6839, 6868, 6901, 6902, 6905, 6933, 7022, 7037, 7046, 7095, 7118, 7140, 7160, 7162, 7201, 7202, 7204, 7233, 7242
5	1290	Services provided by ecosystems	Nature's contributions to people, a concept similar to and inclusive of ecosystem services, refers to all the contributions from biodiversity to people's well-being or quality of life. These contributions take various forms, including material contributions, regulating services and	Similar/identical: 1034, 1221, 1290, 2983, 3043, 3088, 5042, 5123 ,3276, 3314, 2831, 3483, 4103, 5042, 5031,

			other non-material contributions including spiritually and culturally. As a result of the ongoing decline of biodiversity, nature's contributions to people are also in decline, with serious implications for human well-being and social cohesion. The restoration, maintenance and enhancement of nature's contributions to people provides an important rationale for the conservation and sustainable use of biodiversity. Nature based solutions and ecosystem-based adaptation depend on ecosystems and biodiversity. The provision of ecosystem services is both an indication of ecosystem health as well as provides an indication of the potential of ecosystems to contribute to adaptation and mitigation. The provision of ecosystem services is also of direct relevance to human wellbeing and links to all of the other targets. This is a headline indicator for Goal B and Target 11 of the Kunming-Montreal Global Biodiversity Framework. Goal B is "Biodiversity is sustainably used and managed and nature's contributions to people, including ecosystem functions and services, are valued, maintained and enhanced, with those currently in decline being restored, supporting the achievement of sustainable development for the benefit of present and future generations by 2050." and Target 11 is "Restore, maintain and enhance nature's contributions to people, including ecosystem functions and services, such as regulation of air, water, and climate, soil health, pollination and reduction of disease risk, as well as protection from natural hazards and disasters, through nature-based solutions and/or ecosystem-based approaches for the benefit of all people and nature." This is indicator B.1 under the Convention on Biological Diversity. It was adopted through decision 15/5. Its metadata was welcomed in decision 16/31. It can be disaggregated for different taxonomic groups. It can be disaggregated by type of ecosystem service, by realm, biome and ecosystem functional group (Global Ecosystem	6695 Possible sub-indicators: 351, 2831, 3276, 3390, 3391, 3392, 3393, 5031

			Typology levels 2 and 3 or equivalent), by indigenous and traditional territories. The indicator is high level enough that it covers multiple types of ecosystem services.	
3	1031	Red list of ecosystems	Ecosystems are one of the main components of biodiversity. Ecosystems are threatened by climate change but also offer potential solutions to climate change (e.g. through restoration) if measures are appropriately designed. The threat status of ecosystems therefore provides information both on how ecosystems are being affected by climate change but also impacts (positive and negative) of response measures. This indicator directly relates to the first part of the target (reducing climate impacts on ecosystems) as well as to the last part (the protection of terrestrial, inland water, mountain, marine and coastal ecosystems;). This indicator compliments the indicator "Extent of natural ecosystems". This is a headline indicator for Goal A and Target 1 of the Kunming Montreal Global Biodiversity Framework. Goal A is "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" Target 1 is "Ensure that all areas are under participatory, integrated, and biodiversity inclusive spatial planning and/or effective management processes addressing land and sea use change, to bring the loss of areas of high biodiversity importance, including ecosystems of high ecological integrity, close to zero by 2030, while respecting the rights of indigenous peoples and local communities." This is headline indicator A.1 of the Convention on Biological Diversity adopted through decision 15/5. Its metadata was welcomed in decision 16/31.	Similar/identical: 240, 535, 3086, 3483, 5039, 5119, 6698, 6736, 6787, 6800, 6869, 7075, 7144, 7147, 7158 Possible sub-indicators: 341,286, 3488, 6984

			The indicator can be disaggregated by realm, biome and ecosystem functional group (Global Ecosystem Typology levels 2 and 3 or equivalent), by indigenous and traditional territories, by protected areas or other effective area-based conservation measures, and by drivers of biodiversity loss (matched to the International Union for Conservation of Nature Threats Classification Scheme). This indicator is at a high enough level that it also covers indicators related to the threats to specific ecosystem types	
3	1288	Red list index	Species are one of the main levels of biodiversity. Their threat status is an indication of the pressures on biodiversity. The Red List Index can be disaggregated to specifically look at the impacts of climate change. Changes in conservation status of species, particularly of those affected by climate change, would indicate the impacts of climate change as well as the effectiveness of measures to adapt to it. This indicator is directly relevant to the first part of the target (Reducing climate impacts on ecosystems and biodiversity) This is a headline indicator for Goal A and Target 4 of the Kunming-Montreal Global Biodiversity Framework. This is indicator A.3 under the Convention on Biological Diversity which was adopted through decision 15/5. Its metadata was welcomed in decision 16/31. It is also an SDG indicator for SDG Target 15.5.1. It can be disaggregated by realm, biome and ecosystem functional group (Global Ecosystem Typology levels 2 and 3 or equivalent), by migratory species, and by drivers of biodiversity loss (matched to the International Union for Conservation of Nature Threats Classification Scheme) This indicator is high level and could be applied/used in most countries. It would address several of the other related species' indicators.	Similar/identical: 1032, 3087, 3529 , 5022, 5040, 5121, 6720, 7213 Possible sub-indicators: 194, 196, 242, 269, 285, 303, 305, 306, 307, 336, 373, 374, 1044, 1500, 1514, 2139, 3281, 5121, 6716, 6734, 6746, 6925, 7222 are possible sub-indicators

2	1684	Number of early-warning systems installed	Early warning systems are an important adaptive measure for extreme environmental conditions, such as exacerbated from climate change, using integrated communication systems to support diverse sectors and communities to prepare for climate-related extreme events. A successful EWS saves lives, infrastructures, land and jobs and supports long-term sustainability.	Similar/identical: 538, 2344, 1684, 1994, 3663, 4411, 4563, 7015
2	5124	Extent of natural ecosystems	Ecosystems are one of the main components of biodiversity. They are affected by climate change. Their loss (particularly of high carbon ecosystems) has a bearing on climate change and adaptation. Conversely their conservation and restoration is an important method of adaptation to the effects of climate change. This indicator directly relates to the first part of the target (reducing climate impacts on ecosystems) as well as to the last part (the protection of terrestrial, inland water, mountain, marine and coastal ecosystems;). This indicator complements the indicator "Red list of ecosystems" This is a headline indicator for Goal A and Target 1 of the Kunming-Montreal Global Biodiversity Framework. Goal A is "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." Target 1 is "Ensure that all areas are under participatory, integrated, and biodiversity inclusive spatial planning and/or effective management processes addressing land and sea use change, to bring the loss of areas of high biodiversity importance, including ecosystems of high ecological integrity, close to zero by 2030, while respecting the rights of indigenous peoples and local communities. " This is indicator A.2 under the Convention on Biological Diversity adopted through decision 15/5. Its metadata was welcomed in decision	Identical/similar: 1287 Possible sub-indicators: 7, 102, 108, 215, 301, 332, 334, 335, 339, 447, 531, 573, 599, 1056, 1497, 1057, 1512, 1619, 1815, 1926, 1927,1933, 1935, 1939, 1940, 2061, 2062, 2280, 2488, 2492, 2762, 3085, 3093, 5025, 5229, 7211

			16/31. This indicator is at a high level so that it would capture changes in multiple ecosystem types. As such it would be relevant globally. It can be disaggregated by realm, biome and ecosystem functional group (Global Ecosystem Typology levels 2 and 3 or equivalent), by indigenous and traditional territories, and by natural and seminatural, ecosystem.	
2	1289	The proportion of populations within species with an effective population size greater than 500	This indicator is one of the few available global indicators of genetic diversity of species. Genetic diversity is one of the main elements of biodiversity and is key to adaptability/resilience. It addresses the first part of the target (reducing climate impacts on ecosystems and biodiversity). This is a headline indicator for Goal A and Target 4 under the Kunming-Montreal Global Biodiversity Framework. Goal A is "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." Target 4 is "Ensure urgent management actions to halt human induced extinction of known threatened species and for the recovery and conservation of species, in particular threatened species, to significantly reduce extinction risk, as well as to maintain and restore the genetic diversity within and between populations of native, wild and domesticated species to maintain their adaptive potential, including through in situ and ex situ conservation and sustainable management practices, and effectively manage human-wildlife interactions to minimize human-wildlife conflict for coexistence." This is indicator A.4 under the Convention on Biological Diversity which was adopted through	Similar/identical: 267, 340, 1033, 1289, 5021, 5041 Possible sub-indicators: 6, 308

			decision 15/5. Its metadata was welcomed in decision 16/31.	
2	1292	Coverage of protected areas and other effective area-based conservation measures	Protected areas are one of the main types of ecosystems-based adaptation and nature-based solutions to climate change. They are also a key policy response to biodiversity loss and protection and are therefore key in reducing the impacts of climate change. This indicator addresses the first element of the target. Further protection is noted in the last part of the target. This is the headline indicator for Target 3 of the Kunming-Montreal Global Biodiversity Framework. Target 3 is "Ensure and enable that by 2030 at least 30 percent of terrestrial, inland water, and of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem functions and services, are effectively conserved and managed through ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures, recognizing indigenous and traditional territories where applicable, and integrated into wider landscapes, seascapes and the ocean, while ensuring that any sustainable use, where appropriate in such areas, is fully consistent with conservation outcomes, recognizing and respecting the rights of indigenous peoples and local communities, including over their traditional territories." This is indicator 3.1 under the Convention on Biological Diversity which was adopted through decision 15/5. Its metadata was welcomed in decision 16/31. It can be disaggregated by protected areas and other effective area-based conservation measures; by realm, biome and ecosystem functional group (Global Ecosystem Typology levels 2 and 3 or equivalent), by areas of importance for biodiversity, by effectiveness (protected area management effectiveness)by governance type and by indigenous and traditional territories. The indicator is high level and would be	Similar/identical: 1265, 1292, 2982, 3282, 3917, 3986 Possible sub-indicators: 170, 226, 240, 282, 333, 337, 338, 445, 446, 448, 524, 525, 533, 534, 545, 598, 1038, 1040, 1580, 1686, 1938, 2007, 2616, 2833, 3497, 3559, 5035, 5046, 5232, 5233, 5234, 5311, 5312, 6685, 6761, 6788, 6836, 6848, 6871, 6906, 6907, 6922, 6923, 7064, 7066, 7068, 7070, 7170, 7215

			applicable in all countries but could also be disaggregated to focus on specific ecosystem types.	
2	1295	Average share of the built-up area of cities that is green or blue space for public use for all	This indicator is related to land use change but has a specific focus on urban environments. As such it is particularly relevant to adaptation and the use of ecosystem based/nature-based solutions to climate change. It also links to the target on infrastructure under the Global Goal on Adaptation. This is the headline indicator for Target 12 of the Kunming-Montreal Global Biodiversity Framework. Target 12 is "Significantly increase the area and quality and connectivity of, access to, and benefits from green and blue spaces in urban and densely populated areas sustainably, by mainstreaming the conservation and sustainable use of biodiversity, and ensure biodiversity-inclusive urban planning, enhancing native biodiversity, ecological connectivity and integrity, and improving human health and well-being and connection to nature and contributing to inclusive and sustainable urbanization and the provision of ecosystem functions and services." This is indicator 12.1 under the Convention on Biological Diversity which was adopted through decision 15/5. Its metadata was welcomed in decision 16/31. It can be disaggregated by space type: by realm, biome and ecosystem functional group (Global Ecosystem Typology levels 2 and 3 or equivalent).	Possible sub-indicators: 216, 238, 239, 1262, 1264, 2699, 4716, 5036, 5334
2	3279	Number of countries with policies to minimize the impact of climate change and ocean acidification on biodiversity and to minimize negative and foster positive impacts of climate action on biodiversity	This indicator is a measure of the number of countries with policies in place to minimize the impact of climate change and ocean acidification on biodiversity and to minimize negative and foster positive impacts of climate action on biodiversity. As such it is directly relevant to this target of the Global Goal on Adaptation and provides a measure of policy action. The indicator is broad so that it can capture a range of policies, including many of the issues that have been suggested in other indicator proposals. As such the indicator is broadly applicable in different national circumstances. This is an indicator for Target 8 of the Kunming-	Similar/identical: 6809, 6811,

			Montreal Global Biodiversity Framework. Target 8 is "Minimize the impact of climate change and ocean acidification on biodiversity and increase its resilience through mitigation, adaptation, and disaster risk reduction actions, including through nature-based solution and/or ecosystem-based approaches, while minimizing negative and fostering positive impacts of climate action on biodiversity." This is indicator 8.b under the Convention on Biological Diversity and was adopted through decision 16/31. The indicator is calculated on the basis of responses to specific questions in the national reporting template agreed by Parties to the Convention on Biological Diversity. The next round of national reporting under the Convention on Biological Diversity has a deadline of February 2026 and all the reports will be made publicly accessible.	
2	2842	Number of countries taking action towards the full, equitable, inclusive, effective and gender-responsive representation and participation in decision-making and access to justice and information related to biodiversity by indigenous peoples and local communities, respecting their cultures and their rights over lands, territories, resources and traditional knowledge, as well as by women and girls, children and youth, and persons with disabilities, and the full protection of environmental human rights defenders	This indicator is a measure of the number of countries which have taken steps to promote inclusivity. The indicator is broad so that it can capture a range of policies, including many of the issues that have been proposed in other indicator proposals. As such the indicator is broadly applicable in different national circumstances. This is an indicator for Target 22 of the Kunming-Montreal Global Biodiversity Framework. Target 22 is "Ensure the full, equitable, inclusive, effective and gender-responsive representation and participation in decision-making, and access to justice and information related to biodiversity by indigenous peoples and local communities, respecting their cultures and their rights over lands, territories, resources, and traditional knowledge, as well as by women and girls, children and youth, and persons with disabilities and ensure the full protection of environmental human rights defenders." This is indicator 22.b under the Convention on Biological Diversity and was adopted through decision 16/31. The indicator is calculated on the basis of responses to specific questions in the national reporting template agreed by Parties to the Convention on Biological Diversity. The next round of national reporting under the Convention on Biological Diversity has a deadline of February 2026 and all the reports will be made publicly accessible.	Possible sub-indicators: 6829, 7089, 7116, 1589, 3569, 6700, 6701, 6702, 6703, 6704, 7074, 7084, 7090, 7101, 7105, 7115, 7120, 106, 6844, 7124, 7125, 7126

2	345	Government spending on conservation and sustainable use of biodiversity and ecosystems over total Government Budget	This indicator reflects a nation's financial commitment to biodiversity conservation and sustainable resource management, highlighting the priority given to safeguarding ecosystems within the broader economic framework, a crucial factor in supporting adaptation efforts (12a). (Global SDG 15.a.1 (a)- proxy)	
1	9d01	Number of countries with NAPs and NDCs that incorporate nature-based solutions (NbS) for adaptation, categorized by the stage of NbS implementation (e.g., identified, planned, piloted, scaled-up, mainstreamed) and reporting on key outcomes related to adaptive capacity, resilience, and vulnerability reduction.	This unified indicator effectively assesses the global progress of integrating nature-based solutions (NBS) or Ecosystem-based Adaptation (EbA) into adaptation strategies by capturing policy commitments (NAPs/NDCs), implementation stages, and demonstrable outcomes across countries, providing a comprehensive measure of progress toward achieving adaptation goals (12a and 12b).	This indicator is based on: 2767, 5125, 3090, 3280
1	9d02	Domestic public funding on conservation and sustainable use of biodiversity and ecosystems	This is an indicator of the domestic funding available for biodiversity. As such it is directly relevant to the means of implementation available. This indicator is a headline indicator for Goal D and Target 19 of the Kunming-Montreal Global Biodiversity Framework. This is indicator D.2 under the Convention on Biological Diversity which was adopted through decision 15/5. Its metadata was welcomed in decision 16/31.	Possible sub-indicators to this one: 141, 292, 3569, 5235, 6699, 6701, 6706, 7178

1	1516	Rate of sea-level-rise	This indicator has been proposed once, and other related indicators had been proposed as well. Sea level rise is a slow onset process, and will increase the vulnerability and limits adaptation options as continued and accelerating sea level rise will encroach on coastal settlements and infrastructure and commit low-lying coastal ecosystems to submergence and loss; poses risks to coastal cities, settlements and infrastructure; increases flood risks, coastal erosion and leads to decline in coastal fisheries resources. Accounting for the rate of sea level rise is hence important information for adaptation planning. This indicator is implemented in the WMO global climate indicator framework.	Similar/identical 1858, 372, 240, 3664, 2589, 1685 Possible sub-indicators: 1858, 372, 240, 3664, 2589, 1685
1	2572	Mean temperature anomaly (compared to climate normal 1991 - 2020) for components (atmosphere, continents, ocean, inland water and cryosphere)	The anomaly of temperature for all Earth system components (atmosphere, ocean, land, cryosphere) is a key climate indicator. A specific example is the political target of the Paris agreement (1.5°C). The climate normal has been changed to follow WMO. Monitoring the temperature anomaly will allow for tracking the long-term trend of warming from global to regional scale, and its implications, such as continued continental, atmospheric, ocean warming, and melting of ice, and its implications for ecosystems (terrestrial, marine, freshwater and cryosphere). These are relevant information for adaptation planning and implementation. This indicator is implemented in the WMO global climate indicator framework.	Similar indicators: 1391, 344, 3529, 399, 3528, 3529, 5301 Possible sub-indicators: 344, 1391, 2572, 3529, 399, 3528, 3529, 5301
1	1399	Heat wave index and duration (atmosphere, ocean, freshwater)	This indicator is relevant for tracking temperature extremes in the atmosphere. It has been modified to account also for temperature extremes in aquatic systems (ocean, freshwater), and to combine both, the heat index and duration of a heat wave. The Heat Index incorporates the information on ambient temperature and relative humidity to assess the risks during heat waves and warn about the conditions dangerous for human health. Heatwaves in aquatic systems have implications for all types of ecosystems and their biodiversity with socio-economic implications (e.g., food security, fisheries, human health, tourism). These are relevant information for adaptation planning and implementation, and early warning systems.	Similar indicators: 1399, 1398, 1401

1	2590	Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies (SDG target 1.5.4)	This indicator is chosen as it is implemented in the SDG framework. Increasing the proportion of local governments that adopt and implement local disaster risk reduction strategies, which the Sendai Framework calls for, will contribute to sustainable development and strengthen economic, social, health and environmental resilience. Their economic, environmental and social perspectives would include poverty eradication, urban resilience, and climate change adaptation.	Similar: 1994, 1045, 3285, 2595
1	6	Proportion of fish stocks within biologically sustainable levels	This indicator has been chosen as it is part of the SDG framework (SDG14, target 14.4.10) aiming to conserve and sustainably use the oceans, seas and marine resources for sustainable development. Particularly the goal is by 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics. This is essential for adaptation at global scale for global nutrition & food security.	Similar: 5304, 5232, 3663, 1684, 1516, 2589, 342, 1391, 344, 2572, 1398, 2590, 1045, 2831, 3033, 2983, 1290, 5123, 2981, 1291, 345, 2835, 5047, 1292, 1042, 5043, 5023
1	9d03	International public funding, including official development assistance for conservation and sustainable use of biodiversity and ecosystems	This is an indicator of the international funding, including through official development assistance, available for biodiversity. As such it is directly relevant to the means of implementation available. This indicator is a headline indicator for Goal D and Target 19 of the Kunming-Montreal Global Biodiversity Framework. This is indicator D.1 under the Convention on Biological Diversity which was adopted through decision 15/5. Its metadata was welcomed in decision 16/31.	Possible sub-indicators: 141, 292, 3569, 5235, 6699, 6701, 6706, 7178
1	9d04	Private funding (domestic and international) on conservation and sustainable use of biodiversity and ecosystems	This is an indicator of the international and domestic funding available for biodiversity. As such it is directly relevant to the means of implementation available. This indicator is a headline indicator for Goal D and Target 19 of the Kunming-Montreal Global Biodiversity Framework. This is indicator D.3	Possible sub-indicators: 141, 292, 3569, 5235, 6699, 6701, 6706, 7178

			under the Convention on Biological Diversity which was adopted through decision 15/5. Its metadata was welcomed in decision 16/31.	
1	9d05	Number of countries that have taken significant action to strengthen capacity-building and development and access to and transfer of technology, and to promote the development of and access to innovation and technical and scientific cooperation	This indicator is a measure of the number of countries which have taken steps to increase capacity and technology transfer which are essential to address the target. As it is broad it would cover a range of policies, including many of the issues that have been proposed in the submissions on more specific policy types. This is an indicator for Target 20 of the Kunming-Montreal Global Biodiversity Framework. Target 8 is " Strengthen capacity-building and development, access to and transfer of technology, and promote development of and access to innovation and technical and scientific cooperation, including through South-South, North-South and triangular cooperation, to meet the needs for effective implementation, particularly in developing countries, fostering joint technology development and joint scientific research programmes for the conservation and sustainable use of biodiversity and strengthening scientific research and monitoring capacities, commensurate with the ambition of the goals and targets of the framework." This is indicator 20.b under the Convention on Biological Diversity and was adopted through decision 16/31. The indicator is calculated on the basis of responses to specific questions in the national reporting template agreed by Parties to the Convention on Biological Diversity. The next round of national reporting under the Convention on Biological Diversity has a deadline of February 2026 and all the reports will be made publicly accessible.	Possible sub-indicators: 1683, 1736, 2460, 3662, 204, 209, 602, 1517, 2324, 2347, 7173
1	5028	Ecosystem Integrity Index	The Ecosystem Integrity Index (EII) assesses the health of ecosystems by considering components (soil quality, species richness) and processes (such as water and nutrient cycling - what could be used to assess the ability of ecosystems to	

			sustain other thematic targets), providing a measure of ecosystem function, which is vital for climate resilience and adaptation (12b).	
1	3277	Bioclimatic Ecosystem Resilience Index	This indicator was presented in two different submissions. The BERI is a valuable indicator because it quantifies ecosystem resilience by integrating multiple factors, providing a holistic assessment for informed conservation and management decisions, particularly relevant for understanding the capacity of ecosystems to adapt to climate change (12a). The Bioclimatic Ecosystem Resilience Index (BERI) measures the capacity of natural ecosystems to retain species diversity in the face of climate change, as a function of ecosystem area, connectivity and integrity. This metric is calculated by CSIRO based on land use maps and species occurrence data. Ecological integrity is used in CBD (target 1 and 2 GBF)	Similar indicators: 5122
1	9d06	Number of Nature-based Solutions (NbS) projects implemented, categorized by their stage of implementation (e.g., pilot, scaled-up, mainstreaming) and reporting on key outcomes related to adaptive capacity, resilience, and vulnerability reduction.	This unified indicator effectively tracks the progress and impact of nature-based solutions in adaptation by encompassing not just the number of projects but also their implementation stages and demonstrable contributions to resilience and vulnerability reduction, which ensures that ecosystems contribute to climate adaptation while providing co-benefits such as biodiversity conservation and disaster risk reduction. (12a and 12b).	Based on 575, 3090, 3353,

1	9d07	Extent of natural and semi-natural ecosystems with high ecological integrity as a proportion of total area of the country	This indicator quantifies the proportion of natural and semi-natural areas and ecosystems with high ecological integrity within a country and the extent of intact natural ecosystems, highlighting their scarcity globally and serving as a crucial benchmark for understanding the human-induced degradation of ecosystems and the urgent need for conservation and restoration efforts to enhance adaptation, which allows for the assessment of conservation effectiveness, the maintenance of ecosystems that are more resilient to climate change (12a).	Based on 1287
1	9d08	Managed terrestrial, inland waters, coastal and marine areas under climate-resilient management practices as a proportion of the total area of the country		Based on 3284
1 expert	3089	Policy and/or incentives for green infrastructure as nature-based solutions	This indicator was presented in two different submissions. This indicator tracks the implementation of policies and regulations that promote green infrastructure as nature-based solutions, reflecting the level of policy commitment to integrating nature-based solutions into development and adaptation, which allow countries and subnational governments to take nature-based climate action, fostering ecosystem resilience while enhancing human well-being and climate adaptation efforts (12a). CBD Indicator 21	Similar: 5044
1	142	Conservation of forest genetic resources	The indicators selected should address the three components of biodiversity as described under Article 2 of the Convention on Biological Diversity "Biological diversity" means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems"). As such the selection of indicators should address biodiversity at the species, ecosystem and genetic level.	Similar: 1505, 2699, 3036, 3044)

1	7247	Number of training programmes implemented regarding ecosystem services and ecosystem restoration/ Number of individuals who have received training	Capacity and training are key elements of means of implementation.	Similar: 528, 1059, 1408, 1506, 1736, 3194, 6840, 6928, 6931, 6935, 7019, 7053, 7172, 7224, 7239, 7244
1	5125	No. of people benefiting from Ecosystem- Based Adaptation (EbA) interventions/ projects	Ensuring broad-based benefits accrue from these interventions.	Similar: 090, 3353, 5125, 5044
1	9d07	Level of implementation of climate actions in National Biodiversity Strategy and Action	Related to 10a-10d.	Similar: 147, 602, 4719, 6829, 6920, 7234
1	5302	Investment for ecosystem and biodiversity	Investment is related to mobilization of financial resources.	Similar: 141, 2591, 6827, 7178
1	9d05	SDG Indicator 15.b.1	SDG indicator with two parts (a) Official development assistance on conservation and sustainable use of biodiversity; and (b) revenue generated and finance mobilized from biodiversity-relevant economic instruments	Similar: 141, 2591, 6827, 7178

1	2830	5.1 Number of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type and scale) Source: (Adaptation Fund Strategic Results Framework)	We note that there is an update to the Adaptation Fund framework: AFB/B.44/11 dated April 10-11, 2025. https://www.adaptation-fund.org/wp-content/uploads/2025/03/AFB.B.44.11-Update-to-the-Strategic-Results-Framework-of-the-Adaptation-Fund.pdf. In this document, outcome 5.1 reads: "Output 5.1: Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability". Its indicator 5.1.1. is " Ecosystems and natural resources targeted by activities to improve protection, restoration, and/or management [# of resources, by type]".	Similar: 2849, 2865
1	602	Number of community-based climate adaptation strategies implemented aimed at enhancing local capacity to manage and respond to changes and hazards related to ecosystems	Related to ensuring capacity and training as well as related to locally led adaptation.	Original indicator is "Number of community-based climate adaptation strategies implemented aimed at enhancing local capacity to manage and respond to changes and hazards related to cryosphere dynamics."
1	3392	Proportion of change (delta) in adaptive capacity between two reference years for the Biodiversity and Ecosystem Services dimension	Associated with measuring progress over time via enhancing adaptive capacity.	
1	3284	Managed terrestrial, inland waters, coastal and marine areas under climate-resilient management practices (%, ha, km)	Related to 10a-10d	

1	3276	Changes in provision of ecosystem services critical for climate adaptation	Associated with measuring progress over time via ecosystem service provisioning.	
1	2831	Total climate regulation services provided by ecosystems by ecosystem type	Disaggregation of indicator 8.b adopted under the CBD 8.2.1.	

Appendix B: Engagement with External Stakeholders

For transparency and accountability, we also document one interaction that the team had with an external stakeholder.

1. **Conservation International:** They shared the following insights with the team related to indicators: Potential classes of ecosystem indicators discussed included: **Protected and/or Restored areas** and other effective areas based conservation methods - e.g. Proportion of coastal blue carbon systems (mangroves, seagrass, tidal marsh) restored or protected, or area of degraded land restored,; **Managed areas** - e.g. number of countries that adopt and implement NAPs/NDCs that incorporate NbS and EbA, or percentage area of managed terrestrial, inland, coastal and marine areas; **Vulnerability assessment** undertaken - that is related to climate change; **Disaster mitigation** - e.g. number of nature-based or hybrid infrastructure projects in coastal-marine areas for the prevention, mitigation and reduction of climate risks.