Using Spatial Data to Support the Development of Plans for National Monitoring Systems

for the

Kunming-Montreal Global Biodiversity Framework

Disclaimer

This technical guidance document is meant to serve as a resource that Parties and others may wish to consider as they work on the development of national monitoring plans for the Kunming-Montreal Global Biodiversity Framework, as an early step towards monitoring implementation of the Framework. It does not replace or qualify the Convention on Biological Diversity (CBD) Conference of Parties (COP) Decisions or related information that is, or will be, provided by the CBD. Countries are welcome to use, adapt, or disregard this guidance, depending on existing capacities, resources, and on-the-ground realities.

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Update Notes

This is the third version of the publication, released in September 2025. It has been updated following the decisions at the Conference of Parties (COP16) to the CBD (CBD/COP/DEC/16/31*). All data referenced in Annex 2 are the global spatial data provided in the indicator metadata (CBD/COP/16/INF/3/Rev.1) which was prepared by the Ad Hoc Technical Expert Group (AHTEG) on Indicators for the Kunming-Montreal Global Biodiversity Framework with support from the Secretariat.

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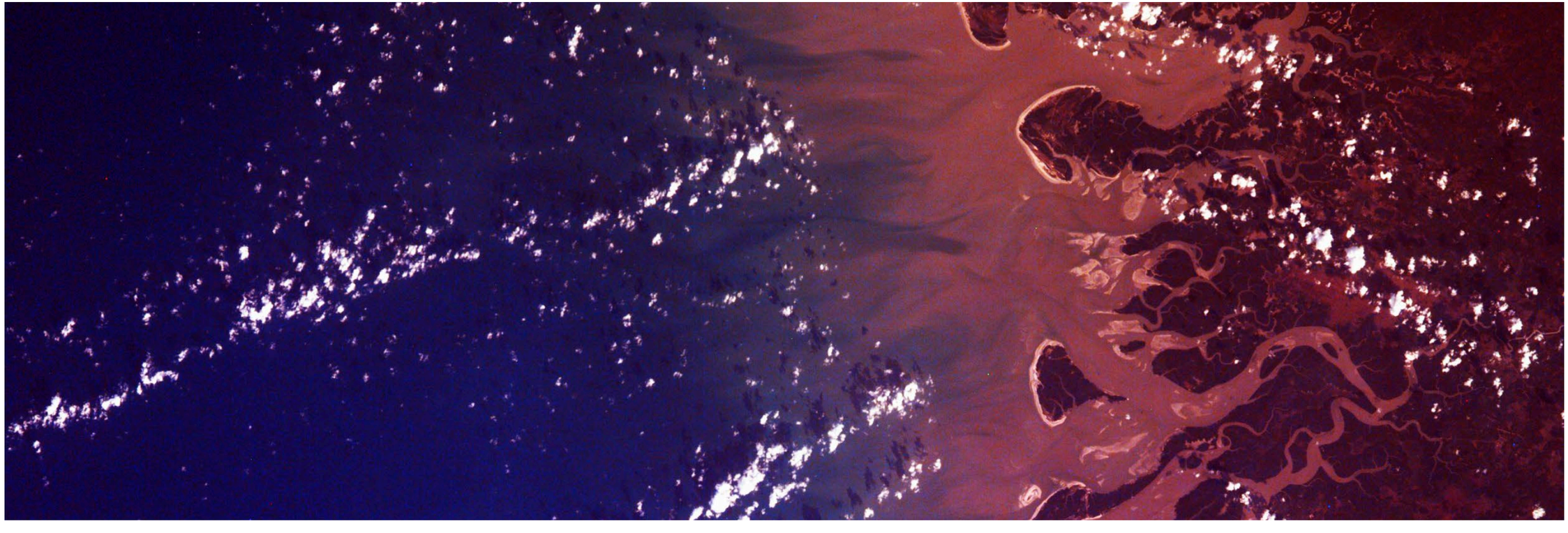
Executive Summary

This guidance aims to support Parties to undertake a detailed assessment of available national spatial data and spatial tools that can be used as part of a national monitoring system for the Kunming-Montreal Global Biodiversity Framework. Parties can use this document to: (1) review indicators that require spatial data for their calculation, (2) identify, view, and download the spatial data that are referenced in the indicator metadata associated with Decision 15/5, and (3) access checklists and guidance to identify existing national spatial data as well as national data gaps. Parties can also view current and forthcoming resources available through the UN Biodiversity Lab (UNBL) spatial data platform that could be used, subject to their national needs and preferences, as part of a monitoring action plan in support of national implementation of the Kunming-Montreal Global Biodiversity Framework and its Monitoring Framework.

This guidance is an offering for the Global Biodiversity Framework Early Action Support (EAS) Project, a country-led effort funded by the Global Environment Facility (GEF) to fast track readiness and early actions to implement the Kunming-Montreal Global Biodiversity Framework. It was developed by the United Nations Development Programme (UNDP), in collaboration with the UN Biodiversity Lab Partnership. This guidance can support action towards EAS Project Component 2 on monitoring and is intended to be a close companion to the Guidance for Developing Plans for National Monitoring Systems in Support of the Kunming-Montreal Global Biodiversity Framework.

For additional support around using spatial data to support planning for the Kunming-Montreal Global Biodiversity Framework, UNDP-supported countries can additionally access national dossiers prepared for EAS Project Component 3 on Spatial Data to Support Policy Alignment with the Kunming-Montreal Global Biodiversity Framework. These dossiers are early products that provide examples of types of useful data for early action on policy alignment and do not yet incorporate the data recommended for use in the Monitoring Framework of the Kunming-Montreal Global Biodiversity Framework that are introduced in this guidance. Further updates in 2024-25 will work to integrate the information available in both these documents.



1

Introduction

1.1

The Kunming Montreal Global Biodiversity Framework and the Monitoring Framework

The Convention on Biological Diversity (CBD) is the overarching instrument for biodiversity governance at the global level, towards the conservation of biodiversity, the sustainable use of its components, and ensure the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. At the 15th meeting of the Conference of the Parties (COP15) to the CBD, held in December 2022, countries adopted the Kunming-Montreal Global Biodiversity Framework[1] to put nature on a path to recovery by 2030, and to live in harmony with nature by 2050. The framework features 4 goals and 23 targets which span three broad topics: reducing threats to biodiversity, meeting people's needs through sustainable use and benefit-sharing, and tools and solutions for implementation and mainstreaming.

The associated Monitoring Framework for the Kunming-Montreal Global Biodiversity Framework[2] adopted in Decision 15/5 aims to provide consistent, standardized, and scalable tracking of the global goals and targets. The Framework includes a set of headline indicators that capture the overall scope of the goals and targets and a number of component and complementary indicators that allow a more detailed analysis.

The types of indicators – as defined in Decision 15/5 – are as follows:

- **Headline indicators:** "A minimum set of high-level indicators, which capture the overall scope of the goals and targets of the Kunming-Montreal Global Biodiversity Framework to be used for planning and tracking progress. They are nationally, regionally and globally relevant indicators validated by Parties. These indicators can also be used for communication purposes."
- **Global level indicators collated from binary yes/no responses in national reports:** "Global indicators based on responses to yes/no questions to be included in the national reporting template. They will provide a count of the number of countries having undertaken specified activities."
- **Component indicators:** "A list of optional indicators that, together with the headline indicators, cover components of the goals and targets of the Kunming-Montreal Global Biodiversity Framework which may apply at the global, regional, national, and subnational levels."
- **Complementary indicators:** "A list of optional indicators for thematic or in-depth analysis of each goal and target which may be applicable at global, regional, national, and subnational levels."

1 https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf
2 https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-05-en.pdf

The indicators adopted for each of the goals and targets of the Global Biodiversity Framework are set out in Annex 1 of Decision 15/5. Decision 15/6 on the Mechanisms for Planning, Monitoring, Reporting, and Review[3] urges Parties to use the headline indicators for national planning processes and requests they use them for monitoring and reporting, supplemented by component and complementary indicators and other national indicators, according to their national circumstances.

Decision 15/5, Annex 1, states that "headline indicators use methodologies agreed by Parties and are calculated at a national level based on national data from national monitoring networks and national sources, recognizing that in some cases headline indicators may need to draw on global datasets. If national indicators are not available, then the use of global indicators at a national level must be validated through appropriate national mechanisms."

To further operationalize the monitoring framework for the Kunming-Montreal Global Biodiversity Framework, the COP15, through Decision 15/5, established an Ad Hoc Technical Expert Group on indicators (AHTEG). The AHTEG has four main tasks:

a. "To provide technical advice on remaining and unresolved issues relating to the monitoring framework, as outlined by the Conference of the Parties at its fifteenth meeting;

b. To provide guidance to Parties on the use of indicators in national planning and reporting, including by reviewing how indicators are proposed for capture in the Online Reporting Tool for national reporting;

c. To provide guidance to Parties on ways to fill temporal and spatial data gaps, including through the use of big data, citizen science, community-based monitoring and information systems, remote sensing, modeling and statistical analysis, and other forms of data and other knowledge systems, recognizing the specific challenges faced by developing country Parties to develop and access information tools;

d. To provide advice on the existing capacity, gaps and needs in terms of capacity development, technology transfer and financing needs related to the monitoring of the Framework."

Updates to the indicators in Annex 1 were discussed at the twenty-sixth meeting of the Subsidiary Body on Scientific, Technical, and Technological Advice (SBSTTA-26) and provided as a recommendation to the sixteenth Conference of the Parties (COP16) in CBD/SBSTTA/26/L.10. This guidance has been updated following the outcomes of COP16 to the CBD (CBD/COP/DEC/16/31*). All data referenced in Annex 2 are the global spatial data provided in the indicator metadata (CBD/COP/16/INF/3/Rev.1) which was prepared by the Ad Hoc Technical Expert Group (AHTEG) on Indicators for the Kunming-Montreal Global Biodiversity Framework with support from the Secretariat.

3 https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-06-en.pdf

1.2

How to use this document

This guidance has been developed as a close companion to the related Guidance for Developing Plans for National Monitoring Systems in Support of the Kunming-Montreal Global Biodiversity Framework, with the goal of supporting countries to take early action to undertake a detailed assessment of available spatial data and spatial tools that can be used as part of their national monitoring system. Parties can use this document to: (1) review indicators that require spatial data for their calculation, (2) identify, view, and download the spatial data that are referenced in the indicator metadata associated with COP16 on the Monitoring Framework (CBD/COP/DEC/16/31*), which are available on the Kunming-Montreal Global Biodiversity Framework indicators website and in (CBD/COP/16/INF/3/Rev.1) and (3) access checklists and guidance for to identify existing national spatial data as well as national data gaps. Parties can also access an overview of resources available through the UN Biodiversity Lab (UNBL) spatial data platform that could be used, subject to their national needs and preferences, as part of a monitoring action plan in support of national implementation of the Kunming-Montreal Global Biodiversity Framework and its Monitoring Framework.

This document is organized into three major sections.

1. **Introduction:** provides an overview of the Kunming-Montreal Global Biodiversity Framework and its Monitoring Framework and summarizes the purpose of the guidance.
2. **Assessing national spatial data capacity and needs for the Monitoring Framework of the Kunming-Montreal Global Biodiversity Framework:** offers an overview of the indicators that can be calculated using spatial data, summarizes the global spatial data referenced in the Monitoring Framework, offers a checklist to support the identification of relevant national spatial data, explores how national and global data can be combined for use, and provides recommendations for validation of global data where needed.
3. **Using UNBL to support the development of a plan for national monitoring systems for the Kunming-Montreal Global Biodiversity Framework:** summarizes current and new functionalities that will be released on UNBL to support planning, implementation, monitoring, and reporting on the Global Biodiversity Framework. The goal of these functionalities is to offer countries tools that could be used seamlessly with existing national resources to develop a customized spatial plan and monitoring system that meet national needs.

The intended users of this document are the government staff, along with the contractors and collaborators they will work with, developing national monitoring system action plans as part of NBSAP (National Biodiversity Strategies and Action Plans) revision. These government staff should include those responsible for national reporting to the CBD, as well as any additional staff and collaborators using indicators and related information to support NBSAP planning and implementation.

The United Nations Development Programme (UNDP) developed this guidance, in collaboration with the UNBL Partnership, including the Secretariat to the Convention on Biological Diversity (SCBD), the United Nations Environment Programme (UNEP), and the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC). It is a product of the Global Biodiversity Framework Early Action Support (EAS) Project (Box 1), funded by the Global Environment Facility (GEF). It is intended to be used along with other guidance documents produced under the EAS Project.

For additional support around using spatial data to support planning for the Kunming-Montreal Global Biodiversity Framework, UNDP-supported countries can additionally access national dossiers prepared for EAS Project Component 3 on 'Spatial Data to Support Policy Alignment with the Kunming-Montreal Global Biodiversity Framework'. These dossiers are early products that provide examples of types of useful data for early action on policy alignment and do not yet incorporate data recommended for use through the Monitoring Framework of the Kunming-Montreal Global Biodiversity Framework that are introduced in this guidance. Further updates in 2024-25 will work to integrate the information available in both these documents.

Box 1. EAS Project overview

The EAS Project is a government-led effort funded by the GEF to fast track readiness and early actions to implement the new framework in this decade. It provides financial and technical support to 138 developing, small island, and middle-income nations in their work to align their NBSAPs with the Kunming-Montreal Global Biodiversity Framework. Efforts focus on four components: national biodiversity targets, monitoring, policy, and finance frameworks. An inclusive, whole-of-government and society approach is followed during this process that strives to account for gender equity, and the full and effective participation of Indigenous Peoples, local communities, and youth. The project is country-led with joint implementation support from the UNDP and the UNEP, in partnership with the CBD Secretariat and the GEF.

2

Assessing national spatial data capacity and needs for the Monitoring Framework of the Kunming-Montreal Global Biodiversity Framework

2.1

Indicators for which spatial data are essential

Spatial data will play a critical role for monitoring progress towards the implementation of various goals and targets of the Kunming-Montreal Global Biodiversity Framework, since many indicators under the Monitoring Framework require spatial data for their calculation. The UNBL Partnership completed a rapid assessment of the indicators for the Monitoring Framework to provide an overview of indicators that can be calculated using spatial data. To do this, we analyzed the published indicator methodology as of June 2025, including the Decision adopted by the Conference of the Parties to the Convention at COP16 (CBD/COP/DEC/16/31*) and the associated metadata for each indicator (available on the Kunming-Montreal Global Biodiversity Framework indicators website and in CBD/COP/16/INF/3/Rev.1. For this initial analysis, we focused on the headline indicators and component indicators.

We identified indicators as falling within one of two classes: spatial and non-spatial (Table 1). Indicators that are reported as statistics at the country level, but are also visualizable as maps (e.g., a world map representing different country-level values) are classified as non-spatial.

Table 1. Definitions used in this analysis to classify indicators

Spatial	Nonspatial
• Methodology is available. • Indicator metadata refers to spatial data. • Spatial data is encouraged for indicator calculation or to provide disaggregated information required by the indicator on the metadata page.	• Methodology is available. • Indicator metadata does NOT refer to spatial data/information.

Through this assessment, we found that of the indicators in the Monitoring Framework, 41% of headline indicators and 36% of component indicators have methodology encouraging the use of spatial data based on indicator metadata associated with Decision 15/5 (Figure 1). These numbers include indicators identified as 'Spatial' based on the definitions in Table 1. Binary indicators require no use of spatial data and were treated as a separate class in this analysis. The detailed breakdown of headline and component indicators that can be calculated using spatial data is available in Annex 1. In summary, the percentage of headline and component indicators encouraging use of spatial data in the major sections of the Monitoring Framework is as follows:

- **Reducing threats to biodiversity (Targets 1-8):** All the targets in this section have at least one indicator that can be calculated using spatial data or for which spatial data can be used to provide disaggregated information required by the indicator. In total, 52% of the headline and component indicators for Targets 1-8 require or encourage the use of spatial data.
- **Meeting people's needs through sustainable use and benefit-sharing (Targets 9-13):** All targets except Target 13 in this section have at least one indicator that can be calculated using spatial data or for which spatial data can be used to provide disaggregated information required by the indicator. In total, 38% of the headline and component indicators for Targets 9-13 require or encourage the use of spatial data.
- **Tools and solutions for implementation and mainstreaming (Targets 14-23):** Two of the targets (Target 21 and 22) in this section have at least one indicator that can be calculated using spatial data or for which spatial data can be used to provide disaggregated information required by the indicator. In total, 11% of the headline and component indicators for Targets 14-23 require or encourage the use of spatial data. This is lower than the other two sections as the targets focus more on the policy solutions and the implementation process.

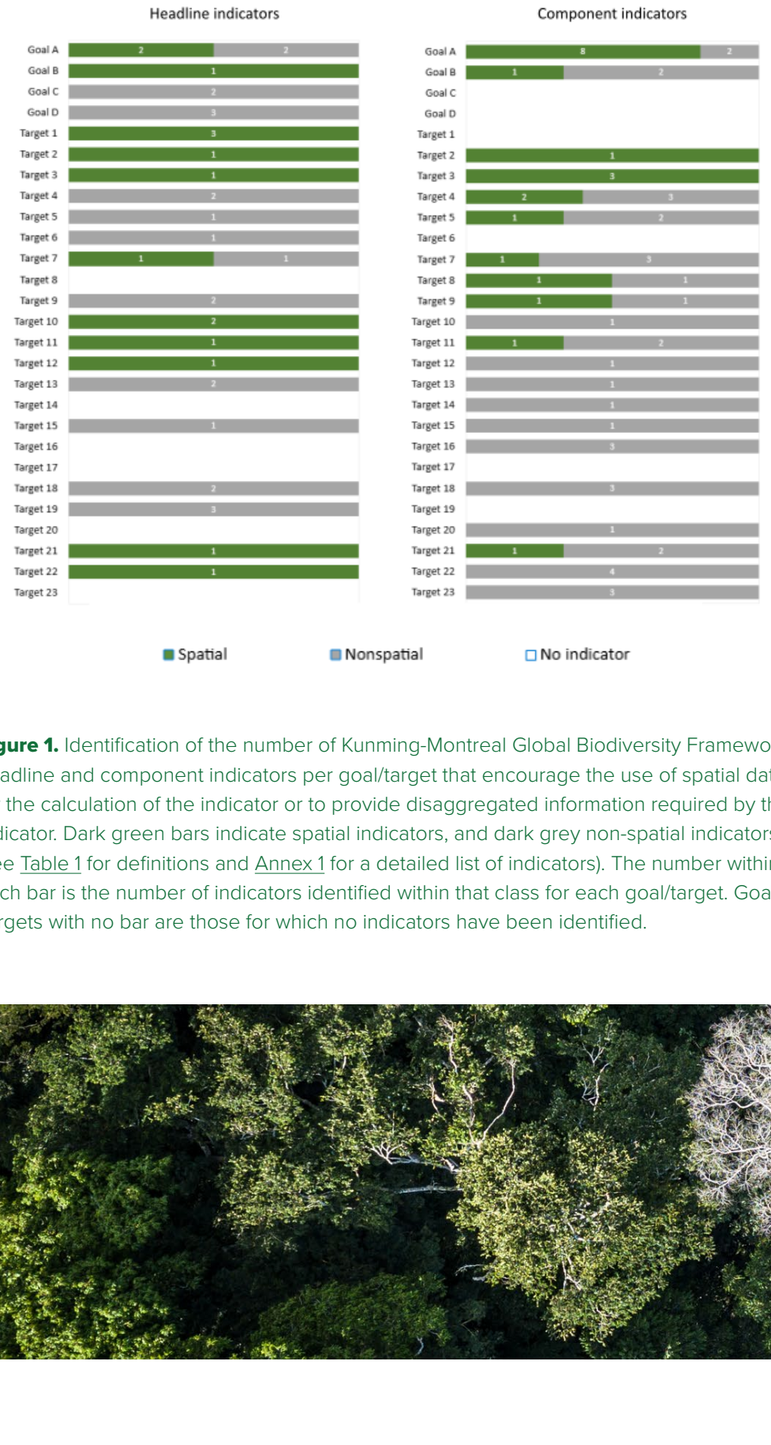


Figure 1. Identification of the number of Kunming-Montreal Global Biodiversity Framework headline and component indicators per goal/target that encourage the use of spatial data for the calculation of the indicator or to provide disaggregated information required by the indicator. Dark green bars indicate spatial indicators, and dark grey non-spatial indicators (see Table 1 for definitions and Annex 1 for a detailed list of indicators). The number within each bar is the number of indicators identified within that class for each goal/target. Goals/Targets with no bar are those for which no indicators have been identified.

2.2

Identifying relevant spatial data for indicator calculation at the national level

As CBD Parties work to develop their national monitoring plan, as appropriate and subject to national needs and priorities, they may decide to develop several key items, as explored in the *Guidance for Developing Plans for National Monitoring Systems in Support of the Kunming-Montreal Global Biodiversity Framework* (Box 2). A critical component advised in this guidance is the assessment, for each national action or target, of data availability and data needs for calculation of selected indicators (Item 1, Box 2). Decision 15/5, Annex 1, states that "headline indicators use methodologies agreed by Parties and are calculated at a national level based on national data from national monitoring networks and national sources, recognizing that in some cases headline indicators may need to draw on global datasets." Likewise, per Decision 15/5, "the use of global indicators at a national level must be validated through appropriate national mechanisms".

To support these efforts, in Section 2.2.1 we begin by providing some overall guidance that Parties may like to consider, on identifying relevant national spatial data for indicator calculation and assessing the utility of global spatial data for indicator calculation at the national level. In Section 2.2.2, we link to data tables for headline, component, and complementary indicators that can be calculated with spatial data, global reference data for calculation of each of these indicators available on UNBL, and guiding questions to support government policymakers and technical specialists to identify relevant national spatial data. In Section 2.2.3, we explore how national and global datasets could be combined for use, based on national needs and context. In Section 2.2.4, we provide information on how Parties may be able to validate global datasets for national use, subject to their national needs and circumstances.

The structure of an action plan is suggested to include the following sections:

1. A separate section or chapter for each target in the NBSAP (which may have been updated or revised to align with the GBF). The section for each target will give information on the indicators that will be used to measure its progress, and any needs for development of additional indicators. A suggested template for the detailed description of an indicator and its development needs is provided Annex 3 of this guidance. The main information to be documented includes:
    a. The name of the indicator,
    b. The agencies responsible for collecting the data and compiling the indicator,
    c. The indicator's data sources and calculation method,
    d. Any staff or organisational capacity development needs to produce the indicator,
    e. A costed plan for the production or further development of the indicator and meeting any capacity needs.
2. A section that lists any national targets that are yet to be revised or created, and identifies possible indicators for these.
3. A section that defines the organization and activities timetable for a national monitoring system, including the definition of:
    a. The lead agency to co-ordinate the national monitoring system and implementation of the action plan.
    b. The roles and resource requirements of the government agencies and non-government actors involved in the monitoring system.
    c. When and how to produce the indicators which are already available. This may include addressing any capacity and resources gaps, and costings and funding sources.
    d. When and how to define and produce indicators for any elements of targets which do not yet have established indicators.
    e. How to define and establish indicators for targets still in development, with costings and funding sources.

All text recreated with permission from: Guidance for Developing Plans for National Monitoring Systems in Support of the Kunming-Montreal Global Biodiversity Framework.

2.2.1

Overall considerations and checklist to support the identification of national spatial data for indicator calculation

Parties may wish to consider data needs for headline, component, complementary, and/or national indicators selected for national use as part of a national monitoring plan. To support this work, we offer a simple checklist of considerations that could be followed to help identify the best compilation of spatial data to meet national needs for indicators that can be calculated using spatial data. This checklist explores in more detail some of the considerations that may be helpful to produce Item 1 of a National Monitoring System Plan (Box 2). A similar process could also be followed for all indicators that are calculated with non-spatial data. The general guidance provided here is complemented by specific considerations for each indicator offered in Section 2.2.2.

Suggested checklist for assessing national spatial data availability for indicators

- Review the indicators that your country will include in a national monitoring plan and confirm which can be calculated using spatial data or for which spatial data can be used to provide disaggregated information required by the indicator (see Section 2.1 of this document for further information).
- Assess national spatial data availability and quality for each indicator. Box 3 and 4 provide overall questions that can support this assessment. Tables 2, 3, and 4 in Annex 3 provide guiding questions to help identify the most relevant national spatial datasets.
- Identify gaps where national spatial data do not exist and determine if new national spatial data should and could be produced.
- If national spatial data do not exist, and cannot be produced, review global reference datasets to see if they may be suitable for national needs (see Box 5 for some overall criteria).
- If used, validate any global global reference datasets that will be used to fill gaps for official national use (see Section 2.2.4 of this document for further information).
- Ensure that all relevant spatial data for your country's monitoring plan is available to all relevant stakeholders through accessible repositories or other similar means (see Section 3 for options available through the UNBL).
- Include information on how spatial data will be sourced and used in the calculation and presentation of the headline indicator in any relevant indicator specification sheets.

Box 3. Guiding questions on data availability

When reviewing spatial data availability and needs, there are several general questions that may be applicable regardless of the specific target or indicator.

1. **Data availability:** Does your country have access to appropriate government-produced spatial data needed to report on each of the indicators? Are there other data sources available that would be acceptable for use? If so, are they freely accessible and from a trusted source?
2. **Data custodians:** Who are the government data holders (ministry, directorate within a ministry, government-supported research group, etc)? Are there data produced by non-state actors (research institutions, NGOs, Indigenous Peoples, etc) that would be acceptable for use? How/where are the data stored and who has access? Are there national working groups around these data?
3. **Data validation:** Are the data scientifically validated? Are the data validated and approved for official government use?

Box 4. Guiding questions on data quality and limitations

When using spatial data for national monitoring and reporting, it is important to understand the suitability, quality, and/or limitations of available data, regardless of whether it is a national or global dataset.

- **Data suitability:** Are there available data for the time period and location required? Can the data directly measure the indicators? Is the data from a reliable and verifiable source?
- **Data quality:** How accurate is the data in reflecting reality over time and space? What is the spatial resolution of the data (for rasters)? Is the spatial coverage of data available for the entire country? Is the data consistent across reporting areas? Is there ground validation work required before applying the data in decision-making and actions? How is the accuracy of the data assessed, e.g., is there ancillary data provided or geostatistical summaries of classification accuracy?

2.2.2

Global reference datasets for indicator calculation and customized questions to identify relevant national data

Annex 2 provides lists of headline (Table 2), component (Table 3), and complementary (Table 4) indicators that require or encourage use of spatial data, and the global reference dataset identified for their calculation. These tables can support the development of Item 1 in the National Monitoring System Plan (Box 2). Each table provides basic metadata on the datasets, including:

- A basic description of each dataset;
- Whether the dataset is a time series or has a temporal component to it;
- The dataset's spatial resolution (for raster datasets);
- Other key data fields and data attributes that provide government staff and contractors working on the national monitoring plan with a better understanding of the type(s) of data recommended or needed for indicator calculation;
- A link to view the dataset on UNBL; and
- A series of guiding questions that can support the identification of relevant nationally approved spatial data for use in headline indicator calculations.

It should be noted that by highlighting these global reference datasets it is not implied that countries should be using these datasets for reporting but rather:

1. These are datasets that act as a data standard that countries can use to evaluate their own national datasets against.
2. In circumstances where no national data exists these global reference data can be used to enable reporting against the associated indicator.

These tables were produced through an analysis of the Decision adopted by the Conference of the Parties to the Convention at COP16 (CBD/COP/DEC/16/31*) and the associated metadata for each indicator (available on the Kunming-Montreal Global Biodiversity Framework Indicators Website and in (CBD/COP/16/INF/3/Rev.1). This analysis was conducted comprehensively for the headline and component indicators and on an ad hoc basis for the complementary indicators.

These global reference data are also available to view in the UNBL Data Collection on the Monitoring Framework for the Kunming-Montreal Global Biodiversity Framework, which is explored further in Section 3.2.

2.2.3

Suggested guidelines on combining national and global data for use at the national level

It may be preferable for countries to use a single, consistent, and validated dataset to address a particular data need. However, there are use cases where national data is both available and preferred, but not comprehensive across a country (e.g., it does not cover the entire country) and in the short term, global data source(s) may be useful to supplement available national data while national datasets are developed. This section addresses some considerations and data processing requirements that government policymakers and technical experts may like to consider when combining global and national data in a country. To illustrate this, in this section we use habitat distribution data in vector format as an example. Parties may like to consider these factors when combining these or other national and global data for use.

Compatibility of data sources

National habitat data likely offers detailed information on habitat types, particularly as recognised by national legislation. In contrast, global dataset may fill coverage gaps in national data, but with less specificity regarding habitat types, particularly in relation to national legislative requirements. When it comes to granularity and resolution of data, national data is often characterized by precise shapes for each habitat type, complete with detailed classifications of those habitat types and their conservation statuses. Global data will likely adopt different classification methods, leading to potential discrepancies. Variables across both datasets include geographic boundaries and types of habitats, yet they might diverge in their criteria for habitat classification, emphasis on conservation status, or ecological value. These will all need to be accounted for by the technical expert combining the data.

Data formats

Combining datasets requires they both be in a common GIS (Geographic Information Systems) vector data format, such as ESRI Shapefile or Geopackage, and use a consistent CRS (Coordinate Reference System). Data cleaning needs to pay special attention to harmonizing the classification schemes for habitat types to ensure comparability and reduce confusion.

Merging data

Developing a clear method for integrating the two datasets is essential and will involve using spatial analysis tools in GIS software. This process might include overlaying the global dataset on the national one to identify and subsequently fill gaps in national coverage without duplicating data (i.e., the same place cannot be classed as more than one habitat type -- an area classed as a forest cannot also be classed as a grassland). Identifying and filling-in the areas where national data is lacking with information from the global dataset should be done with care to respect and give precedence to the boundaries and classifications of the national dataset.

Adjustments

Government staff and contractors combining the data may want to apply weightings to certain areas or habitat types to account for the confidence level in the data source, in order to more accurately reflect the underlying data quality. Conducting sensitivity analyses to understand how changes in data integration methods and classification schemes might influence habitat status and trends conclusions is also crucial.

Documentation, transparency, and attribution

Maintaining detailed records of the methods used for data cleaning, data integration, and any analyses, including any assumptions made and the rationale behind chosen integration strategies, is paramount. It is important to clearly detail how datasets were combined, where global data was used to supplement national data, as well as any limitations or uncertainties this introduces. Similarly, proper attribution of the sources of both datasets, including any licensing agreements, is crucial.

2.2.4

Guiding questions and steps for validating global data for national use

In cases where national data for indicator calculation are not yet currently available or do not provide full coverage of the country, the global datasets highlighted in Section 2.2 could be used by countries to fill spatial data gaps in the interim, until national datasets are built. As noted in Decision 15/5, “the use of global indicators at a national level must be validated through appropriate national mechanisms”. Typically data validation can occur in two, often interlinked, ways: (1) scientific validation to ensure that the data are accurate and valid at national and/or subnational levels; and (2) institutional/national validation (or approval) to ensure that data can be used for official government purposes, including reporting. This section explores key questions and steps for consideration by government staff and contractors working on the national monitoring plan,in the context of validating global data for inclusion in a national monitoring plan.

Scientific validation of global data for national use

Using global data comes with advantages and disadvantages at the national level (Box 5). Scientific validation of global datasets for national use is critical to ensure the accuracy and applicability of globally-validated datasets within specific national contexts. However, the direct application of these datasets will nearly always require validation to account for local conditions, regional variations, and specific national requirements. The validation process involves rigorous statistical analysis and may include techniques such as correlation and regression analysis, error metric assessment, and sensitivity testing. While these validation techniques may fall beyond the expertise of the readers of this guidance, and may require the expertise of outside specialists, it is a vital step to ensure that global data accurately reflects local realities and is amenable for

use in national reporting and calculation of indicators. Although it is beyond the scope of this guidance document to fully explore all aspects of a scientific validation process, we provide an overview of important considerations for assessing data quality. This is intended to provide context to government staff and contractors working on the national monitoring plan to understand considerations around the use of global data.

One important caveat exists that would be remiss to not include here: all geospatial data, whether global or national, will always have some amount of uncertainty and error within it -- this is part of trying to map a complex and changing planet.

Box 5. Global data advantages and disadvantages

As government policymakers and technical specialists review existing national data availability and quality, it may be helpful to consider the pros and cons of using global data to fill any existing data gaps.

Advantages:

- Understand status and changes on a global level
- Data already exists, and follows accepted methodologies
- Option to fill data gaps when national data is not available
- Ability to compare across countries / ecoregions
- Data may be updated more regularly

Disadvantages:

- Data may not be accurate or representative of local conditions
- Data may not be created using nationally mandated methodologies.
- The resolution of data may be insufficient for use (particularly for smaller countries)
- National entities need to validate and approve global data for official use
- Limited access to certain data sources
- Data may be updated less regularly

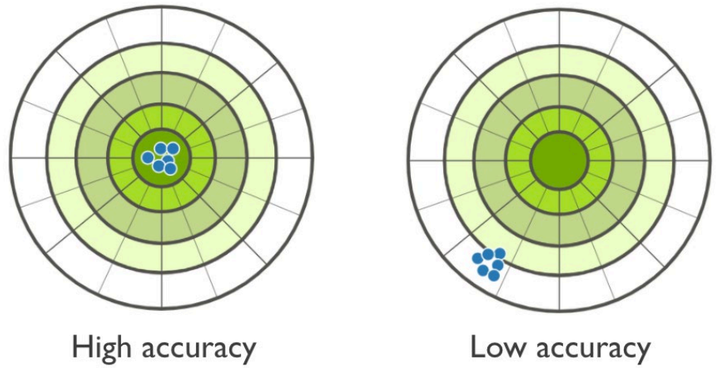
At its core, scientific validation of a dataset works to understand and evaluate the quality and limitations of spatial data at the national level. Spatial datasets can be evaluated based on six metrics: accuracy, precision, resolution, completeness, consistency, and currentness.

1. Accuracy

Accuracy of spatial data refers to how closely the data reflects true real-world values. For example, in the context of a land use/landcover (LULC) classification (raster), accuracy refers to the degree to which the classified data correctly represents the actual land cover or feature types on the ground. An accuracy assessment in the raster classification is crucial to evaluate the performance of the classification algorithms and the reliability of the resulting landcover map. This typically will involve comparing classified raster pixels against ground-truth data, often obtained through field surveys or high-resolution imagery.

Key measures of accuracy include **overall accuracy**, which is the proportion of correctly classified pixels across all classes, and class-specific measures such as **user** and **producer accuracies**. It is important to recognise, however, that overall accuracy may not seemingly be as high as users' may expect or hope for; for example, one review of three recent global landuse/landcover (LULC) datasets, including Google's Dynamic World (DW), the European Space Agency's (ESA) WorldCover (WC), and ESRI/ ImpactObservatory's Land Cover (ESRI/ IO)), found that ESRI/IO had the highest overall accuracy (75%) compared to DW (72%) and WC (65%), but with notable variation between classes and regions[4].

Validation of global data should produce measures of accuracy of the data and the confidence associated with using data at the national and subnational scale to meet country needs for monitoring progress to achieve the Kunming-Montreal Global Biodiversity Framework.



Source: PacMARA & UNDP [NBSAP Forum] 2021[5].

4 Venter ZS, Barton DN, Chakraborty T, Simensen T, Singh G. 2022. Global 10 m Land Use Land Cover Datasets: A Comparison of Dynamic World, World Cover and Esri Land Cover. Remote Sensing 14:4101. Multidisciplinary Digital Publishing Institute.

5 PacMARA & UNDP [NBSAP Forum] 2021. #4- Spatial data considerations [Video]. YouTube. https://www.youtube.com/watch?v=lG-tM_ralGY&list=PL8vwCyAB16RoktR9TQDEAXZFpDQNRl1vL&index=4&ab_channel=NBSAPForum

2. Precision

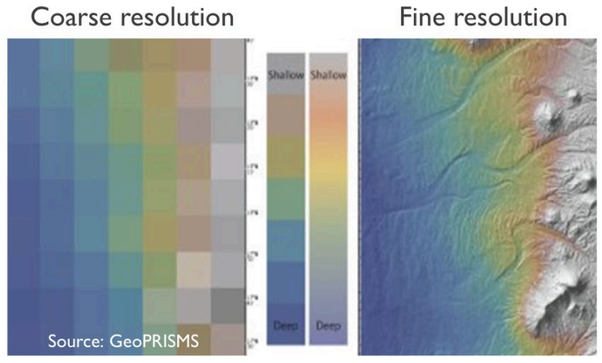
Precision in spatial data refers to the level of detail and consistency of measurements. In GIS and remote sensing, precision often reflects the spatial resolution of data (see below). For instance, the size of a pixel in a raster dataset or the exactness in the position of a point in a vector dataset (such as a polygon representing a national boundary). High precision means that the measurements are consistent and detailed, allowing for a very fine-scale representation of spatial features and a more granular understanding of the underlying processes being mapped. However, it does not necessarily mean that the data is true to the real-world features it represents.

Validation of global data should ensure that the precision of global data is sufficient to allow for correct mapping and application of data monitoring at national and subnational scales to meet country needs to achieve the Kunming-Montreal Global Biodiversity Framework.

3. Resolution

Spatial data resolution refers to the smallest size of a feature that can be reliably identified in a dataset. In the realm of earth observation, remote sensing and GIS, resolution is often segmented into two primary categories: spatial and temporal. **Spatial resolution** pertains to the size of a pixel in a raster dataset, such as a satellite image or a digital elevation model. The smaller the pixel size, the higher the spatial resolution, allowing for more detailed and finer representation of the Earth's surface. For instance, a remotely sensed image with a 1-meter resolution can distinguish features that are at least 1 meter apart (smaller than a tree). Several real world examples of earth observation sensors include the MODIS sensors that capture imagery down to ~250-m resolution, the LANDSAT satellites that capture multispectral imagery at ~30-m resolution, and the ESA Sentinel-2 sensors that can capture imagery at resolutions as small as ~10-m for several spectral bands. **Temporal resolution**, on the other hand, relates to the frequency at which data is captured or updated. High temporal resolution means that data is collected frequently, enabling the monitoring of changes over time with greater regularity. Several real world examples of the temporal resolution of earth observation sensors include the MODIS sensors that revisit the same point on earth every 1-2 days, the LANDSAT satellites that have a 16-day revisit cycle, and the ESA Sentinel-2 that has a revisit time of around 5 days (at the equator). Higher resolution data, in both the spatial and temporal senses, entails larger file sizes and more processing power, presenting a trade-off to users between detail and resource processing requirements.

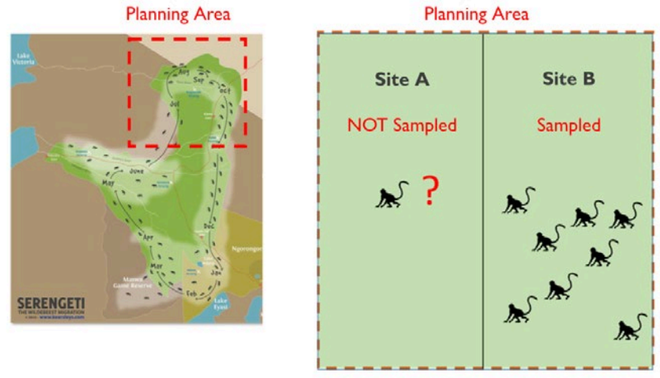
Validation of global data should ensure that both spatial and temporal resolution of data is suitable for use at the national and subnational scales to meet country needs for monitoring progress to achieve the Kunming-Montreal Global Biodiversity Framework.



4. Completeness

Completeness in spatial data is typically defined in terms of errors of omission. This is to ensure that the data used to represent a particular feature is consistent across the study region. For example, considering a layer depicting national forest cover, the data would be incomplete if it only includes forest cover in one province. When datasets are inconsistent, unintended biases may be introduced. The team also needs to account for sampling methods, which can introduce different degrees of completeness in a dataset.

Validation of global data should ensure that they are complete and do not represent significant bias at the national and subnational scales to meet country needs for monitoring of progress to achieve the Kunming-Montreal Global Biodiversity Framework.



Source: PacMARA & UNDP [NBSAP Forum] [6]

6 PacMARA & UNDP [NBSAP Forum] (2021, Dec 13) #4- Spatial data considerations [Video]. YouTube. https://www.youtube.com/watch?v=lG-tM_raIGY&list=PL8vwCyAB16RoktR9TQDEAXZFpDQNRl1vL&index=4&ab_channel=NBSAPForum

5. Consistency

For geospatial data, consistency refers to conformity with certain topological rules. For example, a polygon must be closed; a non-closed polygon is considered a geometric error. Errors in spatial attributes can also make a dataset inconsistent. For example, an entity that has the value "Colombia" for the attribute "country" but the value "New York City" for the attribute "city", is considered inconsistent since New York City is not in Colombia.[7]

Validation of global data should ensure that they are consistent and represent approved and required naming conventions at the national and subnational scales to meet country needs for monitoring progress to achieve the Kunming-Montreal Global Biodiversity Framework.

6. Currentness

Currentness in spatial data analysis is a nuanced concept that hinges on the timeliness, and therefore relevance, of data in relation to its intended use. This includes whether data is up to date, as well as whether data is accurately able to reflect historical conditions. This aspect is crucial, as the accuracy of spatial analyses and the efficacy of resulting decisions heavily depend on the data's reflection of the present situation. For instance, using grossly outdated forest cover data can mislead environmental policies, whereas the same historical data is invaluable for understanding long-term ecological changes, planning reforestation efforts, or mitigating forest loss in high-risk areas. In predictive modeling, such forecasting agricultural changes under future climate scenarios, forward-looking data becomes essential. The demand for currentness thus varies with context: real-time decision-making and monitoring necessitates access to the latest data available, while historical analyses or trend identification rely on utilizing more temporally complete datasets. Our planet is dynamic and so are improvements of the sensors we use to observe it; accessing and adopting regularly updated and contextually relevant data sources is key to maintaining the integrity and applicability of data sources used in monitoring frameworks.

Validation of global data should ensure that that data is timely and able to correctly represent the current state at the national and subnational scales to meet country needs for monitoring progress to achieve the Kunming-Montreal Global Biodiversity Framework.

In summary, the scientific validation of global spatial datasets for national use is valuable to ensure their accuracy, relevance, and applicability within national contexts, as well as to ensure that resultant analyses, aggregated outputs, and indicator calculations are scientifically robust and defensible. Parties have the opportunity to decide what data are most suitable for their national planning, monitoring, and reporting context. In some cases where minimal data are available, Parties may wish to use sub-optimal data, in the absence of another option.

7 PacMARA & UNDP [NBSAP Forum] (2021, Dec 13) #4- Spatial data considerations [Video]. YouTube. https://www.youtube.com/watch?v=IG-tM_ralGY&list=PL8vwCyAB16RoktR9TQDEAXZFpDQNRl1vL&index=4&ab_channel=NBSAPForum

This is a complex process; the full depth of which is beyond the scope of this guidance document, and external expert consultation should be sought where expertise is not available.

Institutional validation of global data for official government use

Institutional validation of global data for official government use ensures the reliability and applicability of internationally-sourced datasets within the frameworks of national governance and policy-making. This validation will vary in each country, subject to national processes. It can involve a comprehensive assessment of the data by government agencies or authorized institutions to confirm its accuracy, relevance, and compatibility with national standards and requirements. Given the diverse sources of global data, which can range from satellite imagery and climate models to socio-economic and species-range distribution models, institutional validation plays a pivotal role in integrating this data into national decision-making processes. Beyond only the technical assessment of data validity in a country, it also considers the legal, ethical, financial, and policy implications of utilizing such data. This is particularly important in areas like climate policy, where global climate data must be rigorously assessed for its applicability in national climate action plans.

The process of institutional validation can involve collaboration between various governmental bodies and in some countries, there is also consultation with external experts, including from academia or civil society. This collaborative approach can help to address the multifaceted aspects of data validation, including its methodological soundness, contextual relevance, and alignment with national priorities. For instance, in land cover and biodiversity conservation projects, spatial data from global sources is examined for its accuracy and resolution to ensure it meets the specific needs of national conservation planning and development initiatives. Scrutiny of global datasets is valuable to ensure they align with national statistical methods and definitions. This comprehensive institutional validation is crucial for maintaining the integrity and efficacy of policy decisions based on global data. It helps in mitigating the risks associated with data misinterpretation and ensures that the data is used responsibly and effectively. Ultimately, institutional validation reinforces the bridge between global knowledge and local application, fostering data-driven, informed decision-making at the national level.

Here, we provide government policymakers and technical specialists some considerations that could be considered while validating global data for use in the context of the national monitoring system for the Kunming-Montreal Global Biodiversity Framework. Steps may include:

- **Identify technical staff within the government institution responsible for the development of the national monitoring system and/or national research institutions included as part of the monitoring and indicators advisory group who have expertise in the subject of the indicator:** The information about relevant institutions typically would already have been gathered in early phases of development of the monitoring plan. It will also be important to identify

the specific individuals within these institutions who have the relevant technical skills relating to the indicator.

- **Conduct a review process with these individuals to scientifically validate the dataset for national use:** This process may include the considerations listed in 2.3.1. In some countries, a whole-of society-approach, that takes into account reviews by non-state actors, such as key stakeholders with detailed knowledge of local ecosystems, such as Indigenous Peoples and Local Communities, may be valuable to ensure that the spatial data is accurate.
- **Conduct a review process with these individuals to review and validate methodology for national indicator calculation:** The group should review and seek to apply methodology provided for the indicator to calculate the indicator to ensure that it is appropriate and accurate for national context.
- **Produce recommendations for clearance by senior decision makers:** Different countries will likely have different mechanisms for final clearance to use global data for national planning, monitoring, review and reporting to the CBD. In some cases, recommending it for inclusion in the national monitoring plan may be sufficient. In other cases, specific briefs may need to be produced and shared with key decision makers summarizing the existing national data gap, steps taken to scientifically validate the global data, and recommendations for using the global data for national monitoring purposes.

UNBL is one of the available tools that provides options to visualize the global data and explore the resulting map at the national level during both the review process and the final approval process. For more detail on the functionalities offered through UNBL, please see Section 3.

3

Using UNBL to support the development of a plan for national monitoring systems for the Global Biodiversity Framework

3.1

Overview: What data and tools does UNBL offer to support Parties in their work around the Global Biodiversity Framework?

UNBL is a free, open source platform that supports country-led efforts to use spatial data and analytic tools to generate insight and impact for conservation and sustainable development. At the heart of UNBL's work is supporting Parties around their commitments to the Convention on Biological Diversity. UNBL does not require any GIS expertise to use and is fully available in English, French, Portuguese, Russian, and Spanish (Box 6). UNBL's goal is to provide a resource to government policymakers and technical specialists to facilitate use of the best possible spatial data for planning, implementing, monitoring, and reporting for the Kunming-Montreal Global Biodiversity Framework, based on national needs and context.

To support national implementation of the Kunming-Montreal Global Biodiversity Framework, in early 2024 UNBL released a data collection to support the monitoring framework for the Kunming-Montreal Global Biodiversity Framework. This data collection provides direct access to global reference datasets for the Monitoring Framework and new data filters to easily search additional data relevant data layers. Over the period 2024-2025, with support from the Gordon and Betty Moore Foundation, UNBL has further developed functionalities to support users to develop integrated spatial plans for Global Biodiversity Framework goals, targets, and indicators (ELSA Tool), to more easily upload national data and connect to existing national spatial data repositories, to display headline indicators for their countries using national and global spatial data, and to streamline connections to other relevant tools for monitoring and reporting. Through these new developments, UNBL will offer an end-to-end package of features for iterative planning, monitoring, and reporting.

Section 3 provides an overview of the current and forthcoming data and tools on UNBL that can support Parties to develop their plans for national monitoring systems for the Global Biodiversity Framework. We introduce features that can enable users to: (1) access and download global reference datasets for the Monitoring Framework on UNBL (Section 3.2); (2) seamlessly bring together national and global data in a single repository to support the development of a monitoring system (Section 3.3); (3) display the headline indicators and other metrics (Section 3.4); (4) connect to other relevant platforms and tools (Section 3.4); and (5) develop a prioritized spatial plan based on national targets and indicators to deliver on Target 1 (Section 3.5).

Box 6. What features does UNBL offer to users?

At the core of UNBL's offering is:

- access to over 1,000 curated global spatial data layers on biodiversity, ecosystem services, and human well-being;
- secure workspaces for countries to upload and manage national spatial data and visualize them alongside global data of interest;
- display of dynamic indicators for any national or subnational area of interest;
- curated data collections for policymakers on protected areas, restoration, nature-based solutions for climate change, and the Monitoring Framework of the Global Biodiversity Framework;
- the ELSA Integrated Spatial Planning tool, which provides users with the ability to develop a spatial prioritization map for their country to show where nature-based actions can best contribute to the achievement of GBF Targets 1, 2, and 3;
- extensive documentation and guidance to enable new users to easily apply UNBL for their needs; and
- direct support to respond to user needs and requests.

Learn more: UNBL trailer | UNBL brochure | UNBL user stories

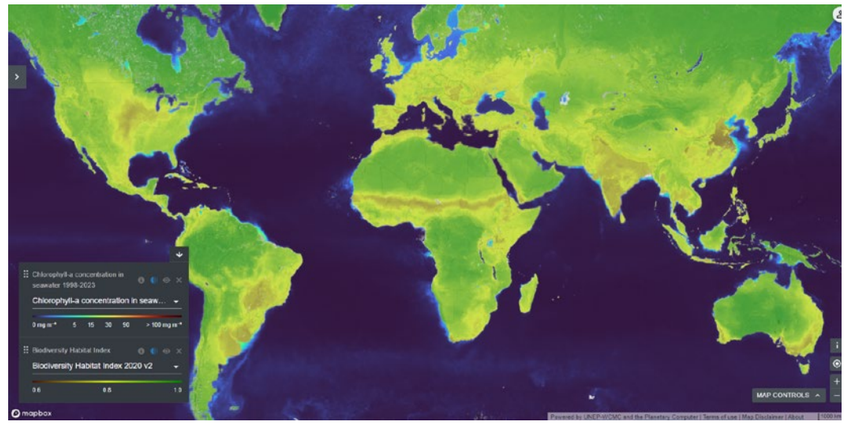


Figure 2. Explore spatial data on UNBL to support national planning, implementation, monitoring, and reporting for the Global Biodiversity Framework. This map includes data for calculation of headline indicators, including the Chlorophyll-a Concentration in Seawater (Sathyendranath et al. 2019), and component indicators, including the Biodiversity Habitat Index (Harwood et al. 2022). Map created using UN Biodiversity Lab on 2 April, 2024.

3.2

Global reference datasets available via UNBL to support national planning, implementation, monitoring, and reporting for the Global Biodiversity Framework

3.2.1

UNBL Data Collection on the Monitoring Framework for the Global Biodiversity Framework

The UNBL Data Collection on the Monitoring Framework for the Kunming-Montreal Global Biodiversity Framework on UNBL provides decision makers with a curated list of global spatial datasets that can be used for the calculation of headline, component, and complementary indicators under the Monitoring Framework. The global datasets provided here aim to support countries to fill spatial data gaps as an interim measure, where national data is not yet available.

The information made available is structured around the goals and targets of the Global Biodiversity Framework, including indicators that can be calculated using existing spatial data at the global level. The data listed for each indicator are the global reference dataset identified for calculation in the metadata associated with CBD/COP/16/INF/3/Rev.1. This collection can support countries with Item 1, point c "definition of data sources and calculation method" of a National Monitoring System Plan, as suggested by the UNEP-WCMC Guidance for Developing Plans for National Monitoring Systems in support of the Kunming-Montreal Global Biodiversity Framework (see Box 2).

The data selected for this collection include all data listed in Annex 2 of this document for headline, component, and complementary indicators. This includes all spatial data, where available, recommended in the indicator metadata (available on the Kunming-Montreal Global Biodiversity Framework indicators website and in CBD/COP/16/INF/3/Rev.1 associated with the decision adopted by the COP16 on the Monitoring framework for the Kunming-Montreal Global Biodiversity Framework (CBD/COP/DEC/16/31*) as of June 2025. The data collection includes a comprehensive list of available data for the headline and component indicators and a partial list of available data for the complementary indicators.

To explore the data collection, follow these steps:

1. Click on the 'Discover' tab on the UNBL home page, select 'Data Collections', and then click on Kunming-Montreal Global Biodiversity Framework. Alternatively, navigate directly to the UNBL data collection on the Monitoring Framework for the Kunming-Montreal Global Biodiversity Framework.
2. Browse the Global Biodiversity Framework goals and targets, select the goal or target of interest and view a description of the goal/target, indicators, and available global data layers that relate to each indicator.
3. Click 'View data' to view data layers that provide input to the monitoring of Kunming-Montreal Global Biodiversity Framework.

Note: *UNBL also offers data collections that more broadly support planning around Restoration (Target 2), Protection (Target 3), and Nature-based Solutions for Climate Change (Target 8). We highlight them here as resources that may be useful to government policymakers and technical specialists for planning around the Kunming-Montreal Global Biodiversity Framework, depending on national priorities and needs. It is recommended that countries validate the use of data before using them in the planning, implementation, and monitoring process.*

UNBL new feature alert: *Curated Data Collection on the Monitoring Framework for the Kunming-Montreal Global Biodiversity Framework.*

3.2.2

UNBL data portfolio and the Global Biodiversity Framework data filtering system

In addition to the Kunming-Montreal Global Biodiversity Framework Data Collection, the UNBL public platform provides users with access to over 600 high quality global data layers, grouped into over 100 datasets, on biodiversity, ecosystem services, and human well-being. All data can either be viewed globally or for a specific country or area of interest, allowing users to activate multiple layers at the same time to compare or conduct a visual overlay analysis.

To enable government policymakers and technical specialists to search and select data that best meets their needs for the development of a national monitoring plan, UNBL also includes flexible thematic filters and tags. The UNBL data team implements these data filters and tags systematically. In early 2024, UNBL launched data filters for the Kunming-Montreal Global Biodiversity Framework to enable users to easily identify relevant data for planning, implementing, monitoring, and reporting for goals, targets, headline indicators, and component indicators that can be supported using spatial data. These data filters can support countries with Item 1, point c "definition of data sources and calculation method" of a National Monitoring System Plan, as suggested by the UNEP-WCMC Guidance for Developing Plans for National Monitoring Systems in support of the Kunming-Montreal Global Biodiversity Framework (see Box 2).

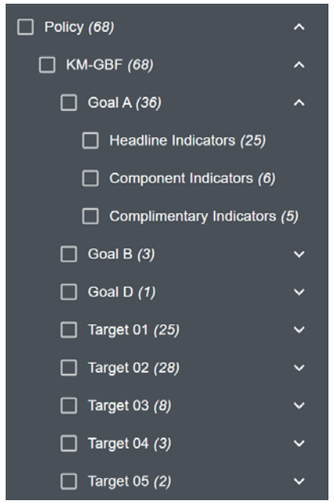
UNBL new feature alert: *Data filters for Kunming-Montreal Global Biodiversity Framework goals, targets, headline indicators, and component indicators.*

To search and view relevant global datasets:

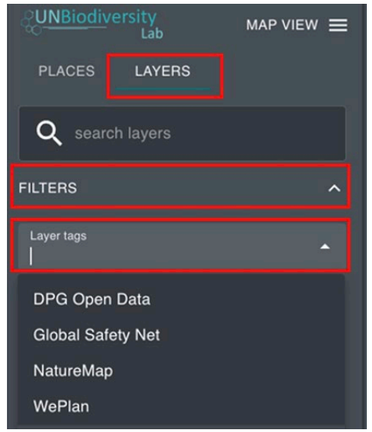
1. Click the ‘LAUNCH MAP’ tab or button on the UNBL home page.
2. Click the ‘LAUNCH’ button to load the UNBL public map platform.
3. You can stay on the global view, or navigate to your area of interest, if preferred (see Section 3.2.3).
4. Click the ‘LAYERS’ icon. To search for a layer, you can either:
   a. Type the name of the layer you want to view into the search box, and select the desired result in the layer list.

      OR

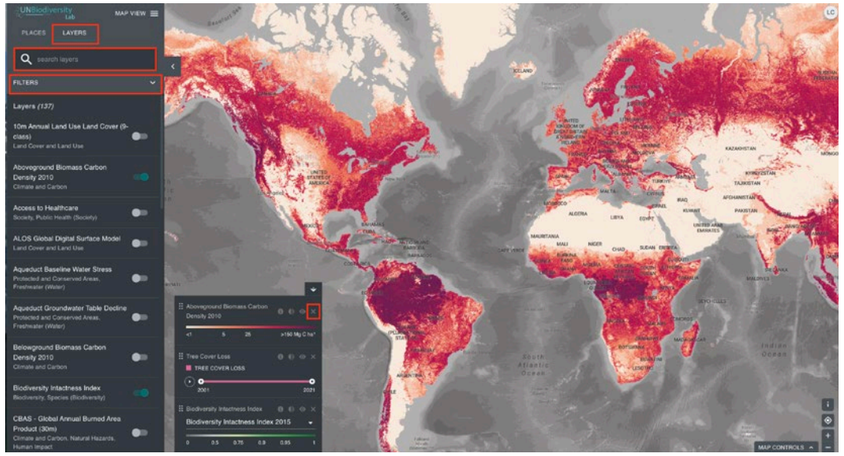
   b. Click to expand the filters to view and select the layer categories of your interest. You then can select the desired layer from the search result list.



5. Click to expand the ‘FILTERS’. Choosing a particular filter, for example ‘Policy’, will consequently show only layers and layer categories associated with that theme. Once the policy tag has been selected, all global spatial data referenced in the indicator metadata for the monitoring framework of the Kunming-Montreal Global Biodiversity Framework Goals and Targets will be visible.
6. Click to expand the ‘LAYER TAGS’. Choosing a particular tag, for example ‘DPG (Digital Public Good) Open Data’, will consequently show only layers and layer categories associated with that category.



7. Click the toggle to the left of the layer name to load this layer to the map.
8. Click the toggle again or click the X icon on the layer info to remove this layer.



3.2.3

How to find your country

UNBL can help government policymakers and technical specialists to navigate to their country to view any globally available data relevant for the development of a national monitoring plan.

To search for an area of interest, you can either:

1. Click on the 'PLACES' icon, type the name of the country, jurisdiction, or transboundary area you want to view into the search box, and select the desired result in the search result list.

   OR

2. Click on the 'PLACES' icon, click to expand the filters box, and select your filter of interest. You then can select the desired place from the search result list.

To further customize UNBL functionalities for your country and upload national data and/or connect to existing national repositories, please see Section 3.3.1.

3.2.4

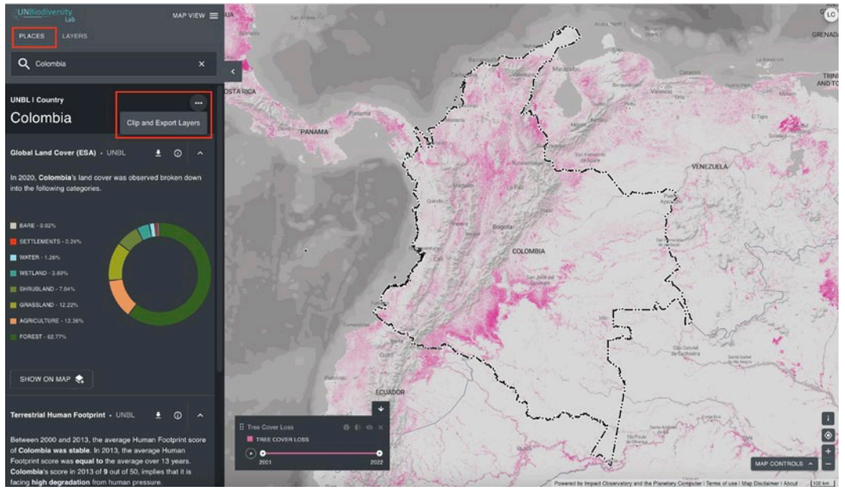
How to download data

Clipping and downloading data to the range of your country

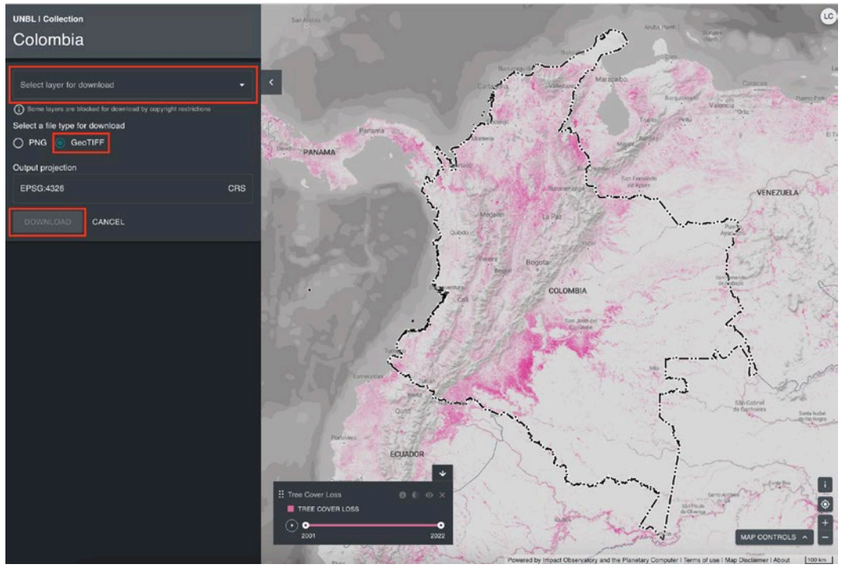
Registered users on UNBL are able to clip Kunming-Montreal Global Biodiversity Framework-related raster layers to an area of interest and download them for use in desktop GIS software. This function allows government policymakers and technical specialists to access the underlying data while avoiding the bandwidth and storage required to download and work with a global dataset.

To clip a Kunming-Montreal Global Biodiversity Framework-related layer to your area of interest and download:

1. Register on the platform. Click here to view a demo: EN | FR | SP.
2. Click the 'PLACES' icon and select your places of interest.
3. Click on the '...' icon on the right of the country's name, and click on 'Clip and Export Layers'.
4. Type the name or select the Global Biodiversity Framework-related data you want to download. If the data contains layers of multiple years, select the year you want to download.



5. Click download.
   a. The selected data source will be clipped to the bounding box around the country.
   b. There is a small buffer added to the bounding box, which will slightly enlarge the area of the clipped raster. This helps to ensure that any incongruities between the national boundary used in UNBL and the official national boundary file you may wish to use do not result in loss of data. This assumes that differences are potentially small. If this is not the case, please contact us at support@unbiodiversitylab.org for assistance.
   c. Note: this is the raw data and will not include styling information.
6. Access the downloaded .zip compressed file in your downloads folder once the download is complete.
7. The downloaded data can be opened in any GIS software for further analysis.

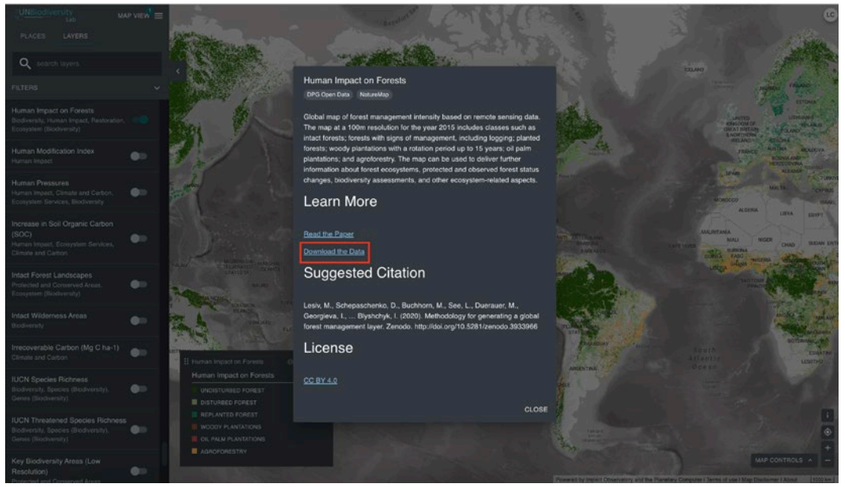


Downloading data on a global range

Should you wish to download and work with the global dataset for particular Kunming-Montreal Global Biodiversity Framework-related data, government policymakers and technical specialists will need to access the data from its original source.

To do this:

1. Select your layer of interest.
2. Click on the layer info icon.
3. Click on the link under ‘LEARN MORE’ to download the data from its original source.
4. If you encounter any issues in accessing the data, please contact support@unbiodiversitylab.org for further support.



3.3

UNBL workspaces as a common repository for national and global data as part of a monitoring system

3.3.1

What is a UNBL workspace?

UNBL workspaces provide a secure work area where national or subnational data can be added and shared with a set of specified users. They offer users with any level of GIS expertise the ability to collaborate on important work to use spatial data as part of the development of a national monitoring plan and/or system for the Global Biodiversity Framework. Government policymakers and technical specialists can use a UNBL workspace to:

- Invite a community of users relevant to the development of a national monitoring plan for the Kunming-Montreal Global Biodiversity Framework;
- Connect to existing national spatial data repositories, enabling all relevant data to be consolidated in one location and ensuring automatic updates from the original source;
- Upload national/subnational datasets and areas of interest to UN servers;
- Tag national data to clearly identify the goal, target, and indicator type that it will be used to calculate;
- Visualize national/subnational datasets alongside any of the global data layers available on UNBL;
- Calculate any UNBL metrics using the official national boundary layer or official sub-national boundary layers, including the forthcoming metrics for headline indicators;
- Connect to other key monitoring tools, including Target Tracker (mechanism TBC).

When setting up the UNBL workspaces, government policymakers and technical specialists can assign roles to individuals or user groups to determine their level of access. These roles include:

- **Owners:** Nominated by the country to take control of the workspace. The owners will be responsible for inviting and granting access to other users, as well as adding other administrators.
- **Admins:** Can add and manage users, assign roles to users as editors and viewers, manage workspace assets via the admin tool, and view all workspace assets on the map view.
- **Editors:** Can manage workspace assets via the admin tool, and view all workspace assets on the map view. Editors should have experience using GIS software to enable them to upload and edit data layers.
- **Viewers:** Can view all workspace assets on the map view. Viewers cannot access the admin tool.

Where useful to national needs and context, a UNBL workspace could serve as a component of a national monitoring system for the Kunming-Montreal Global Biodiversity Framework. In particular, it can support countries with Box 2, item 1, point c) “definition of data sources and calculation method” of a National Monitoring System Action Plan, as suggested by the UNEP-WCMC Guidance for Developing Plans for National Monitoring Systems in Support of the Kunming-Montreal Global Biodiversity Framework (see Box 2). It can likewise support the creation of a space for collaboration across different ministries involved in the monitoring system, related to Item 3, point b) definition of the “roles and resource requirements of the government agencies and non-government actors involved in the monitoring system”.

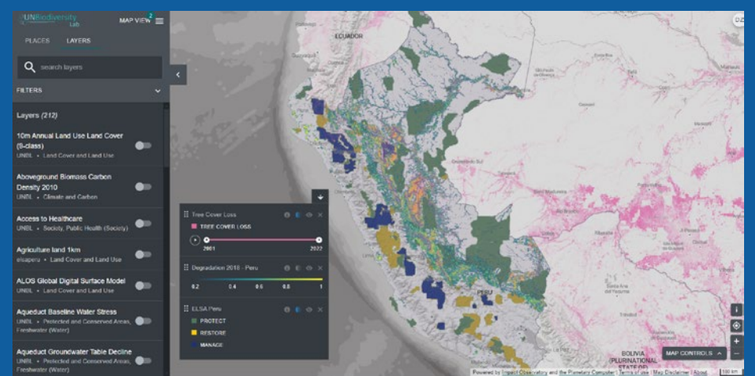
3.3.2

How to apply for a UNBL workspace

Parties to the CBD and any non-commercial users can freely apply for a UNBL workspace. To request a UNBL workspace please click on the UNBL workspaces tab on our support page and fill out the form. Our UNBL Workspace Guidance provides further guidance on all features detailed above.

Box 7

View of Peru’s UNBL workspace, bringing together national and global data for visualization: Essential Life Support Areas map for Peru; national Degradation layer; and the global layer on Annual Tree Cover Loss.



3.4

Using UNBL to access headline indicators (in progress)

In 2024-2025, UNBL will start displaying spatial headline indicators. This feature will enable countries to view and download headline indicators using spatial data, where available. Where useful to Parties, this feature could serve as a component of a national monitoring system for the Global Biodiversity Framework. This ability to view headline indicators can support countries with Item 1, point c) "definition of data sources and calculation method" of a National Monitoring System Plan, as suggested by the UNEP-WCMC Guidance for Developing Plans for National Monitoring Systems in Support of the Kunming-Montreal Global Biodiversity Framework (see Box 2).

For a preview of how this will work, please see the steps below around existing dynamic metrics available on UNBL.

UNBL new feature alert: *Access headline Indicators for your country. Available 2025.*

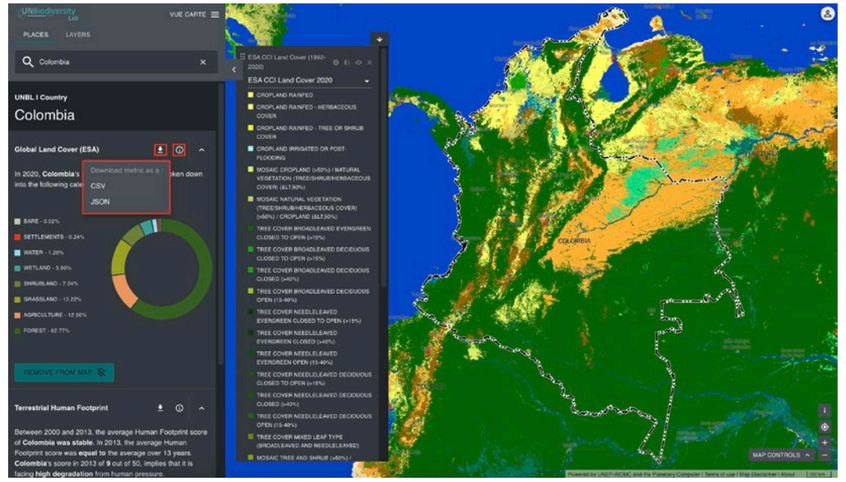
3.4.1

How to display existing dynamic metrics for your country

To display dynamic metrics for your country:

1. Review available metrics in the left panel.
2. Click on the toggle button to turn it green and view this layer on the map. Click on it again to turn it grey or the remove layer icon on the legend to clear the screen.

3. Click on the icon to view layer info, the info pages provide a brief description of the data, related paper to read and source links.
4. To download summary data for the metric in .csv or .json format, click on the arrow icon . You can also download the original data from source links on the layers' info pages.



3.5

Using UNBL to connect to other key tools for the Monitoring Framework (forthcoming functionality)

To support streamlined and efficient monitoring and reporting for countries, UNBL will scope and create connections to other relevant platforms, including Target Tracker and the CBD Online Reporting Tool.

3.6

Using UNBL to develop a customized spatial plan for action on Global Biodiversity Framework Targets and Indicators

The headline indicators and other indicators included within each national monitoring plan can be used to assess progress in implementation of national biodiversity strategies and action plans,. In addition, Target 1 calls for an integrated spatial plan for action across all targets.

To support countries, the UNBL partnership is building on extensive work at the national level to map Essential Life Support Areas (ELSAs) (Box 7) to create a spatial prioritization tool. The ELSA Integrated Spatial Planning Tool, now implemented in UNBL, enables countries to use UNBL to create a prioritized spatial plan to show where action to protect, manage, and restore nature can lead to the best outcomes across the goals, targets, and indicators of the Kunming-Montreal Global Biodiversity Framework, as well as other related policy commitments.

To use the ELSA Integrated Spatial Planning Tool for your country, simply request a workspace on UN Biodiversity Lab using our form and indicate that you would like access to the ELSA tool. Feel free to reach out to support@unbiodiversitylab.org for further questions.

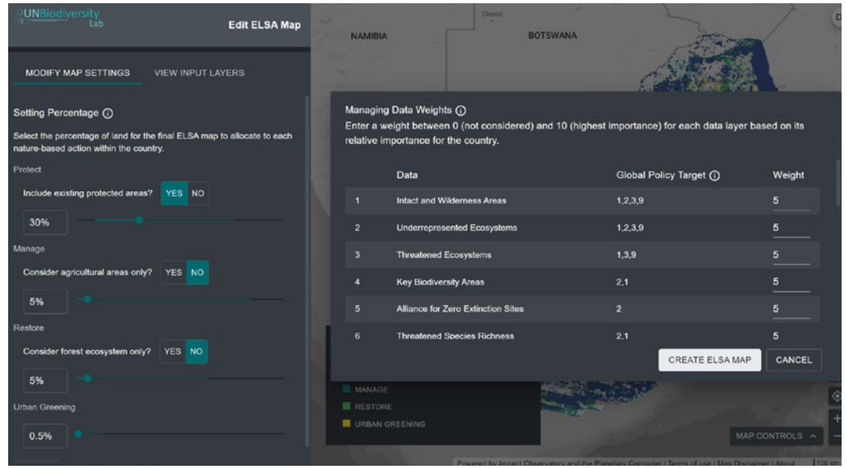
UNBL new feature alert: *ELSA Tool to create a customized spatial plan for action to achieve the Global Biodiversity Framework.*

Box 8. Background on Mapping Hope: An approach to identifying ELSAs to mainstream biodiversity across sectors

UNDP has developed an approach to harness spatial data to create national 'Maps of Hope' that identify Essential Life Support Areas (ELSAs). These are places where action to protect, manage, and restore nature can sustain critical benefits to humanity, including food and water security, sustainable livelihoods, disaster risk reduction, and carbon sequestration. The result is a map that governments can use to harmonize nature and development policies and prioritize areas for protection, management, and restoration as they seek to implement the Kunming-Montreal Global Biodiversity Framework and related national priorities. UNDP has now developed customized ELSA maps for 12 countries based on their unique policy targets. More information about this methodology and case studies can be found in UNDP's Integrated Spatial Planning Workbook (UNDP, 2022).

To make the ELSA approach available via UNBL, UNDP worked with an Expert Advisory Committee that used systematic conservation planning approaches to develop a rapid ELSA analysis that can be applied and customized for any country in the world. The initial proof-of-concept applied this approach for Colombia, Costa Rica, and South Africa. Over the period 2024-2025, the UNBL partnership will work to strengthen the prioritization to reflect the final Global Biodiversity Framework goals, targets, and indicators and to make the tool available via UNBL's secure workspaces to any country in the world.

Learn More: ELSA Trailer | ELSA Brochure | Maps of Hope Webpage



4

Additional resources

- UNBL website
- UNBL Brochure: English | French | Spanish | Portuguese | Russian
- User Stories: English | French | Spanish | Portuguese | Russian
- UNBL trailer English | French | Spanish
- Micro-course 'Using Spatial Data for Biodiversity' hosted by Learning for Nature: English | French | Spanish | Portuguese I Russian
- UNBL Public platform guidance:
  - Online user guide | FAQs
  - Downloadable guidance: English | French | Spanish | Portuguese | Russian
- UNBL workspaces
- UNBL Workspace guidance:
  - Online user guide | FAQs
  - Downloadable guidance: English | French | Spanish | Portuguese | Russian
- Exploring UNBL data providers and use cases: English | Spanish

5

Contact us

For any questions or inquiries on using UNBL to support the development of your country's national monitoring plan, please contact Scott Atkinson (scott.atkinson@undp.org) with a copy to support@unbiodiversitylab.org.

Annex 1

List of headline and component indicators that require spatial data

These tables were produced through an analysis of CBD/COP/DEC/16/31* Annex 1 and 2 and the associated indicator metadata available as of June 2025. The metadata for all indicators was provided to COP16 , this document was prepared by the Ad Hoc Technical Expert Group on Indicators for the Kunming-Montreal Global Biodiversity Framework with support from the Secretariat. It has subsequently been revised to take into account the outcomes from the twenty-sixth meeting of the Subsidiary Body and the peer-review process called for in recommendation 26/1 of the Subsidiary Body, and is available on the Kunming-Montreal Global Biodiversity Framework Indicators Website and in CBD/COP/16/INF/3/Rev.1.The use or non-use of spatial data for calculating these indicators may shift based on the final methodology. Please see Table 1 for definitions of spatial and non-spatial. Please see Figure 1 for a summary view of this table.

Goal/ Target	Headline Indicator	Spatial-S, Non-spatial-N	Component Indicator	Spatial-S, Non-spatial-N
A	A.1 Red List of Ecosystems	S	Ecosystem Intactness Index	S
	A.2 Extent of natural ecosystems	S	Ecosystem Integrity Index	S
	A.3 Red List Index	N	Species Habitat Index	S
	A.4 The proportion of populations within species with an effective population size > 500	N	Biodiversity Habitat Index	S
			Protected Connected index	S
			Protected Area Representativeness & Connectedness Indices	S
			Number of extinctions averted	N
			Evolutionarily Distinct and Globally Endangered Index	S
			Living Planet Index	S
			Wild Bird Index	N
B	B.1 Services provided by ecosystems	S	Red List Index for utilized species	N
			Total value of ecosystems services in monetary units	N
			Living Planet Index for utilized species	S
C	C.1 Monetary benefits received in accordance with applicable internationally agreed Access and Benefit sharing instruments	N		
	C.2 Non-monetary benefits arising from applicable international access and benefit-sharing instruments	N		
D	D.1 International public funding, including official development assistance for conservation and sustainable use of biodiversity and ecosystems	N		
	D.2 Domestic public funding on conservation and sustainable use of biodiversity and ecosystems	N		
	D.3 Private funding (domestic and international) on conservation and sustainable use of biodiversity and ecosystems	N		
1	A.1 Red List of Ecosystems	S		
	A.2 Extent of natural ecosystems	S		
	1.1 Percentage of land and sea covered by biodiversity-inclusive spatial plans	S		
2	2.1 Area under restoration	S	Proportion of land that is degraded over total land area	S

Goal/ Target	Headline Indicator	Spatial-S, Non-spatial-N	Component Indicator	Spatial-S, Non-spatial-N
3	3.1 Coverage of protected areas and other effective area-based conservation measures	S	Protected Connected index	S
			Protected Area Connectedness Index (PARC-Connectedness)	S
			Species Protection Index	S
4	A.3 Red list Index	N	Living Planet Index	S
	A.4 The proportion of populations within species with an effective population size > 500	N	Number of (a) plant and (b) animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities	N
			Green Status of Species Index	S
			Human-wildlife conflict indicator	N
			Proportion of local breeds classified as being at risk of extinction	N
5	5.1 Proportion of fish stocks within biologically sustainable levels	N	Red List Index (impacts of utilization) for utilized species	N
			Living Planet Index for utilized species	S
			Degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing	N
6	6.1 Rate of invasive alien species establishment	N		

Goal/ Target	Headline Indicator	Spatial-S, Non-spatial-N	Component Indicator	Spatial-S, Non-spatial-N
7	7.1 Index of coastal eutrophication potential	S		
	7.2 Pesticide environment concentration and/ or aggregated total applied toxicity	N	Cropland nutrient budget	N
			Proportion of domestic and industrial wastewater flow safely treated	N
			Plastic debris density	S
			Red List Index (impact of pollution)	N
8			Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030 which include biodiversity	N
			Bioclimatic Ecosystem Resilience Index	S
9	9.1 Benefits from the sustainable use of wild species	N		
	9.2 Percentage of the population in traditional occupations	N	Red List Index (species used for food and medicine)	N
			Living Planet Index for utilized species	S
10	10.1 Proportion of agricultural area under productive and sustainable agriculture	S		
	10.2 Progress towards sustainable forest management	S	Average income of small-scale food producers, by sex and indigenous status	N

Goal/ Target	Headline Indicator	Spatial-S, Non-spatial-N	Component Indicator	Spatial-S, Non-spatial-N
11	B.1 Services provided by ecosystems	S	Annual mean levels of fine particulate matter (e.g., PM2.5 and PM10) in cities	N
			Proportion of bodies of water with good ambient water quality	N
			Level of water stress: freshwater withdrawal as a proportion of available freshwater resources	S
12	12.1 Average share of the built-up area of cities that is green/ blue space for public use for all	S		
			Singapore Index on Cities' Biodiversity index	N
13	C.1 Monetary benefits received in accordance with applicable internationally agreed Access and Benefit Sharing instruments	N		
	C.2 Non-monetary benefits arising from applicable international Access and Benefit-sharing instruments	N	Total number of internationally recognized certificates published in the Access and Benefit-sharing Clearing-House	N
14			Integration of biodiversity into national accounting and reporting systems, defined as implementation of the System of Environmental-Economic Accounting (Sustainable Development Goal indicator 15.9.1b)	N
15	15.1 Number of companies disclosing their biodiversity-related risks, dependencies and impacts	N	Number of companies publishing sustainability reports	N

Goal/ Target	Headline Indicator	Spatial-S, Non-spatial-N	Component Indicator	Spatial-S, Non-spatial-N
16	-		Food waste Index	N
			Material footprint per capita, and material footprint per GDP	N
			Ecological footprint	N
18	18.1 Positive incentives in place to promote biodiversity conservation and sustainable use	N		
	18.2 Value of subsidies and other incentives harmful to biodiversity	N	Revenue generated by biodiversity-relevant tradable permits (if auctioned)	N
			Monetary value of payments for ecosystem services	N
			Monetary value of biodiversity offsets	N
19	D.1 International public funding, including official development assistance for conservation and sustainable use of biodiversity and ecosystems	N		
	D.2 Domestic public funding on conservation and sustainable use of biodiversity and ecosystems	N		
	D.3 Private funding (domestic and international) on conservation and sustainable use of biodiversity and ecosystems*	N		
20			Total amount of funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies	N

Goal/ Target	Headline Indicator	Spatial-S, Non-spatial-N	Component Indicator	Spatial-S, Non-spatial-N
21	21.1 Indicator on biodiversity information for the monitoring the Kunming-Montreal Global Biodiversity Framework	S	Species Information Index	S
			Participation in decision-making of indigenous peoples and local communities in the implementation of the Convention at all levels	N
			Index of Linguistic Diversity	N
22	22.1 Land-use change and land tenure in the traditional territories of indigenous peoples and local communities	S		
			Participation in decision-making of indigenous peoples and local communities in the implementation of the Convention at all levels	N
			Index of Linguistic Diversity	N
			Proportion of total adult population with secure tenure rights to land, (a) with legally recognized documentation, and (b) who perceive their rights to land as secure, by sex and type of tenure	N
			Number of verified cases of killings and other attacks against environmental human rights defenders in the previous 12 months	N

Goal/ Target	Headline Indicator	Spatial-S, Non-spatial-N	Component Indicator	Spatial-S, Non-spatial-N
23	-		Proportion of seats held by women in (a) national parliaments and (b) local governments	N
			Indicator on national implementation of the Gender Plan of Action (2023–2030)	N
			Proportion of total adult population with secure tenure rights to land, (a) with legally recognized documentation; and (b) who perceive their rights to land as secure, by sex and type of tenure	N

Annex 2

List of Headline, Component and Complementary indicators that can be calculated using spatial data and associated global data

These tables were produced through an analysis of CBD/COP/DEC/16/31* Annex 1 and 2 and the associated indicator metadata available as of June 2025. The metadata for all indicators was provided to COP16 , this document was prepared by the Ad Hoc Technical Expert Group on Indicators for the Kunming-Montreal Global Biodiversity Framework with support from the Secretariat. It has subsequently been revised to take into account the outcomes from the twenty-sixth meeting of the Subsidiary Body and the peer-review process called for in recommendation 26/1 of the Subsidiary Body, and is available on the Kunming-Montreal Global Biodiversity Framework Indicators Website and in CBD/COP/16/INF/3/Rev.1

It should be noted that by highlighting these global reference datasets it is not implied that countries should be using these datasets for reporting but rather:

1. These are datasets that act as a data standard that countries can use to evaluate their own national datasets against.
2. In circumstances where no national data exists these global reference data can be used to enable reporting against the associated indicator.

Table 2. Headline Indicators -- Global reference spatial data to inform calculation at the national level

This table contains all headline indicators that require spatial data for their calculation, as indicated by the indicator metadata associated with CBD/COP/DEC/16/31, which is available on the Kunming-Montreal Global Biodiversity Framework Indicators Website and in CBD/COP/16/INF/3/Rev.1.

Global Biodiversity Framework Goal/Target	Indicator & link to metadata for indicator calculation where available	Global data available	Global data description	Frequency of update for global data	Resolution of global data a	UNBL Mapview URL	Guiding questions to identify national data
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;	A.1 Red List of Ecosystems	Red List of Ecosystems	The Red List of Ecosystems framework assesses the relative risk of ecosystem collapse of an ecosystem type. The indicator 'Red List Index of Ecosystems (RLIe)' measures the average risk of ecosystem collapse of a group of ecosystems and allows for tracking change over time, based on genuine change in the risk category of each ecosystem. The RLIe can be calculated for any set of ecosystem types for which there are Red List of Ecosystems assessments. It can thus be calculated at the country level or at the global level, or for broad ecosystem groups (e.g. ecosystem functional groups)	5 years	N/A	Pending	• Does national data on classifications and the extent of ecosystem types exist? • Has my country conducted Red List of Ecosystems assessments across all ecosystem types?
The genetic diversity within populations of wild and domesticated species is maintained, safeguarding their adaptive potential.	A.2 Extent of natural ecosystems	Status 3. Methods developed (or partially developed) and tested/piloted, but data not yet widely available (and/or collection not yet underway). (Indicator/methodology maintained by an organization(s)).					
Goal B: 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.	B.1 Services provided by ecosystems	Status 3. Methods developed (or partially developed) and tested/piloted, but data not yet widely available (and/or collection not yet underway). (Indicator/methodology maintained by an organization(s)).					
Target 1: Plan and Manage all Areas To Reduce Biodiversity Loss.	A.1 Red List of Ecosystems	Red List of Ecosystems	The Red List of Ecosystems framework assesses the relative risk of ecosystem collapse of an ecosystem type. The indicator 'Red List Index of Ecosystems (RLIe)' measures the average risk of ecosystem collapse of a group of ecosystems and allows for tracking change over time, based on genuine change in the risk category of each ecosystem. The RLIe can be calculated for any set of ecosystem types for which there are Red List of Ecosystems assessments. It can thus be calculated at the country level or at the global level, or for broad ecosystem groups (e.g. ecosystem functional groups).	5 years	Unknown	Pending	• Does national data on classifications and extent of ecosystem types exist? • Has my country conducted Red List of Ecosystems assessments across all ecosystem types?
	A.2 Extent of natural ecosystems	Status 3. Methods developed (or partially developed) and tested/piloted, but data not yet widely available (and/or collection not yet underway). (Indicator/methodology maintained by an organization(s)).					
	1.1 Percentage of land and seas covered by biodiversity-inclusive spatial plans	Status 1: Methods not yet developed, and a process needs to be established to develop these.					

Global Biodiversity Framework Goal/Target	Indicator & link to metadata for indicator calculation where available	Global data available	Global data description	Frequency of update for global data	Resolution of global data a	UNBL Mapview URL	Guiding questions to identify national data
Target 2: Restore 30% of all Degraded Ecosystems.	2.1 Area under restoration	FERM (Framework for Ecosystem Restoration Monitoring)	Currently, there is no mechanism for collecting area-based information on ecosystem restoration. FAO and key partners from the Monitoring Task Force of the UN Decade on Ecosystem Restoration have defined a draft methodology for data collection, compilation, and reporting. The proposed workflow consists of four main elements: data compilation, country validation, reporting and capacity development. The primary platforms and reporting mechanisms for collecting information on restoration areas identified by the Working Group, include the Framework for Ecosystem Restoration Monitoring (FERM), and others. Restoration initiatives, led by public entities, private sector, civil society and individuals can share area based data and additional parameters for reporting area under restoration through any of the key identified platforms. FAO will compile data from the key platforms and harmonize the data through the FERM registry.	Unknown	N/A	Pending	• Has your country submitted data to the FERM registry? • Is there a national database on restoration projects in the country? • Do NGO, community groups, or large private landowners, carry out restoration works that are, can, or should be included?
Target 3: Conserve 30% of Land, Waters and Seas.	3.1 Coverage of protected areas and other effective area-based conservation measures	World Database on Protected Areas	Coverage by ecosystem component: The indicator shows the total percentage coverage of terrestrial and marine areas by protected areas and OECMs at the global level.	Monthly	N/A	World Database on Protected Areas	• Is there national data on protected areas and OECMs that includes areas not already in the WDPA and WD-OECM?
		World Database of Other Effective Area-Based Conservation Measures (WD-OECM)	Coverage by ecosystem component: The indicator shows the total percentage coverage of terrestrial and marine areas by protected areas and OECMs at the global level.	Monthly	Unknown	World Database of Other Effective Area-Based Conservation Measures (WD-OECM)	
Target 7: Reduce Pollution to Levels That Are Not Harmful to Biodiversity	7.1 Index of coastal eutrophication potential	Chlorophyll-a anomalies	Level 1: This sub-indicator evaluates the intra-annual changes in chlorophyll-a concentration anomalies in each Exclusive Economic Zone (EEZ) and territorial sea using the NOAA VIIRS chlorophyll-a ratio anomaly product produced daily for the globe at 2 km spatial resolution. The daily global VIIRS chlorophyll-a concentrations are produced from the NOAA Multi-Sensor Level 1 to Level 2 (MSL12) processing of the VIIRS sensor on the Suomi SNPP satellite.	Daily	2 km	View map on UNBL	
		Chlorophyll-a deviation	The indicator aims to measure the contribution to coastal eutrophication from countries and the state of coastal eutrophication. Therefore, two levels of indicators are recommended. This data is Level 1: Globally available data from earth observations and modeling. Chlorophyll-A deviation modeling.	Monthly	4km	View map on UNBL	

Global Biodiversity Framework Goal/Target	Indicator & link to metadata for indicator calculation where available	Global data available	Global data description	Frequency of update for global data	Resolution of global data a	UNBL Mapview URL	Guiding questions to identify national data
Target 10: Enhance Biodiversity and Sustainability in Agriculture, Aquaculture, Fisheries, and Forestry	10.1 Proportion of agricultural area under productive and sustainable agriculture	Proportion of agricultural area under productive and sustainable agriculture	Headline indicator 10.1 measures the Proportion of agricultural area under productive and sustainable agriculture. It corresponds to SDG indicator 2.4.1 Proportion of agricultural area under productive and sustainable agriculture. This indicator is defined by the formula: *Area under productive and sustainable agriculture / Agricultural land area* Where the numerator corresponds to agricultural land area of the farms that satisfy the sustainability criteria of the 11 sub-indicators and the denominator is the sum of a country's total agricultural land area. The scope of the indicator is land used primarily to grow crops and raise livestock.	Annual	Country-level stats	Proportion of agricultural area under productive and sustainable agriculture	• Is there national data on agriculture, aquaculture, fisheries and forestry?
	10.2 Progress towards sustainable forest management	Proportion of forest with a long-term management plan	Headline Indicator 10.2 measures Progress towards Sustainable Forest Management. It corresponds to SDG indicator 15.2.1 - Progress towards sustainable forest management. This indicator monitors progress towards sustainable forest management (SFM) globally through five sub-indicators to capture multiple dimensions of sustainable forest management. • Annual forest area change rate (%) • Above-ground biomass in forest (tonnes per hectare) • Proportion of forest area within legally established protected areas (%) • Proportion of forest area under a long-term management plan (%) • Forest area under an independently verified forest management certification scheme (hectares)	Annual	Country-level stats	Proportion of forest with a long-term management plan	• Is there national data on forest areas under sustainable forest management (SFM)?
		Forest area under an independently verified forest management certification scheme	Headline Indicator 10.2 measures Progress towards Sustainable Forest Management. It corresponds to SDG indicator 15.2.1 - Progress towards sustainable forest management. This indicator monitors progress towards sustainable forest management (SFM) globally through five sub-indicators to capture multiple dimensions of sustainable forest management. • Annual forest area change rate (%) • Above-ground biomass in forest (tonnes per hectare) • Proportion of forest area within legally established protected areas (%) • Proportion of forest area under a long-term management plan (%) • Forest area under an independently verified forest management certification scheme (hectares)	Annual	N/A	Forest area under an independently verified forest management certification scheme	
		Proportion of forest area within legally established protected areas	Headline Indicator 10.2 measures Progress towards Sustainable Forest Management. It corresponds to SDG indicator 15.2.1 - Progress towards sustainable forest management. This indicator monitors progress towards sustainable forest management (SFM) globally through five sub-indicators to capture multiple dimensions of sustainable forest management. • Annual forest area change rate (%) • Above-ground biomass in forest (tonnes per hectare) • Proportion of forest area within legally established protected areas (%) • Proportion of forest area under a long-term management plan (%) • Forest area under an independently verified forest management certification scheme (hectares)			Proportion of forest area within legally established protected areas	

Global Biodiversity Framework Goal/Target	Indicator & link to metadata for indicator calculation where available	Global data available	Global data description	Frequency of update for global data	Resolution of global data a	UNBL Mapview URL	Guiding questions to identify national data
		Above-ground biomass in forest	Headline Indicator 10.2 measures Progress towards Sustainable Forest Management. It corresponds to SDG indicator 15.2.1 - Progress towards sustainable forest management. This indicator monitors progress towards sustainable forest management (SFM) globally through five sub-indicators to capture multiple dimensions of sustainable forest management. • Annual forest area change rate (%) • Above-ground biomass in forest (tonnes per hectare) • Proportion of forest area within legally established protected areas (%) • Proportion of forest area under a long-term management plan (%) • Forest area under an independently verified forest management certification scheme (hectares)			Above-ground biomass in forest	
		Annual forest area change rate	Headline Indicator 10.2 measures Progress towards Sustainable Forest Management. It corresponds to SDG indicator 15.2.1 - Progress towards sustainable forest management. This indicator monitors progress towards sustainable forest management (SFM) globally through five sub-indicators to capture multiple dimensions of sustainable forest management. • Annual forest area change rate (%) • Above-ground biomass in forest (tonnes per hectare) • Proportion of forest area within legally established protected areas (%) • Proportion of forest area under a long-term management plan (%) • Forest area under an independently verified forest management certification scheme (hectares)			Annual forest area change rate	
Target 11: Restore, Maintain and Enhance Nature's Contributions to People.	B.1 Services provided by ecosystems	Status 3. Methods developed (or partially developed) and tested/piloted, but data not yet widely available (and/or collection not yet underway). (Indicator/methodology maintained by an organization(s)).					
Target 12: Enhance Green Spaces and Urban Planning for Human Well-Being and Biodiversity	12.1 Average share of the built-up area of cities that is green/blue space for public use for all	Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities	The following is the definition of the SDG 11.7.1 indicator and consequently there could be small variations in the definition for the "Average share of the built-up area of cities that is green/blue space for public use for all". Indicator 11.7.1 has several interesting concepts that required global consultations and consensus. These include; built-up areas, cities, open spaces for public use, etc. As a custodian agency, UN-Habitat has worked on these concepts along with several other partners.	Annual	City-level stats	View map on UNBL	• Is there recent national validated land cover/land use data? • Has there been a national assessment on greenspace and bluespace opportunities in built-up areas?
Target 21: Ensure That Knowledge Is Available and Accessible To Guide Biodiversity Action.	21.1 Indicator on biodiversity information for the monitoring the Kunming-Montreal Global Biodiversity Framework	Status 2. Methods not yet developed, but a process is underway to develop them, led by one or more organizations, to develop them.					

Global Biodiversity Framework Goal/Target	Indicator & link to metadata for indicator calculation where available	Global data available	Global data description	Frequency of update for global data	Resolution of global data a	UNBL Mapview URL	Guiding questions to identify national data
Target 22: Ensure Participation in Decision-Making and Access to Justice and Information Related to Biodiversity for all	22.1 Land-use change and land tenure in the traditional territories of indigenous peoples and local communities	Global Land Governance Index	LANDex is a global land governance index that aims to put people at the centre of land data, democratising land monitoring and building a data ecosystem that better captures the complex experience of land governance from diverse perspectives. All LANDex indicators are set on a 0-100 scale, with 100 being the most desirable score. A high score reflects the extent to which a country has fulfilled the criteria set forth by the indicator, whether it is an ideal proportion or provisions of law or expected rates of inclusion, among others	Annual	Country-level stats	s	• Does your government recognize indigenous and local community land rights and/or title claims? • Is there a central repository for spatial data on the location and/or boundaries of indigenous or local community land titles? • If so, is this data publicly available?

a N/A: not applicable. Refers to data that are points or polygons vector layers.
Unknown: Refers to data that are raster layers where the spatial resolution of the data is unknown.

Table 3. Component Indicators – Global reference spatial data to inform calculation at the national level

This table contains all component indicators that require spatial data for their calculation, as indicated by the indicator metadata associated with of CBD/COP/DEC/16/31* Annex 1 and 2, which is available on the Kunming-Montreal Global Biodiversity Framework Indicators Website and in CBD/COP/16/INF/3/Rev.1.

Global Biodiversity Framework Goal/Target	Indicator & link to metadata for indicator calculation where available	Global data available	Global data description	Frequency of update for global data	Resolution of global data	UNBL Mapview URL	Guiding questions to identify national data
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.	Ecosystem Intactness Index	Ecological Intactness Index	Human activities are altering natural areas worldwide. While our ability to map these activities at fine scales is improving, a simplistic binary characterization of habitat and non-habitat with a focus on change in habitat extent has dominated conservation assessments across different spatial scales. Here, the authors provide a Ecological Intactness Index metric that captures both habitat loss, quality and fragmentation effects which, when combined, are called intactness.	Annual	1km	Ecological Intactness Index	• Is there technical capacity to recalculate the index with national data? • If so, is there nationally validated data on: – human footprint index – ecoregions
	Ecosystem Integrity Index	Ecosystem Integrity Index	The Ecosystem Integrity Index (EII). The index provides a simple, yet scientifically robust, way of measuring, monitoring and reporting on ecosystem integrity at any geographical scale. It is formed of three components, structure, composition, and function, and measured against a natural (current potential) baseline on a scale of 0 to 1	Unknown	1km2	Pending	• Is there technical capacity to recalculate the index using national data?.
	Species Habitat Index	Species Habitat Index	The Species Habitat Index (SHI) measures changes in ecosystem integrity through health of their component species populations and the associated processes and functions of ecological communities. The index captures alterations to the quality and connectivity of habitats at the level of single species and at fine spatial scale, addressing single square kilometer assemblages. When aggregated over a larger geographic unit (e.g., landscape, seascape, mountain region, ecological region, or country), SHI can provide a compound measure of an area's ecological integrity and connectivity. When evaluated over species' geographic ranges, the SHI also informs about trends in the health of species populations and potential changes in their genetic diversity	Annual	1 km2	Pending	• Is there technical capacity to recalculate the index with national data? • If so, is there nationally validated temporal data on: – species habitat/ distribution range, – connectivity, and – habitat integrity? – If these data exist, what is the spatial resolution of each?
	Biodiversity Habitat Index	Biodiversity Habitat Index	The Biodiversity Habitat Index (BHI) estimates the level of species diversity expected to be retained within any given spatial reporting unit (e.g. a country, a biome, an ecosystem type, or the entire planet) as a function of the area, connectivity and integrity of natural ecosystems across that unit. Results for the indicator can be expressed as either: 1) the 'effective proportion of habitat' remaining within the unit – adjusting for the effects of the condition and functional connectivity of that habitat, and of spatial variation in the species composition of ecological communities (beta diversity); or 2) the proportion of species expected to persist (i.e. avoid extinction) over the long term, predicted as a simple species-area based function of the effective proportion of habitat remaining.	5 years	30 arc-sec	Biodiversity Habitat Index	• Does your country have the technical capacity to replicate the methods to calculate this index? • Does your country have environmental data that is either nationally required and/or at a finer spatial resolution than WorldClim's 30-arcsec data for: – Min Monthly Min Temperature – Max Monthly Max Temperature – Max Diurnal Temperature Range – Annual Precipitation – Actual Evaporation – Potential Evaporation – Min Monthly Water Deficit – Max Monthly Water Deficit – Soil pH – Soil Clay Proportion – Soil Silt Proportion – Soil Bulk Density – Soil Depth – Ruggedness Index – Topographic Wetness Index • Does your country have species occurrence records that are not in GBIF and would thus produce different outputs than the global index?

Global Biodiversity Framework Goal/Target	Indicator & link to metadata for indicator calculation where available	Global data available	Global data description	Frequency of update for global data	Resolution of global data	UNBL Mapview URL	Guiding questions to identify national data
	Protected Connected index	Protected Area Connectivity (ProtConn)	ProtConn, an indicator of the connectivity of Protected Areas (PAs) systems that improves the detail and comprehensiveness of previous related assessments mainly by depicting different categories of land through which movement between protected locations may occur, including the assessment of the contribution of transboundary PAs to connectivity.	2 years	10km	Protected Area Connectivity (ProtConn)	• Methods to recompute the ProtConn index are complex; does your country: • have the capacity to recalculate the index? • Have protected area data not provided to the WDPA and would produce different values than the global index?
	Protected Area Representativeness & Connectedness Indices	Protected Area Representativeness & Connectedness Index (PARC-Connectedness)	The Protected Area Representativeness and Connectedness (PARC) indices measure the extent to which terrestrial protected areas, and other effective area-based conservation measures (OECMs), are ecologically representative, and well-connected.	2 years	30 arc-sec	Protected Area Representativeness & Connectedness Index (PARC-Connectedness)	• If working with global data, countries would simply extract the raw gridded PARC results (at 30-arcsecond grid resolution) for their country from the relevant globally-generated layers. • If there is a desire to recalculate at the national level, the following questions are relevant. • Is there technical capacity to recalculate the index with national data? • If so, is there nationally validated data on: – protected areas and OECMs, and – spatial variation in species composition?
	Evolutionarily Distinct and Globally Endangered Index	Evolutionarily Distinct and Globally Endangered Index	The EDGE index uses available extinction risk data for the world's most evolutionarily distinct and threatened species to provide explicit monitoring of documented extinctions and increases and decreases of extinction risk category on the IUCN Red List through time for these irreplaceable sets of species.	Unknown	Unknown	Pending	• Are species declared as evolutionarily distinct and threatened found in your country? • Are they being monitored?
	Living Planet Index	Living Planet Index	The Living Planet Index is a multi-species indicator which tracks average changes in the relative abundance of species populations over time.	2 years	N/A	Living Planet Index	• Does your country have the technical capacity to replicate the methods to calculate this index? • The living planet index has created an R package (rlpi) to help with calculating the index using user collected/created data. • Do you have time series data on species population sizes in your country?
Goal B: 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.	Living Planet Index for utilized species	Living Planet Index (utilized species)	The use of wildlife supports many people for their food, medicine, and livelihoods. Ensuring that this use is sustainable is central to conservation to ensure the persistence of species alongside continued utilization by people. Using more than 11,000 wildlife population trends from the Living Planet Index, the authors conducted a global analysis of local-scale data to better understand how wildlife populations respond to utilization.	2 years	N/A	View map on UNBL	• Does your country have the technical capacity to replicate the methods to calculate this index? • The living planet index has created an R package (rlpi) to help with calculating the index using user collected/created data. • Do you have time series data on utilized species population sizes in your country?
Target 2: Restore 30% of all Degraded Ecosystems.	Proportion of land that is degraded over total land area	Indicator 15.3.1: Proportion of land that is degraded over total land area	SDG indicator 15.3.1 is a binary - degraded/not degraded - quantification based on the analysis of available data for three sub-indicators to be validated and reported by national authorities. The subindicators (Trends in Land Cover, Land Productivity and Carbon Stocks) were adopted by the UNCCD's governing body in 2013 as part of its monitoring and evaluation approach	4 years	Unknown	View map on UNBL	• Is there a national method to measure land degradation? • Is there national coverage of data measuring degradation?

Global Biodiversity Framework Goal/Target	Indicator & link to metadata for indicator calculation where available	Global data available	Global data description	Frequency of update for global data	Resolution of global data	UNBL Mapview URL	Guiding questions to identify national data
	Protected Connected Index	Protected Area Connectivity (ProtConn)	ProtConn, an indicator of the connectivity of Protected Areas (PAs) systems that improves the detail and comprehensiveness of previous related assessments mainly by depicting different categories of land through which movement between protected locations may occur, including the assessment of the contribution of transboundary PAs to connectivity.	2 years	10km	Protected Area Connectivity (ProtConn)	• Methods to recompute the ProtConn index are complex; does your country: • have the capacity to recalculate the index? • Have protected area data not provided to the WDPA and would produce different values than the global index?
	Protected Area Connectedness Index (PARC-Connectedness)	Protected Area Connectedness Index (PARC-Connectedness)	The Protected Area Representativeness and Connectedness (PARC) indices measure the extent to which terrestrial protected areas, and other effective area-based conservation measures (OECMs), are ecologically representative, and well-connected.	2 years	30 arc-sec	Protected Area Connectedness Index (PARC-Connectedness)	• If working with the global data, countries could simply extract the raw gridded PARC results (at 30-arcsecond grid resolution) for their country from the relevant globally-generated layers. • If there is a desire to recalculate at the national level, the following questions are relevant. • Is there technical capacity to recalculate the index with national data? • If so, is there nationally validated data on: • protected areas and OECMs, and • spatial variation in species composition?
	Species Protection Index	Species Protection Index	The Species Protection Index (SPI) captures how adequately Protected Areas or Other Effective Area-Based Conservation Measures, i.e. conservation areas, conserve habitat and support the health and survival of species and their populations.	Annual	Unknown	Pending	• Map of Life has conducted an initial computation of global and national SPI values to assist biodiversity assessment and reporting. • Is there technical capacity to recalculate the index with national data? • If so, is there nationally validated data on: – protected areas and OECMs that is not included in the WPDA and WD-OECM, and – species habitat (suitable) range?
Target 4: Halt Species Extinction, Protect Genetic Diversity, and Manage Human-Wildlife Conflicts.	Living Planet Index	Living Planet Index	The Living Planet Index is a multi-species indicator which tracks average changes in the relative abundance of species populations over time.	2 years	N/A	View map on UNBL	• Does your country have the technical capacity to replicate the methods to calculate this index? • The living planet index has created an R package (rlpi) to help with calculating the index using user collected/created data. • Do you have time series data on species population sizes in your country?
	Green Status of Species Index		Current metadata mentioned that the Green Status of Species Index is currently in development. The year of availability is not currently known, though the aim is to be fully developed and available by 2025 at the latest.				
Target 5: Ensure Sustainable, Safe and Legal Harvesting and Trade of Wild Species.	Living Planet Index for utilized species	Living Planet Index (utilized species)	The use of wildlife supports many people for their food, medicine, and livelihoods. Ensuring that this use is sustainable is central to conservation to ensure the persistence of species alongside continued utilization by people. Using more than 11,000 wildlife population trends from the Living Planet Index, the authors conducted a global analysis of local-scale data to better understand how wildlife populations respond to utilization.	2 years	N/A	View map on UNBL	• Does your country have the technical capacity to replicate the methods to calculate this index? • The living planet index has created an R package (rlpi) to help with calculating the index using user collected/created data. • Do you have time series data on utilized species population sizes in your country?
Target 7: Reduce Pollution to Levels That Are Not Harmful to Biodiversity.	Plastic debris density	Floating plastic debris density (by micro and macro plastics (Sustainable Development Goal indicator 14.1.1(b))	The indicator 14.1.1b “Plastic debris density” includes potential measurement of plastics washed onto beaches or shorelines, floating on the water or in the water column, deposited on the seafloor/seabed, as well as ingested by biota; however, it is also important to note the importance of monitoring information on waste management and the sources of plastic pollution for understanding plastic pollution.	Unknown	Country level stats	View map on UNBL	• Is there a waste management department in the country? • Are there national investigations and monitoring on micro-and macro-plastics in EEZ and inland sea?

Global Biodiversity Framework Goal/Target	Indicator & link to metadata for indicator calculation where available	Global data available	Global data description	Frequency of update for global data	Resolution of global data	UNBL Mapview URL	Guiding questions to identify national data
Target 8: Minimize the Impacts of Climate Change on Biodiversity and Build Resilience.	Bioclimatic Ecosystem Resilience Index	Bioclimatic Ecosystem Resilience Index (BERI)	The Bioclimatic Ecosystem Resilience Index (BERI) measures the capacity of landscapes to retain species diversity in the face of climate change, as a function of the area, connectivity and integrity of natural ecosystems across those landscapes. The indicator assesses the extent to which any given spatial configuration of natural habitat will promote or hinder climate-induced shifts in biological distributions. It does this by analyzing the functional connectivity of each grid-cell of natural habitat to areas of habitat in the surrounding landscape which are projected to support a similar assemblage of species under climate change to that currently associated with the cell of interest.	5 years	30 arc-sec	Bioclimatic Ecosystem Resilience Index (BERI)	• Does your country have the technical capacity to replicate the methods to calculate this index? • Does your country have environmental data that is either nationally required and/or at a finer spatial resolution than WorldClim's 30-arcsec data for: – Min Monthly Min Temperature – Max Monthly Max Temperature – Max Diurnal Temperature Range – Annual Precipitation – Actual Evaporation – Potential Evaporation – Min Monthly Water Deficit – Max Monthly Water Deficit – Soil pH – Soil Clay Proportion – Soil Silt Proportion – Soil Bulk Density – Soil Depth – Ruggedness Index – Topographic Wetness Index • Does your country have species occurrence records that are not in GBIF and would thus produce different outputs than the global index?
Target 9: Manage Wild Species Sustainably To Benefit People.	Living Planet Index for utilized species	Living Planet Index (utilized species)	The use of wildlife supports many people for their food, medicine, and livelihoods. Ensuring that this use is sustainable is central to conservation to ensure the persistence of species alongside continued utilization by people. Using more than 11,000 wildlife population trends from the Living Planet Index, the authors conducted a global analysis of local-scale data to better understand how wildlife populations respond to utilization.	2 years	N/A	View map on UNBL	• Does your country have the technical capacity to replicate the methods to calculate this index? • The living planet index has created an R package (rlpi) to help with calculating the index using user collected/created data. • Do you have time series data on utilized species population sizes in your country?
Target 11: Restore, Maintain and Enhance Nature's Contributions to People.	Level of water stress: freshwater withdrawal as a proportion of available freshwater resources	Level of water stress (SDG 6.4.2) by major river basin	Level of water stress (SDG 6.4.2) by major river basin - AQUASTAT (FAO). This map provides a global representation of the level of water stress spatially disaggregated by major river basin.	Annual	N/A	View map on UNBL	• Does your national statistical body, environmental ministry, or local NGOs, collect data on water stress across your country?
Target 21: Ensure That Knowledge Is Available and Accessible To Guide Biodiversity Action.	Species Information Index	Species Status Information Index (SSII)	For a given species, the Species Information Index (SII) captures how well existing data covers the species' expected range. At the species level, the SII can be computed across the entirety of the species' expected range, ignoring national boundaries, or separately within each nation where it is expected to occur.	Annual	Unknown	Pending	• Does your country have species occurrence data that has not been uploaded to and mediated by the GBIF (Global Biodiversity Information Facility)? • If so, does your country have the technical capacity to replicate the methods of the Map of Life to calculate this index?

Table 4. Complementary Indicators -- Global reference spatial data to inform calculation at the national level

Please note that this is not a comprehensive list of the complementary indicators that can be calculated using spatial data. Indicators are included here on an ad hoc basis where the UNBL team already had access to the data, as indicated by the indicator metadata associated with CBD/COP/DEC/16/31* Annex 1 and 2,, which is available on the Kunming-Montreal Global Biodiversity Framework Indicators Website and in CBD/COP/16/INF/3/Rev.1.

Global Biodiversity Framework Goal/Target	Indicator & link to metadata for indicator calculation where available	Global data available	Global data description	Frequency of update for global data	Resolution of global data	UNBL Mapview URL	Guiding questions to identify national data
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.	Rate of tree cover loss	Tree Cover Loss	This data is a collaboration between the GLAD (Global Land Analysis & Discovery) lab at the University of Maryland, Google, USGS, and NASA, measuring areas of tree cover loss across all global land (except Antarctica and other Arctic islands). The data were generated using multispectral satellite imagery from the Landsat 5 thematic mapper (TM), the Landsat 7 thematic mapper plus (ETM+), and the Landsat 8 Operational Land Imager (OLI) sensors. Over 1 million satellite images were processed and analyzed, including over 600,000 Landsat 7 images for the 2000-2012 interval, and more than 400,000 Landsat 5, 7, and 8 images for updates for the 2011-2022 interval. The clear land surface observations in the satellite images were assembled and a supervised learning algorithm was applied to identify per pixel tree cover loss.	Annual	30 m	Tree Cover Loss	• Does your country produce annual forest cover data that includes the ability to measure loss of tree cover over time (e.g., does it include a temporal component)? • Is the tree cover data that is available validated for national use?
	Mangrove extent	Global Mangrove Watch (SDG 6.6.1 Indicator)	The layers shown here indicate the global extent of mangrove forests in the years 1996, 2007 - 2010, 2015 - 2020, as well as changes in mangrove extent over the period 1996-2020.	Annual	N/A	View map on UNBL	• Does your country produce its own annual mangrove extent or change maps? • How long have mangrove extent records been collected for?
	Global saltmarsh extent	Global Distribution of Saltmarshes	This dataset displays the extent of our knowledge regarding the distribution of saltmarshes globally, drawing from occurrence data (surveyed and/or remotely sensed). The dataset was developed to provide a baseline inventory of the extent of our knowledge regarding the global distribution of saltmarshes, which are ecosystems located in the intertidal zone of sheltered marine and estuarine coastlines. These ecosystems comprise brackish, shallow water with salt-tolerant plants such as herbs, grasses and shrubs, and are commonly found at temperate and high latitudes. Saltmarshes are of ecological importance as they underpin the estuarine food web. In particular, saltmarshes serve as nesting, nursery and feeding grounds for numerous species of birds, fish, molluscs and crustaceans, including commercially important fish species such as herring (Clupea harengus), and are also home to a number of Endangered and Critically Endangered species.	Unknown	N/A	Global Distribution of Saltmarshes	• Does your country maintain national data on saltmarsh extent? • If so, is this data historical? • How often is it updated? • When was it last updated?
	Forest Landscape Integrity Index	Forest Landscape Integrity Index (FLII)	The Forest Landscape Integrity Index integrates data on observed and inferred forest pressures and lost forest connectivity to generate the first globally-consistent, continuous index of forest integrity as determined by degree of anthropogenic modification. The result is a globally applicable, continuous-measure map of landscape-level forest integrity (hereafter, integrity), which offers a timely indicator of the status and management needs of Earth's remaining forests.	Unknown	300m	View map on UNBL	• Does your country have the relevetn data equivalents and technical capacity to replicate the methods to calculate this index?

Global Biodiversity Framework Goal/Target	Indicator & link to metadata for indicator calculation where available	Global data available	Global data description	Frequency of update for global data	Resolution of global data	UNBL Mapview URL	Guiding questions to identify national data
	Bioclimatic Ecosystem Resilience Index	Bioclimatic Ecosystem Resilience Index (BERI)	The Bioclimatic Ecosystem Resilience Index (BERI) measures the capacity of landscapes to retain species diversity in the face of climate change, as a function of the area, connectivity and integrity of natural ecosystems across those landscapes. The indicator assesses the extent to which any given spatial configuration of natural habitat will promote or hinder climate-induced shifts in biological distributions. It does this by analyzing the functional connectivity of each grid-cell of natural habitat to areas of habitat in the surrounding landscape which are projected to support a similar assemblage of species under climate change to that currently associated with the cell of interest.	5 years	30 arc-sec	Bioclimatic Ecosystem Resilience Index (BERI)	• Does your country have the technical capacity to replicate the methods to calculate this index? • Does your country have environmental data that is either nationally required and/or at a finer spatial resolution than WorldClim's 30-arcsec data for: – Min Monthly Min Temperature – Max Monthly Max Temperature – Max Diurnal Temperature Range – Annual Precipitation – Actual Evaporation – Potential Evaporation – Min Monthly Water Deficit – Max Monthly Water Deficit – Soil pH – Soil Clay Proportion – Soil Silt Proportion – Soil Bulk Density – Soil Depth – Ruggedness Index – Topographic Wetness Index • Does your country have species occurrence records that are not in GBIF and would thus produce different outputs than the global index?

Annex 3

Indicator Specification Template

This template is recreated with permission from the companion *Guidance for Developing Plans for National Monitoring Systems in Support of the Kunming-Montreal Global Biodiversity Framework*. It is available in Microsoft Word format here.

1. Indicator name
2. Target measured by the indicator
3. How the indicator relates to the NBSAP target (e.g. which components or elements it helps to measure or understand, and its suitability for this purpose)
4. The responsible agency and person for the production and communication of the indicator
5. Development status of the indicator (e.g. proposed, in draft form, fully specified and adopted, actively being calculated and available)
6. Definition of the indicator **7. Units of the indicator** (e.g. km^2, ha yr^{-1} (hectares per year), number of individuals, % change) **8. Forms of presentation** (graph types, maps, narrative text, etc. – give examples where possible) **9. Calculation procedure** (method) **10. Frequency of production of the indicator** **11. Where and how the indicator results are published** (are they freely available or on request, and in a machine readable, non-proprietary file format such as: .csv, .txt, geospatial formats, etc.)
12. Reports that use the indicator and their frequency The responsible agency and person for producing the reports
13. Where data is available from for calculating the indicator (e.g. a database) Responsible agency and person for the data source Time period for which data is available Level of coverage by the data for the subject of interest (e.g. geographical area, relevant populations)

14. How observations and measurements (primary data) **are produced for the indicator** Primary providers or source of observations and measurements for the indicator
15. How to interpret the indicator results (e.g. how effectively it helps to measure the target; limitations of the data; its suitability for aggregation; meaning of upward or downward trends; threshold values)
16. Limits to the indicator's usefulness and accuracy (e.g. slow change in response to changes in the subject of interest; poor quality data; limited scope for updating)
17. Closely related indicators (including in national and international processes)
18. Costs and funding to produce and maintain the indicator Annual staff and office costs (current and future years) + source of funding + any funding gaps Annual costs to collect data (current and future years) + source of funding + any funding gaps Annual computing and other infrastructure costs (current and future years) + source of funding + any funding gaps Annual costs to produce information products (indicators, reports, etc.) (current and future years) + source of funding + any funding gaps Actions to address any funding requirements
19. Capacity development needs Personnel or staff positions to be filled Technical skills to be developed Computing and other infrastructure needs to be developed Actions to address capacity development needs
20. Further information sources and details


UNBiodiversity
Lab
GBF
early action support