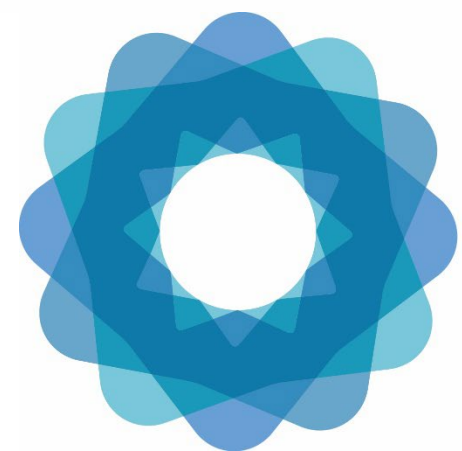




System of
Environmental
Economic
Accounting



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the European Union

Introduction to Compilation Guidelines on indicator A2 – Extent of Natural Ecosystems

Chiba Training
4 to 7 August 2026

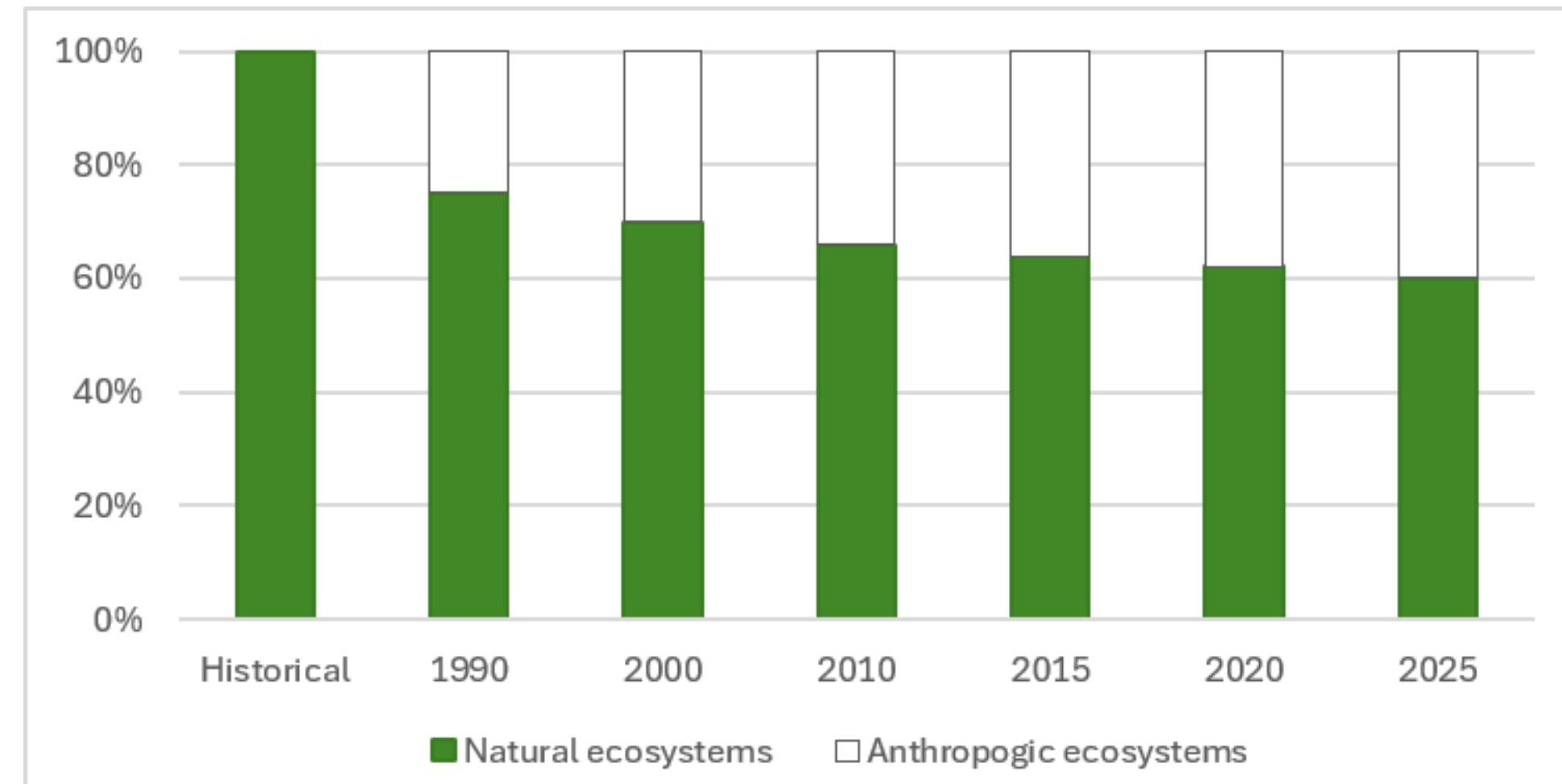
Ilaria Di Matteo
United Nations Statistics Division



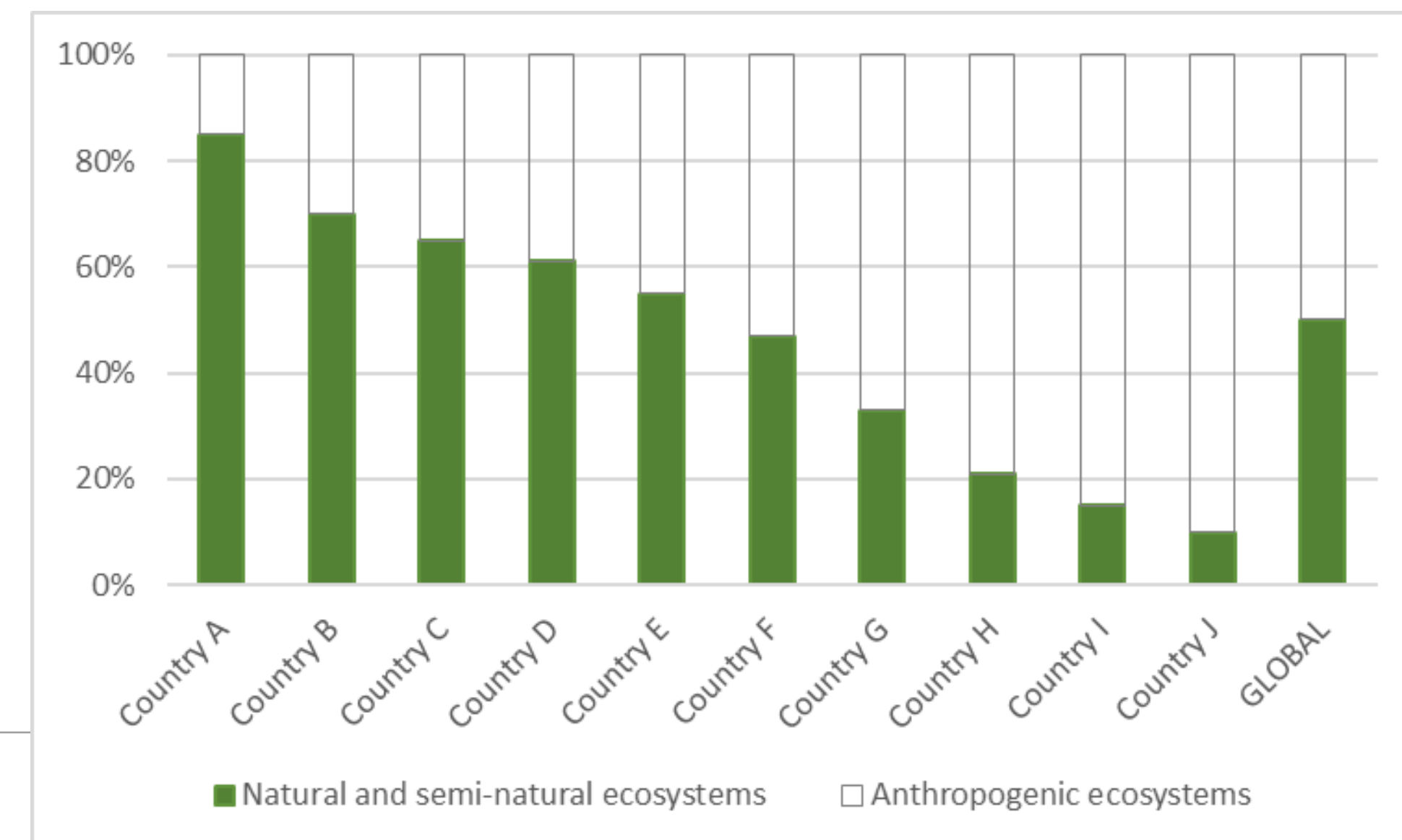
United Nations

Headline Indicator A2: Extent of Natural Ecosystems

- **Goal A:** The integrity, connectivity and resilience of all ecosystems are maintained, enhanced, or restored, substantially increasing the area of natural ecosystems by 2050.
- **Indicator Rationale:** Natural ecosystems are the foundation of biodiversity.
- **Indicator Definition:** The extent of natural and semi-natural ecosystems as a proportion of total area of the country.
- Easy to understand snapshot of the relative area of natural ecosystems at national and global level



Example of Indicator A.2 for one country over several years

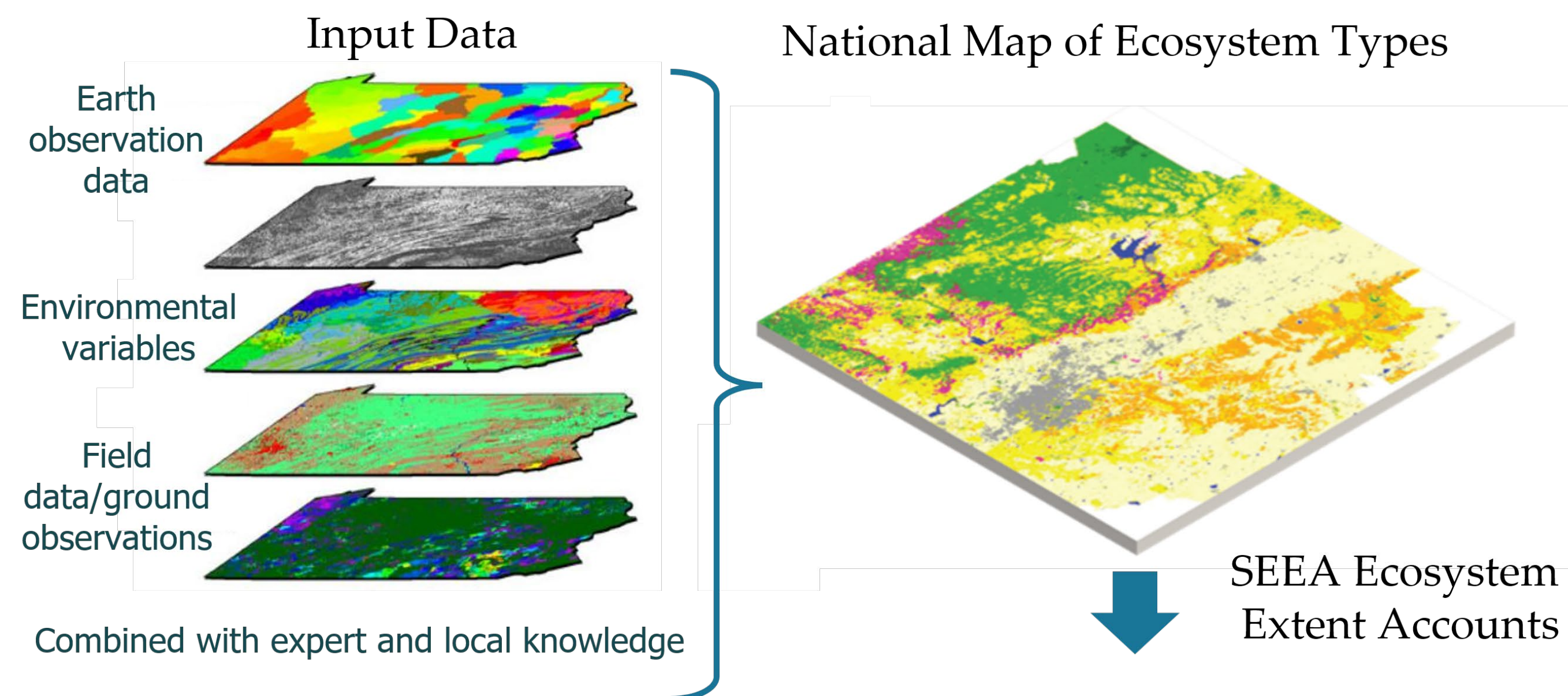


Example of Indicator A.2 for several countries, in year X

Key concepts, definitions and classifications

- **Natural ecosystems** - Ecosystems where the impact of humans on ecosystem composition, structure and function are low compared to natural factors
 - > Modified by human interventions, but with natural compositional, structural and functional characteristics still at least partially present and recognisable
 - > Instances or occurrences of natural ecosystem types that are in a range of condition states
- **Anthropogenic ecosystem** - Ecosystems created and maintained through human interventions, which determine composition, structure and functioning of the ecosystem
 - > Replaced a pre-existing natural ecosystem type, which is no longer recognisably present (although small patches/fragments and some native species may persist).
- **National ecosystem classifications** - Classification and descriptions of different ecosystem types in a country, preferably as part of a hierarchical classification system.
- **IUCN Global Ecosystem Typology** - Hierarchical framework for classifying the Earth's ecosystem types across terrestrial, freshwater and marine realms and transitions between them.

Methods and data for A.2



Method of computation: The indicator is drawn directly from **ecosystem extent accounts compiled based on the SEEA Ecosystem Accounting**.

Data:

- National ecosystem map showing the distribution of different ecosystem types in a country.
- Global Ecosystems Atlas *Guidelines for developing national ecosystem maps*.
- Land cover/land use datasets can effectively represent some anthropogenic ecosystem types and identify change in natural ecosystem extent.
- [Global Ecosystems Atlas](#) map of ecosystem functional groups at 100m resolution.

National ecosystem types summarised to the broad categories anthropogenic and natural, in hectares					
	Anthropo- genic	Natural	Total extent	Value of Indicator A.2	
Opening extent (2020)	360	640	1000	64,0% in 2020	
Increases in extent	70	0			
Reductions in extent	10	60			
Net change in extent	60	-60			
Closing extent (2025)	420	580	1000	58,0% in 2025	

A.2 Compilation Guidelines

- Being developed by UNSD as part of the EU funded [SEEA-Related Indicators for the GBF project](#).
- Based on most recent versions of the metadata being discussed at CBD SBSTTA
- Provides practical guidance to countries for compiling and reporting on GBF indicators
 - > Adaptable to countries at different stages of SEEA EA implementation
 - > Build common understanding of the indicator within and across countries.
 - > Support a strategic approach for regular compilation of the indicator.

A.2 Extent of natural ecosystems

Indicator name
A.2 Extent of natural ecosystems
2. Date of metadata update
March 2024
3. Goals and Targets addressed
3a. Goal
Headline Indicator for 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



SEEA-related Indicators
for the Kunming-Montreal Global Biodiversity Framework

**ADVANCED DRAFT Compilation
Guidelines for
GBF headline indicator A.2
Extent of natural ecosystems**

This advanced draft of the Compilation Guidelines has been prepared for information for the twenty-eighth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA-28) of the Convention on Biological Diversity (CBD). The Guidelines are being developed by the United Nations Statistics Division, with the support of an expert group convened under the auspices of the Technical Committee on SEEA Ecosystem Accounting of the United Nations Committee of Experts on Environmental-Economic Accounting (UNCEEA). Their development has also been informed by an [Expert Group Meeting on SEEA-related indicators for the Kunming-Montreal Global Biodiversity Framework \(GBF\)](#), held in February 2026. Following a final Expert Group Meeting scheduled for November 2026, a revised version of the Guidelines will be made available for public consultation.

This document (Version 3.0) is an advanced draft circulated for information purposes only. It has not been finalized, endorsed, or released for public consultation.

ecosystems are under participatory integrated biodiversity management processes addressing land and sea use change, to enhance, including ecosystems of high ecological integrity, of indigenous peoples and local communities.

loss of biodiversity, providing the conditions necessary for recovery. The conversion of natural ecosystems to intensively managed land use, such as urban development, agriculture, and infrastructure development, is one of the main drivers in the reduction of the area of natural ecosystems. This can result in increases in the area of natural ecosystems.

Extent of natural ecosystems as a proportion of overall area, over time. This responds to the element of Goal A that refers to 'substantially increasing the area of natural ecosystems by 2050'. The indicator also responds to 'pressing land and sea use change', 'to bring the loss of biodiversity ecosystems of high ecological integrity, close to zero', and 'to be disaggregated into different natural ecosystem types and abundance or scarcity of different natural ecosystem types over time.

The indicator refers broadly to ecosystems where the impact of human activities on structure and function are low compared to natural ecosystems. Natural ecosystem types in this broad sense can include ecosystems with human interventions but with natural composition.

[Updated metadata for the headline indicators for the Kunming-Montreal Global Biodiversity Framework](#)

[SEEA-related GBF indicators: Project progress | System of Environmental Economic Accounting](#)

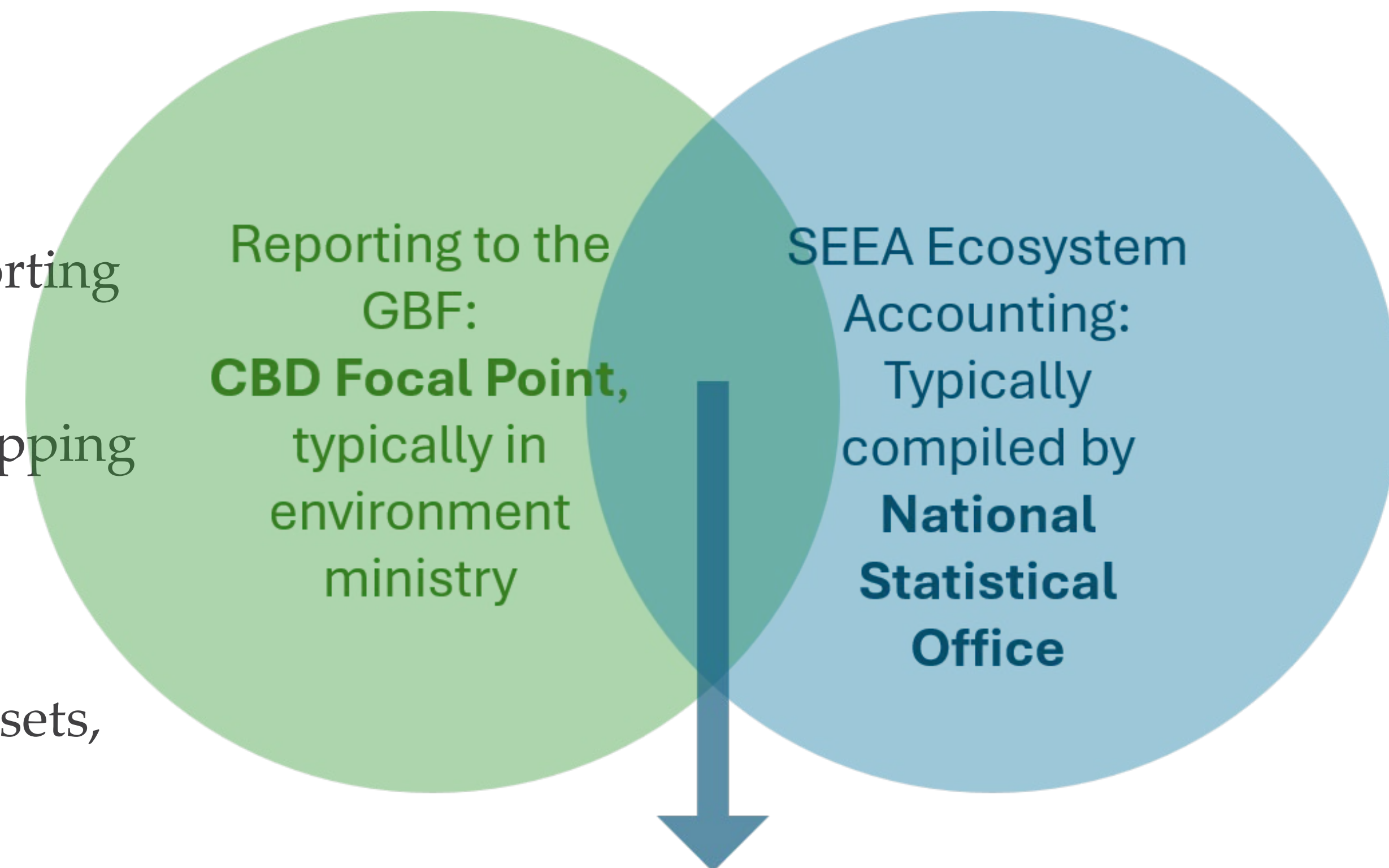


A.2 Compilation Guidelines – Stepwise approach

PART A	1. Introduction	What this document is, who it's for, how it's structured
	2. Context and rationale	Rationale in relation to Goal A and Target 1; Suite of ecosystem-related HIs; Accounting approach to indicators; Interpreting Indicator A.2
	3. Concepts and definitions	Ecosystem; Ecosystem type (ET); Ecosystem condition; Natural ETs; Anthropogenic ETs; Land cover, land use & ETs; Mosaic ETs; Borderline cases; Ecosystem extent; Changes in extent including conversions
	4. Classifications	Global Ecosystem Typology; National ecosystem classifications
PART B	5. Step 0. Preparation	High-level institutional guidance
	6. Step 1. Deciding on measurement scope	Realm-based approach; Considerations for the inland component; Considerations for the marine component (if applicable)
	7. Step 2. Collecting & organising datasets	National ecosystem map at a baseline date; Spatial datasets on change in ecosystem distribution; Global datasets as an interim option
	8. Step 3. Compiling accounts	Three scenarios regarding existence of ecosystem extent accounts; Basic and interim options for a preliminary account; Translating the account to GET ecosystem functional groups
	9. Step 4. Deriving the indicator	Deriving the indicator from the account; Disaggregating the indicator
	10. Step 5. Reporting on the indicator	GBF reference period, national baseline, reporting years; Reporting items and units

Step 0: Preparation

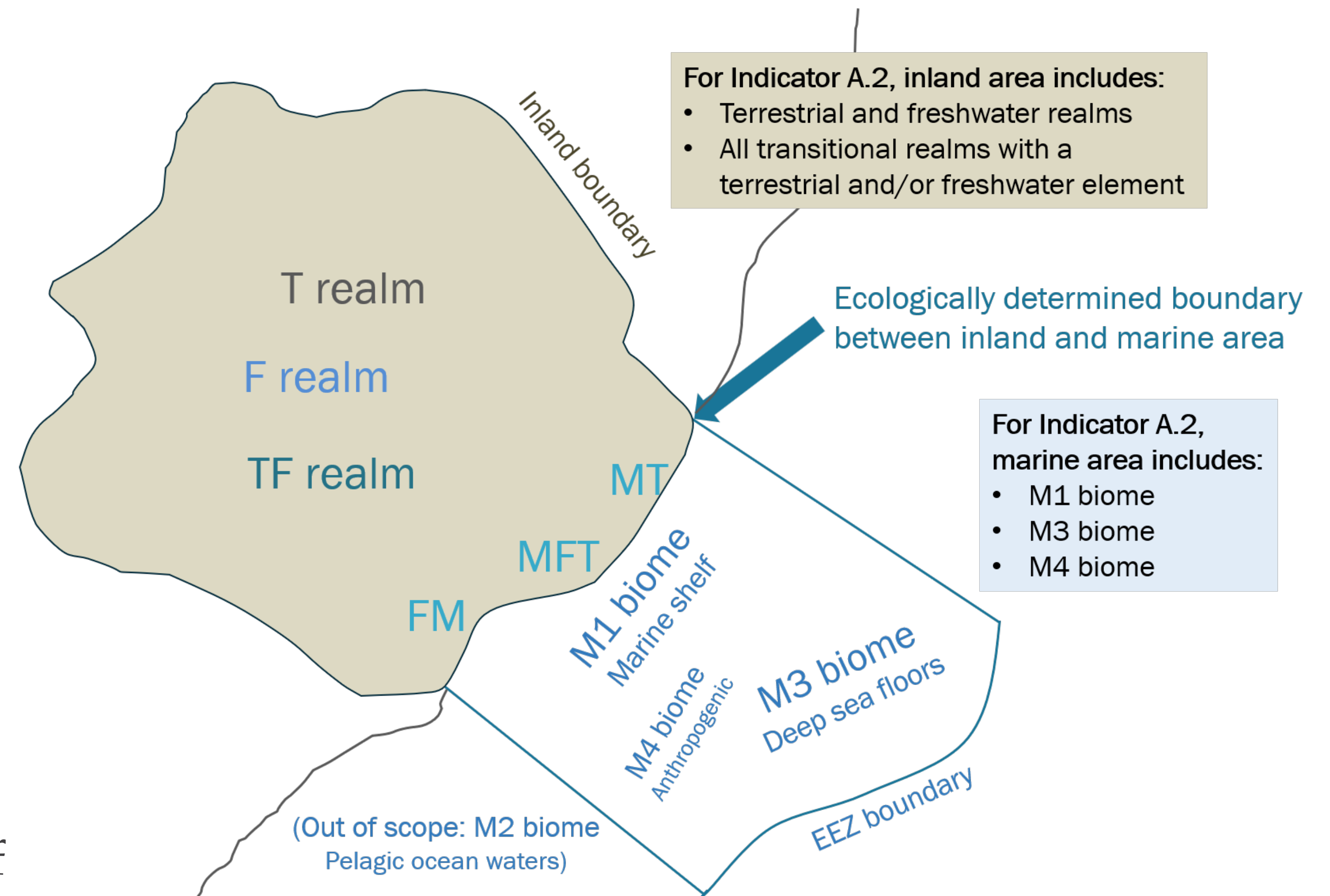
- Convene key institutions and experts that will contribute to compilation of A.2:
 - > CBD Focal Point responsible for national reporting
 - > Ecosystem scientists,
 - > Specialists in ecosystem classification and mapping
 - > Custodians of key datasets
 - > Environmental accounting experts
- National self-assessment to identify available datasets, capacity and gaps
- Identify any key datasets that will need to be developed or improved
- Establish the institutional arrangements and technical team



Collaborative delivery of
GBF Indicators A.2 and B.1,
working with relevant partners across institutions

Step 1: Operationalizing the measurement scope of the indicator

- The measurement scope for Indicator A.2 is a country's whole territory.
- Realm-based approach to compile A.2 for:
 - > Inland territory: All terrestrial and freshwater ecosystems plus the ecosystems in transitional ecosystems to the marine territory (e.g., estuaries, mangroves, shorelines).
 - > Marine territory: All marine ecosystem types to the EEZ boundary.
- The boundary between the inland and marine territory is the seaward boundary of the transitional marine realms



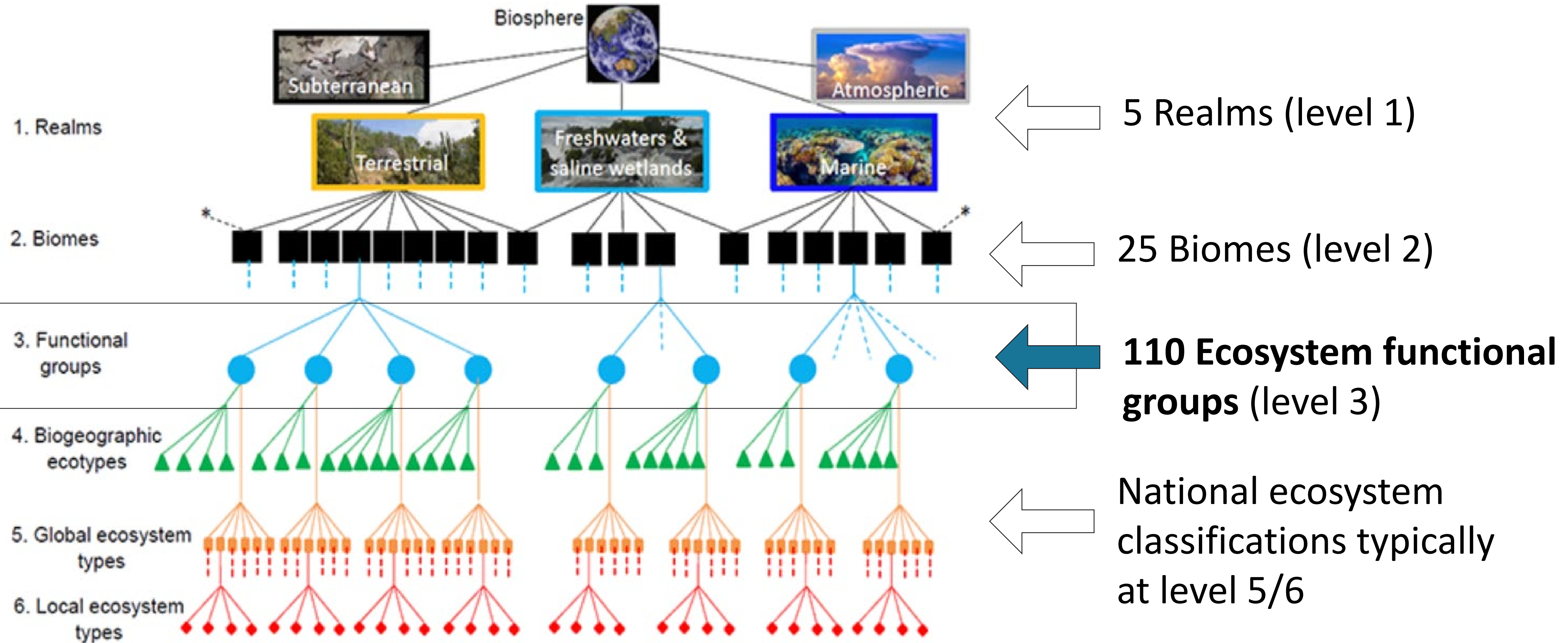
Step 2: Collecting and organizing key datasets

1. National baseline ecosystem map:
 - a. Classification of all ecosystem types that occur in a country*
 - b. Spatial dataset representing their distribution at a baseline date
 - c. Mutually exclusive and collectively exhaustive classes (No overlaps or gaps between ecosystem types)
2. Spatial datasets representing the change in distribution of ecosystem types for successive time points

* The classification distinguishes between different ecosystem types, each with a name and description. Preferably hierarchical, with ecosystem types at lower levels of the hierarchy nested within broader classes that share similar characteristics at higher levels.

- What is a national ecosystem map
 - > National classification and map of the spatial distribution of ecosystem types in a country
 - > Vegetation map
 - > Habitat map
 - > Geobotanical map
 - > Map of ecological communities
- Requires the integration of geospatial data:
 - > Historical maps,
 - > Earth observation data
 - > Environmental variables and field data
 - > Expert and local knowledge.

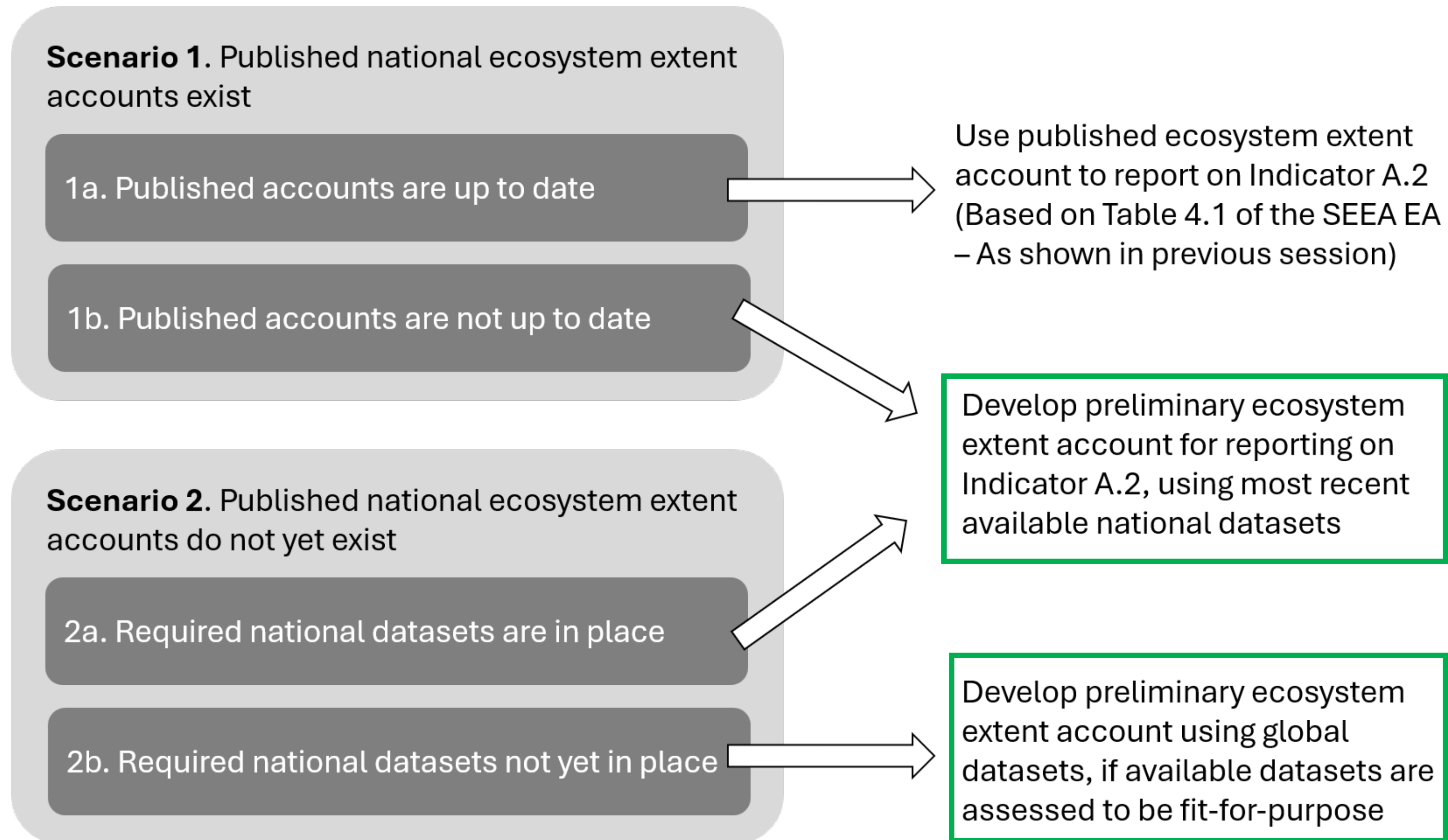
IUCN Global Ecosystem Typology



Step 2: Collecting and organizing key datasets

- Approaches to determining baseline map:
 - > Mapping the contemporary (present-day or relatively recent) distribution of ecosystem types.
 - > Mapping the historical (e.g. pre-industrial) distribution of ecosystem types.
- Links to land cover and land use:
 - > Not suitable as an ecosystem map
 - > Do not consider the compositional and functional characteristics of natural ecosystems
 - > For anthropogenic ecosystem types there may be a closer correspondence with some land cover and land use classes
- Approaches for determining change in distribution of ecosystem types for successive time points:
 - > Remap the distribution of all ecosystem types at successive dates; OR
 - > Use high quality land cover/land use datasets to measure conversion from natural to anthropogenic ecosystem types can be an effective method for mapping most changes in ecosystem distribution
 - > At least one time point in the period 2011-2020 (Reference period for reporting on the GBF)
 - > At least one more recent time point 2020 – 2030 (Implementation period of the GBF)

Step 3: Compiling the accounts



A country can compile and report on Indicator A.2 from the starting point of either of these scenarios, i.e. even if it does not yet have formally published national ecosystem extent accounts.

A preliminary ecosystem extent account should use the table structure in SEEA EA OR the basic or interim options shown on the next slide.

Basic and interim options for a preliminary account

Basic ecosystem extent account for an inland territory. Based on information on the open and closing extent only (no reductions or additions).

If national national datasets are used, the columns in the account table will reflect national ecosystem types.

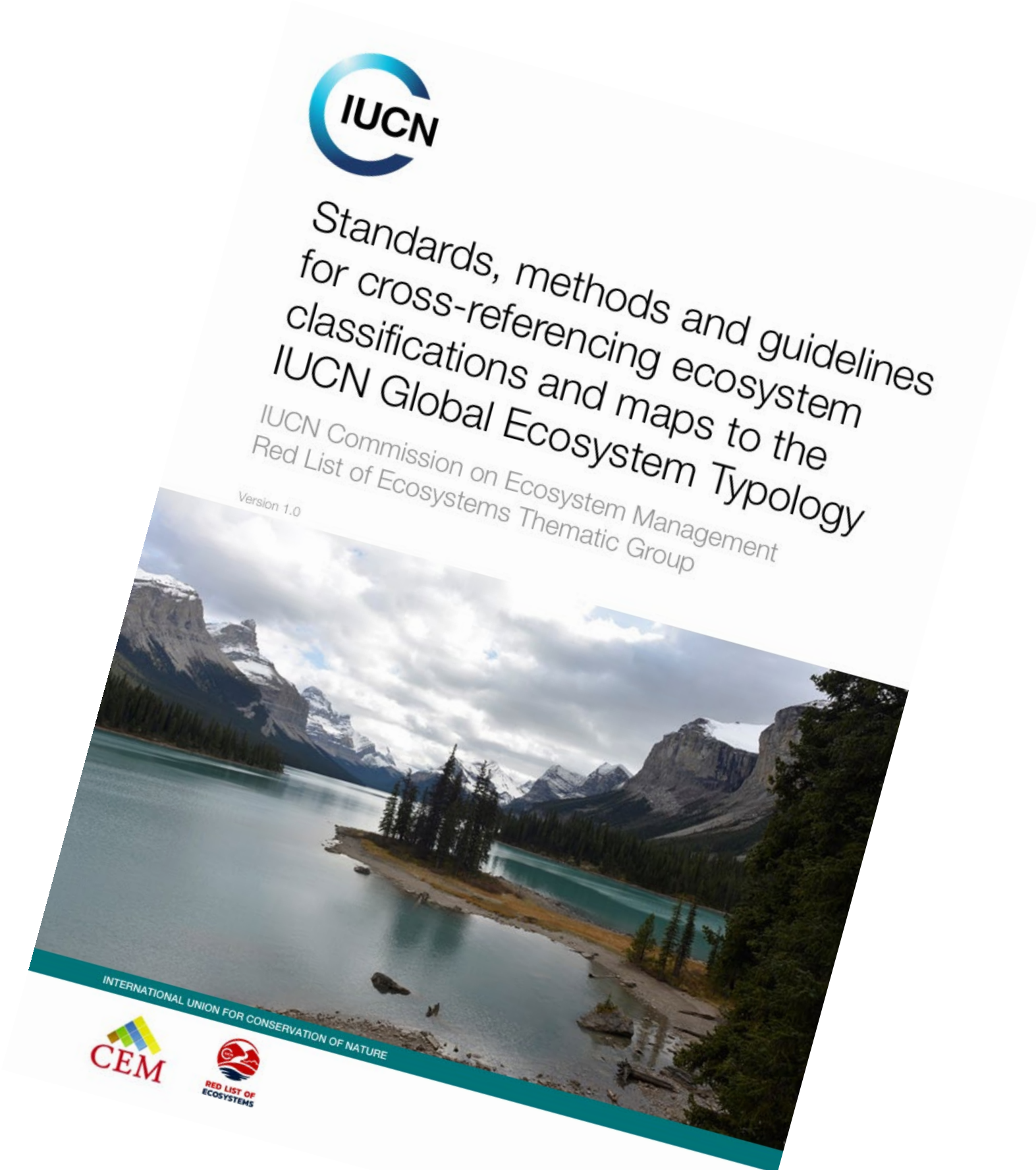
	Tropical/subtropical lowland rainforests (T1.1)	Tropical/subtropical dry forests and thickets (T1.2)	Tropical/subtropical montane (T1.3)	Urban and industrial ecosystems (T7.4)	Plantations (T7.3)	Permanent lowland rivers (F1.2)	Total
Opening Extent in year X	4	10	10	6	53	8	91
Net Change	0	-3	3	2	-2	0	
Closing Extent in year Y	4	7	13	8	51	8	91

As an interim option, in the absence of data on ecosystem types, a table with natural ecosystem extent, anthropogenic ecosystem extent can be compiled

	Natural Ecosystems	Anthropogenic Ecosystems	Total
Opening Extent in year X	32	59	91
Net Change	0	0	0
Closing Extent in year Y	32	59	91

Translating extent account to IUCN GET functional groups

- Reporting template for Indicator A.2 requests countries to submit values on the extent of each ecosystem functional group of the GET.
- *The version of the ecosystem extent account based on national ecosystem types remains the version that would typically be used at the national level*
- Each national ecosystem type is assigned a *membership value* across one or more ecosystem functional groups:
 - > *A proportional-fit approach*, extent of each national ecosystem type split proportionately between one or more EFGs based on its membership values,
 - > *A best-fit approach*, full extent of each national ecosystem type is assigned to a single EFG based on highest membership value.
- Cross-referencing process is conceptual rather than spatial and does not influence the spatial delineation of national ecosystem types



[IUCN's guidelines for the cross-referencing process \(IUCN, 2025\)](#)

Step 4: Deriving the indicator from the account

- To derive Indicator A.2 from an extent account, national ecosystem types should be allocated to the broad categories of natural and anthropogenic ecosystems.
- National ecosystem types with high membership value or are a best fit with an anthropogenic ecosystem functional group can be considered anthropogenic ecosystem types for the purposes of Indicator A.2
- If a country has not cross referenced its national ecosystem types to ecosystem functional groups or biomes, it should assign them to the broad categories of “natural” and “anthropogenic”
- Indicator A.2 = (Total extent of natural ecosystem types / Total extent of country) x 100

	Natural Ecosystems	Anthropogenic Ecosystems	Total	Value of A.2
Opening Extent in year X	32	59	91	35.16%
Net Change	0	0	0	
Closing Extent in year Y	32	59	91	35.16%

Using the IUCN Global Ecosystem Typology for A.2

Table 1
List of ecosystem functional groups (EFGs) in the IUCN GET that are considered anthropogenic and thus excluded from “natural ecosystems” for Indicator A.2

<i>Realm</i>	<i>Biome</i>	<i>Ecosystem functional group</i>
Terrestrial	T7 Intensive land-use systems ⁷	T7.1 Annual croplands
		T7.2 Sown pastures and fields
		T7.3 Plantations
		T7.4 Urban and industrial ecosystems
		T7.5 Derived semi-natural pastures and old fields**
Freshwater	F3 Artificial fresh waters	F3.1 Large reservoirs
		F3.2 Constructed lacustrine wetlands
		F3.3 Rice paddies
		F3.4 Freshwater aquafarms
		F3.5 Canals, ditches and drains
Marine	M4 Anthropogenic marine systems	M4.1 Submerged artificial structures
		M4.2 Marine aquafarms
Marine-terrestrial	MT3 Anthropogenic shorelines	MT 3.1 Artificial shorelines

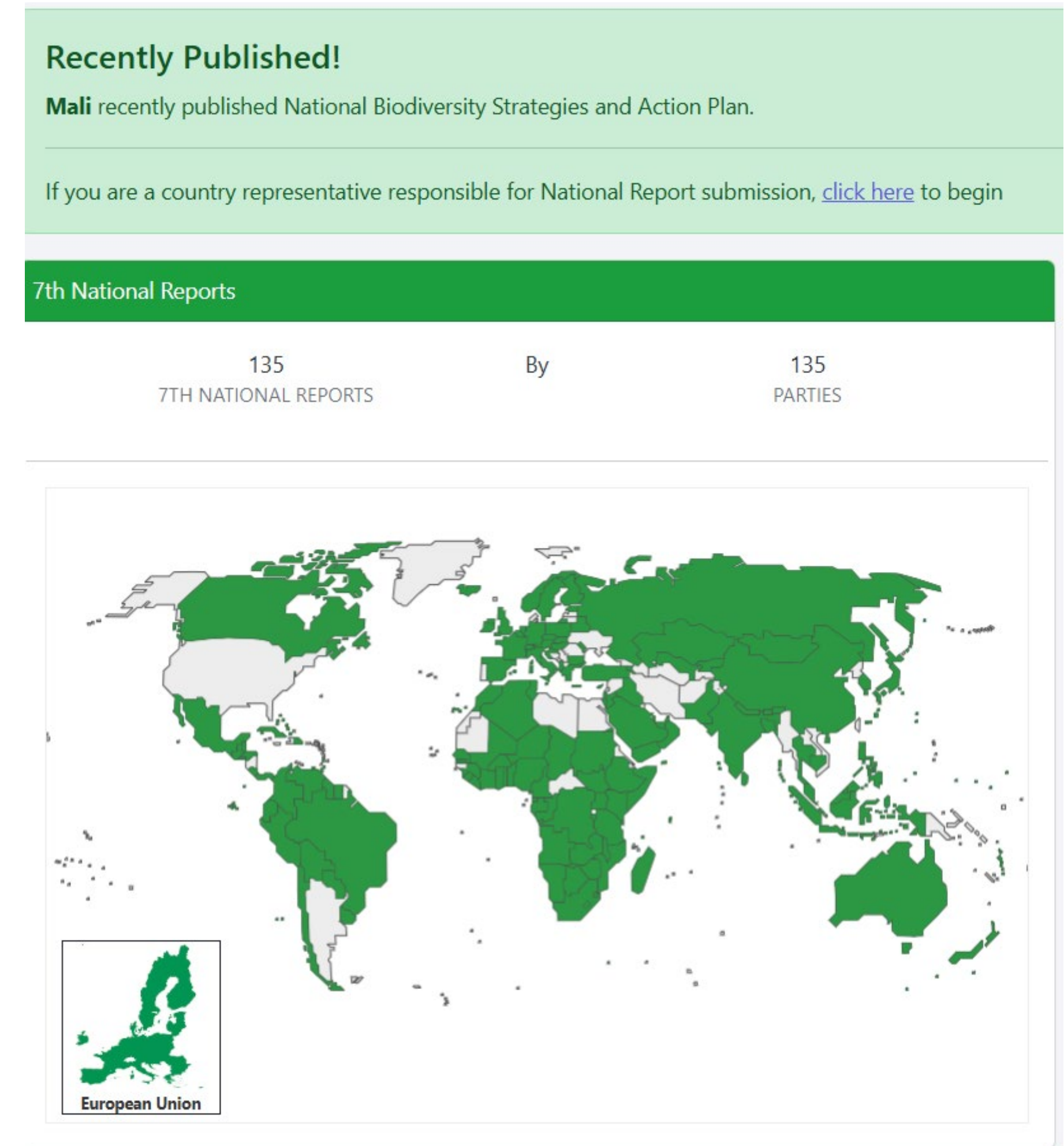
Of the 110 ecosystem functional groups, 97 are natural and 13 are anthropogenic (inc. 1 x semi natural)

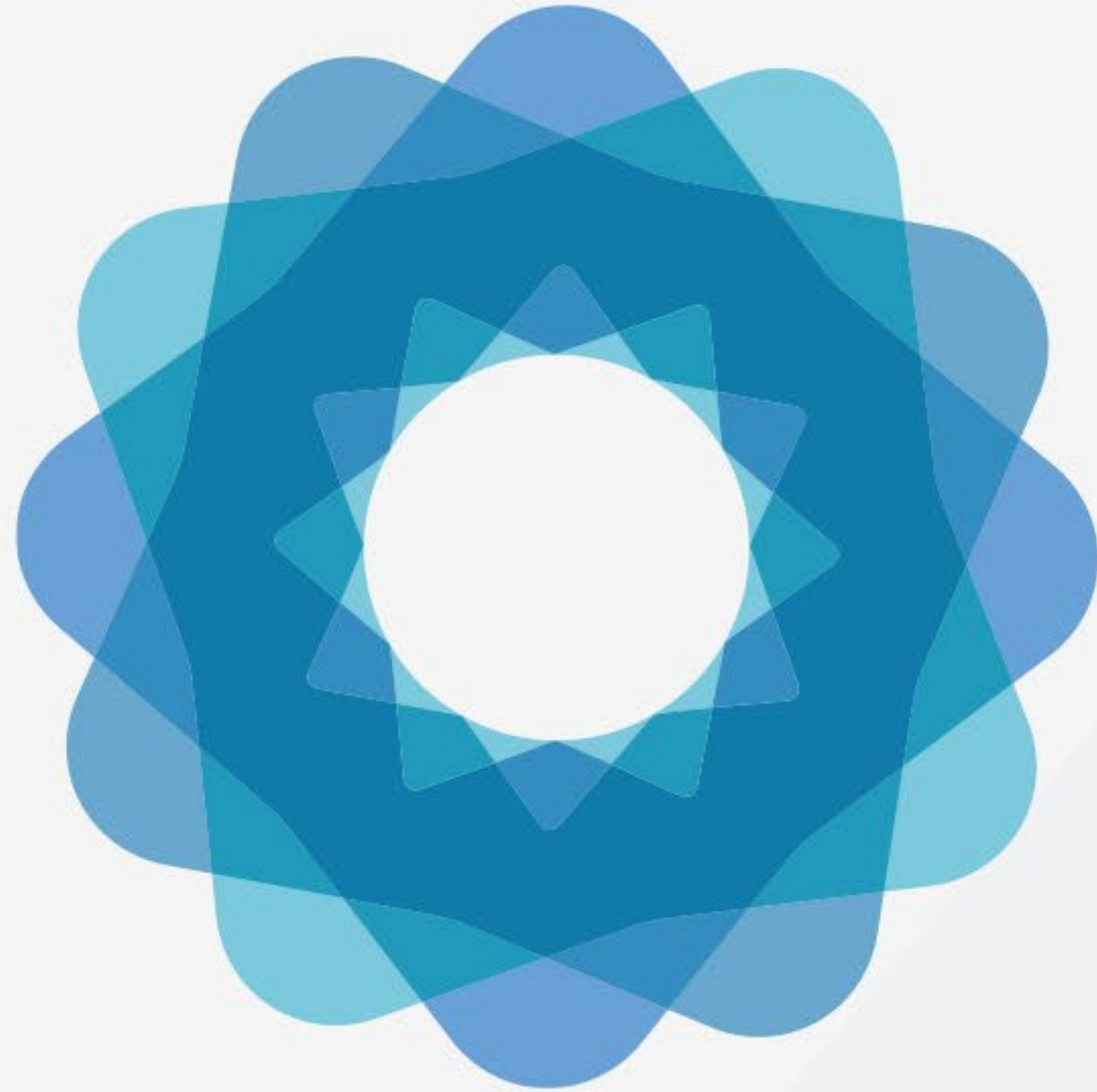
Requested Dissaggregations for Indicator A.2

- By realm, biome and ecosystem functional group
 - > At the highest level, the indicator will be disaggregated into inland and marine components that will be reported separately
 - > Preferred option is to disaggregate the indicator by ecosystem functional group (Global Ecosystem Typology level 3)
- By indigenous and traditional territories
 - > Requires respect for national legal frameworks and informed consent and participation of the communities involved
 - > Requires reliable spatial boundaries for indigenous and traditional territories.
- By natural and seminatural ecosystem, if feasible.
 - > Where “semi-natural” is refers to specific ecosystem types in an ecosystem classification.
 - > Disaggregation of indicator A.2 by degrees of human modification within the broad category of natural ecosystems is not recommended at the global level

Step 5: Reporting on the indicator

- Part of countries' National Reports via [CBD Online Reporting Tool](#)
- The ideal is for countries to report the absolute area of every ecosystem functional group that occurs in the country, not the value of the indicator itself.
- Countries are encouraged to report values for:
 - > Historical extent (prior to intensive human intervention in the landscape).
 - > Past extent (as many data points as possible, for instance 1900, 1990, 2010).
 - > At least one year within the GBF reference period (2011-2020).
 - > More recent years (as many as possible).





System of Environmental Economic Accounting