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Convention on Biological Diversity

# Post-2020 Global Biodiversity Framework

# Monitoring Framework

Jillian Campbell, Convention on Biological Diversity

UNITED NATIONS DECADE ON ECOSYSTEM RESTORATION 2021-2030

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# What is the GBF?

During the fifteenth meeting of the Conference of the Parties to the Convention on Biological Diversity will adopt a post-2020 **global biodiversity framework (GBF)** as a stepping stone towards the 2050 Vision of "Living in harmony with nature".



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# GBF Logic

- **Goals:** State and state indicators(e.g. Ecosystem extent, Gross Ecosystem Product)
- **Targets:** Actions and action indicators (e.g. Protected areas (policy indicator), material footprint (consumption indicator))


Shift from the Aichi (2010-2020) which only included targets.

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# Monitoring Approach

**Develop SDG-type indicators for the Goals and Targets**

- https://www.cbd.int/doc/c/705d/6b4b/a1a463c1b19392bde6fa08f3/sbstta-24-03-en.pdf

**Balance aspiration and feasibility**

- Preference to existing indicators, but not at the expense of measuring what is important
- Preference for existing national methodologies which have been agreed by an intergovernmental body
    - SEEA and FDES

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# Indicator groups

**Group 1 - Headline indicators:**

- A minimum set of high-level indicators to capture the overall scope of the goals and targets.
- Attempting to develop goal datasets/models which can be used in absence of national data sources.
- For National Reporting (mandatory under the Convention.)

**Group 2 - Component indicators**

- More detailed, often a disaggregation of the Headline indicators

**Group 3 - Complementary indicators**

- For thematic or in-depth analysis, may be less relevant some countries.

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# INDICATOR ASSESSMENTS AND TOOLS FOR THE DEVELOPMENT OF THE MONITORING FRAMEWORK OF THE POST 2020 GLOBAL BIODIVERSITY FRAMEWORK

Katherine Despot-Belmonte, Natasha Ali
Lauren Weatherdon, Sarah Ivory


UN environment programme WCMC

# Resources for the development of the post-2020 monitoring framework

- Many organisations have been sharing information about  indicators relevant for the monitoring framework
- Assessments of the availability and suitability of  indicators to inform discussions and support the further development of the post-2020 monitoring framework
- Information about available indicators will be made accessible online

# Context: Peer review of draft monitoring framework May to August 2020

CBD/SBSTTA REC 23/1 requested the BIP and partners to:

- peer review of document on “Indicators for global and national biodiversity targets: experience and indicator resources for development of the post-2020 global biodiversity framework and……..
- “a document that identifies the range of relevant existing indicators.....”

Peer review response:

- 106 documents submitted by 60 Parties, plus USA
- 281 documents submitted by 189 observers
- Nearly 10,000 separate comments on the proposed monitoring framework including over 5,000 on the proposed indicators

https://www.cbd.int/doc/c/a571/b25e/544f7e2b1843a86bb062ad06/sbstta-24-inf-20-en.pdf

# Indicator suitability assessment method - process

## Alignment

*How well does the indicator align to the text of the relevant Post 2020 biodiversity framework monitoring element?*

- Each indicator assessed for alignment by two reviewers with relevant expertise in the theme/topic covered
- Reviewers allocated independent alignment scores and justification
- Alignment scores and justifications reviewed by UNEP-WCMC's Chief Scientist and final score allocated along with final justification/explanation

## Temporal Relevance

*Are there enough data points available for the period 2010-2020 to enable accurate assessment?*

- Number of data points available, noting the frequency of update.
- Note of indicators which have not been updated during the timeframe of the 2010-2020 strategic plan

## Spatial Coverage

*What is the spatial scale of the indicator?*

- Review and assess spatial coverage of indicator, i.e. number of continents and countries covered.

Tittensor, D P et al. (2014) A mid-term analysis of progress toward international biodiversity targets. Science, 346:6208, pp 241-244. Available at: https://science.sciencemag.org/content/346/6206/241

# Step 2 Indicator assessment methodology - scoring

| Score | Alignment to monitoring element | Temporal relevance | Spatial coverage |
|---|---|---|---|
| **High/Good (3 points)** | As defined by Tittensor et al. (2014) | Total of ≥5 data points available for 2010-2020 | 'Good', as defined by Tittensor et al. (2014):<br>• 5 + continents (>20 countries total) |
| **Medium/ Moderate (2 points)** | As defined by Tittensor et al. (2014) | 3-4 data points are available between 2010-2020 | 'Moderate', as defined by Tittensor et al. (2014):<br>• 3-4 continents (>10 countries total);<br>• 5 + continents (<20 countries total) |
| **Low/Poor (1 point)** | As defined by Tittensor et al. (2014) | ≤2 data points are available between 2010-2020 | 'Poor', as defined by Tittensor et al. (2014):<br>• 1-2 continents (no matter how many countries);<br>• 3-4 continents (<10 countries total) |
| **Unknown** | N/A - all "available" indicators were assessed for alignment | Number of data points could not be validated e.g., data could not be accessed/was not publicly available, nor provided by institution responsible for indicator | Spatial coverage could not be accessed/validated e.g., data could not be accessed/ were not publicly available and no further information was provided by institution responsible for indicator |

# Important considerations about the assessment methodology

- Only available indicators were assessed
- It can be re-run once other indicators under development become available
- Some indicators can be used for different components of the monitoring framework

# Accessible information about indicators

CBD/SBSTTA/24/INF/16 details the analysis and provides a list of 155 available indicators. The information is presented in different ways in the Annexes

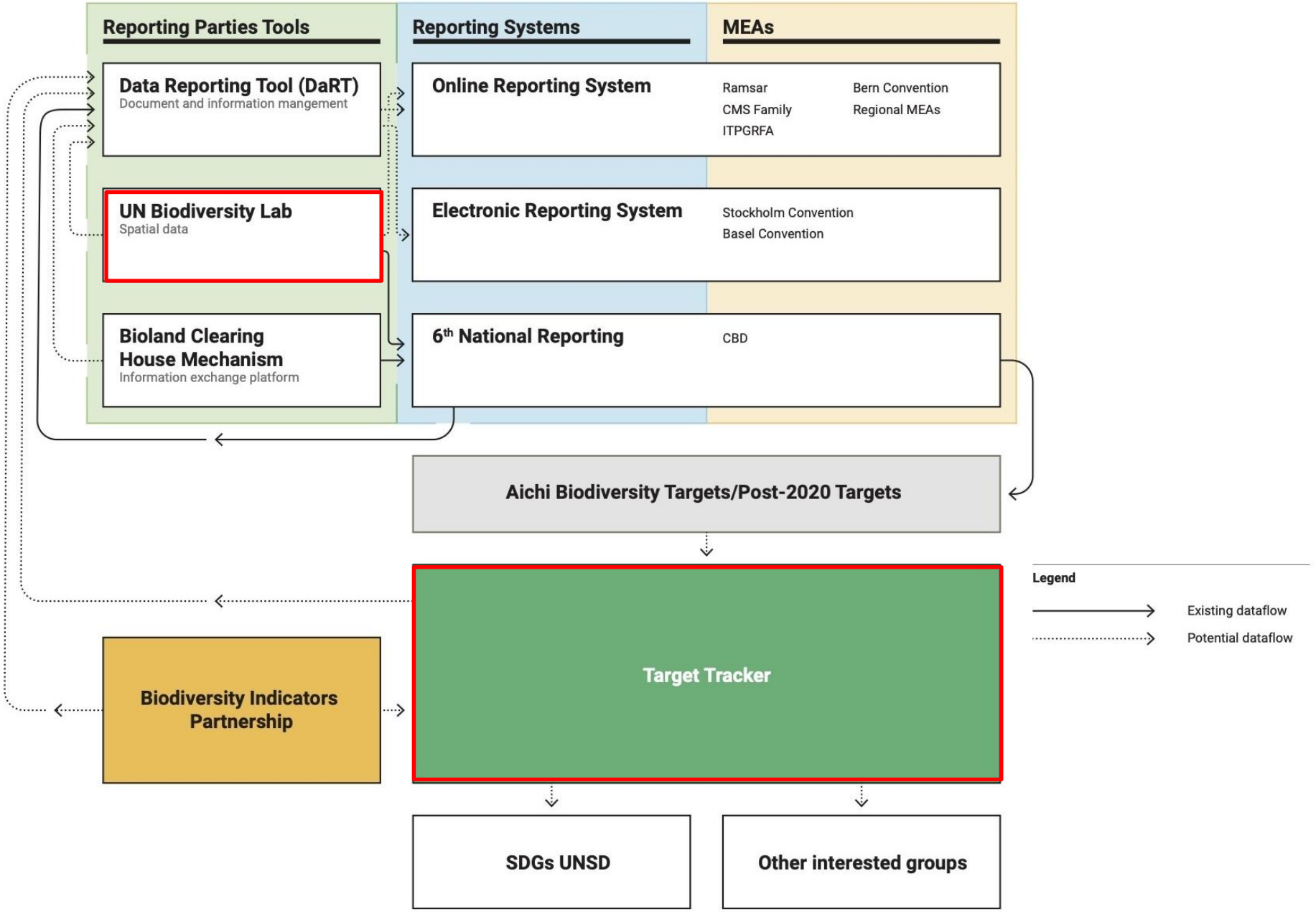
Information on available indicators is also being made accessible online, to further support discussions

1. Available and suitable indicators for the draft post-2020 monitoring framework by goal, target and component

2. An alphabetical list of indicators

3. Mapping of headline indicators and available indicators

# Future options for data and indicator flows in the national reporting landscape



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bip Biodiversity Indicators Partnership

System of Environmental Economic Accounting

# SEEA and Post-2020 GBF Monitoring Framework

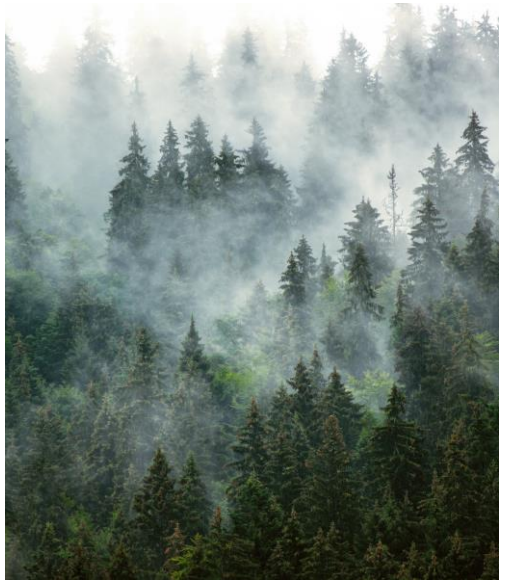
Alessandra Alfieri

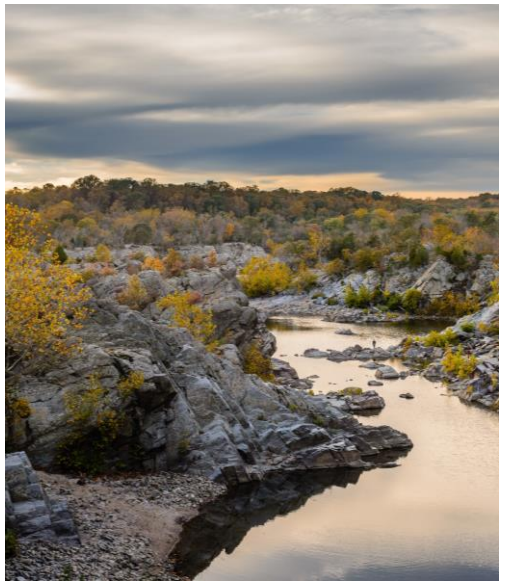
United Nations Statistics Division

United Nations

# The Need

- Our economic well-being crucially depends on nature.
- But headline indicators like GDP or the unemployment rate do not capture these vital contributions.
- As a result, decision makers don't have access to key information necessary to effectively pursue and track sustainable development.
- The System of Environmental Economic Accounts (SEEA) fills that gap.
- SEEA integrates information on the economy and the environment showing their interrelationship complementing the System of National Accounts





# Mandate of the UN Committee of Experts on Environmental-Economic Accounting (UNEEA)

- Established by UN Statistical Commission at 36th session in 2005
- Functions as an intergovernmental body to provide overall vision, coordination, prioritization and direction in environmental economic accounting and supporting statistics
- Three broad objectives
    - Mainstream environmental-economic accounts and supporting statistics
    - Elevate the SEEA to an international standard
    - Advance country implementation

# UNCEEA Work Programme

United Nations Statistical Commission
UNSC

UN Committee of Experts of Environmental-Economic Accounting
(UNCEEA)

1. Coordination and communication

2. Methodological development

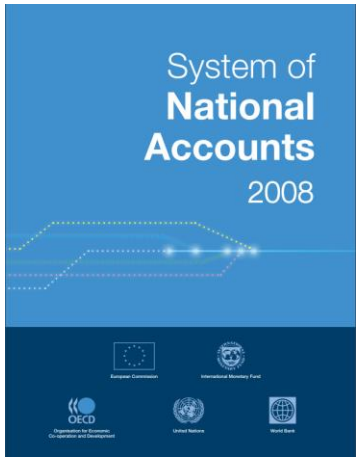
3. Development of databases

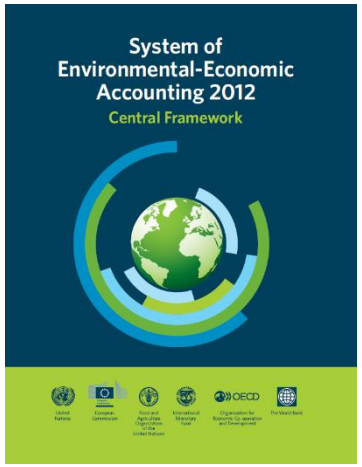
4. Implementation and statistical capacity building

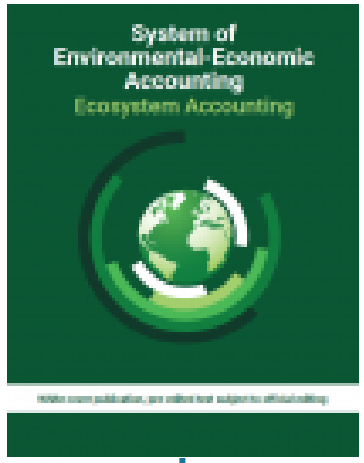
Main achievements of the UNCEEA:

- SEEA EA  adopted by UNSC in 2021
- SEEA CF adopted as an international statistical standard in 2012
- Thematic handbooks: (e.g. energy, water, measuring sustainable tourism, ocean)

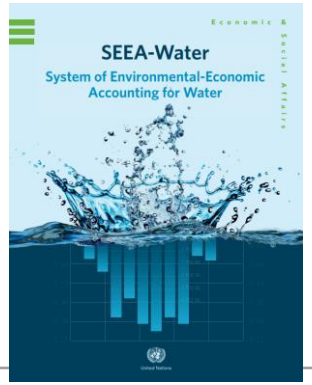
# The SNA and SEEA: Systems of integrated information

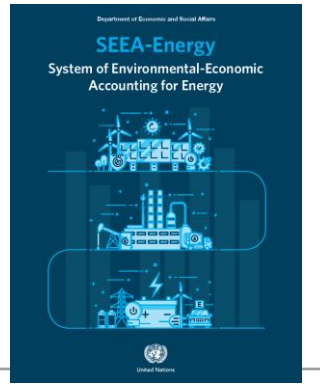


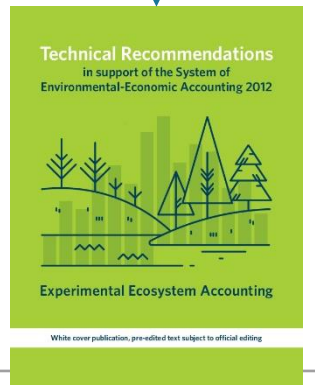





SEEA-
Agriculture,
Forestry and
Fisheries
(forthcoming)

Others
(forthcoming)

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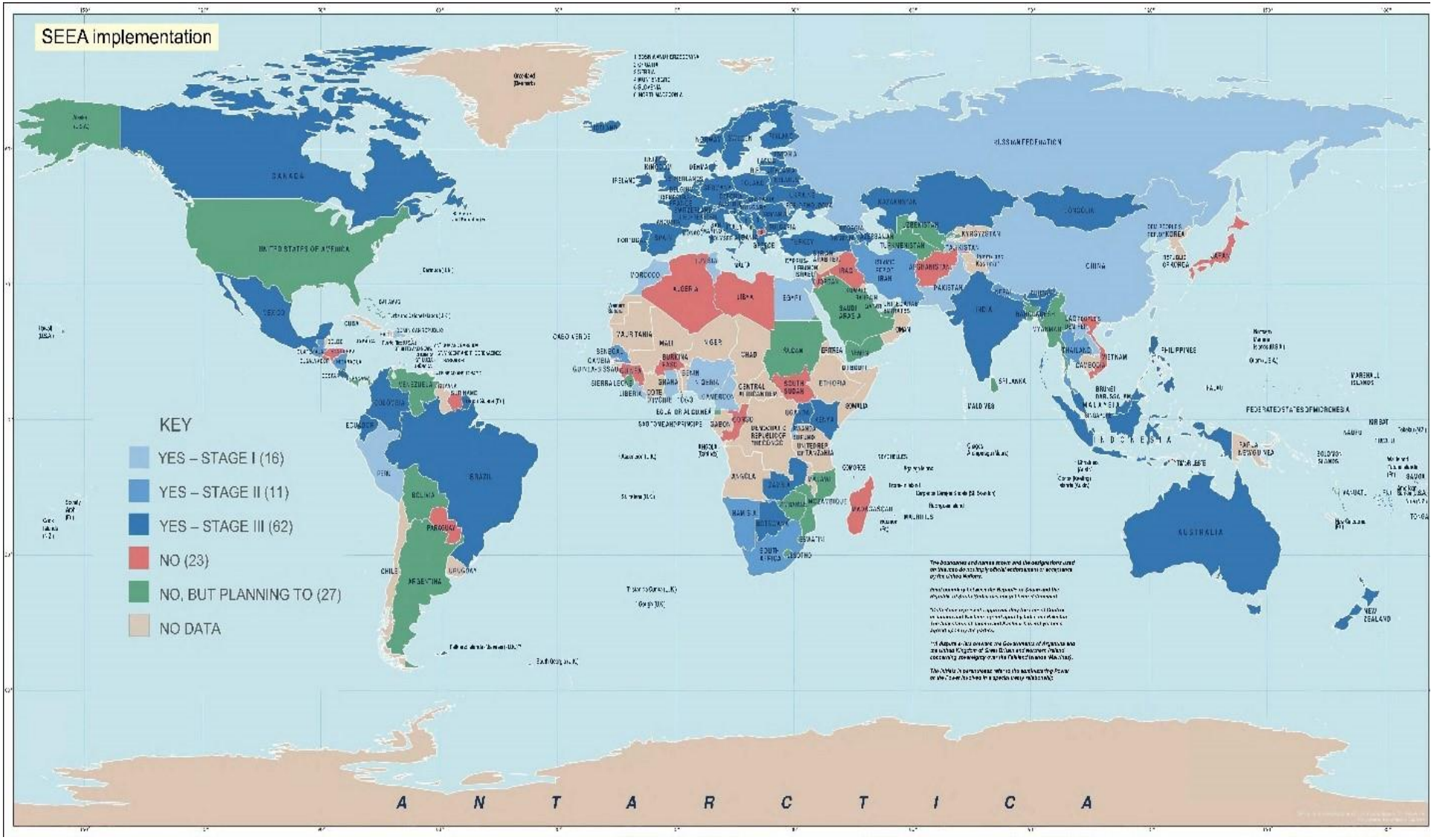
# SEEA implementation




- 2020 Global Assessment for Environmental-Economic Accounting and Supporting Statistics
- 89 countries implementing the SEEA Central Framework
- 34 countries compiling SEEA Ecosystem Accounts
- 27 countries planning to start implementation of the SEEA

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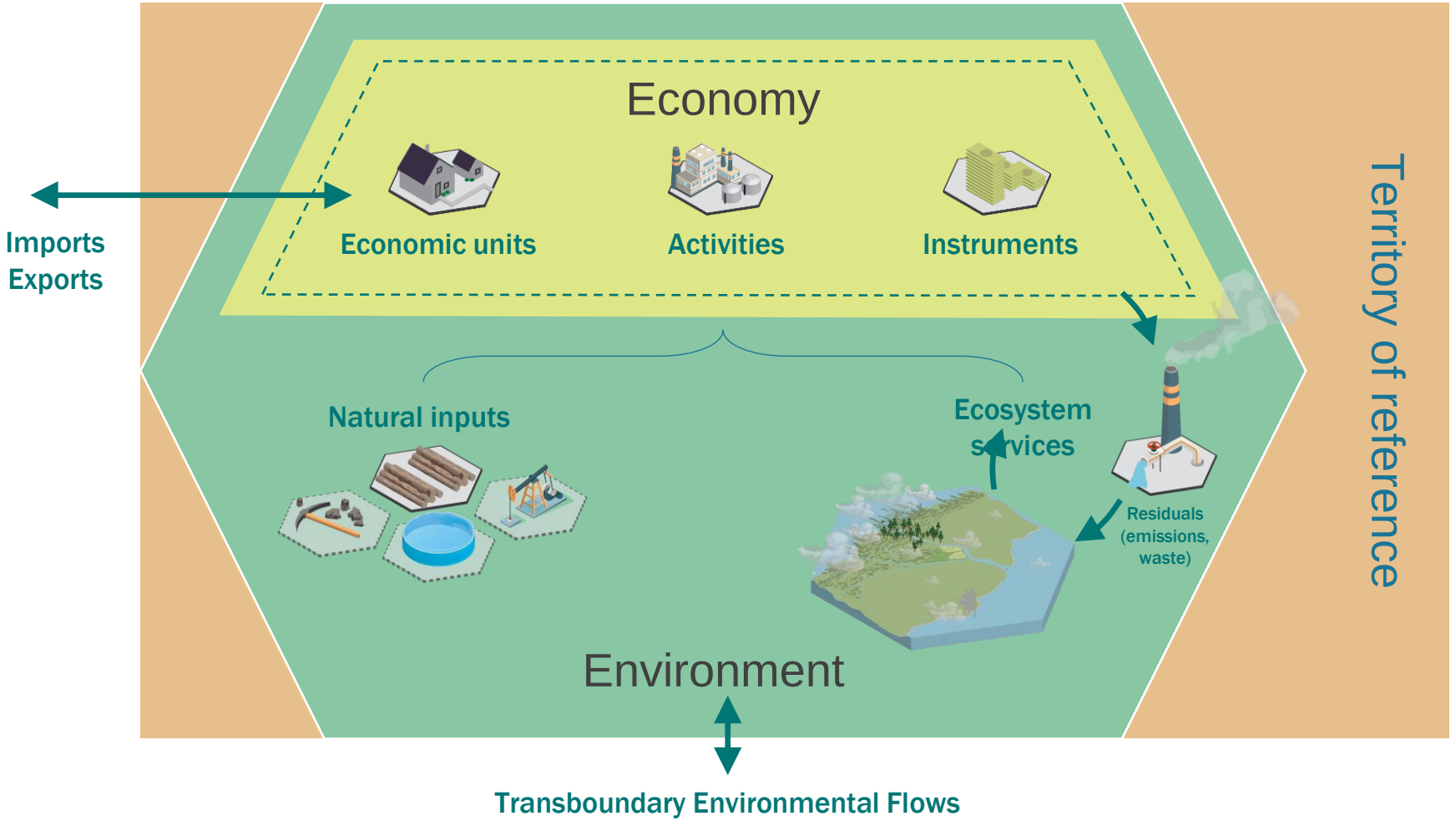
# SEEA Conceptual Framework

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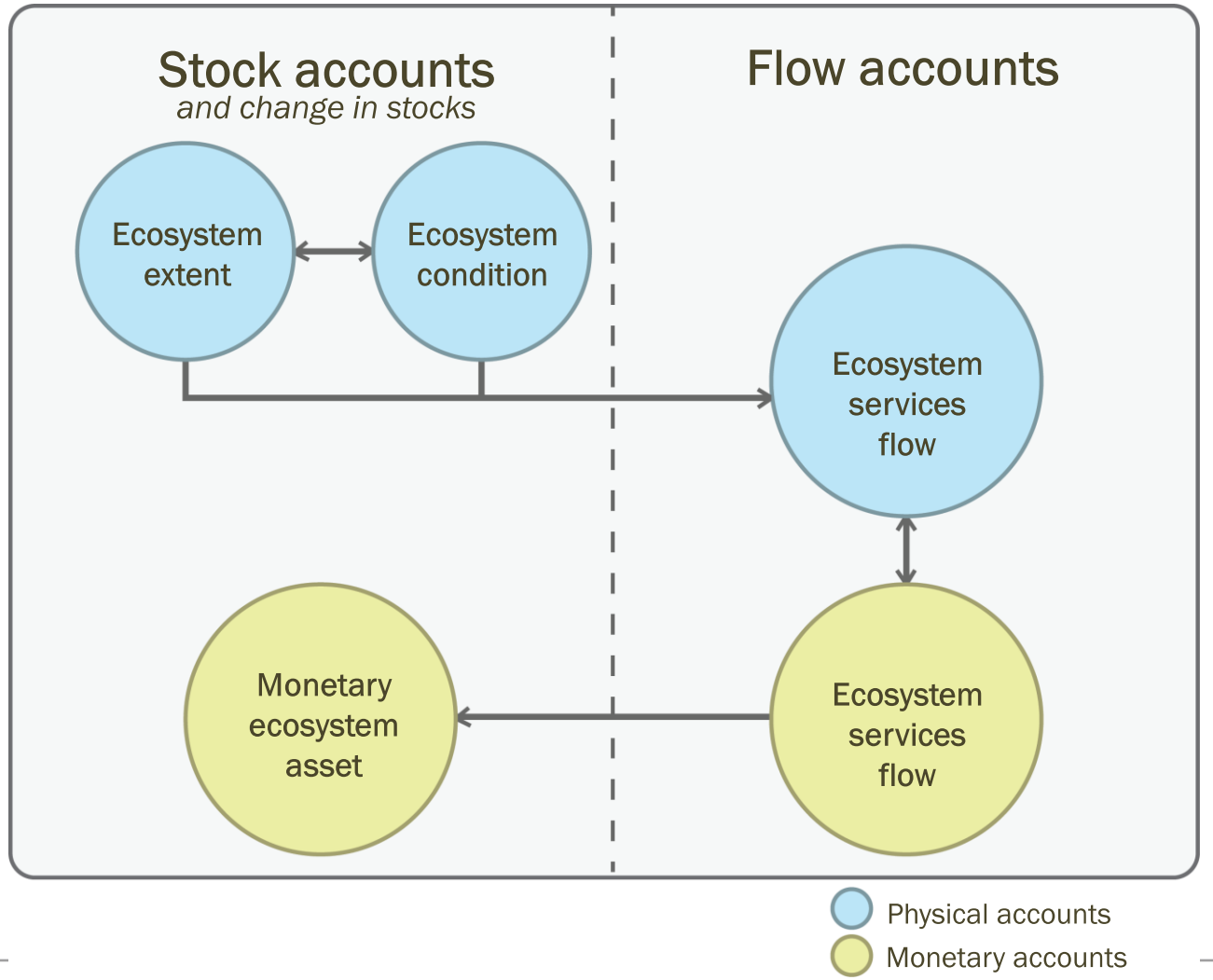
# SEEA EA - Core Accounts

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# Decision from UNSC 2021

## The United Nations Statistical Commission at its 52nd session in March 2021

- Agreed to remove the "Experimental" from the title of the revised SEEA Ecosystem Accounting, adopt chapters 1-7 describing the accounting framework and the physical accounts as an international statistical standard, keep all chapters together in one document, with chapters 8-11 describing monetary valuation and integrated accounting for ecosystem services and assets, and chapters 12-14 describing the applications and extensions, and regularly evaluate and report on the usefulness and pertinence of the accounts; (decision 8c)
- Recognized that, Chapters 8-11 of the SEEA Ecosystem Accounting describe internationally recognized statistical principles and recommendations for the valuation of ecosystem services and assets in a context that is coherent with the concepts of System of National Accounts for countries which are undertaking valuation of ecosystem services and/or assets, and requested the Committee to promptly resolve the outstanding methodological aspects in chapters 8-11 as identified in the research agenda; (decision 8d)



Source: https://unstats.un.org/unsd/statcom/52nd-session/documents/decisions/Draft-Decisions-Final-10March2021.pdf

# SEEA Ecosystem Accounting

- ❑ One integrated document, remove “Experimental”
- ❑ Chapters 1-7 on accounting framework and physical accounts adopted as an international statistical standard
- ❑ Chapters 8-11 on valuation
- ❑ Chapters 12-14 on applications and extensions
- ❑ Next
  - SEEA EA Implementation Strategy
  - Guidelines for biophysical modelling, valuation, scenario analysis
  - Implementation guidelines and technical notes
  - ARIES for SEEA (https://seea.un.org/content/aries-for-seea)

**Section: A**
**Introduction and overview**

- Ch.1: Introduction
- Ch.2: Principles of ecosystem accounting

**Section B**
**Accounting for ecosystem extent and condition**

- Ch.3: Spatial units for ecosystem accounting
- Ch.4: Accounting for ecosystem extent
- Ch.5. Accounting for ecosystem condition

**Section C: Accounting for ecosystem services**

- Ch.6. Ecosystem services concepts for accounting
- Ch.7. Accounting for ecosystem services in physical terms

**Section D: Monetary valuation and integrated accounting of ecosystem services and assets**

- Ch. 8 Principles of monetary valuation for ecosystem accounting
- Ch. 9 Accounting for ecosystem services in monetary terms
- Ch. 10 Accounting for ecosystem assets in monetary terms
- Ch. 11. Integrated and extended accounting for ecosystem services an assets

**Section E: Complementary valuations, thematic accounting and indicators**

- Ch.12: Complementary approaches to valuation
- Ch.13: Accounting for specific environmental themes
- Ch.14: Indicators and combined presentations

# Why SEEA?

- **Makes nature count** within economic planning and decision-making
- **Standardization is important** in order to obtain high-quality, and comparable statistics
- **SEEA catalyzes collaboration** due its multi-disciplinary nature between different stakeholders--statistical office and universities, line ministries, businesses, etc
- **Provides framework for deriving indicators** to support various monitoring and reporting frameworks such as SDGs, Biodiversity, Climate Change, Green Economy

# Decision from UNSC 2021

The United Nations Statistical Commission at its 52nd session in March 2021

- *Welcomed the progress of the Committee in mainstreaming the use of the SEEA in policy, including climate change, circular economy, sustainable finance, and biodiversity policy, and particularly encouraged the Committee to engage in the monitoring framework of the post-2020 global biodiversity agenda and participate in the proposed expert group under the auspices of the Secretariat of the Convention on Biological Diversity to provide the connection between the biodiversity and official statistical communities; (decision 8g)*



Source: https://unstats.un.org/unsd/statcom/52nd-session/documents/decisions/Draft-Decisions-Final-10March2021.pdf

# SBSTTA-24

- The Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) at its recent meeting in May 2021 :
  - *"Recognizes* the value of aligning national monitoring with the **United Nations System of Environmental-Economic Accounting statistical standard** in order to mainstream biodiversity in national statistical systems and to strengthen national information and monitoring systems and reporting"

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Source: Non-Paper on SBSTTA-24 Agenda item 3
https://www.cbd.int/doc/c/13e9/73d6/0de346d7d3433024a3ef1441/sbstta-24-nonpaper-item-03-v1-en.pdf

# SEEA and Post-2020 GBF

The discussion on the headline indicators for the post-2020 global biodiversity framework is ongoing. Below is a selected list of **proposed headline indicators that can be derived from the SEEA accounts:**

- A.01 Extent of selected natural ecosystem
- B.0.1. Value of all final ecosystem services (Gross Ecosystem Product)
- 6.01 Proportion of water with good ambient water quality
- 7.01 Total climate regulation services provided by ecosystems
- 8.0.1 Number of people using wild resources for energy, food or culture
- 10.0.2 Ecosystems providing reduced coastal erosion flood protection and other services
- 11.0.1 Average share of the built-up area of cities that is green/blue space for public use for all
- 13.0.2 Integration of biodiversity into national accounting and reporting systems, defined as implementation of the System of Environmental-Economic Accounting
- 15.0.1 Biomass material footprint per capital
- 18.0.1 Official development assistance, public expenditure and private expenditure on conservation and sustainable use of biodiversity and ecosystem system

# Example – SEEA and Goal A monitoring

## Ecosystem extent accounts in Brazil (2000-2018)



The ecosystem extent accounts (2000-2018), by biomes, show that Brazilian terrestrial biomes lost about 500 thousand km² of their natural areas, due to conversion into modified areas such as land used for crops and grazing.

| 2050 Goals, milestones and Targets | Headline indicators |
|---|---|
| **Goal A:**<br>The area, connectivity and integrity of natural ecosystems increased by at least [X%] supporting healthy and resilient populations of all species while reducing the number of species that are threatened by [X%] and maintaining genetic diversity;<br><br>**2030 Milestones:**<br>(i) The area, connectivity and integrity of natural systems increased by at least [5%].<br>(ii) The number of species that are threatened is reduced by [X%] and the abundance of species has increased on average by [X%]. | A.0.1 Extent of selected natural ecosystems (forest, savannahs and grasslands, wetlands, mangroves, saltmarshes, coral reef, seagrass, macroalgae and intertidal habitats)<br><br>A.0.2 Living Planet Index<br><br>A.0.3 Red list index<br><br>A.0.4 Species habitat index<br><br>A.0.5 The proportion of populations maintained within species |

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Source: (IBGE 2020), Ecosystem Accounts: Land Use in Brazilian Biomes 2000-2018

# Example: SEEA and Goal B monitoring

| First-level indicators | Second-level indicators | Third-level indicators | 2016 | 2017 | Net change |
|---|---|---|---|---|---|
| Provisioning services | Food/material provisioning | Agricultural /forestry/hay/ aquatic /seafood products | 1405.6 | 1389.4 | -16.2 |
| Summation of provisioning services | | | 1405.6 | 1389.4 | -16.2 |
| Regulating services | Global climate regulation services | Carbon sequestration | 20.3 | 20.4 | 0.1 |
| | Local climate regulation services | Regulating temperature | 117.7 | 126.1 | 8.4 |
| | Air fltration services | Absorbing sulfur dioxide | 20.9 | 19.4 | -1.5 |
| | | Absorbing fluoride | 0.3 | 0.2 | -0.1 |
| | | Absorbing nitrogen oxides | 3.9 | 3.4 | -0.5 |
| | | Dust retention | 380.4 | 347 | -33.4 |
| | Water purification services | Inorganic nitrogen purification | 0.2 | 0.4 | 0.2 |
| | | Active phosphate purification | 0 | 0 | - |
| | | Chemical oxygen demand (COD) treatment | 4.7 | 7.3 | 2.6 |
| | | Petroleum disposal | 0 | 0 | - |
| | Water flow regulation services | Conserving water resources | 3688.4 | 3374.5 | -313.9 |
| | Mitigation services | Farmland protection | 42.1 | 38.5 | -3.6 |
| | | Flood mitigation | 31.3 | 26.8 | -4.5 |
| | Soil and sedime retention services | Soil retention | 18.5 | 17.2 | -1.3 |
| | Nursery population and habitat maintenance services | Biological conservation | 3050.9 | 3011.9 | -39 |
| Summation of regulating services | | | 7379.6 | 6993.1 | -386.5 |
| Cultural services | Recreation-related services | Agricultural tourism | 74.3 | 94.4 | 20.1 |
| | | Forest tourism | 54.9 | 50.5 | -4.4 |
| | | Water conservancy tourism | 14.6 | 21.7 | 7.1 |
| | | Marine tourism | 59.9 | 61.1 | 1.2 |
| | | Urban tourism | 152.2 | 184.3 | 32.1 |
| Summation of cultural services | | | 355.8 | 412 | 56.2 |
| Total | | | 9141 | 8794.5 | -346.5 |

Highlighted results:

- Regulating services accounts for 60% of total ecosystem services in Guangxi

- The total value of ecosystem services (GEP) as % of GDP in Guangxi
  - 2016: 56.7%
  - 2017: 49.4%

***Monetary flow accounts for ecosystem services in Guangxi, China (Unit: 100 million CNY)***

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Source: NBS China 2021. Ecosystem Accounts for China. Results of the NCAVES Project.

# Next step

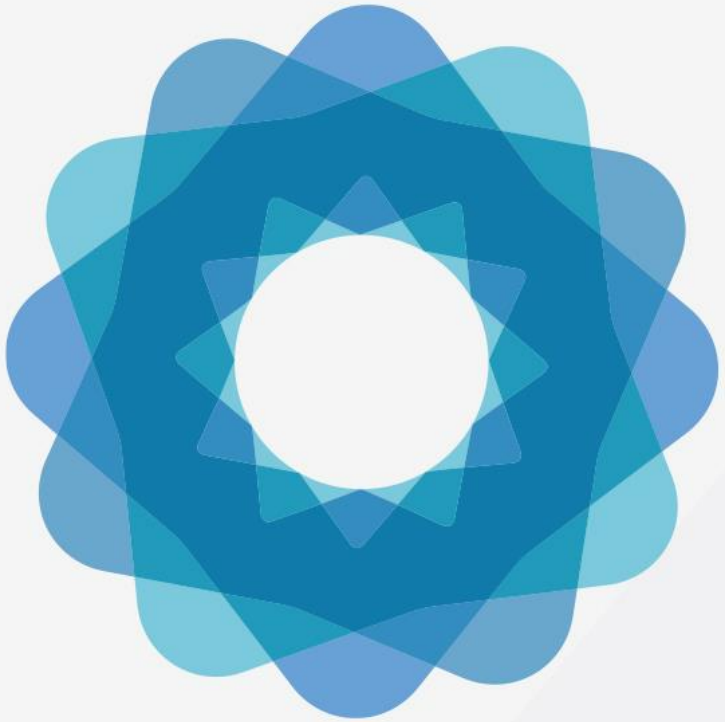
- Submit an information note documenting the linkage of SEEA EA with the GBF monitoring framework to Open-Ended Working Group on the GBF scheduled for August 2021.
- Analyze existing metadata developed by the scientific community with regard to consistency with SEEA in collaboration with the relevant agencies (e.g. GEOBON on genetic diversity, BIP indicators and their partners, etc.)
- Prepare Metadata sheets for selected SEEA EA indicators in the current list, for example, indicators related to Goal A (size and condition of natural ecosystems) and Goal B (nature's contribution to people) of the monitoring framework

# ARIES for SEEA for rapid, standardized account creation

- Global, customizable models approach enables SEEA EA compilation anywhere & improvement with local data where available
- Faster & easier to learn than other biophysical modeling approaches
- Automate production of maps & accounting tables for all accounts
- Support adoption of SEEA EA as statistical standard by providing a consistent, easy-to-use application enabling ecosystem accounting anywhere on Earth
- Infrastructure for the SEEA community to share & reuse interoperable data & models.
- More information at https://seea.un.org/content/aries-for-seea

United Nations
Statistics Division

UNEP



# System of Environmental Economic Accounting

# GEO BON in support of GBF Monitoring Framework

**Andrew Gonzalez**
GEO BON co-chair (McGill University)

**Mike Gill** (NatureServe)

McGill University

Centre de la science de la biodiversité du Québec

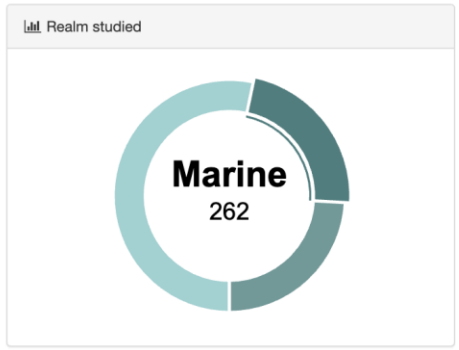
Quebec Centre for Biodiversity Science

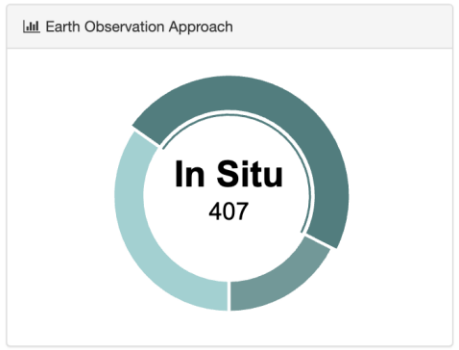
NatureServe

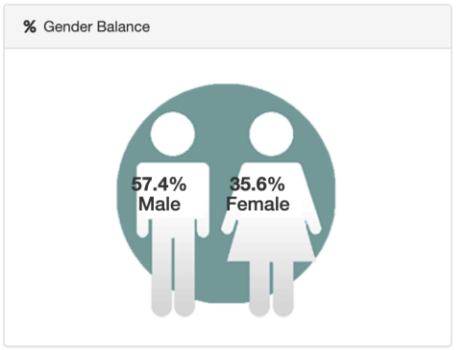
www.geobon.org

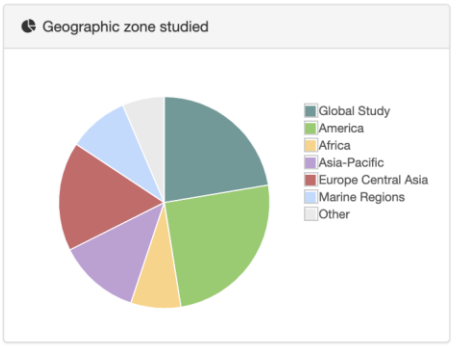
# GEO BON in a nutshell

A global Partnership:
1792 registered members from 123 countries and 1116 institutions


https://members.geobon.org/pages/index.php

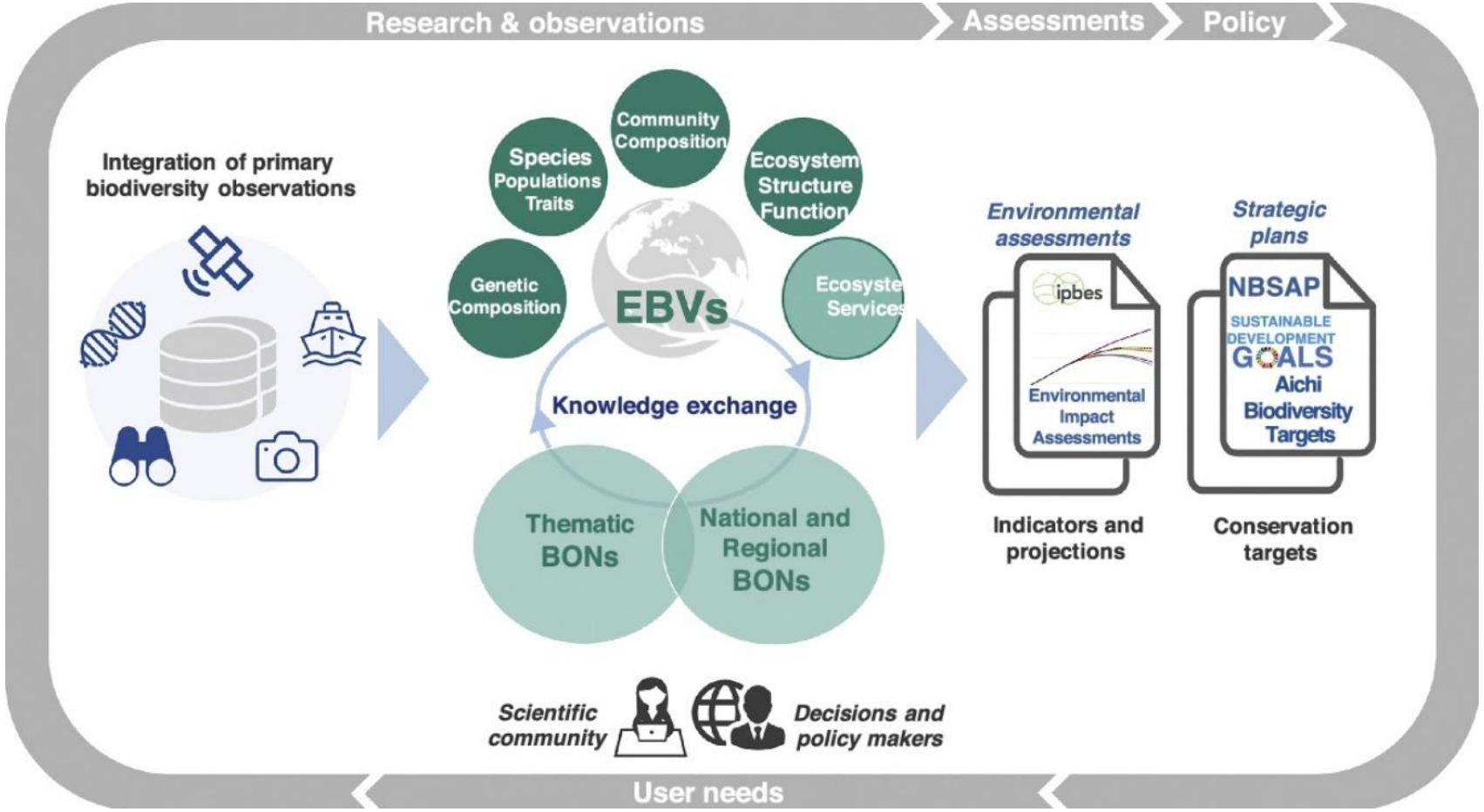
# GEO BON's mission

**Improve the acquisition, coordination and delivery of biodiversity observations and related services to users including decision makers and the scientific community.**

In the GBF context, GEO BON Support Parties to the CBD to easily and effectively track and guide progress to national targets by:

1. Providing guidance so that Parties can easily identify appropriate indicators (i.e. Headline, Component and Detailed Indicators) for the different targets.
2. Providing access to user-friendly indicator methodologies
3. Providing guidance for the sustained production, delivery and use of biodiversity indicators.

# Providing essential biodiversity variables to support robust monitoring of indicators




Navarro et al. 2017

# The Essential Biodiversity Variables

Minimum set of measurements, complementary to one another, that can capture major dimensions of biodiversity change.

EBVs are:

- ✓ Biological and policy relevant
- ✓ Sensitive to change
- ✓ Biological state variables
- ✓ Generalizable across realms
- ✓ Scalable
- ✓ Feasible



**Genetic Composition**
e.g. Allelic diversity

**Species Populations**
e.g. Species distribution

**Species Traits**
e.g. Body size, phenology

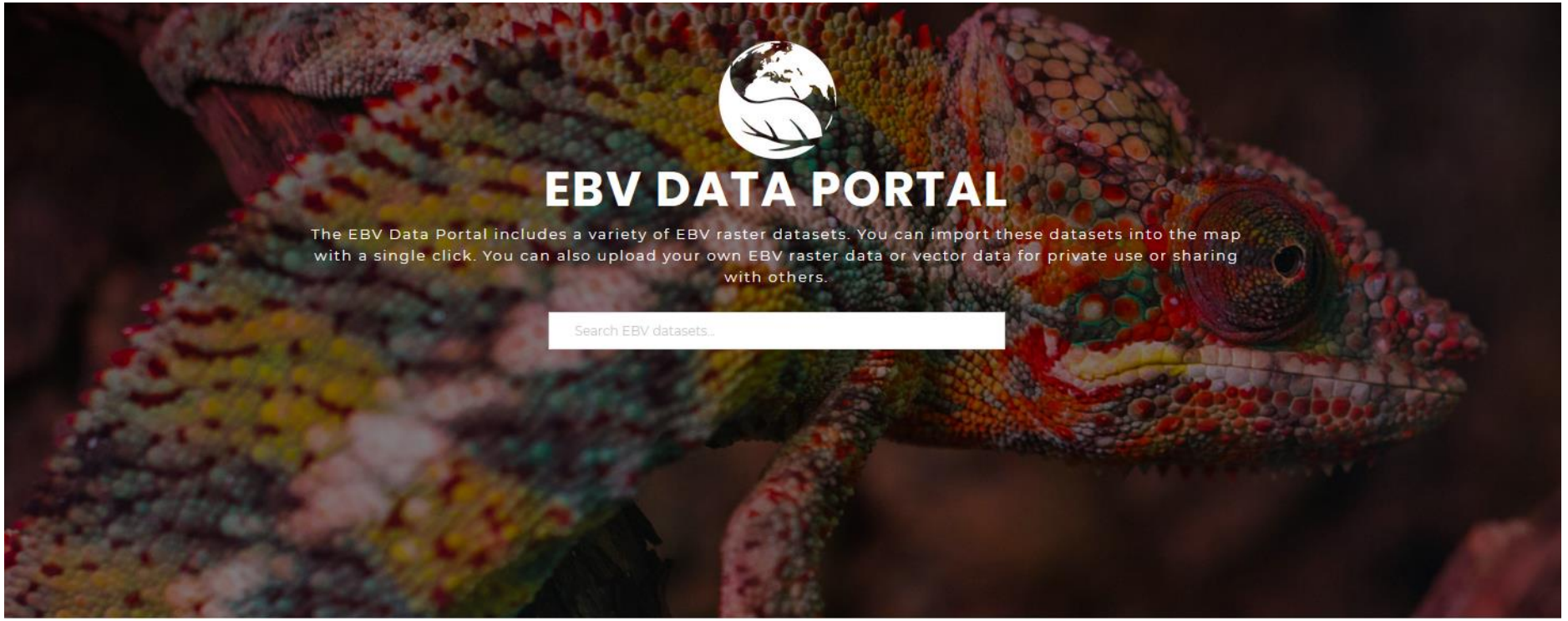
**Community Composition**
e.g. Species interactions

**Ecosystem Structure**
e.g. Ecosystem extent

**Ecosystem Functions**
e.g. Disturbance

# The Essential Biodiversity Variables

Minimum set of measurements, complementary to one another, that can capture major dimensions of biodiversity change.

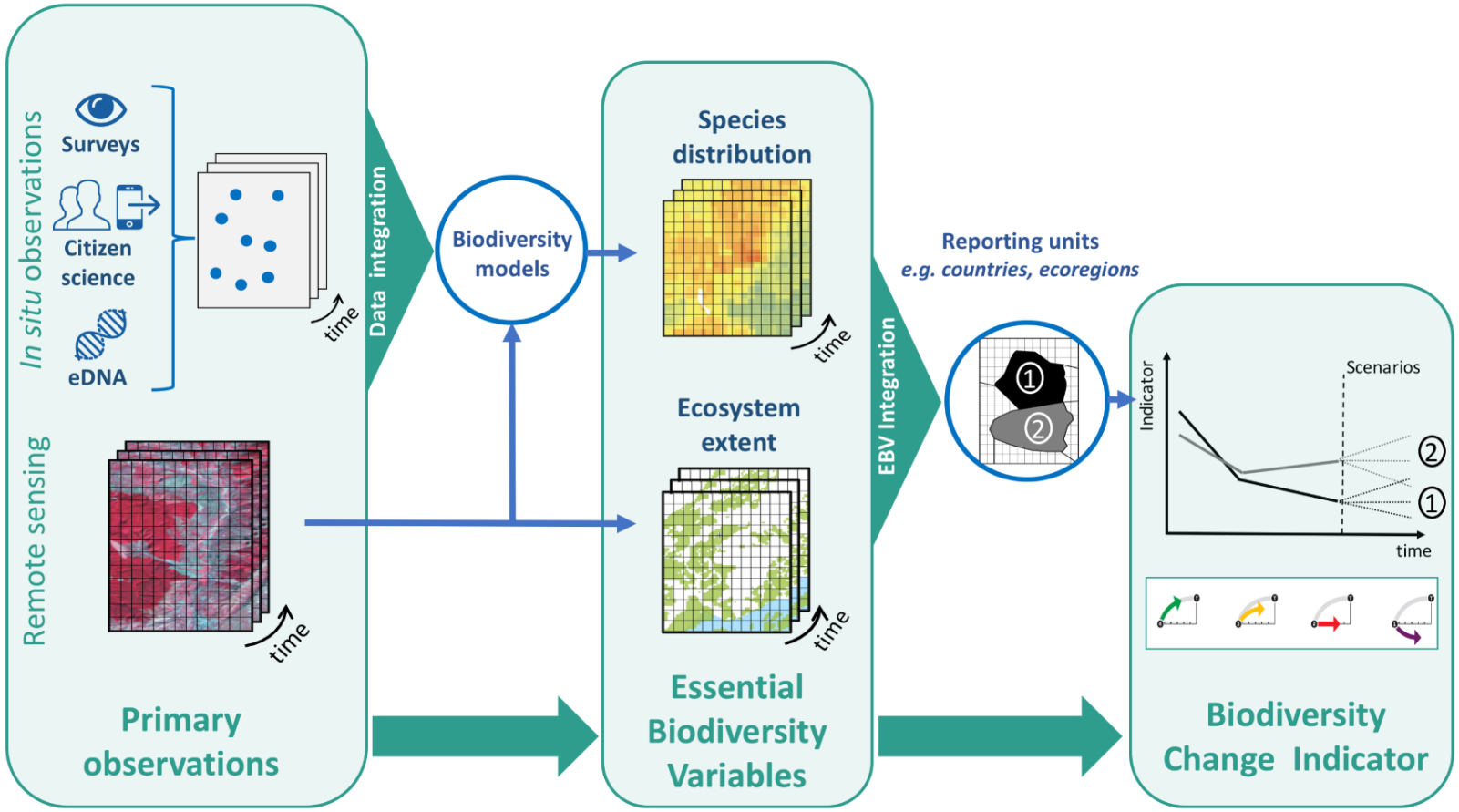



https://portal.geobon.org/

MEASURING THE BIODIVERSITY OF OUR PLANET

BIODIVERSITY OBSERVATIONS FOR A BETTER FUTURE

# Developing the Essential Biodiversity Variables




Navarro et al. 2017

Users

National Governments

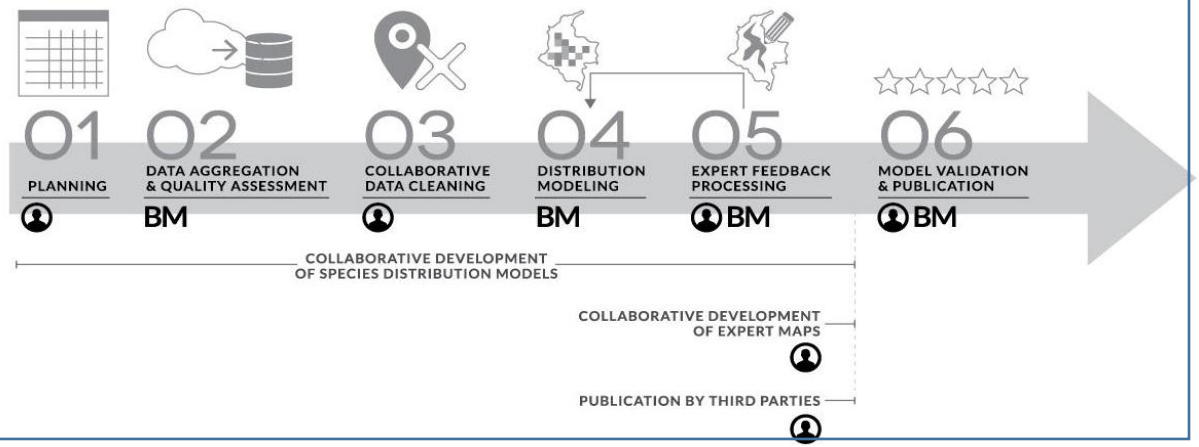
CBD

ipbes Science and Policy for People and Nature

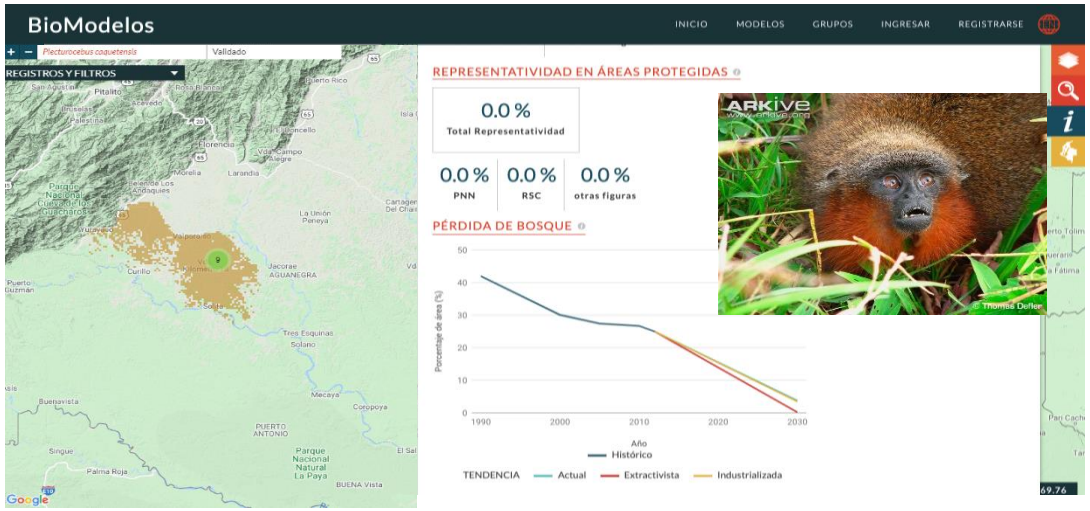
SUSTAINABLE DEVELOPMENT GOALS

# EBV workflow in Colombia

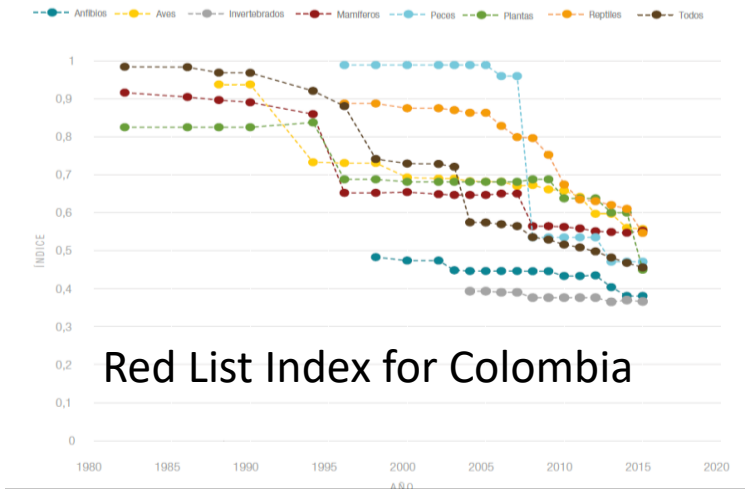
**Species**
**Populations**
Species distribution



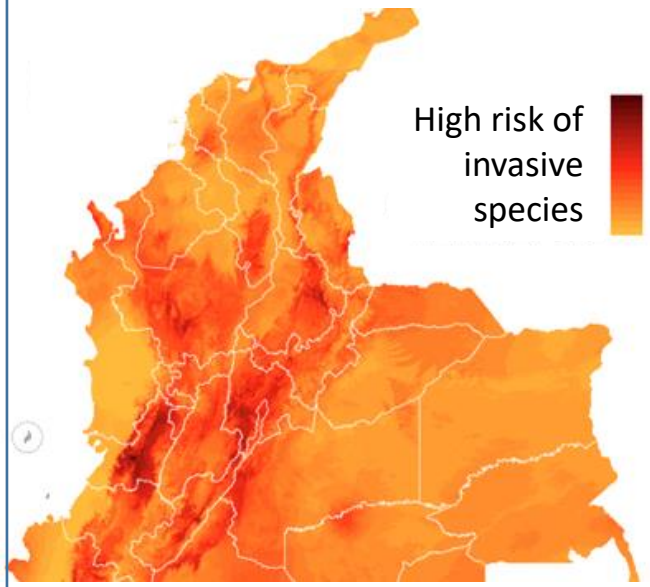

1. Species distribution maps and indicators: representation in protected areas and habitat loss, are available at BioModelos platform: http://biomodelos.humboldt.org.co for each species.

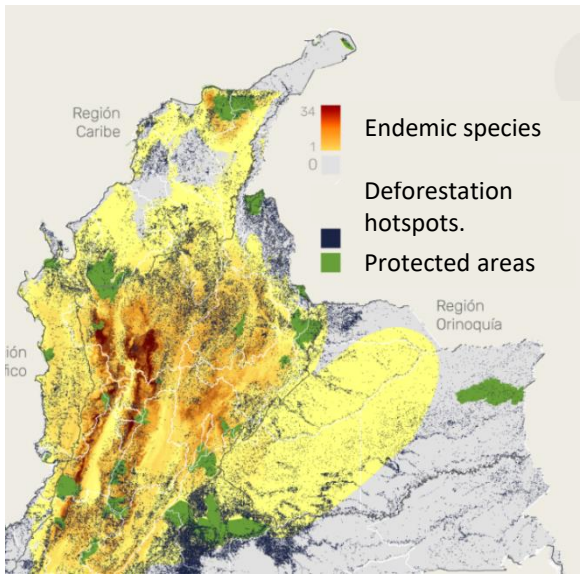



2. Metrics and indicators are used for species extinction risk assessment:




3. Multispecies analysis generates national indicators:

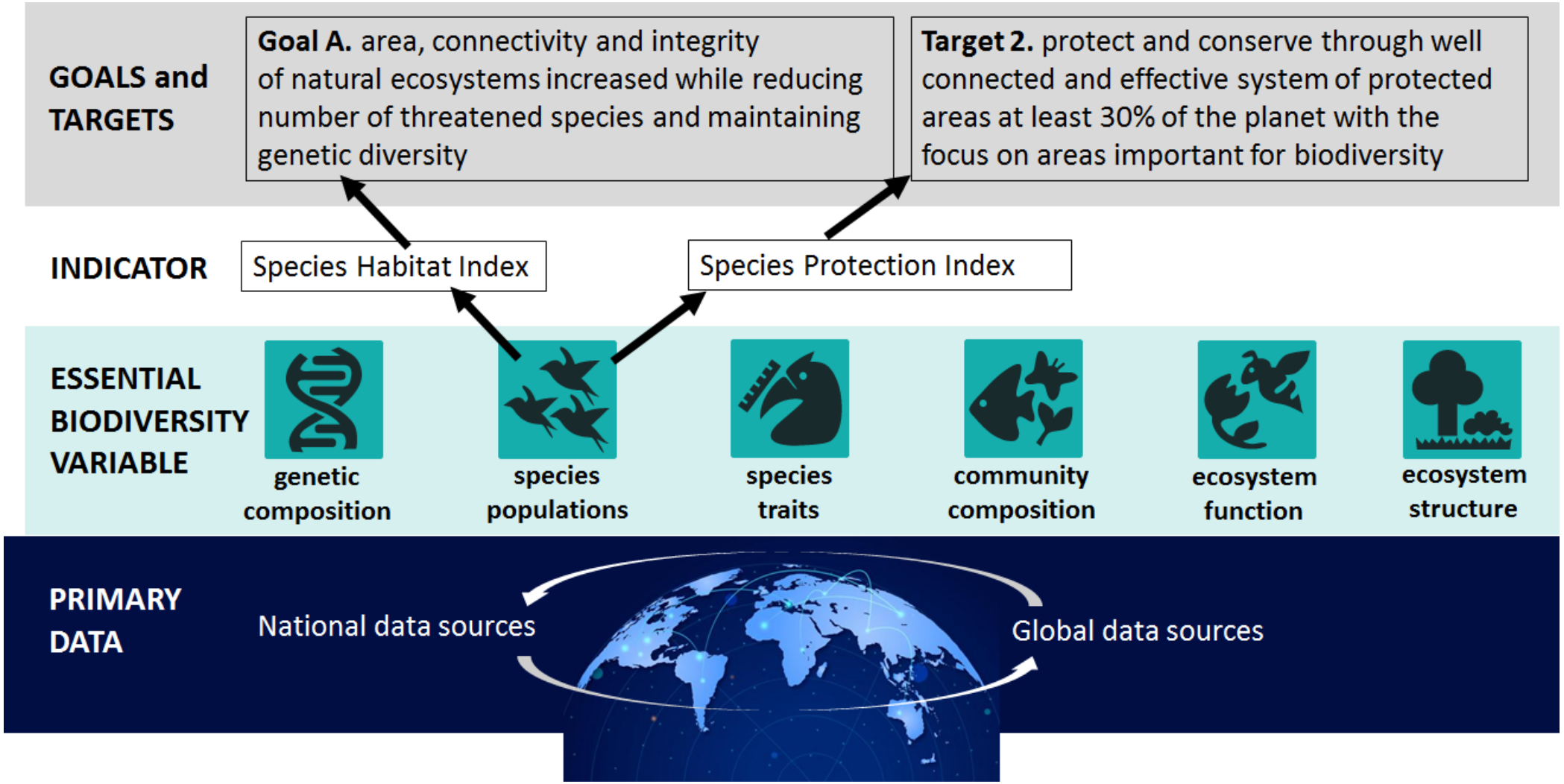


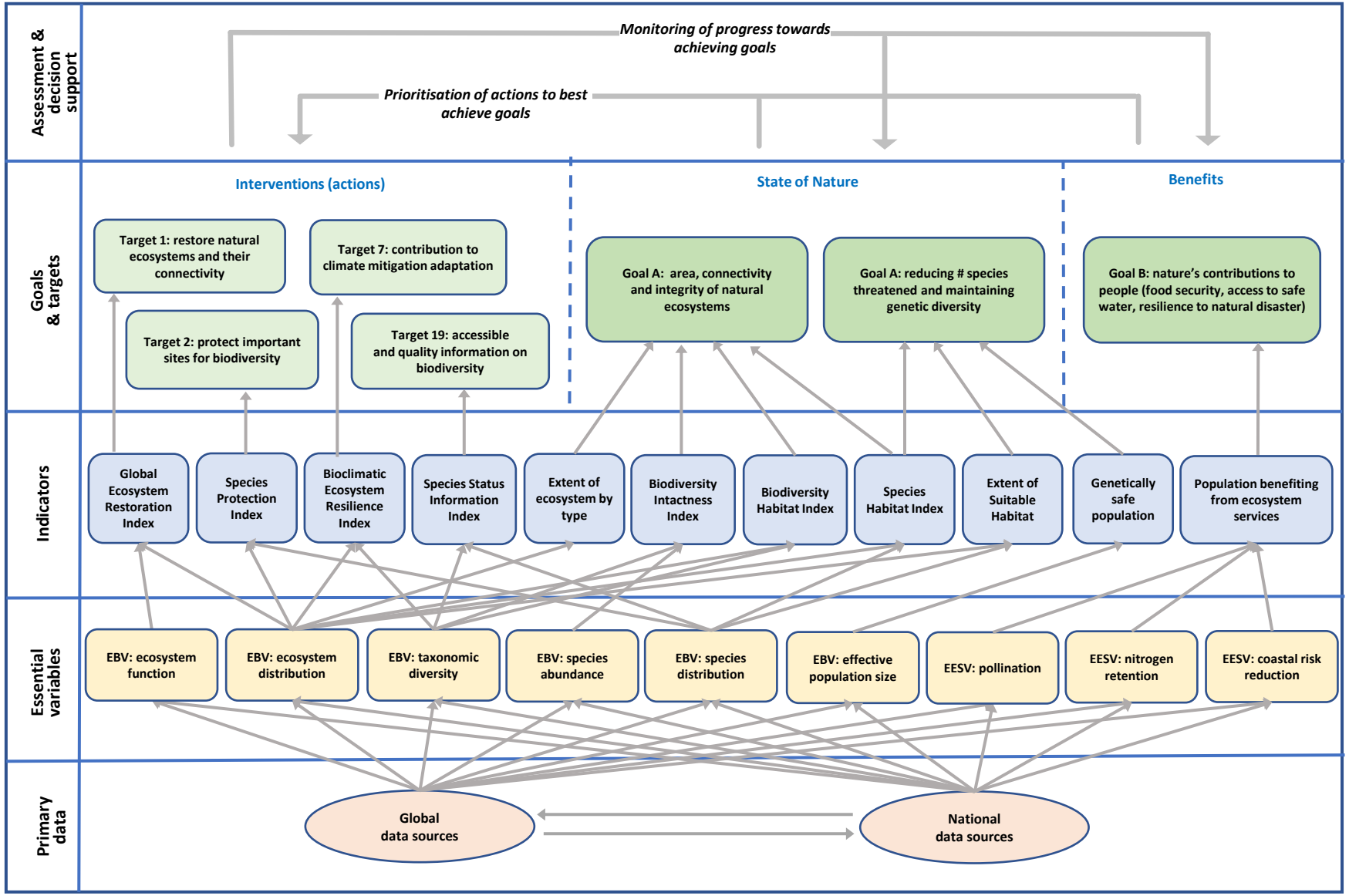




PATROCINADORES

ALIADOS

# Mapping EBVs to post-2020 GBF






Source: Kim et al. *In prep.* Essential Biodiversity Variables and Essential Ecosystem Services Variables for Post-2020 Policy Development and Implementation

# The Biodiversity Observation Networks (BONs)

BONs contribute to the collection and analysis of harmonised biodiversity observations, the development of integrated and interoperable biodiversity monitoring programs

## National and Regional BONs

China BON
Arctic BON
Colombia BON
Asia Pacific BON
French BON
Americas BON

## Thematic BONs

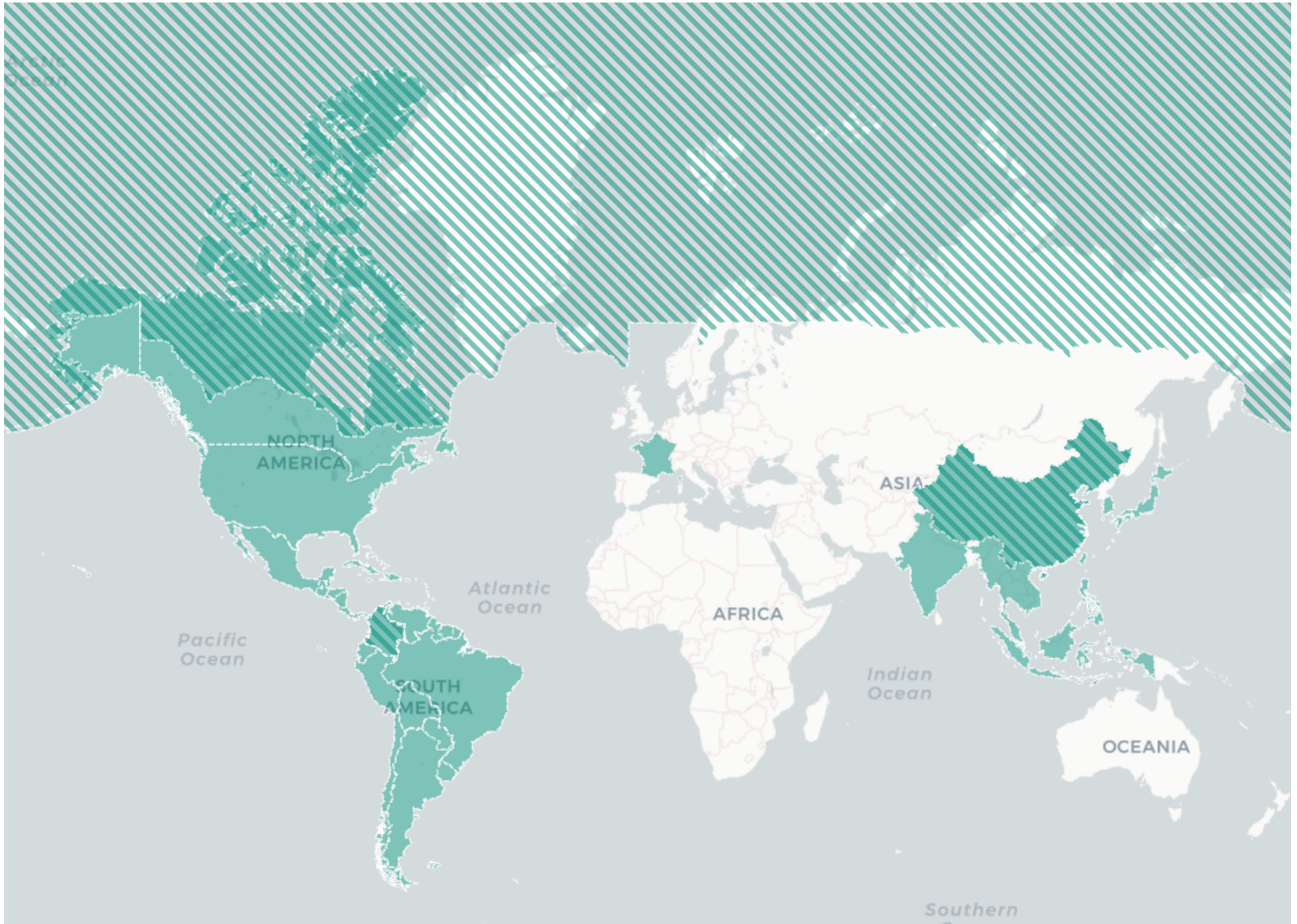
MBON Marine Biodiversity Observation Network

AP MBON Marine Biodiversity Observation Network

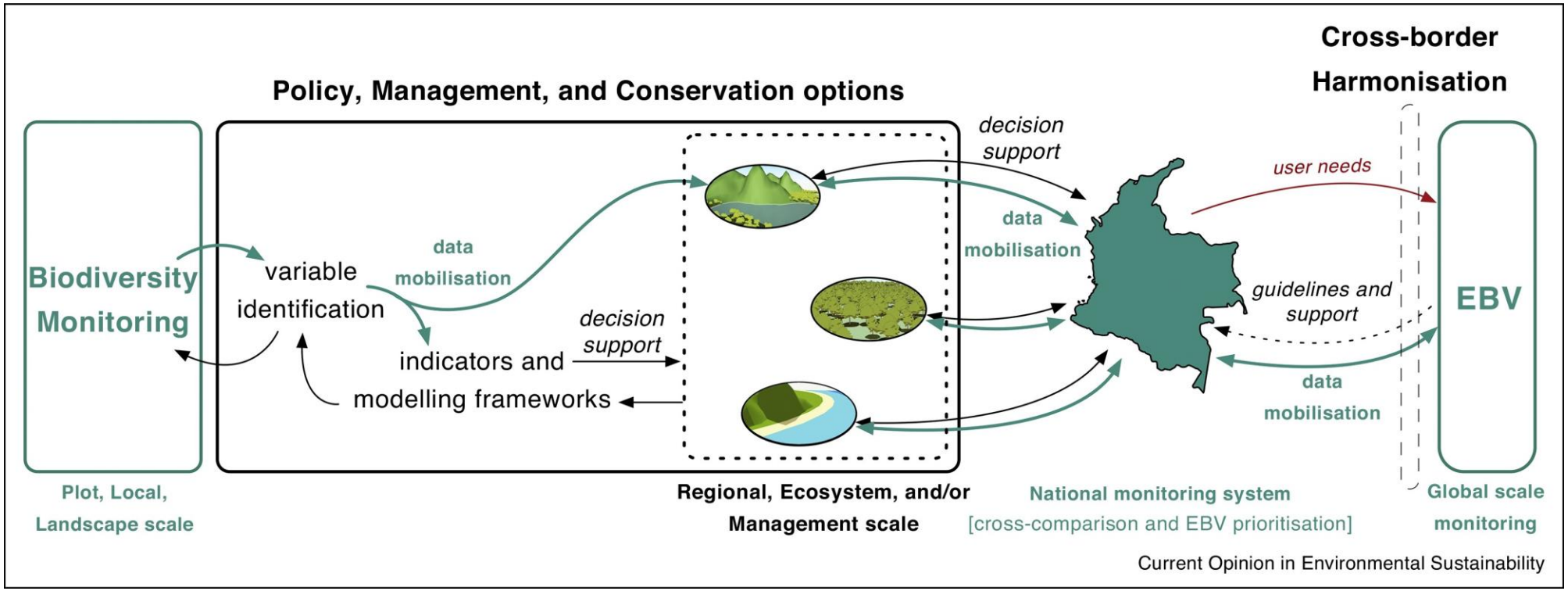
FWBON Freshwater Biodiversity Observation Network

Soil BON

Other developing BONs in Canada, Quebec, Switzerland, Bahamas, Ghana, Uganda, Antarctica

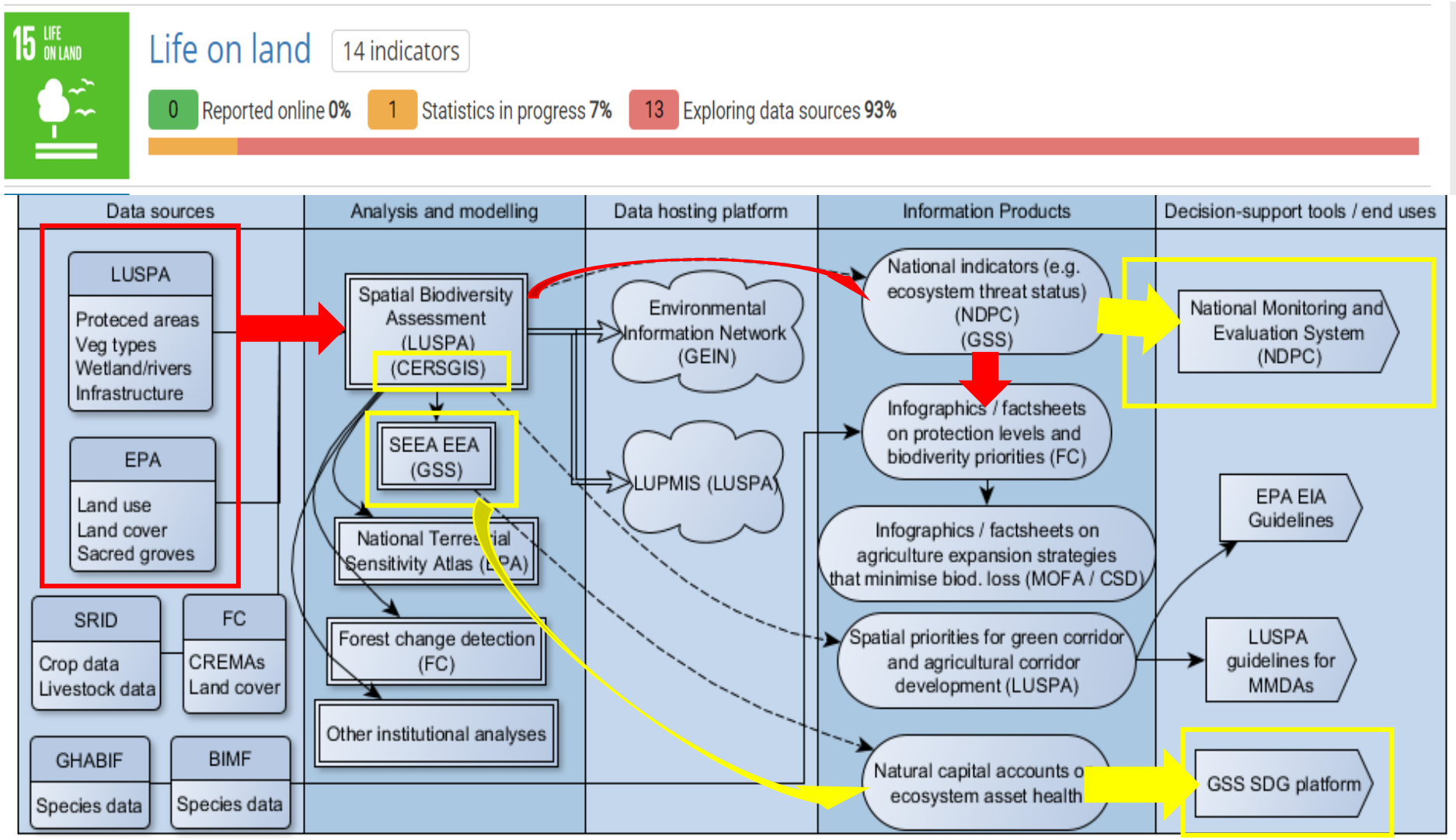


# A Biodiversity Observation Network




Navarro et al. 2017

# Repeatable Workflows: From Data to Decision



# Transforming Data to Conservation Intelligence

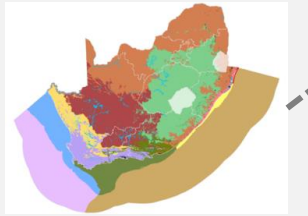
*Repeatable, Harmonized Workflows*

## Data Sources

- Protected Areas
- Land Cover Time Series
- Land-use *(ecological condition)*
- Vegetation Map and Habitat Types
- Species Data

## Analysis

- Spatial biodiversity assessment

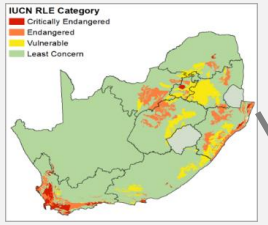


- Systematic Conservation Planning
- Critical Biodiversity Areas

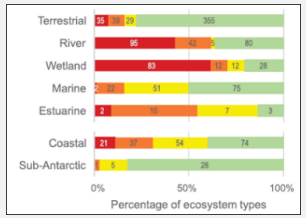
**Data hosting**


## Information Products

- Threatened Ecosystem Map




- Ecosystem Threat Indicator




- Ecosystem Accounts

## Decision Support

- Land-use scheme guidelines

- Environment Screening Tool
- Post-2020 CBD/SDG reporting
- Natural Capital Accounts

## Post-2020 Target Tracking

**Goal A.** Area, connectivity & integrity of natural ecosystems increased by at least [X%] while reducing # of species that are threatened by [X%]. 2030 Milestones (i) The area, connectivity and integrity of natural ecosystems increased by at least [5%] (ii) # of threatened species is reduced by [X%] and species abundance has increased on average by [X%]

**Target 2**. By 2030, protect and conserve through well connected and effective system of protected areas and other effective area-based conservation measures at least 30% of the planet with the focus on areas particularly important for biodiversity

**Adapted from Matthew Child, South African National Biodiversity Institute*

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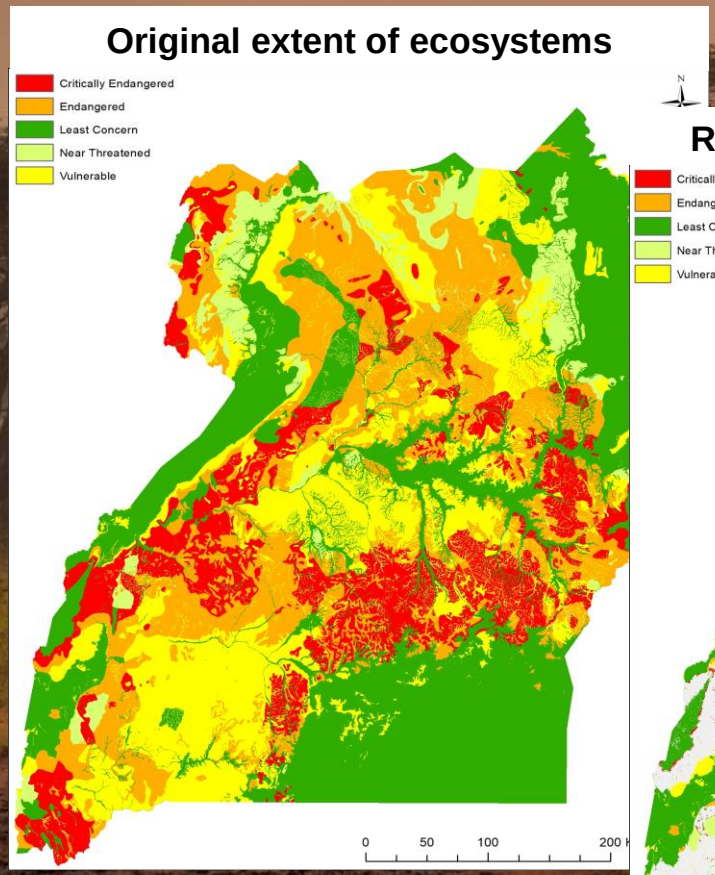
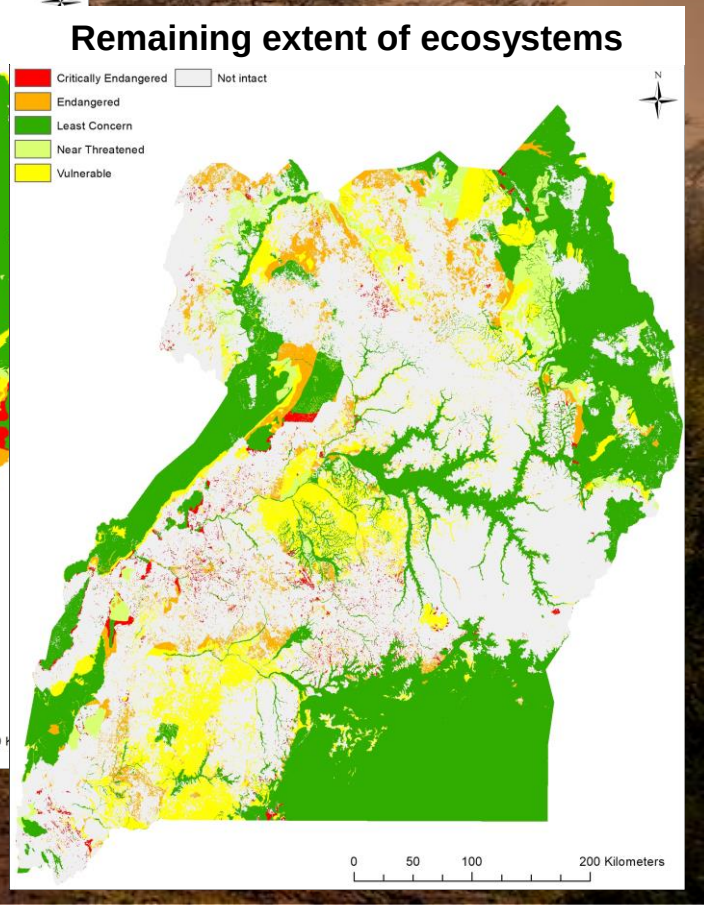
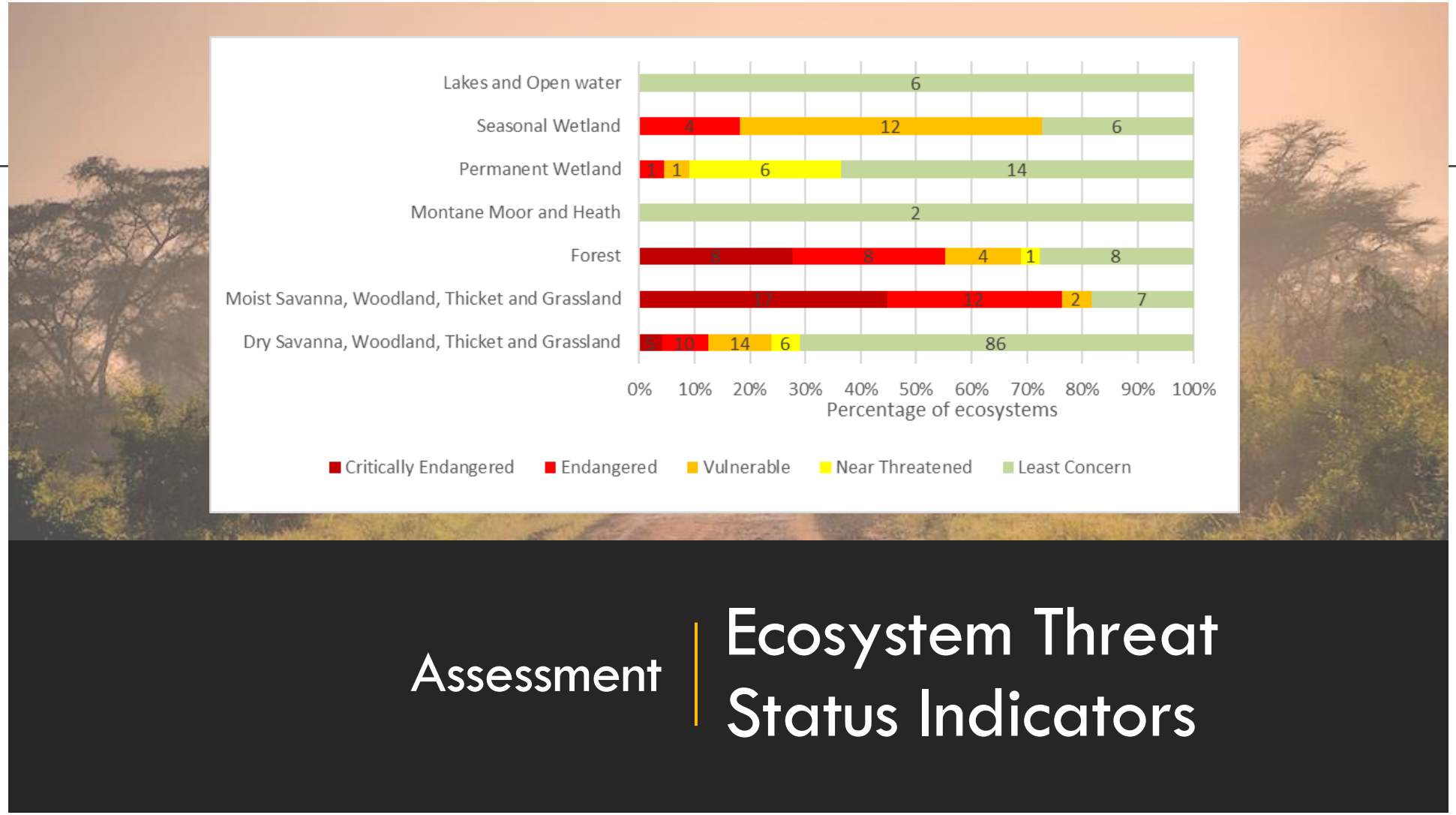
# Spatial Planning Outputs

## Ecosystem Threat Status



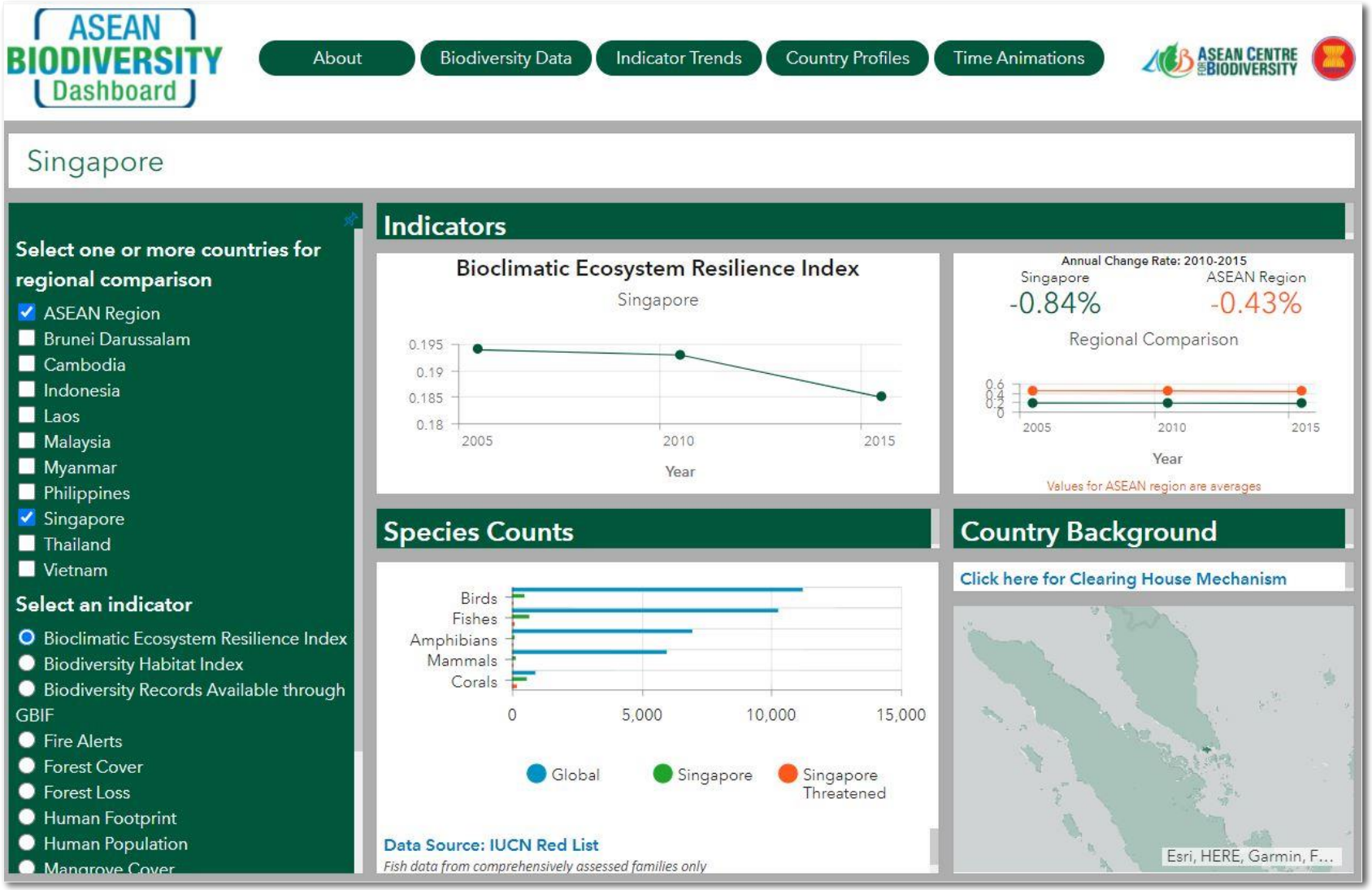

*Uganda Spatial Biodiversity Assessment (Connect Africa: Stephen Holness, Nelson Mandela University)*




# Assessment | Ecosystem Threat Status Indicators

*Uganda Spatial Biodiversity Assessment (Connect Africa: Stephen Holness, Nelson Mandela University)*

# Indicator Reporting Systems: Biodiversity Dashboards

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# GEO BON: A Global Partnership for Supporting the GBF

# Webinar series - Save the date!

July 12: **Species populations and area-based conservation** (Lead GEO BON)

July 26: **Genetic diversity** (Lead GEO BON)

August 18: **Ecosystem services** - ARIES- GEP (Lead SEEA)

September TBD: **Ecosystem extent/integrity + Connectivity** (Lead GEO BON)

October TBD: **Tools for national reporting** (Lead WCMC)

**More to come!**

# Questions and answers