

# International Forum facilitated by the Forest Ecosystem Restoration Initiative:

Workshop on ecosystem  
restoration-related planning and  
capacity-building needs for the  
implementation of the  
Kunming-Montreal Global  
Biodiversity Framework

**12 September, 10 am - 12 pm EDT**



UN  
environment  
programme



Convention on  
Biological Diversity



**2020 UN BIODIVERSITY CONFERENCE**  
**COP 15 - CP/MOP10-NP/MOP4**  
Ecological Civilization-Building a Shared Future for All Life on Earth  
KUNMING – MONTREAL



**FERI**



산림청  
Korea Forest Service

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# KM-GBF Target 2

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CBD Secretariat, 12 September 2023



Convention on  
Biological Diversity



# Outline

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- ❖ Lessons learned from 2010-2020
- ❖ Unpacking KM-GBF Target 2
- ❖ Roadmap for Target 2

# Progress on Aichi Biodiversity Target 15 (GBO5)

## Target 15:

**"By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks have been enhanced, through conservation and restoration, including restoration of at least 15 percent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification."**

- Has not been achieved (medium confidence) -33% were on track
- Not all elements of ABT15 were addressed
- Lack of consensus on land degradation (baseline)
- SMARTness of national targets (specific, measurable, accurate, realistic, time-bound) – difficulty with assessing the total area of degraded ecosystems, locations to be restored
- Ecosystem restoration in marine and coastal areas needs more guidance



# Capacity development to accelerate implementation of ABT 15



## Short-Term Action Plan on Ecosystem Restoration (CBD, 2016)

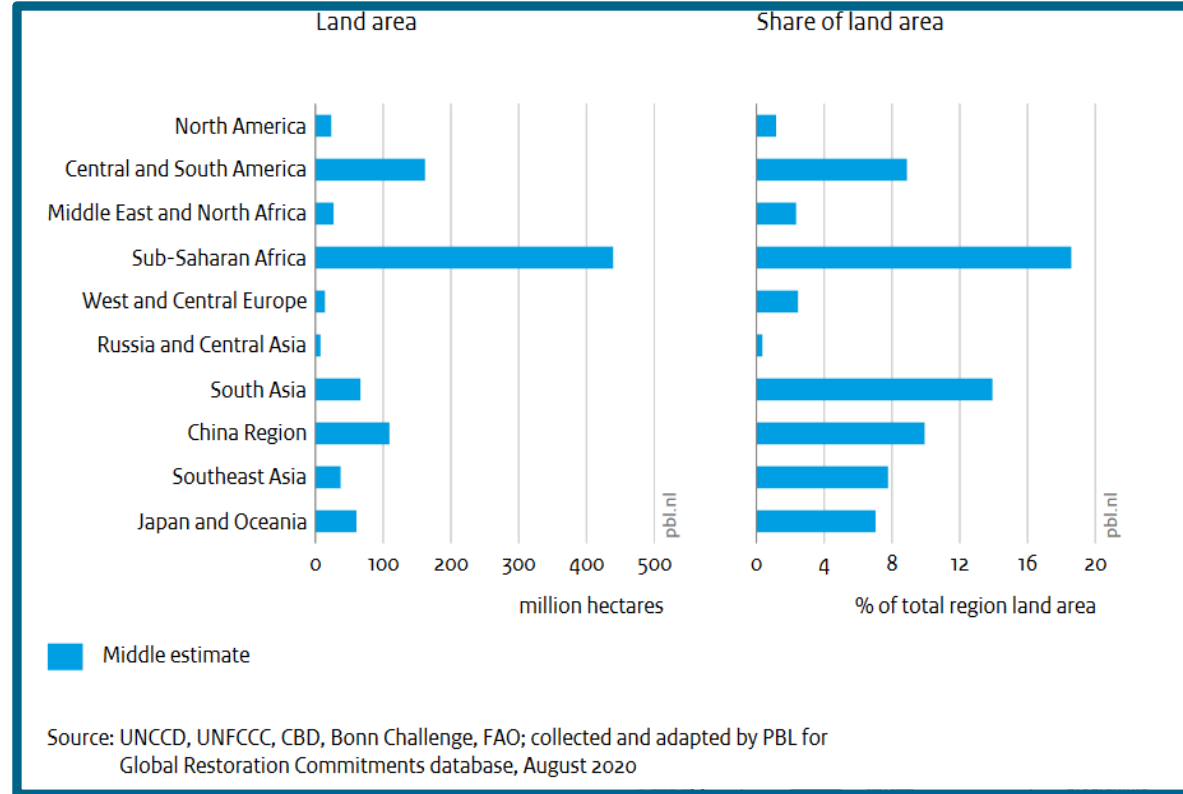
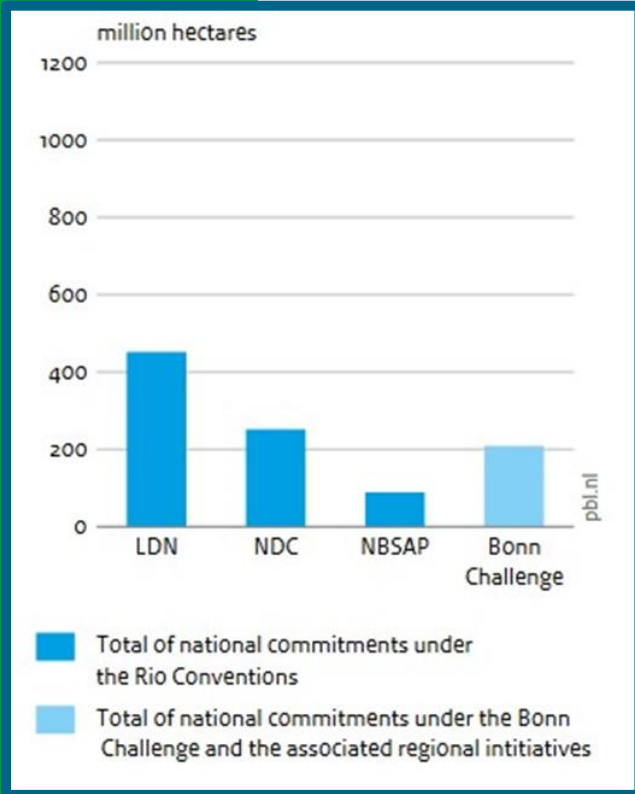
- Online Course on Ecosystem Restoration
- WePlan Forest - restoration decision-making tool

## Forest Ecosystem Restoration Initiative (FERI)

- 7 sub-regional workshops (2015-2020): Caribbean, Pacific, Mediterranean, Central-Eastern-Southern Africa, Latin America, Asia, West Africa.
- 12 small-scale projects on forest landscape restoration



# 1 bln ha is committed



# Unpacking KM-GBF Target 2

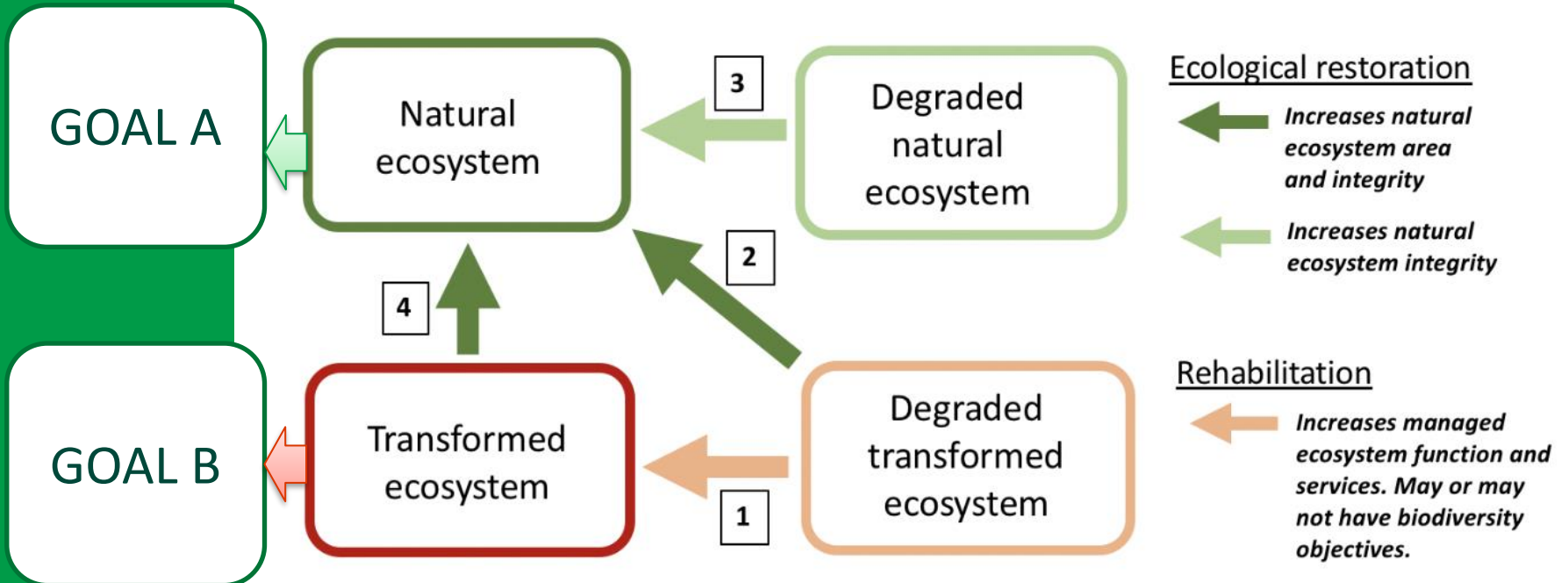
Ensure that by 2030 at least 30 % of areas of degraded terrestrial, inland water, and coastal and marine ecosystems are under effective restoration, in order to enhance biodiversity and ecosystem functions and services, ecological integrity and connectivity.

**Headline indicator: Area under restoration**

- Level of ambition
- Avoiding further degradation
- Types of ecosystem
- Baseline
- Restoration/Rehabilitation
- Enhanced ecosystem functions and services
- Ecological integrity and connectivity
- **Interlinkages with other targets**



# Restoring to what state



# Target 2: Capacity development

2023

**Side-event at SBSTTA 25 –October, Nairobi**

**Workshop on ecosystem restoration  
related planning and capacity needs  
November, Rome**

**Awareness raising and mobilization of technical support through UN  
Decade Partner Network**

2024

**SBSTTA 26**

**Restoration planning/monitoring e-learning  
Regional capacity development with partners  
Contribution to NSBAP webinars**

**COP-16**

2025



UNITED NATIONS DECADE ON  
**ECOSYSTEM  
RESTORATION**  
2021-2030

**UN**  
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# Post-COP16: Partnership and country support

2025

2026

**COP 16 Rio-Pavilion  
Restoration Day**

**Global stock take**

**Restoration Gap report**

**7th national reporting process**

**Submission of 7th national  
reports**

**Analysis of data, review of  
implementation, and gap  
analysis**



**NICFI**

Norway's  
International Climate  
and Forest Initiative



Federal Ministry  
for the Environment, Nature Conservation,  
Nuclear Safety and Consumer Protection

based on a decision of  
the German Bundestag

**IKI**



INTERNATIONAL  
CLIMATE  
INITIATIVE



UK Government



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# Questions

- High expectation to deliver multiple benefits
- On-going and committed restoration initiatives
  - MEAs
  - International –UNDER, Bonn Challenge
  - Regional – AGI, AFR100, 20x20 LAC, ECCA30, Great Green Wall, others
- Knowledge and data sharing (scientific and traditional)
- Finance for restoration



# “From Agreement to Action: Build Back Biodiversity”

## THANK YOU!

Secretariat of the  
Convention on Biological  
Diversity  
secretariat@cbd.int  
www.cbd.int



Convention on  
Biological Diversity



**2020 UN BIODIVERSITY CONFERENCE**  
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Food and Agriculture  
Organization of the  
United Nations



UNITED NATIONS DECADE ON  
**ECOSYSTEM  
RESTORATION**  
2021-2030

# Framework for Ecosystem Restoration Monitoring

Toward transparent monitoring of  
restoration and disseminating results.

Julian Fox

FAO, Senior Forestry Officer

Yelena Finegold

FAO, Forestry Officer



# What is the global status of ecosystem restoration?



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RESTORATION**  
2021-2030



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Kunming-Montreal **Global  
Biodiversity Framework (GBF)**

# Task Force on Monitoring

## Terrestrial ecosystems

### Sub TF

e.g. Forests, Pasture, Croplands

## Aquatic and transitional ecosystems

### Sub TF

e.g. Coastal, Sea grass, Tidal marshes, Coral reef, Mangroves, Peatlands, Lakes and rivers

## Socio-economic

### Sub TF

e.g. Drivers, impacts, effectiveness of restoration from socio-economic aspect

**Working group on drafting methodology for reporting area under restoration**

~400 technical experts from 100+ organizations with a shared vision:

**Sound monitoring can catalyze investments and ensure science-based actions**



# Target 2 of the Kunming-Montreal Global Biodiversity Framework



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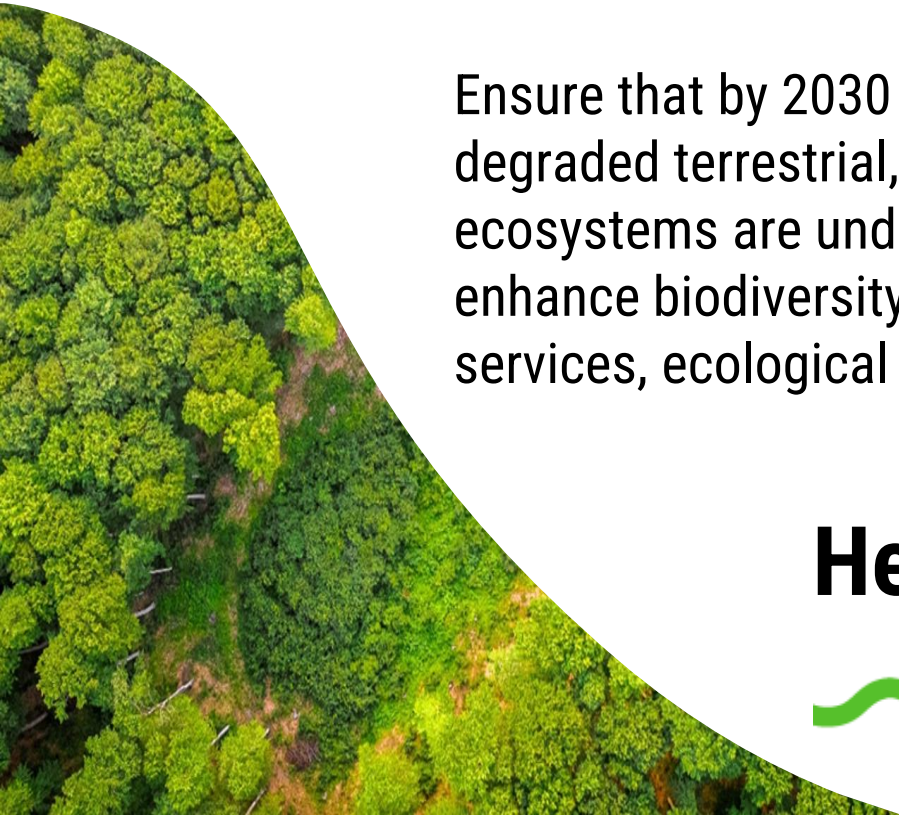
UNITED NATIONS DECADE ON  
**ECOSYSTEM  
RESTORATION**  
2021-2030

Ensure that by 2030 at least 30 per cent of areas of degraded terrestrial, inland water, and coastal and marine ecosystems are under effective restoration, in order to enhance biodiversity and ecosystem functions and services, ecological integrity and connectivity.

## Headline indicator



**Area under restoration**





# Target 2: Road map

- FAO, as lead of the Task Force on Monitoring, is the custodian of the headline indicator for Target 2 of the Kunming Montreal Global Biodiversity Framework
- The road map to provide guidance on the implementation and monitoring of Target 2 includes the following elements:
  - Finalize **indicator methodology** to provide guidance on indicator qualifiers and include case studies from pilot countries (Burkina Faso, Kenya, Peru, and Vietnam)
  - Develop the **Framework for Ecosystem Restoration Monitoring (FERM)** consistent with reporting needs to integrate existing data on areas under restoration and provide a default dataset
  - **Capacity development** and awareness raising to CBD Parties to align with Target 2 in national planning, monitoring and reporting
  - Provide **post COP 16** support towards national reports

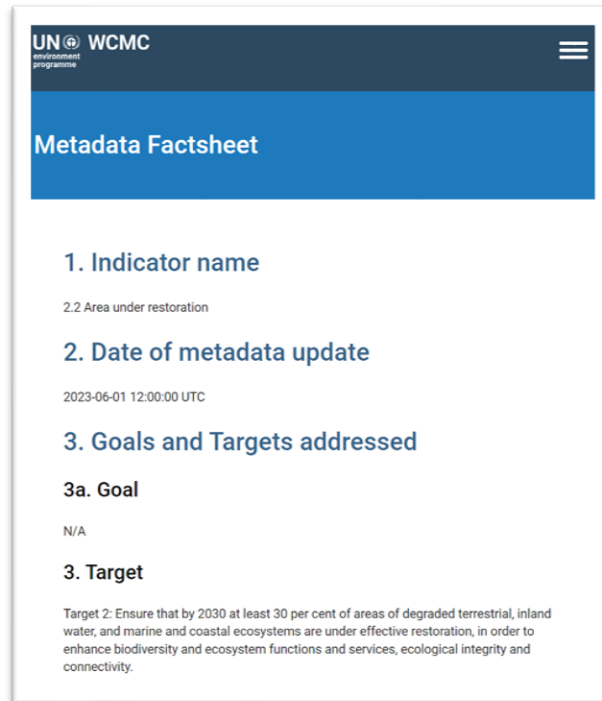


# Indicator methodology

## Metadata for the Target 2 headline indicator

- Builds on existing guidance (e.g., STAPER, Road to Restoration)
- Outlines a default dataset based on compiled data from restoration platforms and frameworks
- Provides flexibility for use of national datasets, databases, and definitions
- Data parameters for the project/initiative database include:
  - area committed to restore, area under restoration, ecosystem, restoration status, type of restoration, restoration activity, lead entity, tenure status
- Guidance on degraded ecosystems and effective restoration is in development
- Promotes alignment and interoperability, channeling data through the Framework for Ecosystem Restoration Monitoring (FERM)

<https://www.post-2020indicators.org/metadata/headline/2-2>



UN WCMC  
environment  
programme

### Metadata Factsheet

- 1. Indicator name**  
2.2 Area under restoration
- 2. Date of metadata update**  
2023-06-01 12:00:00 UTC
- 3. Goals and Targets addressed**
  - 3a. Goal**  
N/A
  - 3. Target**  
Target 2: Ensure that by 2030 at least 30 per cent of areas of degraded terrestrial, inland water, and marine and coastal ecosystems are under effective restoration, in order to enhance biodiversity and ecosystem functions and services, ecological integrity and connectivity.



# FAO tools for planning, monitoring, and reporting restoration



Food and Agriculture  
Organization of the  
United Nations

Planning

Monitoring:

Field and remote sensing  
assessments

Reporting

Identify potential areas for  
restoration: **se.plan**



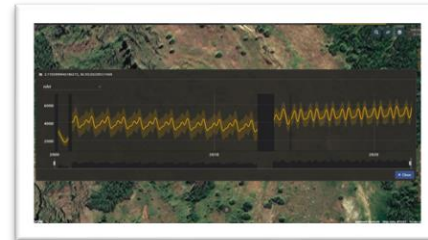
Identify indicators for  
monitoring: **AURORA**

Field inventories:  
**Collect Mobile**

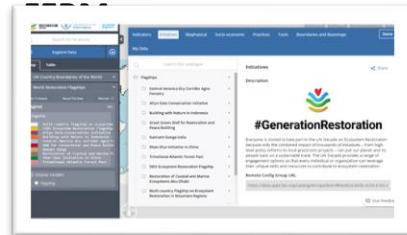


Delineate restoration  
areas: **Ground**  
*(coming soon)*

Analyze times series of  
satellite imagery: **SEPAL**



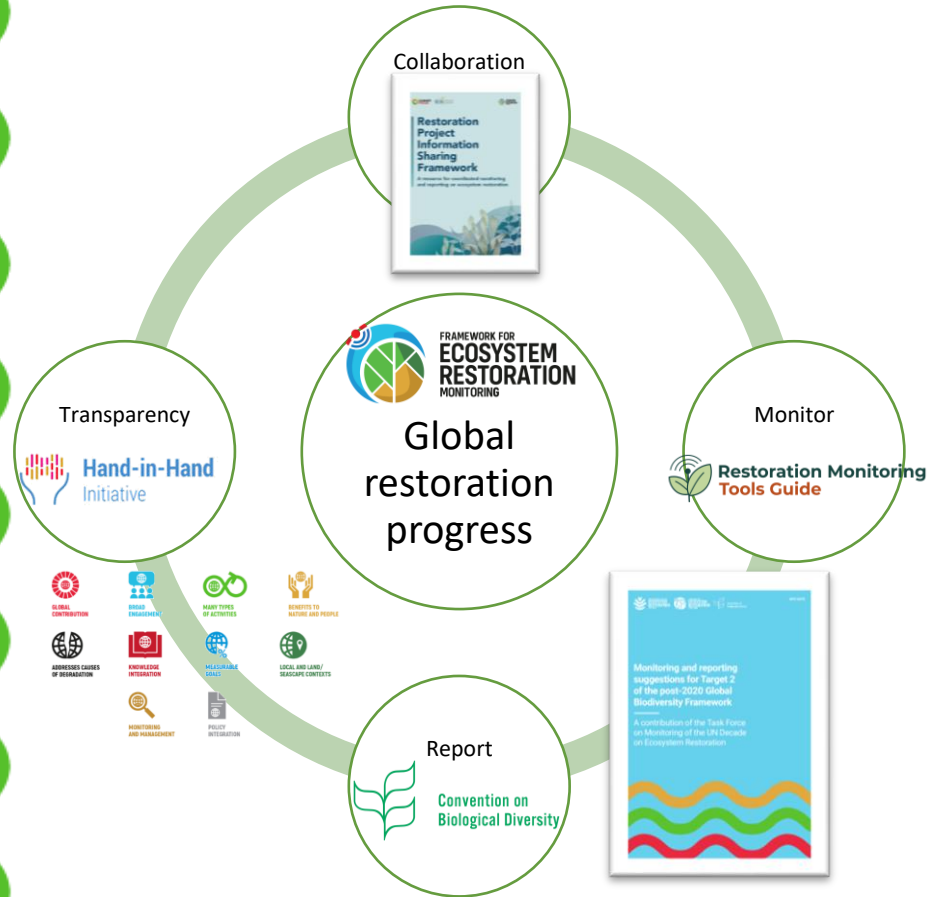
Collect sample-based data using  
satellite images: **Collect Earth**



<https://ferm.fao.org/>

# Framework for Ecosystem Restoration Monitoring (FERM)

- 1. COLLABORATION:** Brings together frameworks/mechanisms that are collecting data on restoration under a common interoperable framework.
- 2. MONITOR:** Provide a platform, guidance, and capacity development for collecting geospatial data to share good practices for implementing restoration and subsequent monitoring of the areas under restoration.
- 3. REPORT:** On global restoration status using the interoperability framework to the UN Decade and support the Parties to report under the post-2020 Global Biodiversity Framework
- 4. TRANSPARENCY:** Provide a public searchable database of geospatial data related to restoration and good practices to ensure that restoration targets are being met.

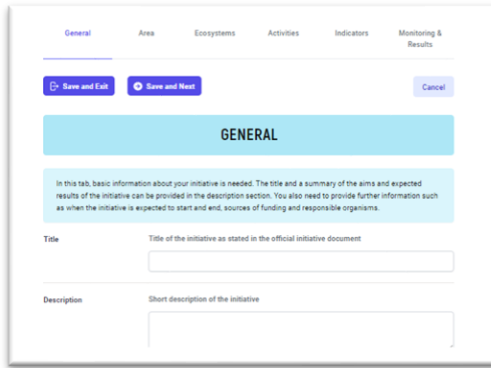


# FERM Registry, Platform, and Search Engine

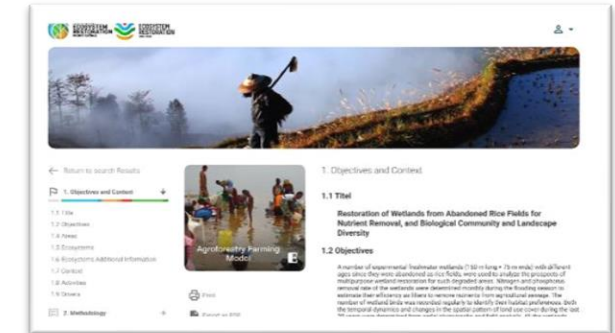
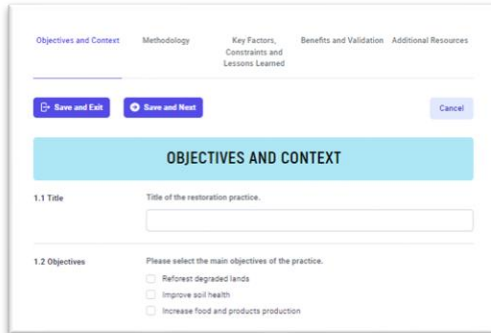
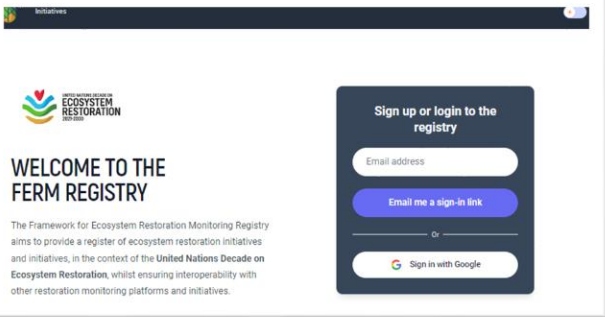
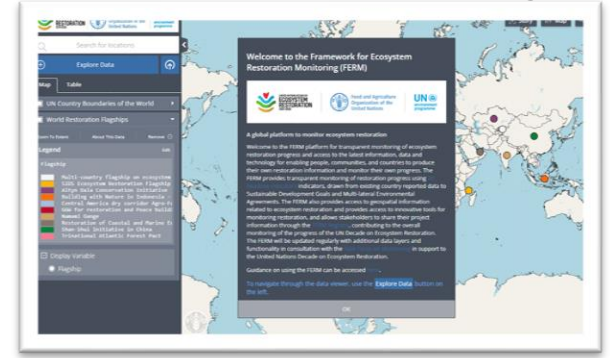
Sign up – open, easy sign up, groups by institutions



Register the initiative and add good practices



Initiatives and good practices are reviewed and published on the FERM Platform and Search Engine



# Collaboration

## Interoperability of monitoring and reporting frameworks

afr100

Initiative  
20x20



Restoration  
Barometer



Ramsar Sites Information Service  
2,492 Sites covering 256,637,813 ha

SER SOCIETY FOR  
ECOLOGICAL  
RESTORATION

RESTOR



protected  
planet

ICRI

Nature Commitments  
Showing Area-based Commitments

AURORA

Assessment, Understanding and Reporting Of Restoration Actions

## Customization of FERM registry for GEF projects with GEF Core Indicators

Requirements of geospatial data

Geospatial data can be collected by delineating the boundary of one sustainable land management or restoration activity per land use using field data or satellite imagery. Sustainable land management or restoration areas can be defined as site specific, such as a stand where trees are planted, land use or land cover areas such as a grassland rangeland that is restored with native species, watershed areas or other physical boundaries that denote the area under sustainable land management or restored.

In line with the mandatory requirements of the FERM platform, the geographic boundary data should be stored in vector format (as a polygon feature), with a defined projection system (preferably EPSG:4326 - WGS 84) and must have no topological errors (e.g., unclosed polygons or lines, gaps between polygons or line borders overlapping polygon or line borders). The following table provides the description of mandatory requirements for all data to be used must follow:

Requirement (mandatory)	Description
Area of Interest (Boundary)	Geospatial polygon(s) data with precise boundaries delineated of sustainable land management or restoration areas/activities.
Format	Shapefile (including shp, prj, shx and dbf, KML, KMZ, GEE table asset, GeoJSON, MW2)
Projection	Coordinate Reference System (CRS)
Delineation	One polygon per sustainable land management or restoration activity/feature
Topology check	There should be: - No overlapped polygons - No gaps between polygons (i.e., slivers between polygons) - No overlapping polygons.

The attribute table of the geospatial polygon should have a structure with at least the columns defined as below:

ID of GEF project	ID of GEF Project ID (country and number, example: DE0005)
Year (geographic indication)	Name of nearest village or place
Date of sustainable land management or restoration activities	Column field name should be "Restor_year" for the starting date, "Restor_year" for the ending date. - YearMonthDay format: YYYY MM DD
Type of sustainable land management or restoration activity	Restoration activity can be defined either: - By land use system or ecosystem under sustainable land management or restored (column/field name should be "Restor_LandUseSystem") - By type of sustainable land management practice or restoration (column/field name should be "Restor_Practice")

Geospatial data should be accompanied by technical specifications of land management practice or restoration activities



# Invitation to CBD Parties to explore, use, and provide feedback to the FERM Registry

We encourage you to **register your restoration initiatives** and document good practices through the **FERM Registry** <https://ferm.fao.org/> and search good practices through the **Search Engine**

For further assistance and to provide feedback, please contact: [restoration-monitoring@fao.org](mailto:restoration-monitoring@fao.org)

**FRAMEWORK FOR ECOSYSTEM RESTORATION MONITORING**

**REGISTER**  
Your restoration initiative and good practices

**VISUALIZE**  
The latest geospatial data on restoration

**SEARCH**  
For good practices on ecosystem restoration (coming soon)

The FERM consists of a geospatial platform and a registry of restoration initiatives. It is the official monitoring platform for tracking global progress and disseminating good practices for the UN Decade on Ecosystem Restoration. It also supports countries in reporting areas under restoration for the Kunming-Montreal Global Biodiversity Framework Target 2.

The FERM Registry provides a harmonized data collection mechanism to aggregate data from restoration platforms.

The FERM Platform is built on FAO's corporate Hand-In-Hand geospatial architecture and provides accessible and transparent information for restoration practitioners.

Join #GenerationRestoration and share your restoration initiative and good practices with the world.



# Follow up



## **SBSTTA 25 side event**

16-20 October 2023

Nairobi, Kenya



## **Target 2 Workshop**

22-24 November 2023

Rome, Italy



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UNITED NATIONS DECADE ON  
**ECOSYSTEM  
RESTORATION**  
2021-2030

# Thank you.

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[yelena.finegold@fao.org](mailto:yelena.finegold@fao.org)



**#GenerationRestoration**

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**Ecosystem Restoration Effectiveness, Principles, and Standards of Practice:** planning to achieve multiple benefits from ecosystem restoration (biodiversity, ecosystem services, connectivity, and resilience)

- George Gann, International Policy Lead, CERP #574
- Bethanie Walder, Executive Director



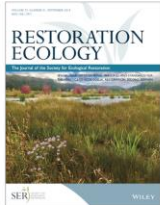


# Programmatic work in the Policy, Standards, and Certification Space



## Society for Ecological Restoration Standards, Guidelines, and Principles

In collaboration with global partners, SER produces standards and guidance for implementing restoration. Standards-based restoration can help increase the effectiveness of restoration projects and programs, delivering greater ecological and human wellbeing outcomes. Standards-based restoration, therefore, also reduces risk and uncertainty for land owners, regulators, and funders. Our recent standards and guidance documents are listed below and can also be found in the fully searchable resource database in the Restoration Resource Center.



### International Principles and Standards for the Practice of Ecological Restoration, 2nd Edition

This groundbreaking publication provides updated and expanded guidance on the practice of ecological restoration. It clarifies the breadth of ecological restoration and linked environmental repair activities, and includes ideas and input from a diverse international group of restoration scientists and practitioners. The Standards are available in English, Chinese, French, Spanish, Ukrainian, and Portuguese.

[LEARN MORE](#)



### International Principles and Standards for the Ecological Restoration and Recovery of Mine Sites

The International Principles and Standards for the Ecological Restoration and Recovery of Mine Sites is a first of its kind framework with standards for socially and environmentally responsible restoration in global mining activities. These standards are designed to inspire and drive better restoration outcomes in mining landscapes.

[LEARN MORE](#)



### International Standards for Native Seeds in Ecological Restoration

The International Standards for Native Seeds in Ecological Restoration provides a pathway toward global best practices in native seed use, and gives seed buyers, end users, and funding bodies increased confidence when sourcing of quality native seeds. This open access issue of Restoration Ecology presents a series of articles examining key steps in the native seed supply chain. Available in English, Spanish, and Portuguese.

[ACCESS NOW](#)



## Certified Ecological Restoration Practitioner (CERP) Program

SER's Certified Ecological Restoration Practitioner (CERP) program encourages a high professional standard for those who are designing, implementing, overseeing, and monitoring ecological restoration projects throughout the world. The program guarantees that practitioners meet a set of minimum requirements for restoration and ecological knowledge, on-the-ground practical experience, and an understanding of restoration principles and standards.



### Become a Certified Practitioner

Interested in becoming a certified practitioner with SER's CERP program? Learn more about certification requirements, benefits for certification, and the application process.

[LEARN MORE](#)



### Find a Certified Practitioner

Want to connect with a qualified restoration practitioner or verify a practitioner's credentials? View our interactive directory of certified practitioners.

[LEARN MORE](#)



### Maintain Your Certification

Certified practitioners must maintain their credentials through continuing education and an annual maintenance fee. Use this page to keep your certification in good standing.

[LEARN MORE](#)

## Engage With SER's CERP Program as an Academic Partner

SER is pleased to offer a variety of partnership options to academic institutions with programs in ecological restoration. These options allow institutions to help launch their students' careers in restoration and distinguish themselves as being committed to training the next generation of restoration professionals.

[GET STARTED](#)

## Restoration Project Certification

SER seeks to improve the quality of global restoration work through the development of a framework for restoration project certification. Once developed, this framework can be adapted to projects in a wide array of ecosystems and biomes with the potential to strongly facilitate high-quality restoration around the globe.

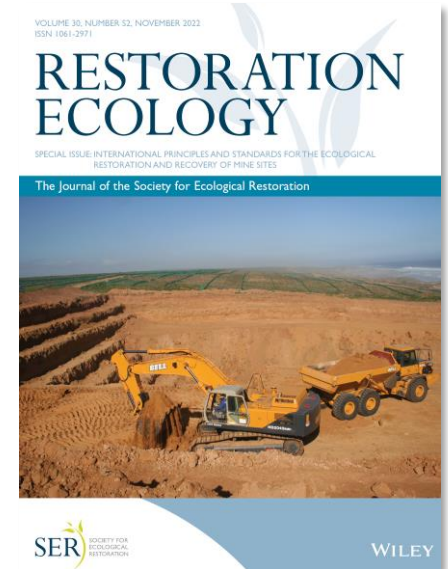
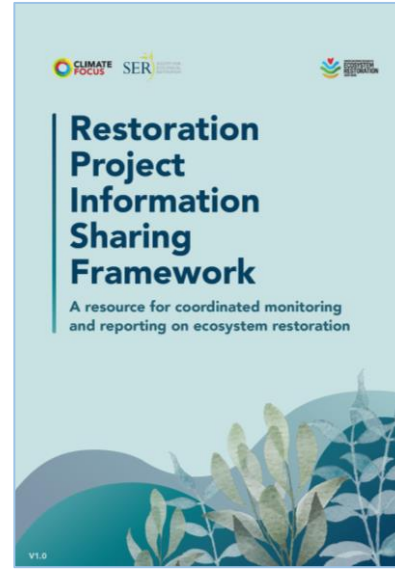
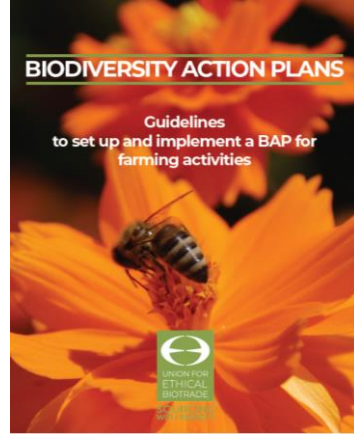
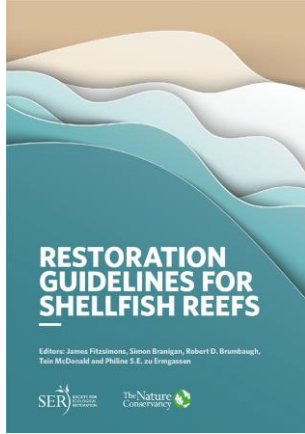


### Mediterranean Forest Restoration Certification Pilot Project

SER is currently piloting an innovative certification program to verify the quality of field-based restoration projects for Mediterranean forest restoration in Spain. The first phase of this project began in 2021 and is set to run through 2023. If successful, SER hopes to expand this certification program to other ecosystems (e.g. other types of forests, biodiverse grasslands) and geographies worldwide.

This program will provide guidance, structure, and an auditing process for how to design, implement, and fund high quality ecological restoration in Mediterranean forests in order to achieve the greatest possible ecological and social outcomes. Through this program, we hope to develop and test a quality "seal of approval" for forest restoration, similar to, for example, organic produce certification.

# Collaborative Effort



## The Global Biodiversity Standard

Microsoft is proud to collaborate with Society and Ecological Restoration to deliver standards-based ecological restoration with Trinity University and the San Antonio River Association in San Antonio, Texas USA. [Learn more here.](#)



Supported by





# “Under Effective Restoration” – What Does it Mean?

## Conservation Biology

1997

### What is Good Ecological Restoration?

¿Que es una Buena Restauración Ecológica?

Eric S. Higgs

First published: 27 February 2002 | <https://doi.org/10.1046/j.1523-1739.1997.95311.x> | Citations: 204

PDF TOOLS SHARE

### Abstract

EN ES

The rapid rise of ecological restoration is forcing consideration of what good restoration entails. Defining an end point for restoration is as much an ethical matter as a technical one, but scientifically trained restorationists have largely ignored the former issue. I argue that good restoration requires an expanded view that includes historical, social, cultural, political, aesthetic, and moral aspects. This expanded definition is necessary at a practical level to guide practitioners in the pursuit of excellence and at a conceptual level to prevent restoration from being swamped by technological activities and projects that veer away from ecological fidelity. Ecological fidelity is based on three principles: structural/compositional replication, functional success, and durability. These principles produce effective restoration, which is a necessary but not a sufficient condition of good restoration. An examination of characteristic problems that emanate from technological practices—reverse adaptation, an attention to product at the expense of process, and the separation of actions from consequences—leads directly to an expanded, inclusive framework for restoration. The results of an inclusive restoration process set up conditions necessary for restoration to achieve both ecological fidelity and harmonious human relationships within ecosystems.



2012

## Ecological Restoration for Protected Areas

Principles, Guidelines and Best Practices

Prepared by the IUCN WCPA Ecological Restoration Taskforce  
 Karen Keenleyside, Nigel Dudley, Stephanie Cairns, Carol Hall and Sue Stolton, Editors  
 Peter Valentine, Series Editor



Developing capacity for a protected planet

Best Practice Protected Area Guidelines Series No. 18



Higgs – Relationship to 3 principles of ecological fidelity: 1) structural/compositional replication; 2) functional success; 3) durability.


Keenleyside et al. – 3 Principles of Ecological Restoration in Protected Areas: Effective, Efficient, Engaging.

“Effective ecological restoration for protected areas is restoration that re-establishes and maintains protected area values.”

# Guidelines for Effective Restoration in Keenleyside et al. 2012

- ‘Do no harm’ by first identifying when active restoration is the best option
- Re-establish ecosystem structure, function and composition
- Maximize the contribution of restoration actions to enhancing resilience
- Restore connectivity within and beyond the boundaries of protected areas
- Encourage and re-establish traditional cultural values and practices that contribute to the ecological, social and cultural sustainability of the protected area and its surroundings
- Use research and monitoring, including from traditional ecological knowledge, to maximize restoration success


# Effectiveness in the STAPER



UNEP

**CBD**

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**Convention on  
Biological Diversity**

Distr.  
GENERAL

CBD/COP/DEC/XIII/5  
10 December 2016

ORIGINAL: ENGLISH

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CONFERENCE OF THE PARTIES TO THE  
CONVENTION ON BIOLOGICAL DIVERSITY  
Thirteenth meeting  
Cancun, Mexico, 4-17 December 2016  
Agenda item 10

**DECISION ADOPTED BY THE CONFERENCE OF THE PARTIES TO THE CONVENTION ON  
BIOLOGICAL DIVERSITY**

**XIII/5. Ecosystem restoration: short-term action plan**

*The Conference of the Parties,*

*Recalling* Article 8(f) and decisions XI/16 and XII/19,

*Aware* that Parties have identified ecosystem restoration needs in their national biodiversity strategies and action plans and in other national, regional and global strategies and/or plans, and that a number of ecosystem restoration activities are under way with support from various organizations and Governments, and *noting* that many degraded ecosystems are still in need of restoration,

*Welcoming* the progress made in the implementation of the Forest Ecosystem Restoration Initiative, supported by the Korea Forest Service of the Republic of Korea,

*Underlining* that ecosystem restoration, when effectively implemented and coherent with other related policies, helps to achieve not only many of the Aichi Biodiversity Targets, but also several Sustainable Development Goals,<sup>1</sup> ecosystem-based adaptation and combating desertification, mitigating the effects of drought and supporting mitigation under the United Nations Framework Convention on Climate Change,<sup>2</sup> land degradation neutrality under the United Nations Convention to Combat Desertification,<sup>3</sup> the Sendai Framework for Disaster Risk Reduction 2015-2030,<sup>4</sup> the wise use of wetlands under the Ramsar Convention on Wetlands,<sup>5</sup> the four Global Objectives for Forests of the United Nations Forum on Forests, commitments under the Convention on the Conservation of Migratory Species of Wild

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<sup>1</sup> See *General Assembly resolution 70/1*, annex.  
<sup>2</sup> United Nations, *Treaty Series*, vol. 1771, No. 30822.  
<sup>3</sup> *Ibid.*, vol. 1854, No. 33480.  
<sup>4</sup> General Assembly resolution 69/283, annex II.  
<sup>5</sup> *Ibid.*, vol. 996, No. 14583.

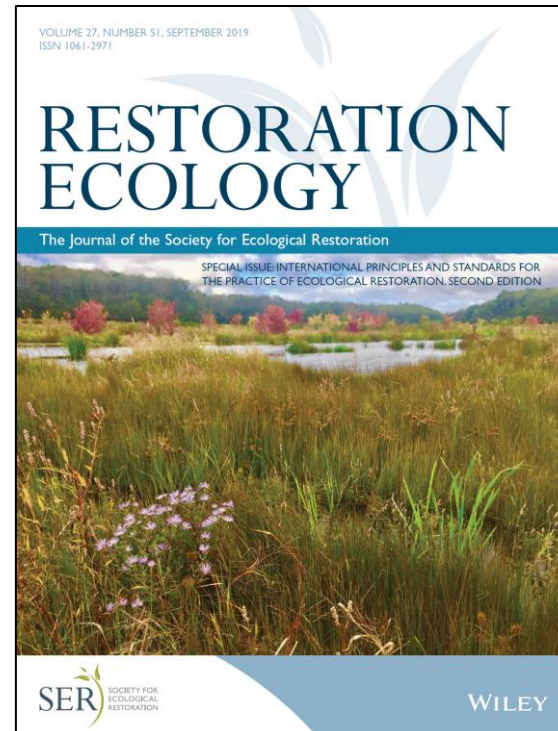
- Effective implementation helps achieve global goals and targets
- Encourages the full and effective participation of indigenous and local communities at all stages of restoration
- Calls for improved effectiveness of restoration programmes through capacity-building, training, and technology transfer
- Calls for identification of cost-effective implementation measures
- Calls for implementation in the most cost-effective and coordinated manner possible
- Describes some attributes of effective restoration monitoring, and suggests that remote sensing may also be a cost-effective monitoring technique in some ecosystems

# Effectiveness in SER Standards for Ecological Restoration



Linked to 3  
Keenleyside  
Principles

19 mentions



Eight  
Principles  
defined

27 mentions

# Eight Principles Underpinning Ecological Restoration

**1** ENGAGES STAKEHOLDERS



**2** DRAWS ON MANY TYPES OF KNOWLEDGE



**3** IS INFORMED BY NATIVE REFERENCE ECOSYSTEMS, WHILE CONSIDERING ENVIRONMENTAL CHANGE



**4** SUPPORTS ECOSYSTEM RECOVERY PROCESSES



**5** IS ASSESSED AGAINST CLEAR GOALS AND OBJECTIVES USING MEASURABLE INDICATORS



**6** SEEKS THE HIGHEST LEVEL OF RECOVERY POSSIBLE



**8** IS PART OF A CONTINUUM OF RESTORATIVE ACTIVITIES

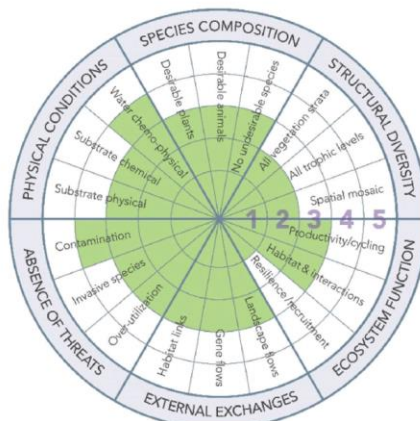
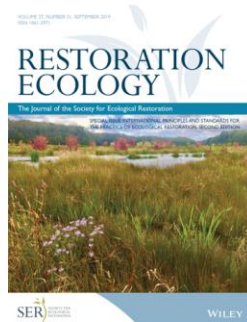
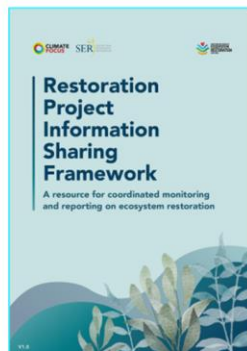


**7** GAINS CUMULATIVE VALUE WHEN APPLIED AT LARGE SCALES

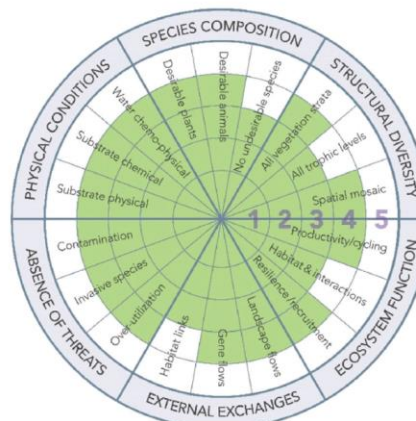




# SER Tools used in Global Biodiversity Standard

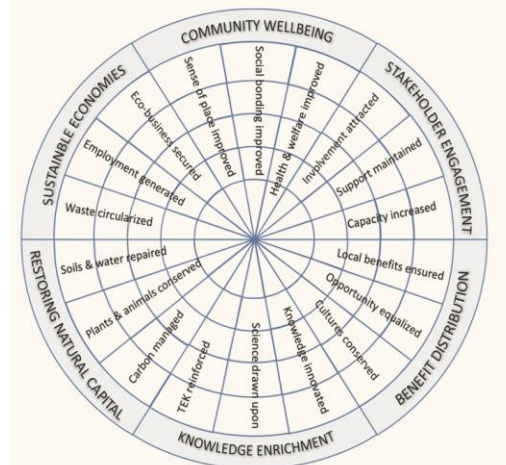


Baseline condition pre-restoration



10-years post-treatment

## 5-star System and Ecological Recovery Wheel



## Social Benefits Wheel

# Effectiveness in UN Decade on Ecosystem Restoration

**TEN PRINCIPLES THAT UNDERPIN ECOSYSTEM RESTORATION**

- GLOBAL CONTRIBUTION
- BROAD ENGAGEMENT
- MANY TYPES OF ACTIVITIES
- BENEFITS TO NATURE AND PEOPLE
- ADDRESSES CAUSES OF DEGRADATION
- KNOWLEDGE INTEGRATION
- MEASURABLE GOALS
- LOCAL AND LAND/ SEASCAPE CONTEXTS
- MONITORING AND MANAGEMENT
- POLICY INTEGRATION

PRINCIPLES FOR ECOSYSTEM RESTORATION TO GUIDE THE UNITED NATIONS DECADE 2021-2030 PAGE 4

10 Principles  
9 mentions

**STANDARDS OF PRACTICE TO GUIDE ECOSYSTEM RESTORATION**

A contribution to the United Nations Decade on Ecosystem Restoration

**SUMMARY REPORT**

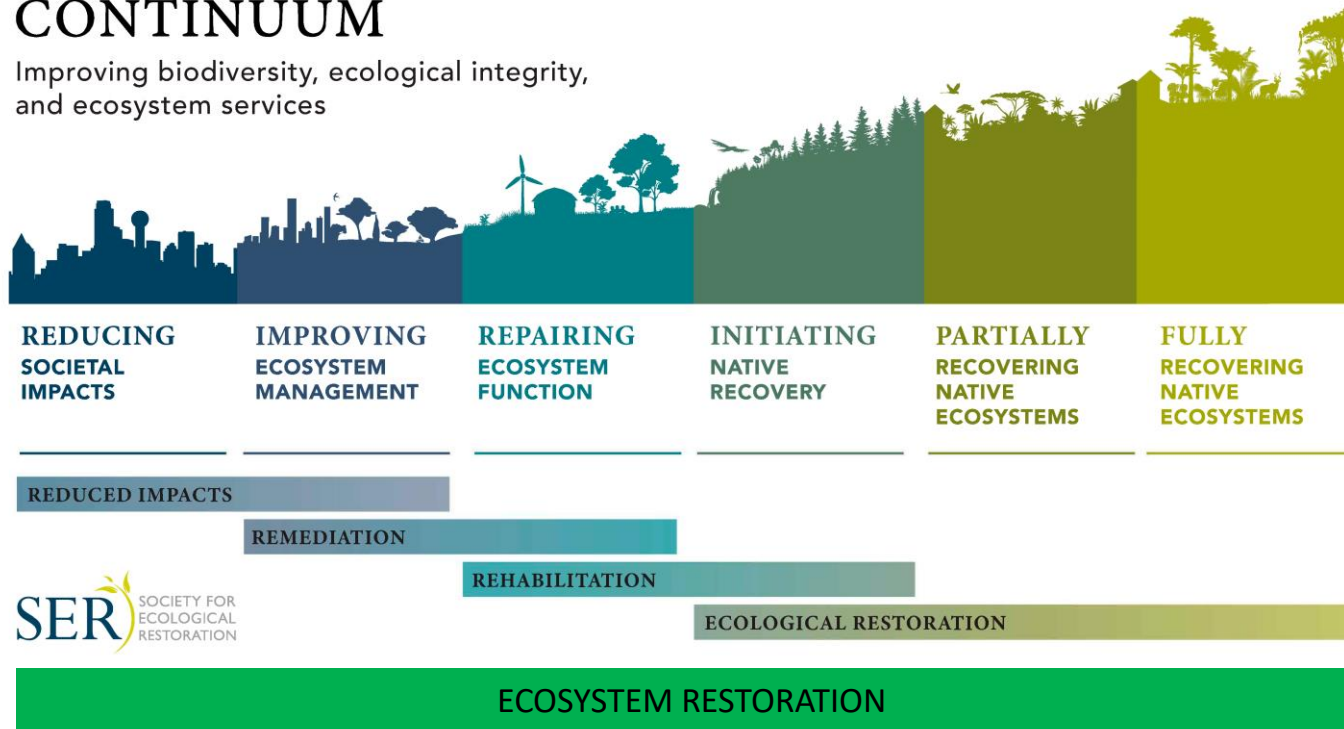
ECOSYSTEM RESTORATION 2020-2030  
 Food and Agriculture Organization of the United Nations  
 UN @ programme  
 SER  
 IUCN  
 CEM

Near Final Draft  
5 components  
45 subcomponents  
65 mentions

# “Under Effective Restoration” – Across the Continuum of Types and Activities

## THE RESTORATIVE CONTINUUM

Improving biodiversity, ecological integrity, and ecosystem services

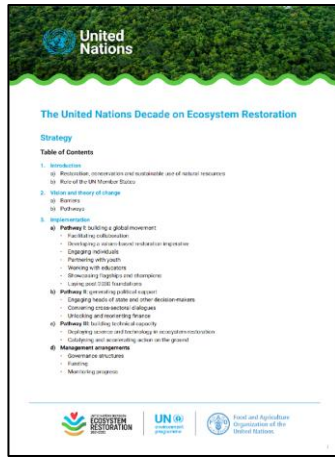


# Potential Components in Definition of Effective Restoration

Effective Restoration is Standards-based Restoration, which is underpinned by agreed Principles.

- It addresses both process and outcomes
- It addresses values of both nature and people
- It addresses the concept of net gain, and avoidance of collateral damage whether onsite or off
- It addresses the concept of achieving multiple benefits for GBF T2 (biodiversity, ecosystem services, connectivity, resilience) while acknowledging that different types of restoration accomplish different things
- It is assessed against clear goals and objectives using measurable indicators
- It encourages the development and use of appropriate standards for specific restoration types (e.g., ecological restoration), sectors (e.g., mining), major biomes (e.g., marine), or precise circumstances (e.g., IUCN Red-listed ecosystem)

# High-Level Guidance Increasing to Help



GBF TARGET 02: ECOSYSTEM RESTORATION

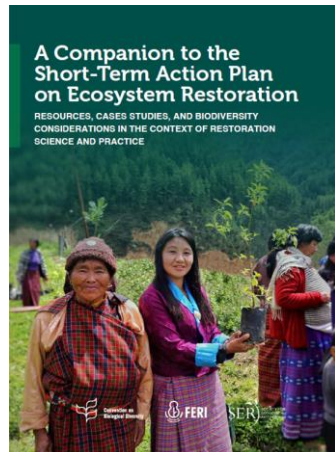
## Ecosystem Restoration 2022

In this Massive Open Online Course, you will learn to develop a step ecosystem restoration plan and apply effective restoration solutions in your national and subnational context.

[View details](#)

**Organizers:**

**Contributors:**



- There is a growing body of guidance to support restoration at the national level
- Using agreed principles and standards can improve restoration outcomes and reduce uncertainty
- Technical support is key to assist parties in translating commitments into restoration plans



# International Forum facilitated by the Forest Ecosystem Restoration Initiative:

Workshop on ecosystem  
restoration-related planning and  
capacity-building needs for the  
implementation of the  
Kunming-Montreal Global  
Biodiversity Framework

**12 September, 10 am - 12 pm EDT**



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COP 15 - CP/MOP10-NP/MOP4  
Ecological Civilization-Building a Shared Future for All Life on Earth  
KUNMING – MONTREAL





# WePlan – Forests: A decision support platform for spatial planning of forest ecosystem restoration



WePlan  
FORESTS



INSTITUTE FOR  
CAPACITY EXCHANGE  
IN ENVIRONMENTAL  
DECISIONS



CONABIO

Robin Chazdon

Institute for Capacity Exchange  
in Environmental Decisions

Forestation International

Wolke Tobón

Comisión Nacional para el  
Conocimiento y Uso de la  
Biodiversidad (Conabio)





# Outline

- Introduction to WePlan-Forests
- Mexico case study and application



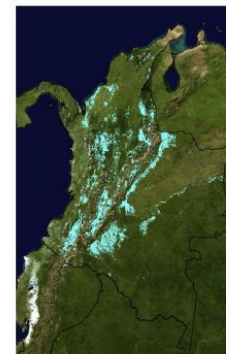
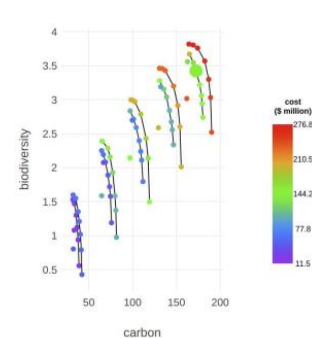
# WePlan – Forests

- Decision support platform
- Maximise restoration benefits for biodiversity and climate change mitigation while minimising costs.
- User-friendly web-based interface
- No spatial modelling or optimization expertise needed
- Results presented in an interactive web interface and as a PDF report (detailed information)



All targets ▼

Standard Letterbox Full

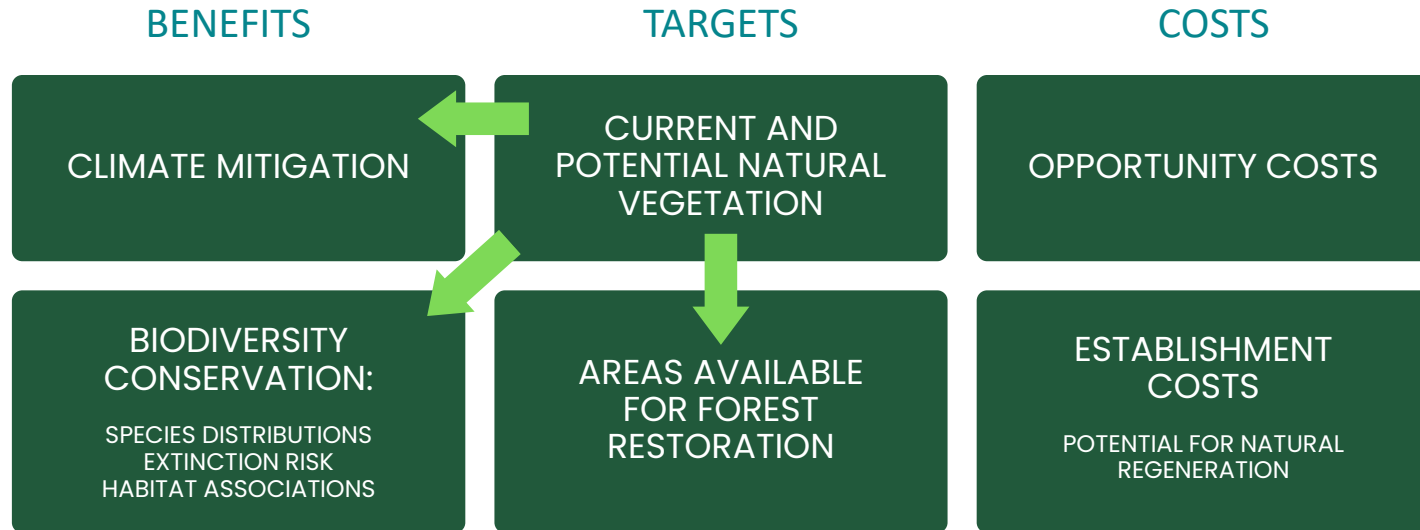


scenario	rest_area_ha	carbon	biodiversity
cost-effective (target 2)	3222464.39901624	109.32132001292	2.23093134149214
cost-effective (target 3)	3222464.39901624	110.394841238943	2.11131561815547
cost-effective (target 3)	3222464.39901624	111.854263492512	1.79516700379996
cost-effective (target 4)	4296619.19868832	130.882181891471	3.28037615034217
cost-effective (target 4)	4296619.19868832	135.69697911504	3.15541472060491
cost-effective (target 4)	4296619.19868832	138.804853528947	3.04063871223333
cost-effective (target 4)	4296619.19868832	142.130074478266	2.84325643901616
cost-effective (target 4)	4296619.19868832	144.245818035097	2.6753171432438

<http://weplan-forests.org>



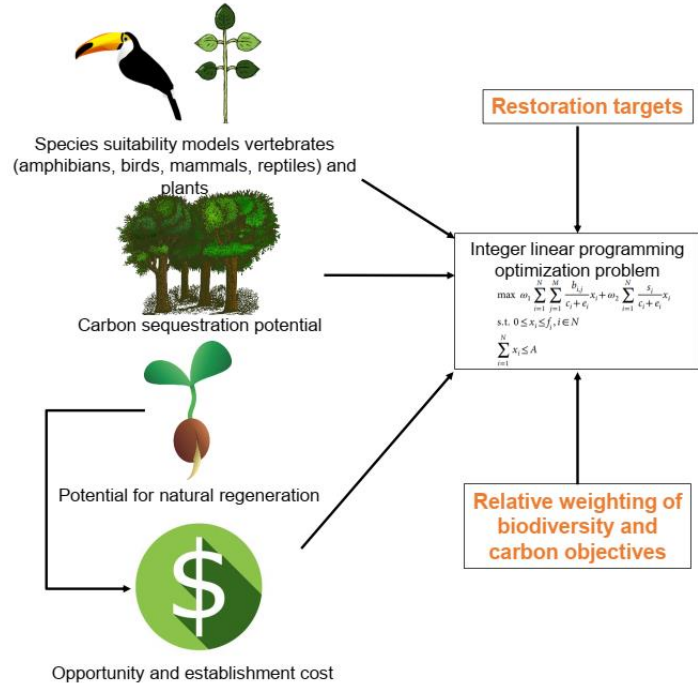
# WePlan – Forests modelling framework





# Optimisation framework

## Input data:

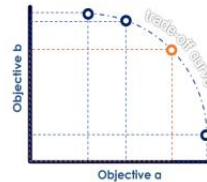


## Outputs:

Map showing priority areas for restoration at the national scale



Trade-off curve describing the relationship between



- Alternative solutions
- Good compromise solution

The framework is flexible and can be adapted to consider different benefits and constraints, at scales other than national, as long as proper data is available.



# WePlan-Forests Mexico

Mexico's restoration interests regard biodiversity conservation, climate change mitigation, and livelihood improvements.

## Restoration targets

Initiative  
20x20

Initiative 20x20: 8.5M ha target



Aichi Target 15: restoration of 15% of degraded areas



Kunming-Montreal Global Biodiversity Framework: restoration of 30% of degraded terrestrial ecosystems by 2030



# WePlan-Forests Mexico

## ICEED assessment

- well-developed restoration, biodiversity and climate change policies and regulations
- extensive experience with systematic planning and use of decision-support tools
- data availability
- high technical and technological capacity, including access to a high-performance computer
- restoration assessment and prioritisation previously assessed (IUCN and WRI 2014, Tobón et al. 2017)



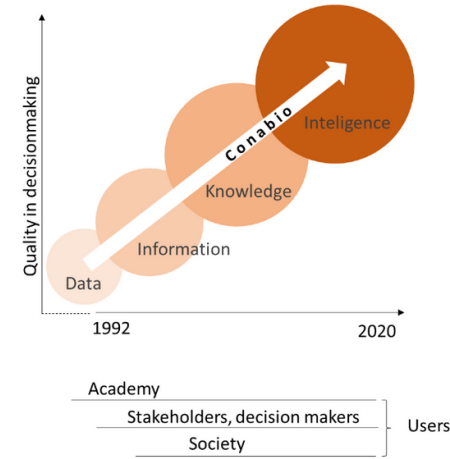
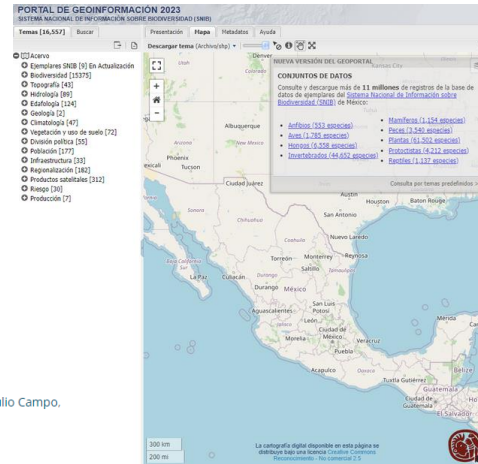
Conservation Biology / Volume 31, Issue 5 / p. 1086-1097

Contributed Paper | [Open Access](#) | [CC](#) | [i](#) | [f](#) | [t](#)

### Restoration planning to guide Aichi targets in a megadiverse country

Wolke Tobón Tania Urquiza-Haas, Patricia Koleff, Matthias Schröter, Rubén Ortega-Álvarez, Julio Campo, Roberto Lindig-Cisneros, José Sarukhán, Aletta Bonn

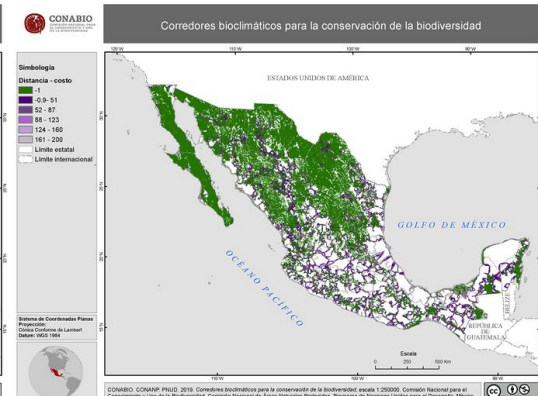
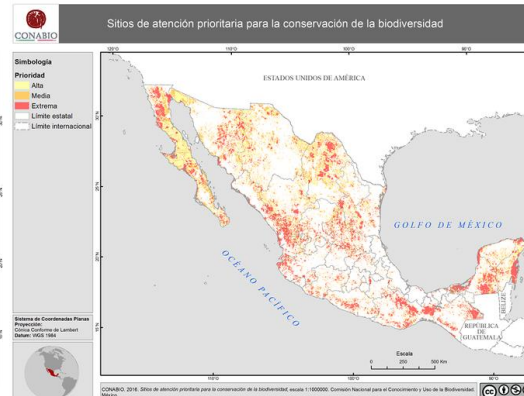
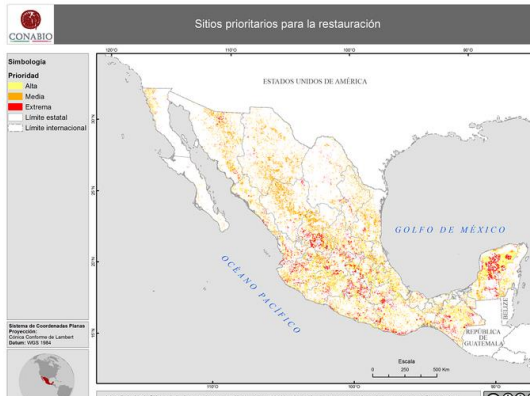
First published: 24 February 2017  
<https://doi.org/10.1111/cobi.12918>



# WePlan-Forests Mexico

## National planning products

- > 3,500 biodiversity surrogates (species and ecosystems)
- systematic conservation planning concepts (e.g. representativeness, irreplaceability, threats), and tools (multicriteria analysis and optimization algorithms)
- priority sites for biodiversity conservation and ecosystem restoration
- bioclimatic corridors to address connectivity planning under climate change

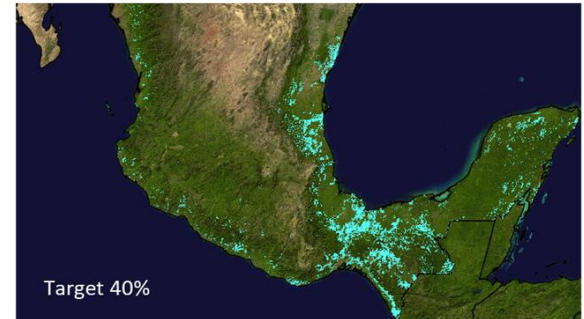
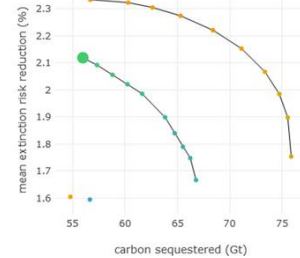
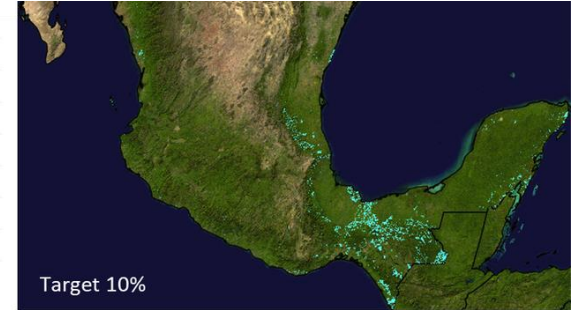
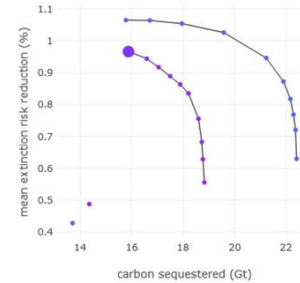


# WePlan-Forests Mexico

80 solutions for restoration in Mexico, considering:  
5 different target levels (10%, 20%, 30%, 40% and 50% of the area available for restoration), and  
4 different scenarios (minimum cost, cost-effective maximum benefit, and random)

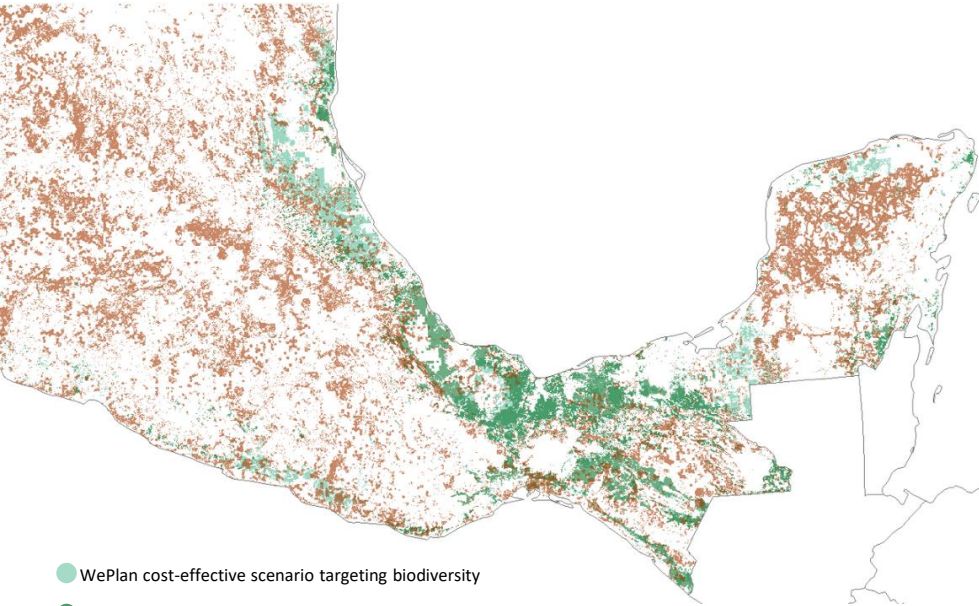


Total area available for forest restoration = 9.1 M ha





# WePlan-Forests Mexico



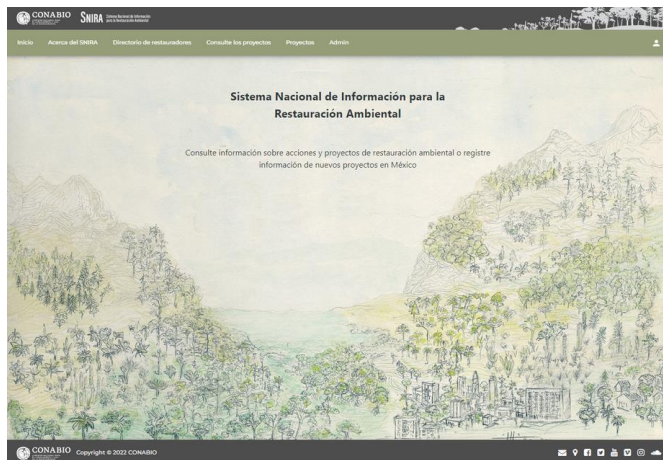
- WePlan cost-effective scenario targeting biodiversity
- WePlan maximum benefit scenario targeting biodiversity
- Conabios' priority area for restoration

How can WePlan-Forests be used to assist Mexico's restoration planning?

- Generate restoration scenarios to complement existing ones.
- Be customized to incorporate national-level data, other types of ecosystems and social-ecological trade-offs.
- Include data on restoration costs to reduce the cost of achieving restoration targets.
- Discuss planning and implementation with stakeholders and evaluating alternative scenarios trade-offs (benefits and costs).



# WePlan-Forests Mexico



National Information System on Environmental Restoration (Sistema Nacional de Información para la Restauración Ambiental) - launch planned for end of 2023

- integrates and synthesizes information related to restoration initiatives and programs in Mexico
- includes wide continuum of practices in terrestrial, freshwater and marine ecosystems and environments
- highlights restoration initiatives for biodiversity conservation and community participation
- designed to inform future restoration projects and catalyze restoration action based on scientific evidence





# Contact

## Website

[iceed.au](http://iceed.au)

[contact@iceed.au](mailto:contact@iceed.au)

## Social media

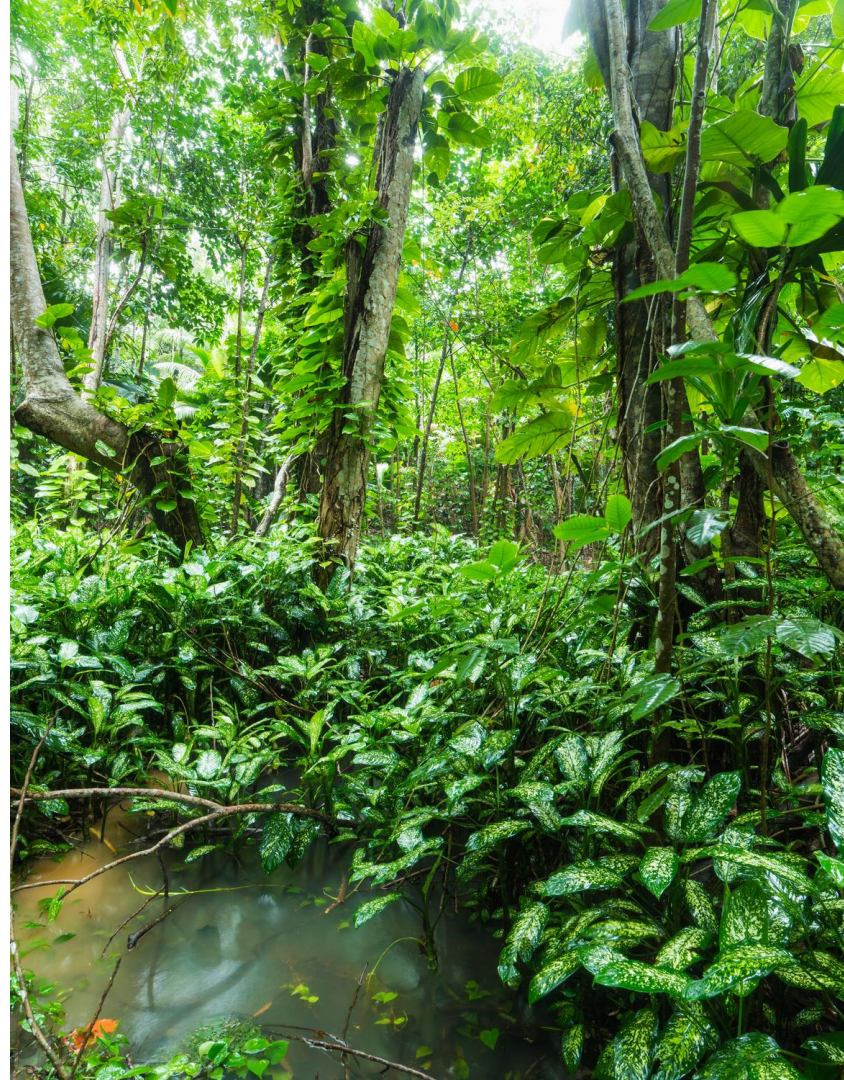
 @iceed

 @iceed\_au

 @iceed\_au

 @iceed\_au

 @iceed





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KUNMING – MONTREAL







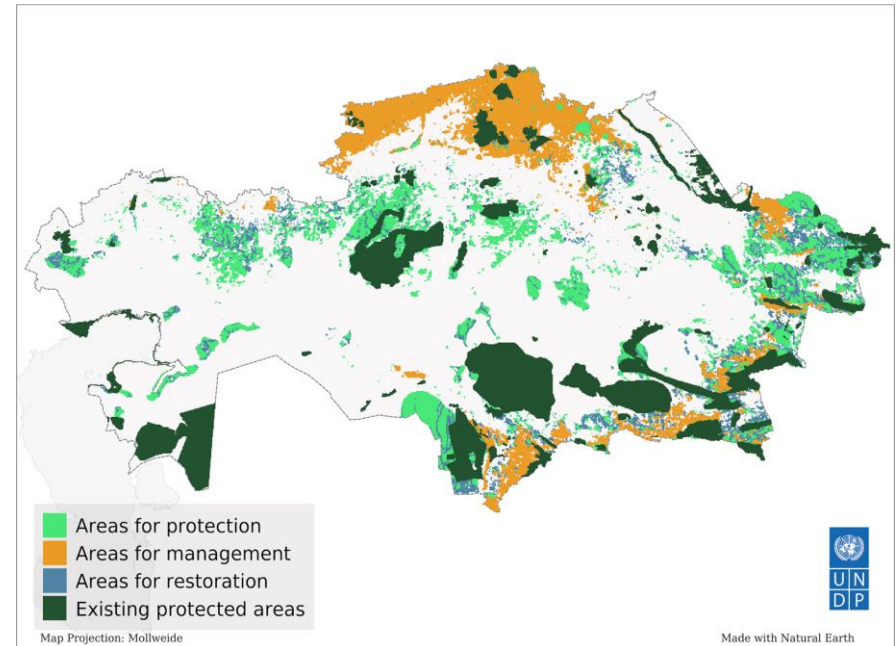
# Restoring hope project

Enrique Paniagua  
Senior Policy Expert  
Global Program on Nature for  
Development  
UNDP

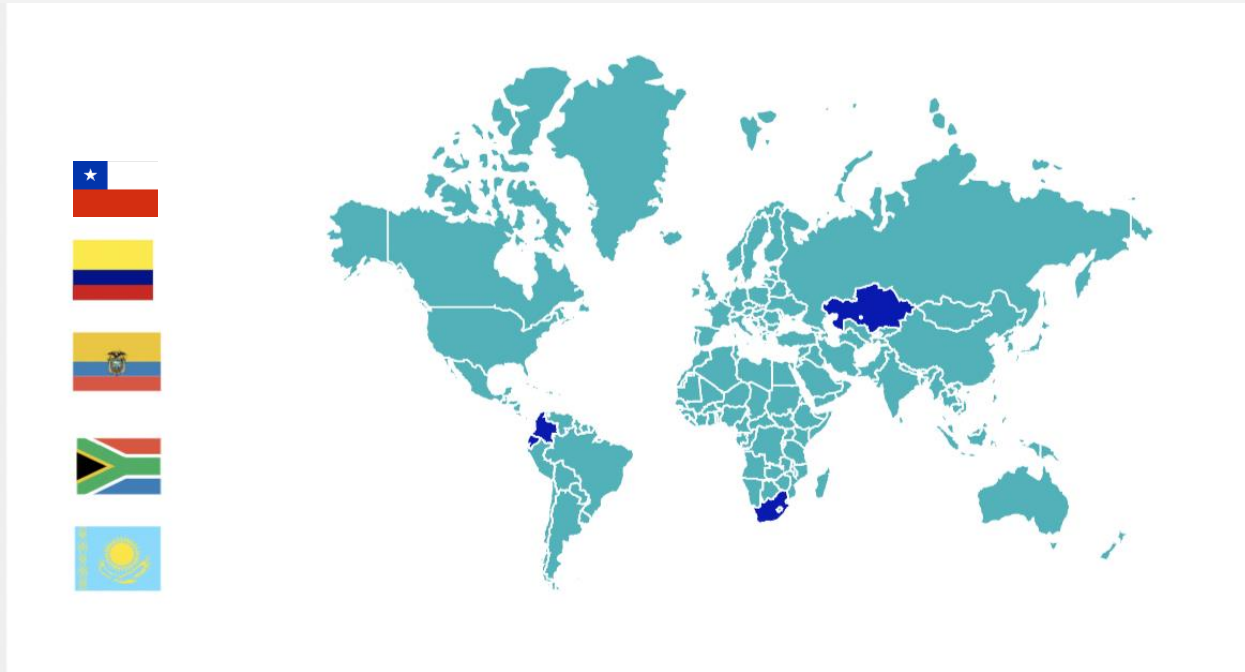
# Introduction

- Convention on Biological Diversity - CBD
- Global Biodiversity Framework - Target 2
- Objective: to help countries optimize their restoration targets through geospatial information and public policy analysis.
- Collaboration with Convention to Combat Desertification - UNCCD

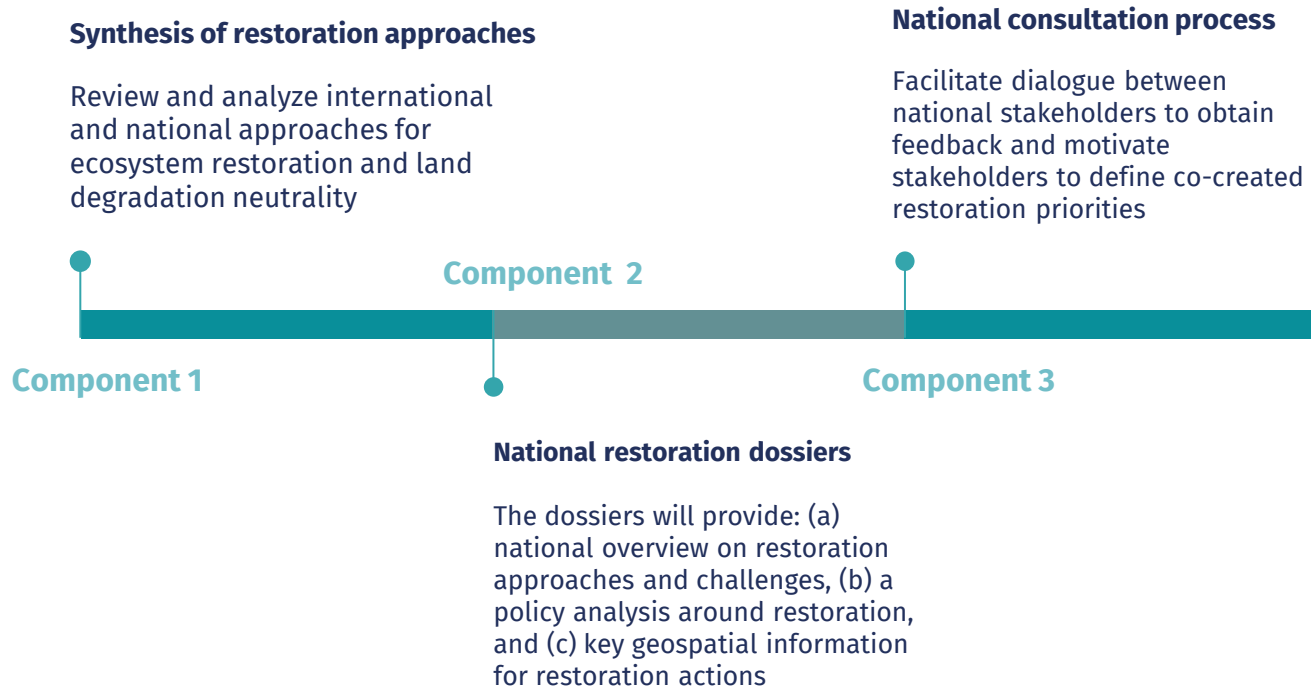
## Essential Life Support Areas Maps ELSA Maps



# Pilot countries



# Project's components



# Restoration approaches

## 1. Governance & challenges

## 2. Policy priorities

## 3. Indicators, metrics and methods

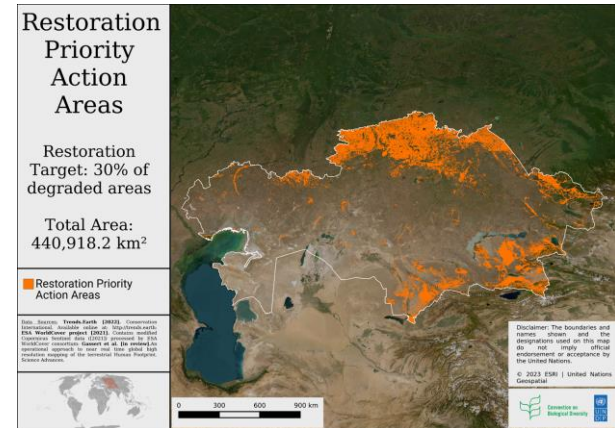
#	Regulatory framework	Item	Approach
1	Constitution of the Republic of Kazakhstan	Article 31	<u>Ecosystem approach, precautionary principle</u>
2	<u>Convention on Biological Diversity</u>	Articles 6, 8, 9	<u>Ecosystem approach</u>
3	Convention on International Trade in Endangered Species of Wild Flora and Fauna	Articles 2-5	<u>Polluter pays principle</u>
4	Ramsar Convention on Wetlands of International Importance, Especially as Waterfowl Habitat	Articles 2-6, 8	<u>Ecosystem approach</u>
5	Convention on the Conservation of Migratory Species of Wild Animals	Articles 2, 4-6	<u>Ecosystem approach</u>



Republic of Kazakhstan  
Ministry of Agriculture

### National Land Degradation Neutrality Targets

Astana, Kazakhstan  
2017



## 4. Engagement with national authorities...



# Policy priorities

1. Land Degradation Neutrality Voluntary Targets 2018 (LDN Targets)
2. First National Determined Contribution 2016 (NDC)
3. Bonn Challenge
4. The strategic plan of the Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan for 2017 - 2021
5. Strategic plan Ministry of Energy of the Republic of Kazakhstan for 2017 -
6. 2021 years
7. The Concept of Conservation and Sustainable Use of Biological Diversity in the Republic of Kazakhstan until 2030
8. On approval of the Predictive scheme of spatial development of the country until 2030
9. Concept for the transition of the Republic of Kazakhstan to the "green economy", 2013
10. The strategic development plan of the Republic of Kazakhstan until 2025, dated February 15, 2018 No. 636

Policy	Targets
<u>LDN Targets</u>	<p>The country aims to achieve a neutral balance of land degradation by 2030:</p> <ul style="list-style-type: none"> <li>• Restoration of 610 thousand hectares of irrigated land.</li> <li>• Restoration of collector-drainage systems.</li> <li>• Restoration of estuary irrigation lands with a total area of 368 <u>ths.</u> Ha.</li> <li>• Soil surveys on an area of 33 <u>mln.</u> Ha of agricultural land.</li> <li>• Geobotanical surveys on an area of 33 <u>mln.</u> Ha of pasture lands.</li> <li>• soil quality surveys on agricultural land of 30 <u>mln.</u> Ha.</li> </ul>
<u>NDC</u>	Kazakhstan pledged to restore at least up to 1.5 million ha of degraded land through afforestation and reforestation until 2030
<u>Bonn Challenge</u>	1,500,000 ha (0.56%) restored land by 2030
<u>National Action Plan for the implementation of the Address of the Head of State to the people of Kazakhstan dated September 1, 2020</u> <u>"Kazakhstan in a new reality: time for action"</u>	It aims to ensure planting of more than 2 billion trees in the forest fund and 15 million in settlements within five years (contributing to with Bonn Challenge)

# Comprehensive spatial data - indicators

<b>UNCBD GBF</b>			
<b>Target</b>	<b>Indicator name</b>	<b>Adopted/proposed</b>	<b>Metrics/proxies</b>
Target 2. Ensure that by 2030 at least 30 per cent of areas of degraded terrestrial, inland water, and coastal and marine ecosystems are under effective restoration, in order to enhance biodiversity and ecosystem functions and services, ecological integrity and connectivity.	<u>Area</u> under restoration (headline indicator)	Headline Indicator adopted in decision 15.5/COP.15	Global Ecosystem Restoration Index
	Extent of natural ecosystems by type (component indicator)	Indicator adopted in decision 15.5/COP.15	Status of Key Biodiversity Areas  Biodiversity Habitat Index
	Maintenance and restoration of connectivity of natural ecosystems (component indicator)	Indicator adopted in decision 15.5/COP.15	Index of Species Rarity Sites, High Biodiversity Areas, Large Mammal Landscapes, Intact Wilderness and Climate Stabilization Areas  Forest Landscape Integrity Index

<b>PRIAS4</b>			
<b>Objective</b>	<b>Indicator name</b>	<b>Metrics/proxies</b>	<b>Adopted/proposed</b>
SO 1: To improve the condition of affected ecosystems, combat desertification/land degradation, promote sustainable land management and contribute to land degradation neutrality;	Trends in land cover	Land use	Indicator adopted in decision 7/COP.13
	Trends in land productivity or functioning of the land	Land use change	Indicator adopted in decision 7/COP.13
	Trends in carbon stocks above and below ground	Soil organic carbon stock	Indicator adopted in decision 7/COP.13
	Proportion of land that is degraded over total land area	-	Background for indicator adopted in decision 9/COP.13

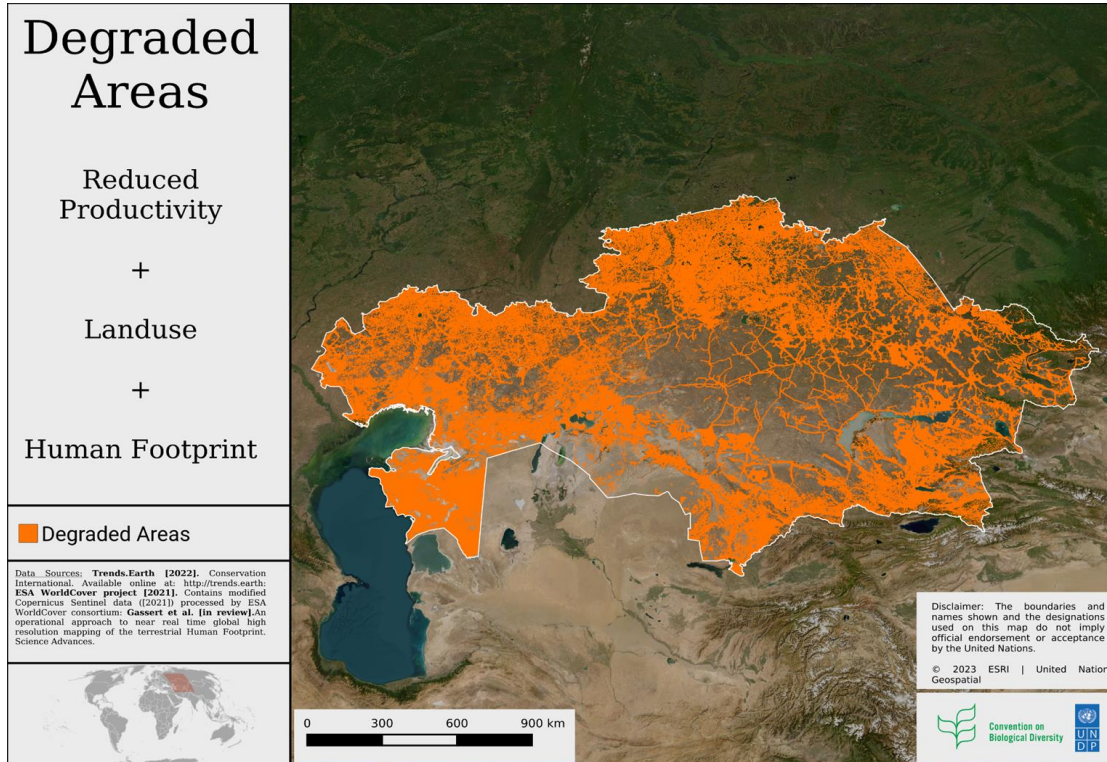
Also national indicators...



# Comprehensive spatial data – metrics & data stacks

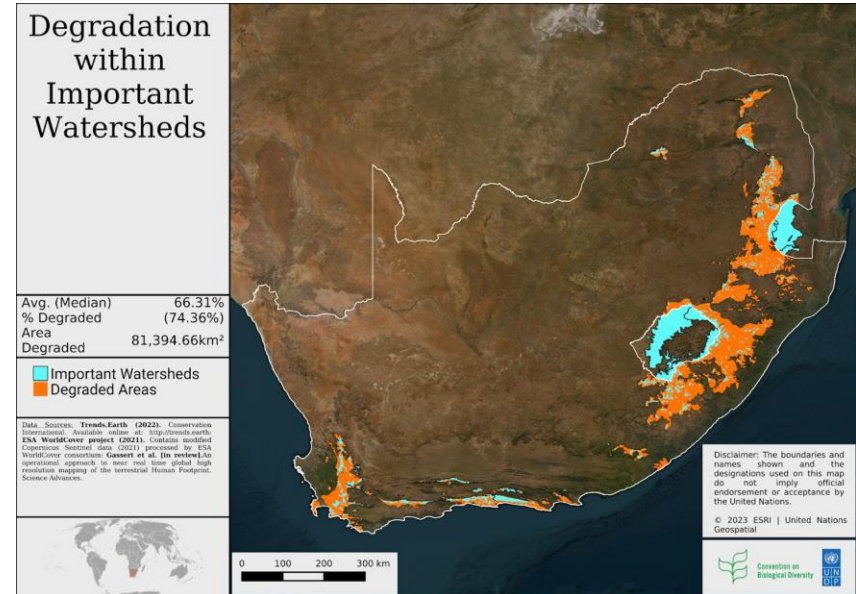
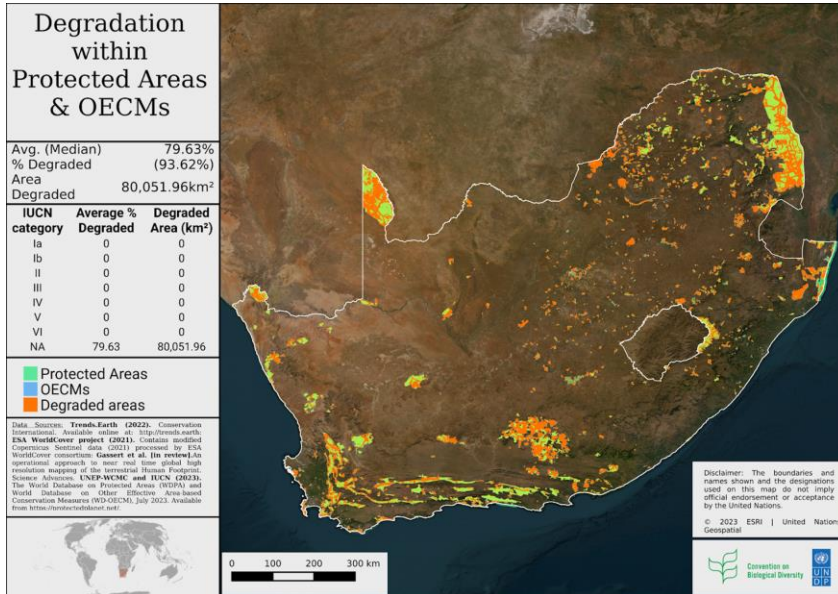
Basemap							
Planning Unit		buffered 1 pixel out to cover more mangroves					
Features	Native forest in land cover 2018		Biodiversity	Native forest	Biodiversidad	Bosque nativo	
Features	Distribution of	combined mainland and Galap	Biodiversity	Mangroves	Biodiversidad	Manglares	
Features			Biodiversity	Paramos	Biodiversidad	Páramos	
Features	Wetlands of international importance declared		Biodiversity	RAMSAR	Biodiversidad	RAMSAR	
Features	Priority conservation areas: Identification of p		Biodiversity		Biodiversidad	Tierras priorita	
	Restoration agreement: Lands with restorati			Forest restorati			
Features	Capacity of the land to be exploited under a ca		Biodiversity	Capacity of lan	Biodiversidad	Capacidad del l	
Features	Priority biodiversity areas in Ecuador		Biodiversity	Priority biodive	Biodiversidad	Áreas prioritari	
Features	Key Biodiversity Area (Key Biodiversity Area). i		Biodiversity	KBAs	Biodiversidad	ACB	
Features	Conservation gaps in the national protected ar		Biodiversity	Conservation g	Biodiversidad	Brechas de con	
Features	Areas of Ecuador representative of terrestrial c		Biodiversity	Biosphere rese	Biodiversidad	Reservas de bic	
Features	Areas of presence and absence of birds in Ecu		Biodiversity	Birds species ri	Biodiversidad	Riqueza de esp	
Features	Ecosystems: Vegetation communities connecti		Biodiversity	Vegetation con	Biodiversidad	Conectividad d	
Features			Biodiversity	Vulnerable agri	Biodiversidad	Frontier agrícc	
Features	Walker et al. defined NCS opportunity (500m)		Climate Change	<b>Carbon deficit</b>	Mitigación del cambio	Carbono de bic	
Features	Carbon found in the form of slightly altered or		Climate Change	Soil organic car	Mitigación del	Carbono orgán	
Features	Areas susceptible to desertification threats at		Climate Change	Susceptibility t	Mitigación del	Susceptibilidad	

# First results: Ecosystem degradation maps

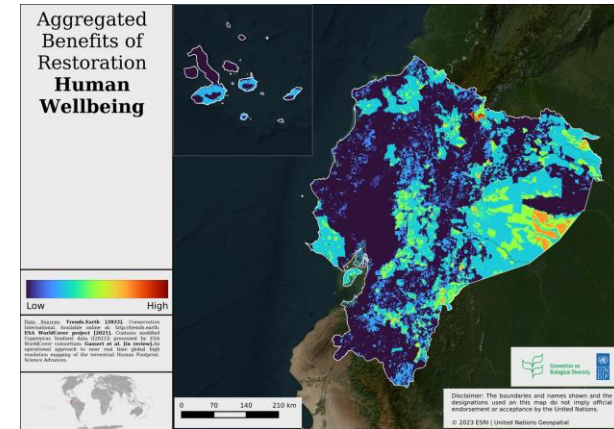
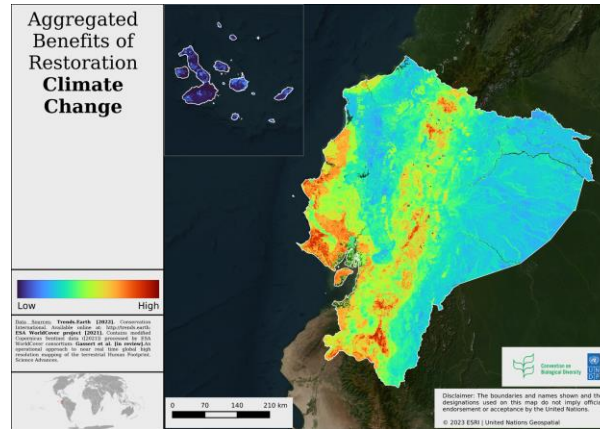
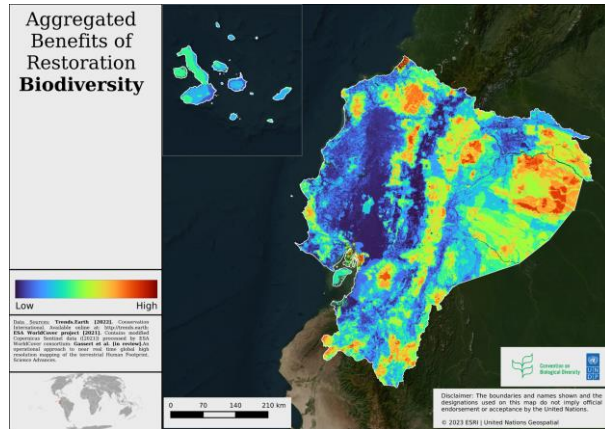




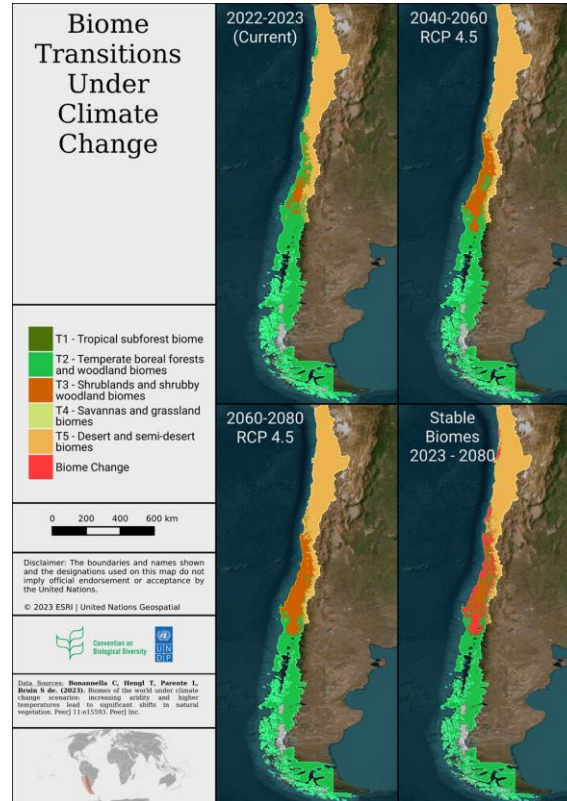
# First results: Degradation in PA and Watersheds



# First results: potential benefits



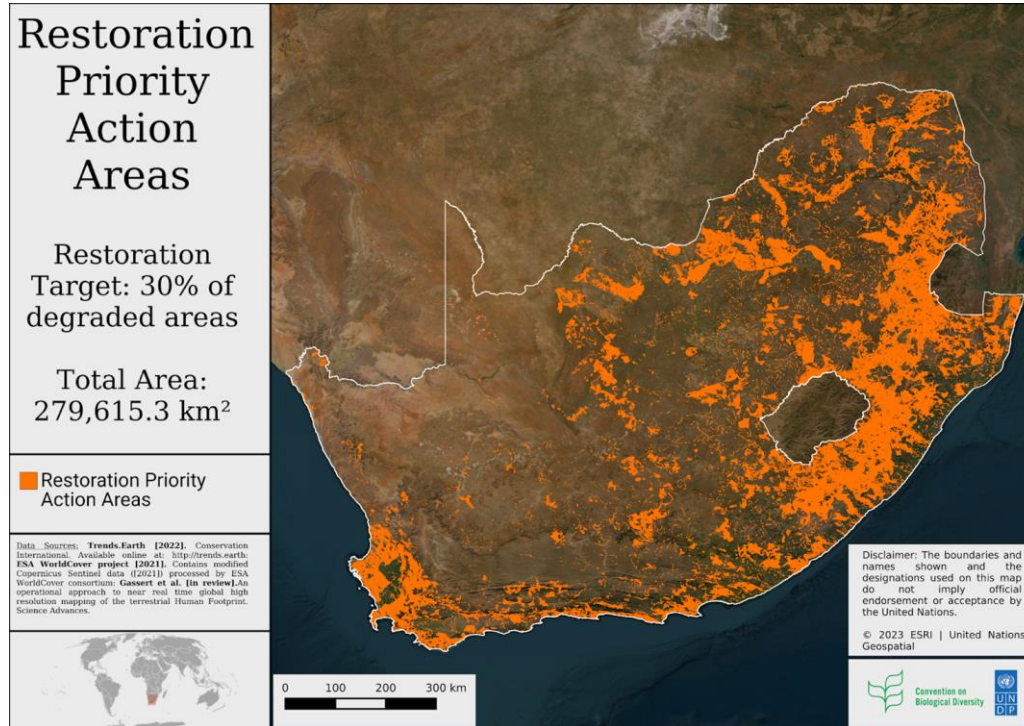
# First results: Climate change & degradation



# First results: Restoration priority areas



Convention on  
Biological Diversity





# Draft ecosystem restoration dossier



## 1. Overview of Ecosystem Restoration :

- Ecosystem restoration governance
- Challenges of ecosystem restoration
- Public policy priorities

## 1. Mapping hope: spatial data for ecosystem restoration

- Current state
- Opportunities for restoration
- Potential benefits
- Climate change and restoration
- Restoration priorities



## Next steps





# Thanks!

[enrique.paniagua@undp.org](mailto:enrique.paniagua@undp.org)

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Workshop on ecosystem  
restoration-related planning and  
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**12 September, 10 am - 12 pm EDT**



UN  
environment  
programme



Convention on  
Biological Diversity



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