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# UN Biodiversity Lab

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2021 Annual Report

# UN Biodiversity Lab: 2021 Annual Report

We live in a deeply interconnected world, where the health of natural and human systems underpins the future of our societies, economies, and planet.

The [UN Biodiversity Lab \(UNBL\)](#) is a free, open-source platform developed in partnership by Convention on Biological Diversity (CBD), UN Development Programme (UNDP), UN Environment Programme (UNEP), and the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) to support governments and other stakeholders in understanding these complex systems by facilitating access to state-of-the-art maps and data on nature, climate change, and human development.

Based on data layers from diverse sources, such as satellites, national and global science teams, and Indigenous Peoples and local communities, UNBL maps constitute a powerful resource to address the planetary crises by providing new ways to generate insight for nature and sustainable development.

The core mission of UNBL is three-fold:

1. To **democratise** access to spatial data and analytic tools as a global public good.
2. To **support decision-makers** to leverage spatial data for insight, priority-setting, planning, and implementation.
3. To empower stakeholders to use spatial data for **monitoring and reporting**.

This annual report presents the key activities, outcomes, and achievements of the UNBL partnership in 2021.

Photo credit: Alice Plate | UNDP Papua New Guinea



## The main activities implemented in 2021 include:

- Development and launch of the new UNBL 2.0 website (complete with a range of new features to enhance impact).
- Engagement with a wide range of new users and data providers.
- Organization of capacity-building events and release of new materials.
- Strategic planning to take the UNBL vision forward to 2030.
- Scaling up of the Essential Life Support Areas (ELSA) approach through incorporation into UNBL.

## Key activities on the horizon for 2022 include:

- Implementation of a new data update and inclusion strategy.
- Refinements of UNBL's data taxonomy and filters to improve user experience.
- High profile events to promote new UNBL and showcase UNBL data providers and users at the UN Environmental Assembly, Nature for Life Hub, UN Biodiversity Conference, and more.
- Launch of updated training materials in English, French, and Spanish, including a micro-course on the Learning for Nature Platform and advanced training sessions offered in partnership with the National Aeronautics and Space Administration Applied Remote Sensing Training (NASA ARSET).
- Release of a new functionalities on the UNBL platform that will enable users to map their country's ELSA, where action to protect, manage, and restore nature can support the achievement of global priorities for biodiversity, climate change, and sustainable development. Initially available as a proof of concept for three countries, this work has the potential to be scaled to any country in the world.
- Scoping to identify key data and functionalities needed to support Parties to the CBD in their commitments to the draft post-2020 global biodiversity framework.



Source: Spalding, M.D., Fox, H.E., Allen, G.R., Davidson, N., Ferdaña, Z.A., Finlayson, M., Halpern, B.S., Jorge, M.A., Lombana, A., Lourie, S.A., Martin, K.D., McManus, E., Molnar, J., Recchia, C.A., Robertson, J. (2007). Marine Ecoregions of the World: a bioregionalization of coast and shelf areas. BioScience 57: 573-583. doi: 10.1641/B570707

# Key achievements of 2021

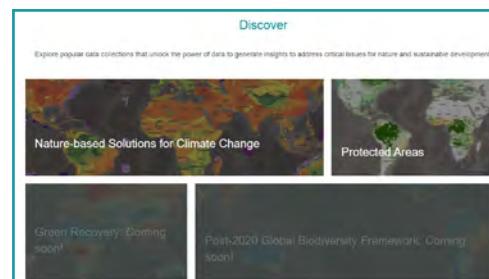
## 1. UNBL 2.0 development and launch.

The new version of UNBL was launched during the Nature for Life Hub, garnering strong interest from a range of stakeholders. The event reached 9,335 live viewers and resulted in 35 million impressions on social media. New features of this updated version of UNBL include:

- **Secure workspaces** which allow all non-commercial actors to incorporate national data alongside global data.
- **Curated data collections** on key thematic areas to generate insight for action.
- **Modern web app design** and enhanced usability.
- **An expanded global data list** of 450 global spatial data layers on biodiversity, climate change, and sustainable development.
- **Analytics** to calculate dynamic indicators for any area of interest.
- **Full availability in 5 languages:** English, French, Portuguese, Russian, and Spanish.

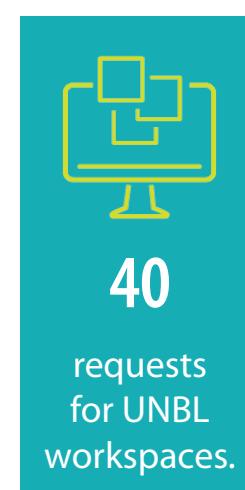


UNBL 2.0 platform



UNBL Collections

At the end of 2021, the UNBL platform had successfully accumulated:



In 2022, new functionalities will be developed to enable users to map their country's ELSA, where action to protect, manage, and restore nature can support the achievement of global priorities for biodiversity, climate change, and sustainable development.

## 2. Engagement of new data providers and users.

Key successes in engagement include:

- **Attracted 385 users** from 82 countries on UNBL 2.0 as of the end of 2021, with 22,218 site views.
- **Renewed relationships** with 30 data providers and negotiated access to over 9 additional and in-development data layers. This engagement resulted in the availability of over 124 global datasets on UNBL, consisting of 450+ individual data layers.
- **Provision of unique UNBL workspaces.** Of the 40 requests for these workspaces received as of December 2021, 25 new workspaces were granted based on the terms for non-commercial use.
- **Conducted user testing** with seven users from four countries to refine data taxonomy and filters and developed a proposal to refine the platform based on these inputs in 2022.

## 3. Capacity-building activities helped to enhance the impact of the use of spatial data.

The following products and events were developed:

- A micro-course on [Using Spatial Data for Biodiversity](#) via [Learning for Nature](#).
- A [UNBL online FAQs](#) list.
- A [UNBL Public Platform User Guide](#).
- A [UNBL Workspace User Guide](#).
- 2 micro-trainings on UNBL during the IUCN World Conservation Congress.
- A [toolkit on tools to support Indigenous Peoples](#) to access and use spatial data.
- An [introduction to UNBL 2.0](#) in a webinar series hosted by the CBD and UNEP-WCMC.

## 4. Strategic planning.

Key successes to take forward the UNBL vision to 2030 included the following:

- Developed recommendations for a data update and inclusion strategy that will be implemented in 2022.
- Active engagement from technical partners such as Impact Observatory, Microsoft, NASA, and the UN International Computing Centre (UNICC).

- The following key partners were engaged in developing the UNBL's strategic vision: CBD, UNDP, UNEP, and UNEP-WCMC.

## 5. Scaling up the ELSA approach.

The UNBL Partnership, along with Impact Observatory, has built on UNDP's work to map ELSAs. These are locations where actions are taken to protect, manage, and restore nature in order to support the achievement of global priorities for biodiversity, climate change, and sustainable development. UNBL will democratise access to the ELSA methodology on the UNBL 2.0 site. In 2021, the UNBL Partnership successfully:

- Initiated work towards a 'Tier 1' ELSA approach that will provide a foundation to produce ELSA maps for any country in the world.
- Convened national experts from three leading ELSA pilot countries and the world's foremost Systematic Conservation Planning (SCP) scientists to serve as members of a global Expert Advisory Committee to guide the creation of the 'Tier 1' analysis.



Photo credit: UNDP Guatemala

## Partners & Donors

Special thanks go to the following donors and partners who have made the UNBL Partnership's achievements in 2021 possible:

### Donors



**PERMANENT MISSION OF DENMARK TO THE UN IN  
NEW YORK**  
*Ministry of Foreign Affairs of Denmark*



### Convening partners



## Technical Partners



Photo credit: UNDP India

## Annex: Detailed achievements from 2021

### 1.1 UN Biodiversity Lab 2.0 Development

With a fresh new web interface launched in 2021 based on feedback from users, UNBL 2.0 provides an invaluable resource to nations around the world to take transformative action for nature and sustainable development. Users can now:

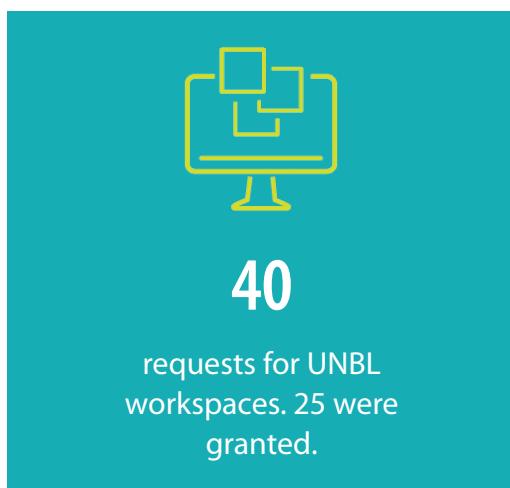
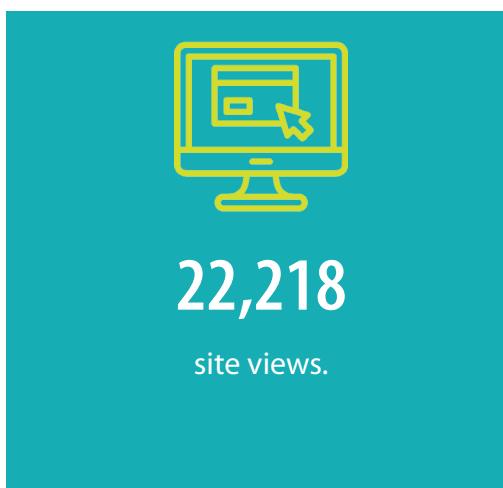
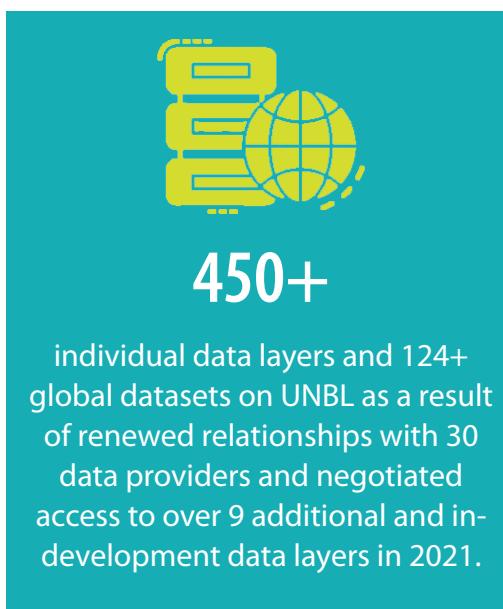
- Access over 450 of the world's best available global spatial data layers.
- Create secure workspaces to incorporate national data alongside global data.
- Use curated data collections to generate insight for action.
- Calculate dynamic metrics and indicators on the state of our planet.
- UNBL is freely available online to governments and other stakeholders as a digital public good.

#### Successes:

- Completed a full update of the UNBL 2.0 backend. This made the platform compatible with the latest advances in geospatial technology, enhanced the speed and quality of data visualizations and analytics, and created the foundation for better connections with other platforms. This was made possible with funding from Microsoft and implementation by Impact Observatory.
  - Technical advancements include transition to Azure cloud computing and the Microsoft Planetary Computer, COG compliant GeoTIFF and STAC service, enhanced zonal stats service, a new tiling service, and webservice via geoserver.
- Conducted user testing with seven users from four countries to refine data taxonomy and filters and developed a proposal to refine the platform based on these inputs in 2022.
- Developed recommendations for a data update and inclusion strategy that will be implemented in 2022.
- Continued dynamic partnership with the [Nature Map](#) initiative to release new maps on global ecosystem services.
- Finalised developments of UNBL 2.0 user interface for launch and migrated the platform to UNICC servers using funding from the Global Environment Facility. The full new feature list includes:
  - Modern web app design and enhanced usability.
  - Fully available in English, French, Portuguese, Russian, and Spanish.
  - An expanded global data list on biodiversity, climate change, and sustainable development.
  - Secure workspaces available to any not-for-profit actors where they can incorporate national data alongside global data.

- Analytics to calculate dynamic indicators for any area of interest.
- Curated data collections on key thematic areas to generate insight for action.

By the end of 2021, UNBL had successfully accumulated:



## 1.2 UN Biodiversity Lab 2.0 Launch at the Nature for Life Hub

UNBL 2.0 was officially launched at the iconic [Nature for Life Hub 2021](#), as part of [Session 1.3](#), entitled “Putting nature at the heart of sustainable development”. The full launch event was followed live by 9,335 participants. Airing on 4 October, the event combined speaker montages, illustrative videos, and dialogues between high-level speakers to address three central questions:

1. Why do we urgently need to transform the nature of development?

2. What is the role of spatial data in this transformation?

3. How can we future-proof our world with national nature-positive development?

Leading up to the event, the UNBL Partnership led a high-profile communications campaign to raise awareness about the platform, encourage registration, and establish UNBL as a trusted platform for planning, implementation, and monitoring/reporting for the post-2020 global biodiversity framework and 2030 Agenda.

### Successes:

#### Communications

- Created a pre-launch [social media campaign](#) and [post-launch social media campaign](#) to build buzz around the Nature for Life Hub session ‘Putting nature at the heart of sustainable development’ and the launch of UNBL 2.0 that was shared with 20 partners and 30 data providers. #UNBiodiversityLab reached [7 million viewers and had 35 million impressions](#).
- Promoted the UNBL 2.0 launch in eight major UN newsletters to raise awareness about the functionalities offered by the new platform.
- Published a UNDP press release on the launch of UNBL 2.0 in [English](#), [French](#), and [Spanish](#). This press release was also shared by [UNEP](#) and the [CBD](#).

#### Launch event

- Organised a [facilitated dialogue](#) on the role of data as a key integrator in national development to open the UNBL launch festivities.
  - This featured Achim Steiner (UNDP Administrator), Brad Smith (President of Microsoft), and Inger Andersen (Under-Secretary-General of the United Nations and Executive Director of UNEP).
- Produced two high-quality video assets:
  - [UNBL trailer](#), co-created with UNDP, UNEP, and UNEP-WCMC.
  - [Video montage with UNBL partners and data providers](#). This featured representatives from the Gordon and Betty Moore Foundation, Impact Observatory, International Institute for Applied Systems Analysis, NASA, Protected Planet at UNEP-WCMC, and UNICC.
- Organised a [facilitated dialogue](#) on using spatial data for the post-2020 global biodiversity framework.
  - Participants included Elizabeth Maruma Mrema (Executive Secretary of the Secretariat of the CBD), Francis Ogwale (Natural Resource Manager at National Environment Management Authority and Co-chair of the CBD Open Ended Working Group for the post-2020 Global Biodiversity Framework), Jamison Ervin (Manager of UNDP Global Programme on Nature for Development), and Corli Pretorius (Deputy Director of the UNEP-WCMC).
  - The team also supported Basile van Havre, Co-chair of the CBD Open Ended Working Group for the post-2020 Global Biodiversity Framework, to give supplementary words on the role of spatial data in the post-2020 global biodiversity framework.

## 2. Engagement

In 2021, the UNBL Partnership developed communication materials and spoke at a series of high-profile events to raise awareness about the power of spatial data and ‘fourth industrial revolution’ technologies to advance the conservation and sustainable development agendas. Materials produced included a wide range of social media campaigns, blogs, articles, and virtual events.

### Successes:

#### Communications

- Published a joint [information document](#), Lessons from UNDP, UNEP, and UNEP-WCMC in Supporting the Implementation of the Strategic Plan for Biodiversity 2011-2020 and Suggestions for the Post-2020 Global Biodiversity Framework, via the CBD. This information document was accompanied by a [UNDP blog](#) entitled Transforming the biodiversity crisis into opportunity.
  - UNBL featured as a case study in the World Wildlife Fund report [Geospatial ESG: The emerging application of geospatial data For gaining ‘environmental’ insights on the asset, corporate and sovereign level](#).
  - Developed a [Resources page](#) on UNBL which features top articles, press releases, Story Maps, and more communications pieces related to the work of the UNBL Partnership.
  - Developed and posted social media content on UNBL partner accounts throughout the year to raise awareness about functionalities of UNBL 2.0.



Above: Examples of engagement conducted on social media to enhance the reach of UNBL.

### Events

- Presented on the power of spatial data to support transformative action for nature, climate, and sustainable development at five flagship events:
  - [AI for the Planet](#)
  - [IUCN World Conservation Congress Spatial Action Planning for Conservation](#)
  - [GEO Week 2021](#)
  - New York City Bar Association meeting of Inter-American Affairs
  - [UNEP Regional Innovation for Asia Pacific Webinar](#)

## 3. Capacity-Building

The UNBL Partnership works to ensure that spatial data can be applied by a variety of users to create innovative solutions for conservation and development challenges. To achieve this, the partnership provides training to stakeholders on existing tools to support decision making, as well as building capacity to access and use spatial data where needed. In 2021, the UNBL Partnership built and strengthened the capacity of policymakers to access and use spatial data in order to deliver on their commitments to the Rio Conventions, the 2030 Agenda for Sustainable Development, and anticipate the implementation of the post-2020 global biodiversity framework.

### Successes:

- Offered a micro-course on [Using Spatial Data for Biodiversity](#) via [Learning for Nature](#).
  - Informs learners about the value of remote sensing for monitoring biodiversity and ecosystem conservation, provides training on UNBL, and offers case studies of how countries are using spatial data for biodiversity conservation decision-making.
  - Designed by UNDP together with [NASA ARSET](#), [Ministry of Environment and Energy of Costa Rica \(MINAE\)](#), [PRIAS Laboratory](#), and the [Humboldt Institute](#).
  - The micro-course has three lessons and is available in English. As of December 2021, it had been taken by 2,218 individuals. The course will be updated in 2022 to reflect updates to UNBL, and will be released in English, French, and Spanish.
- Produced and disseminated guidance materials for UNBL 2.0 in the five official platform languages.
  - These included [online guides and FAQs](#), the Public Platform User Guide (in [English](#), [French](#), [Portuguese](#), [Russian](#), [Spanish](#)), and UNBL Workspace User Guide (in [English](#), [French](#), [Portuguese](#), [Russian](#), [Spanish](#)).
- Produced customised materials
  - Developed customised training in Portuguese on UNBL for the Brazil Supreme Audit Institution. The training included an overview of the platform, data available, training on using the public platform, and training on using UNBL workspaces.

- Developed a customized use case guide exploring how UNBL can support environmental audits, available in Portuguese (and soon also English).
- Offered two micro-trainings on UNBL during the [International Union for Conservation of Nature World Conservation Congress](#) in September 2021, reaching approximately 60 participants:
  - [Transforming data to action: Remote sensing platforms to support conservation priorities](#)
  - [Supporting Indigenous peoples' use of geospatial technologies in defending nature and traditions](#)
- Produced a toolkit to support Indigenous Peoples to access and use spatial data available in [English](#), [French](#), and [Spanish](#) in collaboration with Conservation International.
- Offered an introduction to UNBL 2.0 in the webinar series “Supporting the Implementation of the Post-2020 Global Biodiversity Framework”, organized by CBD and UNEP-WCMC.
  - The webinar was an opportunity to present UNBL 2.0 and its features to potential users, alongside other relevant tools for the Parties to CBD. The sessions were given in [English](#) (26 October and 29 October), [French](#) (28 October), and [Spanish](#) (27 October), and were attended by a total of 435 live participants from 103 countries. As of December 2021, the [recordings](#) have been watched over 855 times on YouTube.

#### 4. Strategy & Governance

The UNBL partners work together to align UNBL's work to the [UN Common Approach for Biodiversity](#) and the [UN Secretary General's Data Strategy](#), leveraging open data to create a solution-driven, user-friendly platform. Our work around strategy and governance forms a foundation to guide our other activities, ensuring that they meet user needs and are aligned with our broader vision. The UNBL Partnership brings together convening partners, technical partners, data providers, and end users to create innovative solutions to address our planetary emergency.

- Convening partners leading the UNBL mission and vision include UNDP, UNEP, UNEP-WCMC, and the CBD Secretariat. Through our partnership, we engage nearly 200 countries, allowing for dynamic updates to the platform based on user needs.
- Technical partners and data providers ensure the provision of cutting-edge tools and data to take action for nature and sustainable development.

#### Successes:

- Positioned UNBL within UNEP, UNDP and CBD long-term strategies and explored connections to related initiatives in each agency.
- Signed a formal partnership agreement with convening partners CBD, UNDP, UNEP (in process), and UNEP-WCMC to take the UNBL vision forward to 2030.
- Built technical partnership to implement the UNBL vision with Impact Observatory, Microsoft, NASA, and the UN International Computing Centre (UNICC).
- Convened UNBL Advisory Committee, Data and Technology Committee, and User Engagement Committees to advise and implement the UNBL vision.

- Was selected, in combination with UNDP's work to map ELSAs, as one of 19 “Outstanding Practices” of the [100+ Biodiversity Positive Practices and Actions Around the World](#) at the CBD COP15 parallel forum. The event was guided by the CBD Secretariat and the Office of the Executive Committee for the Preparation of COP15, as well as co-hosted by the China Environmental Protection Foundation and the Paradise International Foundation.

#### 5. ELSA functionalities

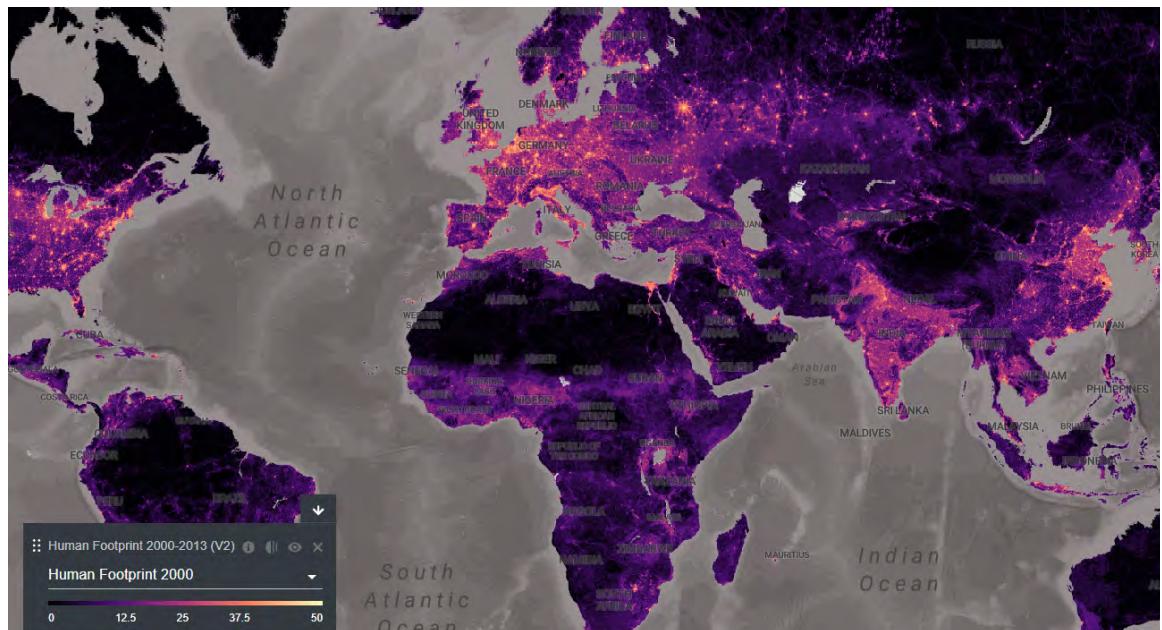
The UNBL Partnership is working to scale up the ELSA approach, for which UNDP has been working to map locations where action to protect, manage, and restore nature can support the achievement of global priorities for biodiversity, climate change, and sustainable development. This project, which will continue from 2021 into 2022, will utilize the learnings from the existing 12 pilot countries to create an ‘ELSA Tier 1’ approach to democratise access to the ELSA methodology through a proof-of-concept tool on [UNBL](#).

Initially available as a proof of concept for three countries – Colombia, Costa Rica and South Africa – this work has the potential to be scaled to any country in the world. By piloting an approach that can be used to produce ELSA maps for any country in the world, this project will offer a ‘hypothesis’ of where nature-based actions can most effectively contribute to global targets for nature and sustainable development. The ELSA tool on UNBL will provide a foundation to support policymakers to direct implementation of the post-2020 global biodiversity framework.

This work is being made possible through collaboration with Impact Observatory as well as funding from the Gordon and Betty Moore Foundation.

Success	Details
<b>Created an <a href="#">approach</a> and workplan to implement the scientific, technological, and stakeholder engagement workstreams of the project.</b>	This was achieved in collaboration with the project science team and web development team.
<b>Formed a global Expert Advisory Committee to guide the creation of the ELSA Tier 1 analysis.</b>	The committee convened national experts from three leading ELSA pilot countries and the world's foremost SCP scientists. The institutions of participating members include Humboldt Institute, Impact Observatory, International Institute for Applied Systems Analysis, Ministry of Environment and Energy of Costa Rica, Montana State University, Nature Conservancy of Canada, PRIAS Laboratory of Costa Rica, South African National Biodiversity Institute, University of British Columbia, UNDP, UNEP-WCMC, University of Queensland, and Wildlife Conservation Society.
<b>Conducted global policy analysis based on feedback from the Expert Advisory Committee.</b>	This analysis identifies <a href="#">ten headline priority global policy targets</a> and global area-based targets for protection, management, restoration, and urban greening to guide the ELSA Tier 1 analysis.

Success	Details
<b>Identified all nature-based actions across biodiversity, climate change and development policies for 50 countries in their Nature for Climate Country Briefs.</b>	This entailed tagging all nature-based national policy targets by nature-based action type (protect/manage/restore/urban greening), relevant ELSA Tier 1 priority global policy targets, ecosystem type, and if quantifiable, time-bound and area-specific. This tagging will enable the creation of national policy briefs that show how the ELSA Tier 1 map reflects national policy priorities.
<b>Developed a draft National Policy Brief for South Africa.</b>	This will act as a template for other countries. The document presents the ELSA Tier 1 background, theory of change, the Tier 1 ELSA Map, and elucidates the connections among priority global policy targets and related national policies, targets and actions to provide a customized national policy analysis.
<b>Redesigned the scientific approach to identifying ELSAs to better reflect the foundational ecological principles of Comprehensiveness, Adequacy and Representation.</b>	Major developments include identifying coarse and fine filter biodiversity proxies, testing alternate optimization algorithms, a pre-calibration process to equalize representation across planning features, and a clumping process to enhance management feasibility and connectivity between ELSA areas.
<b>Announced the forthcoming ELSA Tier 1 proof of concept functionality at multiple events,</b>	Events included the Nature for Life Hub, CBD Webinar Series on Supporting Implementation of the post-2020 Global Biodiversity Framework, and at the NGO Forum alongside the high-level segment of CBD COP15.
<b>Presented a preliminary approach to designing the analysis to the Expert Advisory Committee for their initial input.</b>	
<b>Identified essential global data layers for the analysis, negotiated data permissions, and combined them in a central repository.</b>	



Source: Williams, B.A., et al. (2020). Change in Terrestrial Human Footprint Drives Continued Loss of Intact Ecosystems. One Earth 3, 371–382. <https://doi.org/10.1016/j.oneear.2020.08.009>

## UNBL Team

[Learn about the team behind this work on our UNBL team page.](#)



Photo credit: UNDP Guatemala



[www.unbiodiversitylab.org](http://www.unbiodiversitylab.org)