SIXTH NATIONAL REPORT:
Technical Reporting Guidance: Using Spatial Data to Determine Biodiversity Status
Volume 2
Table of Contents

Overview..........................................................................................................................................4
Introduction.........................................................................................................................................6
UN Biodiversity Lab .............................................................................................................................. 8
Essential Spatial Data Layers for Conservation Planning and Reporting .............................................10
18 Status Maps to Report on Your National Contributions to CBD’s Strategic Plan.........................23
Aichi Biodiversity Target 5 ..................................................................................................................24
  Overview........................................................................................................................................ 24
  Key Reporting Targets: ......................................................................................................................25
  Maps in this Section: ..........................................................................................................................25
    Map: Rate of Forest Loss 2000-2017 ..............................................................................................25
    Map: Levels of Degradation Within each Ecoregion (Biodiversity Intactness Index).................28
    Map: Rate of Loss within Ecoregions 1993 - 2009 .......................................................................30
Aichi Biodiversity Target 11 ................................................................................................................32
  Overview........................................................................................................................................ 32
  Key Reporting Targets ......................................................................................................................33
  Maps in this Section: ..........................................................................................................................33
    Map: Terrestrial Protected Area network and National Coverage %. ........................................ 33
    Map: Marine Protected Area Network and National Coverage %.................................................35
    Map: Species richness and Protected Area network (or particular species of interest) ..............37
    Map: Protection coverage of Key Biodiversity Areas (KBAs) .....................................................41
    Map: Protection coverage of terrestrial Ecoregions – National Level .....................................43
    Map: Protection coverage of Marine Ecoregions – National Level .............................................46
    Map: Protected/Connected coverage of Ecoregions .................................................................49
    Map: Protected Area Management Effectiveness .......................................................................51
Aichi Biodiversity Target 12 ................................................................................................................54
  Overview........................................................................................................................................ 54
  Key Reporting Targets: ......................................................................................................................54
  Maps in this Section: ..........................................................................................................................54
    Map: Species richness/Threatened Species Richness/Critically Threatened Species Richness ....54
    Map: Threatened Species Richness within Effective Protected Areas .......................................57
Aichi Biodiversity Target 14 ................................................................................................................60
  Overview........................................................................................................................................ 60
  Key Reporting Targets: ......................................................................................................................60
  Maps in this Section: ..........................................................................................................................61
Map: Key usage areas for using ES. ..........................................................61
Map: Key areas for provisioning ES. ......................................................63
Aichi Biodiversity Target 15 ..................................................................67
Overview: .........................................................................................67
Key Reporting Targets: .......................................................................67
Maps in this Section: ..........................................................................67
Map: Carbon Stores in the Environment. ..............................................68
Map: Carbon Stores in the Protected Area network. .........................70
Map: Heat map of carbon sequestration potential. .............................73
Annex 1. 6NR Template .....................................................................76

List of Tables

Table 1. The Seven Sections of the Sixth National Report ..................4
Table 2. Ten key questions related to the ABT and the Sustainable Development Goals that spatial analyses can help us to address.................................6
Table 3. Data layers currently available on UN Biodiversity Lab ..........10
Table 4. The Seven Sections of the Sixth National Report to the Convention on Biological Diversity .........................................................76
## Overview

**Article 26** of the Convention on Biological Diversity (CBD) requires Parties to submit periodic national reports to the Conference of the Parties (COP) that assess measures taken to implement the CBD and the effectiveness of those actions in meeting the Convention’s objectives. At the thirteenth meeting of the COP, the Sixth National Report (6NR) guidelines and reporting templates ([Decision XIII/27](#)) were adopted. These documents can be accessed [here](#). The 6NR contains seven sections (Table 1). The reporting guidelines require Parties to assess progress toward national biodiversity targets and Aichi Biodiversity Targets (ABTs) and the effectiveness of measures taken on the implementation of National Biodiversity Strategies and Action Plans (NBSAPs).

### Table 1. The Seven Sections of the Sixth National Report

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Information on the targets being pursued at the national level.</td>
</tr>
<tr>
<td>2.</td>
<td>Implementation measures taken, assessment of their effectiveness, associated obstacles and scientific and technical needs to achieve national targets.</td>
</tr>
<tr>
<td>3.</td>
<td>Assessment of progress towards each national target.</td>
</tr>
<tr>
<td>4.</td>
<td>Description of the national contribution to the achievement of each global ABT.</td>
</tr>
<tr>
<td>5.</td>
<td>Description of the national contribution to the achievement of the targets of the Global Strategy for Plant Conservation (this section is optional).</td>
</tr>
<tr>
<td>6.</td>
<td>Additional information on the contribution of indigenous peoples and local communities to the achievement of the ABT if not captured in the sections above (this section is optional).</td>
</tr>
<tr>
<td>7.</td>
<td>Updated biodiversity country profiles.</td>
</tr>
</tbody>
</table>

Parties can improve the robustness of national reporting cycles by incorporating data that reports on national and global indicators, and by completing analyses with the support of stakeholders and spatial data analysis tools. A lack of spatial data and root cause analyses, and inconsistent monitoring of changes in the status and trends of biodiversity have resulted in a pervasive lack of evidence-based reporting and decision-making during previous national reporting cycles.
We encourage Parties to view the 6NR preparation period as an opportunity to review progress they have made to advance the implementation of the CBD and its Strategic Plan for 2011-2020 (Strategic Plan) at the national level. This process can shine a spotlight on the scope of biodiversity actions being taken in a country, the effectiveness of biodiversity policies and legislation, and their impact on biodiversity outcomes. The data in each national report will be used to analyze global progress to achieve the ABTs and will be used to develop the Fifth Global Biodiversity Outlook. The information compiled during the 6NR process can also be used to document progress to address additional international commitments to other biodiversity-related conventions as well as the 2030 Agenda for Sustainable Development. These data will provide an important foundation for development of the post-2020 global biodiversity framework, which will define follow-up work on the Strategic Plan beyond this decade. To accomplish these goals, each 6NR must provide an accurate and up-to-date reflection of national progress to achieve the Strategic Plan, its associated ABTs, and the broader mission of the CBD.

This document provides technical guidance on how Parties to the CBD can use the UN Biodiversity Lab to develop a high quality and data-driven 6NR that is gender-responsive and considerate of marginalized stakeholders. This document is the first volume of a two-volume set of technical guidance on using spatial data to help develop your Sixth National Report (6NR). Volume 1: UN Biodiversity Lab User Guide introduces the UN Biodiversity Lab and provides a detailed user guide to enable you to: register and access your country’s National Project, search and visualize data, upload national data, conduct basic analyses, and download data layers and maps for inclusion in your 6NR. Volume 2: Using 18 Biodiversity Status Maps in your 6NR will show you how to use spatial data available on UN Biodiversity Lab to determine the status of biodiversity in your country and to assess your progress towards five key ABTs.

These documents will help build the capacity of Parties to utilize the best available spatial data to: (1) monitor indicators of biodiversity status and trends; and (2) assess the effectiveness of measures to implement NBSAPs and ABTs. These documents are intended to be complementary to those produced by the Biodiversity Indicators Partnership (Annex 2), which provides users with resources to browse and identify both spatialized and non-spatialized biodiversity indicators.
Introduction

By the end of 2018, Parties are required to submit a 6NR on the measures they are taking to implement the CBD and its Strategic Plan for 2011-2020, and the effectiveness of those actions in meeting the Convention’s objectives\(^1\). Reporting guidelines require Parties to assess the progress they are making to achieve national biodiversity targets and the global ABTs, as well as the effectiveness of the measures they are taking to implement their NBSAP. To do so, Parties need to use data and indicators to assess their progress to achieve national and global biodiversity targets. Spatial data can play a transformative role in shaping conservation and sustainable development decision-making, and can improve the capacity of Parties to develop a data-driven national report.

Many countries still lack the ability to access and utilize spatial data due to limitations in data availability and technical capacity. A recent UN report shows that spatial data will enable policymakers to accelerate implementation of the ABTs and SDGs, but there are striking gaps between the potential for data to be used, and the actual capacity of countries to use data for effective decision-making. For example, a recent UNDP study showed that out of 180 5\(^{\text{th}}\) National Report submissions to the CBD, 33% either contained no maps or maps without actionable data. However, the data developed during spatial analyses can help us answer many critical conservation and development questions (Table 2).

Table 2. Ten key questions related to the ABT and the Sustainable Development Goals that spatial analyses can help us to address

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Where are the most important areas to promote sustainable use of biodiversity to reduce poverty?</td>
<td>ABT 2</td>
<td>SDG 1.1; 1.2; 1.5</td>
</tr>
<tr>
<td>2. Where is natural resource management in danger of exceeding safe ecological limits?</td>
<td>ABT 4</td>
<td>SDG 6.4, 15.1, 15.2</td>
</tr>
<tr>
<td>3. Where are the highest rates of natural habitat loss occurring?</td>
<td>ABT 5</td>
<td>SDG 15.1, 15.2; 15.5</td>
</tr>
<tr>
<td>4. Where are the most important areas for sustainable agriculture, forestry &amp; aquaculture?</td>
<td>ABT 7</td>
<td>SDG 15.2, 15.3</td>
</tr>
<tr>
<td>5. Where are the most dangerous sources of pollution, including agricultural runoff?</td>
<td>ABT 8</td>
<td>SDG 3.9; 6.3; 14.1</td>
</tr>
<tr>
<td>6. Where can actions have impact in controlling, eradicating, &amp; preventing invasive species?</td>
<td>ABT 9</td>
<td>SDG 15.8</td>
</tr>
<tr>
<td>7. Which coral reefs are most vulnerable to climate change or ocean acidification?</td>
<td>ABT 10</td>
<td>SDG 14.3</td>
</tr>
<tr>
<td>8. Where are the most important areas to create new protected areas and improve existing ones?</td>
<td>ABT 11</td>
<td>SDG 14.5, 15.1, 15.4, 15.7, 15.9</td>
</tr>
<tr>
<td>9. Where are the most important areas to protect</td>
<td>ABT 12</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Article 26 of the CBD requires Parties to submit periodic national reports to the COP that assess measures taken to
A lack of access to spatial data needed to monitor ecological and landscape changes also makes it challenging to develop evidence-based national reports that quantitatively assess the effectiveness of measures to meet the Convention’s objectives. For example, data and monitoring gaps limit the ability of Parties to assess, plan for, and take action to mitigate the impacts of climate change on biodiversity, or to fully understand the role that NBSAP strategies and actions that maintain ecosystem services can have on achieving the SDGs. Without accurate data, Parties will be inhibited from populating the CBD online reporting system and from assessing the effectiveness of their measures to achieve the CBD. This sixth national reporting period to the CBD provides an opportunity for Parties to develop and adopt more dynamic, data-driven reporting methodologies that build our global capacity to facilitate dynamic biodiversity monitoring, reporting, and decision-making.

UNDP and UN Environment challenge the 196 Parties to the CBD to double the number of maps used in their progress reports to the CBD by the end of 2018. The baseline for this challenge will be the number of maps in each country’s Fifth National Report.
UN Biodiversity Lab

UNDP, UN Environment, and the Secretariat of the Convention on Biological Diversity created the UN Biodiversity Lab to support Parties to overcome gaps in access to spatial data, spatial technology, and capacity to use this information. The UN Biodiversity Lab is a free, cloud-based online spatial platform that combines accessible, high-quality spatial data with easy-to-use analysis tools. This platform enables you to produce some of the data and maps that are necessary for your 6NR.

The mission of the UN Biodiversity Lab is three-fold: (1) to build spatial literacy to enable better decisions, (2) to use spatial data as a vehicle for improved transparency and accountability, and (3) to apply insights from spatial data across sectors to deliver on the CBD and the 2030 Agenda for Sustainable Development. By creating a collaborative, open-source environment, the UN Biodiversity Lab is an inclusive and scalable data platform. The UN Biodiversity Lab is not just another website; it is a platform for building partnerships among data providers and data users. By focusing on a key user group of policymakers working to deliver on their commitments to the CBD, the UN Biodiversity Lab provides key services catered to support development of the 6NR and NBSAP implementation.

The UN Biodiversity Lab supports Parties to report data on five key ABTs. Spatial data is essential to fully monitor these targets. These spatial datasets are also available at the global level.

- **ABT 5**: Halve or bring to zero rate of loss of habitats, significantly reduce degradation and fragmentation.
- **ABT 11**: Conserve 17% of terrestrial and 10% coastal and marine, especially important biodiversity areas, important ecosystem services, through effective, equitable, representative well-connected protected areas and other effective area-based measures and integrated into landscapes and seascapes.
- **ABT 12**: Prevent extinctions and improve and sustain species most in decline.
- **ABT 14**: Prevent extinctions and improve and sustain species most in decline.
- **ABT 15**: Enhance resilience and contribution of biodiversity to carbon stocks and restore 15% of degraded ecosystems.

Key services of the UN Biodiversity Lab include:

- Access to 80+ global spatial data layers for conservation and development planning.
- Access to high-quality spatial data on forest cover developed by the United States National Aeronautics and Space Administration (NASA).
- Access to 18 maps to help you determine your progress towards achieving the five ABTs defined above (explored in detail in volume 2 of this technical guidance).
- Access to secure, private national projects where Parties can upload national datasets, manage privacy, and visualize and analyze them in combination with global datasets.
- Ability to analyze global and national datasets to determine progress to achieve five key ABTs.
● Ability to assess the outcome of measures to implement your NBSAP, for example increases in protected area coverage, effectiveness of protected area management, status of key species, or changes in rate of habitat loss.
● Ability to export maps for use in the 6NR as pdfs and jpegs.
● Ability to export data layers and datasets for further analysis as shapefile, GeoJSON, DXF, SQLite, and KML files.
● Assessments of data layer integrity by the UN, including data reliability, technical accessibility, data openness, and data sustainability.

The 6NR period provides an opportunity to evaluate how the CBD is being implemented from the global to the local level. We encourage Parties to use the spatial data that is available in the UN Biodiversity Lab when developing data for their national reports. This project is an important opportunity to share and develop spatial data layers for conservation and development purposes, ensure they are utilized, and address existing capacity gaps.
Essential Spatial Data Layers for Conservation Planning and Reporting

The UN Biodiversity Lab provides access to over 80 data layers organized by the relevant Aichi Biodiversity Targets and by more general themes. We select data for inclusion through a rigorous process, involving input and insight from conservationists and scientists around the world. All data that UN Biodiversity Lab provides comes from partners who have provided the data after it has gone through rigorous scientific review and publication in some of the world most high impact scientific journals, including Science, Nature, and PNAS.

The below table introduces you to the data layers we currently have available on UN Biodiversity Lab, and explains their relevance to national conservation planning and reporting.

Table 3. Data layers currently available on UN Biodiversity Lab

<table>
<thead>
<tr>
<th>Key Spatial Data</th>
<th>Data Source</th>
<th>Data Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data Source:</strong></td>
<td>Hansen, M.C., et al., 2013. High-Resolution Global Maps of 21st-Century Forest Cover Change. Science 342, 850–853.</td>
<td>The Global Forest Cover data (often just referred to as the Hansen data) shows the percent tree cover in year 2000 for all global land areas (outside of the polar regions) at 30 meter resolution. The data also includes data on tree cover loss, year of loss (from 2000), and gain from 2000-2011.</td>
</tr>
<tr>
<td><strong>UN Biodiversity Lab Views:</strong></td>
<td>Global Forest Cover 2000; Global Forest Cover - Year of Loss (2000-2017); Global Forest Cover - Gain (2000-2011)</td>
<td></td>
</tr>
<tr>
<td><strong>Data Source:</strong></td>
<td>Hamilton, S. E., &amp; Casey, D. (2016). Creation of a high spatio-temporal resolution global database of continuous mangrove forest cover for the 21st century (CGMFC-21). Global Ecology and Biogeography, 25(6), 729-738.</td>
<td>The Continuous Global Mangrove Forest Cover for the 21st Century (CGMFC-21) provides high resolution local, regional, national, and global estimates of annual mangrove forest levels using continuous data from 2000 through to 2014. CGMFC-21 provides the required spatiotemporal resolutions to not only set REDD baseline measures globally in a systematic manner, but also to account for forest degradation as well as deforestation on an annual basis.</td>
</tr>
<tr>
<td><strong>UN Biodiversity Lab Views:</strong></td>
<td>Global Mangrove Forest Cover for the 21st Century (2000); Global Mangrove Forest Cover for the 21st Century (2014)</td>
<td></td>
</tr>
<tr>
<td><strong>Data Source:</strong></td>
<td>World Atlas of Mangroves (version 3.0). A collaborative project of ITTO, ISME, FAO, UNEP-WCMC, UNESCO-MAB, UNU-INWEH and TNC.</td>
<td>This dataset shows the global distribution of mangroves, and was produced as a joint initiative of the International Tropical Timber</td>
</tr>
</tbody>
</table>
Data Source:

UN Biodiversity Lab Views:
Intact Forest Landscapes (IFLs)

Data Description:
Intact Forest Landscape (IFL) are a seamless mosaic of forest and naturally treeless ecosystems within the zone of current forest extent, which exhibit no remotely detected signs of human activity or habitat fragmentation and are large enough to maintain all native biological diversity, including viable populations of wide-ranging species. IFLs have high conservation value and are critical for stabilizing terrestrial carbon storage, harboring biodiversity, regulating hydrological regimes, and providing other ecosystem functions.

Data Source:

UN Biodiversity Lab Views:
Global Wetlands (v2) - CIFOR

Data Description:
This dataset shows a distribution of wetland that covers the tropics and subtropics, excluding small islands. It was mapped at 231 meters spatial resolution by combining a hydrological model and annual time series of satellite-derived estimates of soil moisture to represent water flow and surface wetness that are then combined with geomorphological data.

Data Source:

UN Biodiversity Lab Views:
Water Occurrence (1984-2015) - Global Surface Water Explorer

Data Description:
This dataset includes a number of remotely sensed raster layers that cover various spatial explicit metrics of surface water change between 1984 and 2015, including maximum extent, seasonality, and direct and intensity of change. It is useful to map changes in surface water due to both man-made and natural causes.
| Water Seasonality (2014 - 2015) - Global Surface Water Explorer |
| Water Transitions (1984 to 2015) - Global Surface Water Explorer |

**Protected Areas**

**Data Source:**
UNEP-WCMC and IUCN, 2018. Protected Planet: The World Database on Protected Areas (WDPA) [On-line], October 2018. Cambridge, UK: UNEP-WCMC and IUCN.

UN Biodiversity Lab Views:
Terrestrial Protected Areas (WDPA)
Marine Protected Areas (WDPA)

**Data Description:**
The World Database on Protected Areas (WDPA) is the most comprehensive global database of marine and terrestrial protected areas, updated on a monthly basis, and is one of the key global biodiversity data sets being widely used by scientists, businesses, governments, International secretariats and others to inform planning, policy decisions and management. The data are made available online through the Protected Planet website, where the data is both viewable and downloadable.

On UN Biodiversity Lab we have broken the data up into its terrestrial components (containing areas classed as 100% land or both land and marine) and Marine Protected Areas (containing areas classed as 100% marine and both land and marine).

**Data Source:**
Saura, S., Bastin, L., Battistella, L., Mandrici, A., Dubois, G., 2017. Protected areas in the world’s ecoregions: How well connected are they? Ecological Indicators 76, 144–158.

UN Biodiversity Lab Views:
ProtConn

**Data Description:**
The Protected Connected (ProtConn) indicator shows the percentage of each terrestrial ecoregion that is covered by protected connected lands. Developed by the Digital Observatory for Protected Areas (DOPA) of the European Commission Joint Research Centre (EC JRC), this data set aims to quantify how well the terrestrial protected area estate within each ecoregion is designed to support connectivity. ProtConn was calculated using only protected areas larger than 1 km² from World Database on Protected Areas (WDPA; June 2016 version) and the 2001 version of the Ecoregion maps (See below). This data set provides the first global assessment of progress towards the protected area connectivity element of Aichi Target 11 of the United Nations Convention on Biological Diversity.
<table>
<thead>
<tr>
<th>Data Source: UNEP-WCMC and IUCN, 2018. IUCN Green List of Protected and Conserved Areas, October 2018. Cambridge, UK: UNEP-WCMC and IUCN.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Description: The IUCN Green List of Protected and Conserved Areas Programme (the ‘IUCN Green List Programme’) aims to encourage, achieve and promote effective, equitable and successful protected areas in all partner countries and jurisdictions. The Green List can viewed as recognition of best-practice in protected area management.</td>
</tr>
<tr>
<td>UN Biodiversity Lab Views: IUCN Green List</td>
</tr>
<tr>
<td>Data Source: PAME</td>
</tr>
<tr>
<td>Data Description: The Global Database on Protected Area Management Effectiveness (GD-PAME) is the most comprehensive global database of management effectiveness assessments for protected areas (PAME). It indicates if a protected area documented in the World Database on Protected Areas (WDPA) has been assessed. Currently PAME does not include a standardised measure of management effectiveness, and there are many different standards under which assessment may be carried out. However, useful statistics on the coverage of assessed areas in a countries protected area network are available.</td>
</tr>
<tr>
<td>UN Biodiversity Lab Views: PAME % coverage of protected areas that have been assessed</td>
</tr>
<tr>
<td>Data Description: The Human Pressures within Protected Areas indicates the percent of each Protected Area that is under intense human pressure. There are currently no standardised and comprehensive global estimates of the effectiveness of management on conserving biodiversity; however, data such this can be used as proxy for management effectiveness. By capturing increases in human pressure inside areas it may indicate failures of management in addressing increased human demands on species and resources.</td>
</tr>
<tr>
<td>UN Biodiversity Lab Views: Human Pressure within Protected Areas</td>
</tr>
<tr>
<td>Data Source: Convention on Wetlands (RAMSAR, 1917)</td>
</tr>
<tr>
<td>Data Description: The Ramsar Convention on Wetlands is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation</td>
</tr>
<tr>
<td>UN Biodiversity Lab Views: RAMSAR Areas (Points) RAMSAR Areas (Polygons)</td>
</tr>
</tbody>
</table>
Under the Convention (1971), each Contracting Party undertakes to designate at least one wetland site for inclusion in the List of Wetlands of International Importance (the “Ramsar List”). There are over 2,000 “Ramsar Sites” on the territories of over 160 Ramsar Contracting Parties across the world.

| Marine Data Description: This dataset shows the global distribution of coral reefs in tropical and subtropical regions. It is currently the most comprehensive global dataset of warm-water coral reefs to date, acting as a foundation baseline map for future, more detailed, work. Data sources include the Millennium Coral Reef Mapping Project (IMaRS-USF and IRD 2005, IMaRS-USF 2005) and the World Atlas of Coral Reefs (Spalding et al. 2001). UN Biodiversity Lab Views: Global Distribution of Coral Reefs (2010) |

| Seagrasses Data Description: This dataset shows the global distribution of seagrasses, and is composed of two subsets of point and polygon occurrence data. The data were compiled by UN Environment World Conservation Monitoring Centre in collaboration with many collaborators (e.g. Frederick Short of the University of New Hampshire), organisations (e.g. OSPAR), and projects (e.g. the European project Mediterranean Sensitive Habitats “Mediseh”), across the globe. UN Biodiversity Lab Views: Global Distribution of Seagrasses (2017) |

| Saltmarshes Data Description: This dataset displays the extent of our knowledge regarding the distribution of saltmarsh globally, drawing from occurrence data (surveyed and/or remotely sensed). UN Biodiversity Lab Views: Global Distribution of Saltmarshes (2018) |

UN Biodiversity Lab Views:
Change in Cumulative Human Impact to Marine Ecosystems (2008-2013)
Cumulative Impact - Sum of Pressure Data 2013 - KNB
Ocean Pollution (Shipping Lanes, Ports) Pressures 2013 - KNB

Data Source:

UN Biodiversity Lab Views:
Exclusive Economic Zone (200NM)(2018)

Data Source:

UN Biodiversity Lab Views:
Marine Ecoregions of the World (MEOW)

Data Source:

UN Biodiversity Lab Views:
Marine Species Richness (Aquamaps)
Marine Range Rarity (Aquamaps)
Marine Proportional Range Rarity (Aquamaps)

Data Description:
This dataset shows calculated and mapped recent changes over 5 years in cumulative impacts to marine ecosystems globally from fishing, climate change, and ocean- and land-based stressors. Nearly 66% of the ocean and 77% of national jurisdictions show increased human impact, driven mostly by climate change pressures. This data provides large-scale guidance about where to prioritize management efforts and affirm the importance of addressing climate change to maintain and improve the condition of marine ecosystems.

Data Description:
The Exclusive Economic Zone (EEZ) v10 dataset builds on previous versions of the world’s EEZ, and indicates the 200 nautical mile outer limit maritime boundary. This dataset also contains digital information about treaties, joint regime, and disputed boundaries.

Data Description:
The Marine Ecoregions of the World (MEOW) dataset shows a biogeographic classification of the world’s coastal and continental shelf waters, following a nested hierarchy of realms, provinces and ecoregions. The regions aim to capture generic patterns of biodiversity across habitats and taxa, with regions extending from the coast (intertidal zone) 370 kilometers (200 nautical miles) offshore (or to the 200-m isobath, where this lies further offshore).

Data Description:
AquaMaps is a tool for generating model-based, large-scale predictions of natural occurrences of species. For marine species, the model uses estimates of environmental preferences with respect to depth, water temperature, salinity, primary productivity, and association with sea ice or coastal areas. These estimates of species preferences, called environmental envelopes, are derived from large sets of occurrence data available from online collection databases such...
**Data Source:**

**UN Biodiversity Lab Views:**
Marine Wilderness

---

**Biodiversity**

**Data Source:**

**UN Biodiversity Lab Views:**
Species Richness
Threatened Species Richness
Range Rarity
*Panthera onca* IUCN*

* note that this is an example of an individual species that is of interest to a country. Species of interest to your country should differ.

**Data Source:**

**UN Biodiversity Lab Views:**
Biodiversity Intactness Index (2016).

---

**Data Description:**
This dataset is the first to systematically map marine wilderness globally by identifying areas that have both very little impact (lowest 10%) from 15 anthropogenic stressors and also a very low combined cumulative impact from these stressors. Approximately 13% of the ocean meets this definition of global wilderness, with most being located in the high seas. Also of great importance, the marine protected area estate holds only 4.9% of global wilderness and 4.1% of realm-specific wilderness, very little of which is in biodiverse ecosystems such as coral reefs.

---

**Data Description:**
The IUCN Red List of Threatened Species is a comprehensive information source on the status of animal, fungi, and plant species, providing information on species’ range, population size, habitat and ecology, use and/or trade, threats, and conservation actions that will help inform necessary conservation decisions. Currently there are more than 93,500 species on The IUCN Red List.

---

**Data Description:**
The Biodiversity Intactness Index shows the modeled average abundance of originally-present species in a grid cell, as a percentage, relative to their abundance in an intact ecosystem. The data may be useful as proxy for degradation and how much biodiversity has been lost.
<table>
<thead>
<tr>
<th>Data Source:</th>
<th>Data Description:</th>
</tr>
</thead>
</table>
| Langhammer, P.F., Butchart, S.H.M., Brooks, T.M., 2018. Key Biodiversity Areas, in: Dellasala, D.A., Goldstein, M.I. (Eds.), Encyclopedia of the Anthropocene. Elsevier, Oxford, pp. 341–345. | Key Biodiversity Areas (KBAs) are nationally identified sites of global significance for biodiversity. KBAs are identified using globally standardised criteria and thresholds, and have clearly defined boundaries. KBAs are seen as an ‘umbrella’ designation, which includes globally important sites for different taxa and realms, such as:  
  - Important Bird and Biodiversity Areas (IBAs);  
  - Important Plant Areas (IPAs);  
  - Important Sites for Freshwater Biodiversity;  
  - Alliance for Zero Extinction (AZE) sites. |
<p>| Data Source: Dinerstein, E., et al., 2017. An Ecoregion-Based Approach to Protecting Half the Terrestrial Realm. BioScience 67, 534–545. | Ecoregions are defined as relatively large units of land or water containing a distinct assemblage of natural communities sharing a large majority of species, dynamics, and environmental conditions. Ecoregions represent the original distribution of distinct assemblages of species and communities. The original Terrestrial Ecoregions of the World (TEOW) has been slightly revised here four regions. The Ecoregions dataset relates in particular to Aichi Biodiversity Target 11. |
| Data Source: Watson, J.E.M., et al., 2016. Catastrophic Declines in Wilderness Areas Undermine Global Environment Targets. Current Biology 26, 2929–2934. | Wilderness conservation is almost entirely ignored in multilateral environmental agreements, largely because they are assumed to be relatively free from threatening processes and therefore are not a priority for conservation efforts. However, wilderness areas are a vital refugia where natural ecological and evolutionary processes operate with minimal human disturbance, and they underpin key regional- and planetary-scale functions. This dataset has used the terrestrial Human Footprint to map changes in wilderness globally over the period 1993-2009. |
| Data Source: Sayre, R., J. Dangermond, et al., 2014, A New Map of Global Ecological Land Units – An Ecophysiographic Stratification Approach. | Ecological Land Units (or ELUs) are a composite classification of the Earth’s land surface based on ecological and physiographic information, |</p>
<table>
<thead>
<tr>
<th>Data Source:</th>
<th>UN Biodiversity Lab Views:</th>
<th>Data Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Source:</td>
<td>UN Biodiversity Lab Views:</td>
<td>Data Description:</td>
</tr>
<tr>
<td>Data Description:</td>
<td>GEOCARBON Global Aboveground Forest Biomass</td>
<td>The Aboveground Live Woody Carbon Density Change data shows estimates of carbon density change (in Mg/ha) between 2003-2014 spanning tropical America, Africa, and Asia. It may be provide insight into carbon losses that have resulted from land cover changes, and deforestation and conversion to agriculture, and be useful for considerations in global carbon emissions reductions agreements.</td>
</tr>
<tr>
<td>Data Description:</td>
<td>Baccini, A., W. Walker, L. Carvalho, M. Farina, D. Sulla-Menashe, R.A. Houghton. 2017. Tropical forests are a net carbon source based on aboveground measurements of gain and loss. Science 2017 Vol. 358, Issue 6360, pp. 230-234</td>
<td>Mangrove forests are some of the most carbon-dense ecosystems in the world, with most of the carbon stored in the soil. This dataset compiles a large georeferenced database of mangrove soil carbon measurements using a novel machine-learning based statistical model of the distribution of carbon density using spatially comprehensive data at a 30 m resolution. The resulting map products from this work are intended to serve nations seeking to include mangrove habitats in payment-for-ecosystem services projects and in designing effective mangrove conservation strategies.</td>
</tr>
</tbody>
</table>
increases in soil organic carbon (SOC) within the top 30 cm of soil in croplands after 20 years following improvements in farm management practices. Improving SOC may provide multiple benefits, including improved food production, and is an important mitigation pathway to achieve carbon emissions reductions under international agreements.

**Data Description:**
Soil organic carbon (SOC) is the carbon that remains in the soil after partial decomposition of any material produced by living organisms and it constitutes a key element of the global carbon cycle. The Global Soil Organic Carbon Map allows the estimation of SOC stock from 0 to 30 cm. It represents a key contribution to SDG indicator 15.3.1 which defines the area of degraded land.

**Data Description:**
The potential for tropical forest carbon sequestration data represents the amount of carbon that could be sequestrated (i.e., prevented from entering the atmosphere as carbon dioxide) if deforestation were halted in tropical forests, calculated at the river catchment level. Higher values indicate that a greater amount of carbon (measured as CO2 equivalents/km2) per unit area could potentially be sequestrated if deforestation were halted in tropical forests.

**Data Description:**
The Human Footprint (HFP) provides a measure of the direct and indirect human pressures on the environment globally in years 1993 and 2009. It is derived from remotely-sensed and bottom-up survey information compiled on eight measured variables: 1) built environments, 2) population density, 3) electric infrastructure, 4) crop lands, 5) pasture lands, 6) roads, 7) railways, and 8) navigable waterways. The Human Footprint maps find a range of uses as proxies for human disturbance of natural systems and can provide an
increased understanding of the human pressures that drive macroecological patterns, as well as for tracking environmental change and informing conservation science and application. HFP values range from 0 (no human impact) to 50 (heavily human impacted).

### Socio-economic and Spatial Data

<table>
<thead>
<tr>
<th>Data Source:</th>
<th>Data Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordhaus, W.D., and X. Chen. 2016. Global Gridded Geographically Based Economic Data (G-Econ), Version 4. Palisades, NY: NASA Socioeconomic Data and Applications Center (SEDAC) UN Biodiversity Lab Views: Purchasing Power Parity (2005) — SEDAC</td>
<td>The Global Gridded Geographically Based Economic Data contains derived one degree global grid cells of Gross Domestic Product (GDP) data in Grid and ASCII formats for both Market Exchange Rate (MER) and Purchasing Power Parity (PPP) for the years 1990, 1995, 2000 and 2005. MER is the exchange rate between local and U.S. dollar currencies for a given time period established by the market. PPP is the exchange rate between a country's currency and U.S. dollars adjusted to reflect the actual cost in U.S. dollars of purchasing a standardized market basket of goods in that country using the country's currency.</td>
</tr>
</tbody>
</table>

UN Biodiversity Lab Views:
Global Grid of Probabilities of Urban Expansion to 2030

Data Source:

UN Biodiversity Lab Views:
Gridded Livestock of the World – Cattle
Gridded Livestock of the World – Sheep
Gridded Livestock of the World – Goats

Data Source:

UN Biodiversity Lab Views:
Accessibility to Cities (2015)

Natural Hazards

Data Source:

Data Description:
This dataset includes an estimate of the expected average annual population (inhabitants) at risk of tsunamis. The data uses
| UN Biodiversity Lab Views: Physical Exposure to Tsunamis | 2010 as the year of reference. |
18 Status Maps to Report on Your National Contributions to CBD’s Strategic Plan

To provide you with baseline resources to reporting on your progress towards achieving the ABTs in your country, we’ve created 18 maps that you can include in your 6NR. These maps provide key information on the status of give key ABTs:

**ABT 5**: Halve or bring to zero rate of loss of habitats, significantly reduce degradation and fragmentation.
1. Map: Rate of Forest Loss 2000-2017
2. Map: Levels of degradation within each Ecoregion (Intactness Index)
3. Map: Rate of loss within Ecoregions 1993 - 2009

**ABT 11**: Conserve 17% of terrestrial and 10% coastal and marine, especially important biodiversity areas, important ecosystem services, through effective, equitable, representative well-connected protected areas and other effective area-based measures and integrated into landscapes and seascapes.
4. Map: Terrestrial Protected Area network and National Coverage %
5. Map: Marine Protected Area Network and National Coverage %.
6. Map: Species richness and Protected Area network (or particular species of interest).
7. Map: Protection coverage of Key Biodiversity Areas (KBAs)
11. Map: Protected Area Management Effectiveness.

**ABT 12**: Prevent extinctions and improve and sustain species most in decline.
13. Map: Threatened Species Richness within Effective Protected Areas.

**ABT 14**: Restore and safeguard ecosystems that provide essential services – water, health, livelihoods, especially for women, indigenous peoples, local communities, and poor and vulnerable.
14. Map: Key usage areas for using ES.
15. Map: Key areas for provisioning ES.

**ABT 15**: Enhance resilience and contribution of biodiversity to carbon stocks and restore 15% of degraded ecosystems.
17. Map: Carbon Stores in the Protected Area network.
This section explains how each of these maps have been created, and why they’re important for reporting on the Aichi Biodiversity Targets. Each country’s approaches to delivering on their commitments to the CBD will vary based on their NBSAP and national targets, however these status maps can provide you with basic information on the status of biodiversity in your country. We encourage you to use these maps in your 6NR as relevant, and to draw on the spatial data expert roster where need to enable you to run analyses specific to your national context.

**Aichi Biodiversity Target 5**

“By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.”

**Overview**

Habitat loss - including degradation and fragmentation - is the most important driver of biodiversity loss globally. Reducing the rate of loss, and eventually halting (or reversing) it, is essential for protecting biodiversity and maintaining the ecosystem services that are vital to human well-being. This is particularly important for habitats that have been greatly diminished or degraded by human activities, or that are approaching a critical tipping point or threshold. This target applies to all habitats, including forests, wetlands, grasslands, and coastal systems, among others, although it is important to note that few habitats are accurately mapped at a
global scale. To achieve ABT 5, and effectively reduce habitat fragmentation and degradation, countries will need to assess the status, trends, and distribution of key natural habitats; understand the drivers of loss and degradation of these habitats; and take a variety of steps to safeguard against further loss and degradation, including through land-use planning, integration of biodiversity into key production and development sectors, and increased land and water protection.

**Key Reporting Targets:**
- Habitat fragmentation and degradation.
- Focusing on reducing habitat loss, fragmentation and degradation.

**Maps in this Section:**
1. Rate of Forest Loss 2000-2017
2. Levels of degradation within each Ecoregion (Intactness Index)
3. Rate of loss within Ecoregions 1993 - 2009

---

**Map: Rate of Forest Loss 2000-2017**

**Analysis:** Calculate the rate of forest loss at the national level and within protected areas.

**Key Spatial Data for This Map**

<table>
<thead>
<tr>
<th>Date types</th>
<th>Key Data Sources</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected Areas (optional)</td>
<td>• UNEP-WCMC and IUCN, 2018. Protected Planet: The World Database on Protected Areas (WDPA) [On-line], October 2018. Cambridge, UK: UNEP-WCMC and IUCN.</td>
<td>4. The World Database on Protected Areas (WDPA)</td>
</tr>
</tbody>
</table>
Notes on the Data:
The Global Forest Cover (GFC) data (Hansen, 2018) provides a percent canopy cover per pixel (30m), using the year 2000 as a baseline. Users are able to define what percent canopy cover percentage best defines forested areas for their needs. For example, the FAO defines forest as having 10% canopy cover. Using the FAO definition of 10% will result in vast areas being classed as forest in many countries, while a canopy cover of 60% would exclude most savannah-type woodlands. The default setting on Global Forest Watch - our data partner who specialise in tracking global forest data using the Global Forest Cover data - is set to 30%, which is a nice middle ground. The choice of forest canopy cover % you use to define forest is yours to make, and should be based on an understanding of the naturally occurring dominant ecosystems within your country (e.g., tropical rainforest vs open savannah types); however, in this guidance document we will use 30% canopy cover as our definition of forest cover.

One important caveat to note about the Global Forest Cover data is that year 2000 is its baseline – most users will be aware that much forest loss occurred prior to 2000.

Optional data: The Views listed as optional above represent unique conservation features or management area within which you may also be interested in calculating rates of forest loss. The World Database on Protected Areas (WDPA) is the world's largest database of global protected areas, within which one may expect there to be lower rates of forest loss due to management. Intact Forest Landscapes (IFLs) and Last of the Wilds are datasets that have identified the last remaining large forested landscapes on the planet, and the last remaining areas of wilderness within the Earth's biomes (there are qualifications, notably areal extents, for areas to be included in these categories). Note, that not all countries contain IFLs or Wilderness areas.

Analysis
The Global Forest Cover data can computationally difficult to work with at even smaller scales. Fortunately tools such as Global Forest Watch and Google Earth Engine have been developed that allow analyses to be carried out, such as calculating forest loss at the national scale, as well as forest loss within Protected Areas or other areas of interest (i.e., Intact Forest Landscapes or Alliance for Zero Extinction sites, etc.). Here we will make a map showing:

1. Forest cover
2. Year of forest loss
3. Forest gain (from 2000-2011)
4. Integrated calculations from Global Forest Watch showing trends in forest loss over the period 2000 - 2017 at the national level, and within the protected area estate, within Ethiopia.

Steps:
1) Under theme ABT 5 turn on following Views in UN Biodiversity Lab:
a) Global Forest Cover (2000);
b) Global Forest Cover - Year of Loss (2000-2017);
c) Forest Gain (2000-2011) - optional
d) The World Database on Protected Areas (WDPA) - optional

2) Global Forest Watch - need to figure out if the widgets can be pulled in before elaborating on this

Example map:

[Image of a map showing the rate of forest cover loss from 2000-2017]

**Mapping Standards**
Maps included in reports should:

- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
- Have clear and legible text;
- Include basic legends, a scale bar, and directional (north) arrow;
- Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.
Map: Levels of Degradation Within each Ecoregion (Biodiversity Intactness Index)

Analysis: What is the amount of degradation within each Ecoregion nationally?

Key Spatial Data for Reporting

<table>
<thead>
<tr>
<th>Data types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Made Data</td>
<td></td>
<td>2. Ecoregion Degradation (National Level)</td>
</tr>
</tbody>
</table>

Notes on the Data
To create this map we need to think about how we define degradation and what types of data might allow us to answer this question. In the absence of data explicitly quantifying how degraded a habitat is, we need to find proxy data that can act a surrogate for defining degradation. There are many possible ways we can define degradation, including degradation of soils, changes in land cover, presence of invasive or non-native species, loss of native plant and animal populations, and excess nutrients in waterways. The Biodiversity Intactness Index presents another possible way to measure degradation of natural habitats, by presenting the modelled average abundance of originally-present species in a area (on a scale from 0 to greater than 1) relative to their abundance in an intact ecosystem. In essence it can be seen as a measure of how far from its original intact ecological state – or how degraded - a pixel is

Analysis
These calculations have been carried out and are available in UN Biodiversity Lab. We have calculated the median LBII value within each Ecoregion present in each country by collecting simple zonal statistics in a GIS; the data we include is the median Biodiversity Index value within each Ecoregion within a country. We are going to present a map of this data here centred on Costa Rica.

Steps:
1) Within theme ABT 5, turn on the View Ecoregion Degradation (National Level).
2) That is all.
3) Export maps using the Screenshot Generator button that is more convenient.
Example map:

Mapping Standards
Maps included in reports should:

- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
- Have clear and legible text;
- Include basic legends, a scale bar, and directional (north) arrow;
- Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.
Map: Rate of Loss within Ecoregions 1993 - 2009

**Analysis:** What is the rate of loss within Ecoregions nationally from 1993-2009?

**Key Spatial Data for Reporting**

<table>
<thead>
<tr>
<th>Data types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Made Data</td>
<td></td>
<td>3. Ecoregion Loss 1993-2009 (National Level)</td>
</tr>
</tbody>
</table>

**Notes on the Data**

There is no simple and direct way to measure the loss of an ecosystem or habitat without regularly mapping it. While some ecosystems may have such temporally explicit data, most global datasets do not. The Ecoregions are often used as a very generalised categorisation of the planet’s many ecological regions, but it is a static dataset (the Ecoregions2017 update from the original 2001 version is not a temporal update.) To estimate the changes in Ecoregions we therefore need to use a proxy which allows us to estimate loss by some other metric. The terrestrial Human Footprint is one way we can use proxy data to measure loss of Ecoregions.

The human footprint is a measure of humanity’s imprint upon the planet, ranging from 0 to 50 (0 meaning there is no measurable human impact, while 50 indicates complete and extremely high human impact – think Time Square in New York City.) Areas under a HFP value of 4 are considered to be lowly modified by humanity, while areas above 4 constitute areas such as heavy grazing and agriculture that constitute conversion of land from natural states to human dominated states. We will use this breakpoint to measure the area of each Ecoregion that was converted from natural uses in 1993 to human dominated uses in 2009, which we will consider as loss.

One important thing to note about what the percent loss may mean; low rates of loss do not necessarily signify natural or intact ecosystems. For example, very little of Germany has a HFP below 4, and what remains is found largely inside protected areas that are well managed. In this case it not so much a measure of how effective Germany is in reducing loss of natural areas, as it
is the fact that most of Germany has a high HFP, most natural areas were lost long and there is very little to lose that is not well protected.

**Analysis**
These calculations have been carried out previously in a GIS and are available in UN Biodiversity Lab. The simplified methods were:

1) Find the pixels that had a HFP values less than 4 in 1993 and and HFP value greater than 4 in 2009;
2) Polygonise the area that was lost by 2009 and calculate the area of the intersection with each Ecoregion that occurs in each country;
3) Polygonise the area with a HFP value less than 4 in 1993 and calculate the area of intersection with each Ecoregion in each country.
4) Calculate the percent lost over the period 1993 to 2009 by dividing the area lost (by the year 2009) by the total area with HFP values less than 4 in year 1993.

Steps:
5) Within theme ABT 5, turn on the View Ecoregions Loss 1993-2009 (National Level)
6) That is all.
7) Export maps.

**Example map:**

![Example map](image)

**Mapping Standards**
Maps included in reports should:
- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
● Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
● Have clear and legible text;
● Include basic legends, a scale bar, and directional (north) arrow;
● Include basic metadata for the data presented in the map. This may include: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.

Aichi Biodiversity Target 11

“By 2020, at least 17% of terrestrial and inland water, and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative, and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.”

Overview

PAs are geographically defined areas, designated or regulated, and managed to achieve specific conservation objectives. They include not only strictly PAs under government control, but also a
wide range of areas that allow for sustainable use of natural resources, including areas owned by indigenous peoples and local communities. Comprehensive, effectively managed PA systems are a proven method for safeguarding habitats and species, avoiding extinctions, maintaining important ecosystem services, and achieving development goals. PAs should cover at least 17% of each ecoregion within each country. In order to achieve ABT 11, countries need to assess gaps in their PA network and identify key weaknesses and threats, as well as take steps to improve PA coverage, representativeness, connectivity, and management effectiveness.

**Key Reporting Targets**
- Conserving 17% of terrestrial and 10% of coastal and marine waters
- Focusing especially on important biodiversity areas and important ecosystem services
- Emphasising effective, equitable, representative, and well-connected protected areas and other effective area-based measures that are well integrated into landscapes and seascapes.

**Maps in this Section**
1. Map: Terrestrial Protected Area network and National Coverage %
2. Map: Marine Protected Area Network and National Coverage %.
3. Map: Species richness and Protected Area network (or particular species of interest).
4. Map: Protection coverage of Key Biodiversity Areas (KBAs)
8. Map: Protected Area Management Effectiveness.
9. Map: Terrestrial Protected Area network and National Coverage %.

**Analysis:** What is the current coverage and distribution of terrestrial protected areas?

**Key Spatial Data for Reporting**

<table>
<thead>
<tr>
<th>Date types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected Areas</td>
<td>UNEP-WCMC, IUCN, and NGS, 2018. Protected Planet: The World Database on Protected Areas (WDPA) [On-line], October 2018. Cambridge, UK: UNEP-WCMC and IUCN.</td>
<td>1. The World Database on Protected Areas (WDPA)</td>
</tr>
</tbody>
</table>

**Notes on the Data**
UNEP-WCMC calculates protected area coverage statistics monthly using a subset of the WDPA and several data processing techniques. Sites are excluded if their status is ‘Proposed’ or ‘Not
‘Reported’, if the site designation is an UNESCO Man and Biosphere Reserve, or if the site has no reported areal attribute (point features only). For point areas that have a reported area, a buffer is created to define the area equal to the reported area (for a discussion of the caveats and introduced inaccuracies in this processing see Visconti et al. 2013.) All buffered point and polygons are then combined and dissolved into singular features, so as to remove overlap in designated areas. The terrestrial protected area coverage is calculated for each country or territory by dividing the total area of terrestrial protected areas by the total terrestrial area of that country. For a complete description of their methods visit https://www.protectedplanet.net/c/calculating-protected-area-coverage.

At the time of writing of this document, protected coverage statistics on UNBL are calculated for October 2018, but the current date of coverage statistics will be noted in UN Biodiversity Lab.

Analysis
Since this data is calculated monthly by UNEP-WCMC, there is no need for us to carry out any further analysis here. We will simply activate appropriate data layers in UN Biodiversity Lab and filter out areas so that we are visualising the same subset of the data that UNEP-WCMC calculates the protected coverage statistics on. To show the protected coverage statistics we will need to ensure that we have appropriate data dashboards turned on as well.

Steps:
1) Under theme ABT 11 activate the View Terrestrial Protected Areas (WDPA).

Optional:
2) We will change the base-map to an aerial satellite image. There are three ways to accomplish this:
   ● Toggle on/off on the Airplane button to switch the basemap theme to Aerial;
   ● Turn on the View Bing Aerial Imagery;
   ● Turn on the View Here.com Aerial Imagery
   ● Choose the best satellite imagery sources for your needs, accounting for clarify, and cloud cover.
3) Change the shadowing effect so that neighbouring countries are less visible, thus focusing attention on our country of interest. attention on our country of interest.
4) Export Map.

Example map:
**Mapping Standards**
Maps included in reports should:

- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
- Have clear and legible text;
- Include basic legends, a scale bar, and directional (north) arrow;
- Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.

---

**Map: Marine Protected Area Network and National Coverage %**

**Analysis:** What is the current coverage and distribution of marine protected areas?

**Key Spatial Data for Reporting**

<table>
<thead>
<tr>
<th>Date types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected Areas</td>
<td>● UNEP-WCMC and IUCN, 2018. Protected Planet: The World Database on Protected Areas (WDPA) [On-line], October</td>
<td>1. The World Database on Protected Areas (WDPA)</td>
</tr>
</tbody>
</table>
Notes on the Data
UNEP-WCMC calculates protected area coverage statistics using a subset of the WDPA and several data processing techniques. Sites are excluded if their status is ‘Proposed’ or ‘Not Reported’, if the site designation is an UNESCO Man and Biosphere Reserve, or if the site has no reported areal attribute (point features only). For point areas that have a reported area, a buffer is created to define the area equal to the reported area (for a discussion of the caveats and introduced inaccuracies in this processing see Visconti et al. 2013.) All buffered point and polygons are then combined and dissolved into singular features, so as to remove overlap in designated areas. Marine and coastal protected area coverage statistics are calculated for each country or territory by dividing the total marine and coastal area of protected areas by total marine and coastal area of that country. For a complete description of their methods visit: https://www.protectedplanet.net/c/calculating-protected-area-coverage.

At the time of writing of this document, protected coverage statistics on UNBL are calculated for October 2018, but the current date of coverage statistics will be noted in UN Biodiversity Lab.

Analysis
Protected area coverage statistics are calculated monthly by UNEP-WCMC, so there is no need for us to carry out any further analysis here. We will simply activate appropriate data layers in UN Biodiversity Lab and filter out areas so that we are visualising the same subset of the data that UNEP-WCMC calculates the protected coverage statistics on. To show the protected coverage statistics we will need to ensure that we have appropriate data dashboards turned on as well. We will map a make here focused on the Philippines.

Steps:
1) Under theme ABT 11 activate the View Marine Protected Areas (WDPA).
2) Turn on Dashboard – it should show the Protected Coverage % of marine areas in your country

Optional:
3. We will change the base-map to an aerial satellite image. There are three ways to accomplish this:
   ● Toggle on/off on the Airplane button to switch the basemap theme to Aerial;
   ● Turn on the View Bing Aerial Imagery;
   ● Turn on the View Here.com Aerial Imagery
   ● Choose the best satellite imagery sources for your needs, accounting for clarity, and cloud cover.
4. Change the shadowing effect so that neighbouring countries are less visible, thus focusing attention on our country of interest.
5. Since this map focuses on marine areas only, we are going to zoom in to those areas in our country.

Example map:

---

**Mapping Standards**
Maps included in reports should:

- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
- Have clear and legible text;
- Include basic legends, a scale bar, and directional (north) arrow;
- Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.

---

**Map: Species richness and Protected Area network (or particular species of interest).**

**Analysis:** What is the protection coverage of species richness data (or particular species of interest)?
**Key Spatial Data for Reporting**

<table>
<thead>
<tr>
<th>Date types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected Areas</td>
<td>● UNEP-WCMC and IUCN, 2018. Protect Planet: The World Database on Protected Areas (WDPA) [On-line], October 2018. Cambridge, UK: UNEP-WCMC and IUCN.</td>
<td>1. The World Database on Protected Areas (WDPA)</td>
</tr>
<tr>
<td>Species Range Data</td>
<td>● The IUCN Red List of Threatened Species. Version 3. [Online], 5 Nov 2018.</td>
<td>2. <em>Panthera onca</em> IUCN*</td>
</tr>
</tbody>
</table>

**Notes on the Data**

We will create the map for this analysis using a particular species we are interested in. We will need to get those polygons from IUCN or use some other data on species range available to us (i.e., national data). The IUCN species range data is not currently accessible in UN Biodiversity Lab, but we hope to provide that functionality soon. If you need assistance with finding and collecting data for species of interest to you, please contact us (support@unbiodiversitylab.org)

UNEP-WCMC calculates protected area coverage statistics using a subset of the WDPA and several data processing techniques. Sites are excluded if their status is ‘Proposed’ or ‘Not Reported’, if the site designation is an UNESCO Man and Biosphere Reserve, or if the site has no reported areal attribute (point features only). For point areas that have a reported area, a buffer is created to define the area equal to the reported area (for a discussion of the caveats and introduced inaccuracies in this processing see Visconti et al. 2013.) All buffered point and polygons are then combined and dissolved into singular features, so as to remove overlap in designated areas. For a complete description of their methods visit [https://www.protectedplanet.net/c/calculating-protected-area-coverage](https://www.protectedplanet.net/c/calculating-protected-area-coverage). We will use the same sub-setting of the WDPA data that UNEP-WCMC uses in calculating National Statistics to calculate protected area coverage across the range of our species of interest).

**Analysis**

We are going to focus here a particular species of interest in Panama: the Jaguar (*Panthera onca*). First, we need the species range data for *P. onca*; this is not available directly within UN Biodiversity Lab so it must be collected from [https://www.iucnredlist.org/](https://www.iucnredlist.org/) (note: you need to be logged in to the IUCN Red List to download species range data).

Collecting Data From IUCN:
Steps:
1) Navigate to https://www.iucnredlist.org/ in your favourite web browser;
2) In the search bar on the page we will search for Panthera onca in the search box.
3) Click on Download and select Range Data - polygons (SHP) on the right side of the screen.
   • Note: you need to be logged in here to download data.
4) Extract the data
   Caveat: the range data for P. onca covers large areas of the neotropics outside of Panama. We have clipped it the area within Panama in an external GIS.
5) Upload the species range data into your National Project Space and create a View of the data:
   • Note that you are bound by the licence and usage restrictions that IUCN binds you to when accessing their data – to keep everyone happy ensure that you do not allow forward sharing or downloading of this data from your National Project.
   • If you are unsure how to do this please visit the following resources:
     ◦ How to upload national data in UN Biodiversity Lab
     ◦ How to create Views in UN Biodiversity Lab.

Analysing data:
To calculate the percentage of the range of P. onca in Panama we need to know total area of the Jaguar range in Panama and the total area of the Range that is protected.

Steps:
1. Turn on the View that you just created (here is it the P. onca range View);
2. In the toolbox use the calculate area tool and copy the value somewhere;
   • Make sure you only have your range View turned on as the area is calculated on all visible Views;
3. Under the theme ABT 11 turn on the View World Database on Protected Areas (WDPA);
4. Click on the top-button that appears like a bullseye. This will quickly find all the areas that overlap between the two layers you have turned on – in this case the IUCN range layer and the WDPA.
   • It will appear like the image below – the bright areas highlighting areas of intersection: Turn on the View that you just created;
5. In the toolbox, again click on the calculate area tool – this time the area calculated be only the areas that intersect between the visible layers.

6. The percentage protected is calculated by dividing the total area that is protected by the total area of the species range (multiply by 100 to convert to a percent.) In our example:

\[
\frac{Range\ Protected\ Area}{Total\ Range\ Area} = \frac{19018\ km^2}{46995\ km^2} = 0.4066 \times 100 = 40.7\%
\]

7. In Panama 40.7% of \textit{Panthera onca}'s range has some level of protection

8. In the map we make we are going to use a satellite image as the basemap. Use your own discretion as to what is most appropriate in your situation.

9. Export Map

\textit{Example map:}
Mapping Standards
Maps included in reports should:

- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
- Have clear and legible text;
- Include basic legends, a scale bar, and directional (north) arrow;
- Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.

Map: Protection coverage of Key Biodiversity Areas (KBAs)

Analysis: What is the protection coverage of Key Biodiversity Areas (KBAs) Nationally?

Key Spatial Data for Reporting

<table>
<thead>
<tr>
<th>Date types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
</table>
| Protected Areas | ✷ UNEP-WCMC and IUCN, 2018. Protected Planet: The World Database on Protected Areas (WDPA) [On-line], October | 1. The World Database on Protected Areas (WDPA) - Terrestrial  
2. The World Database on |
**Notes on the Data**

UNEP-WCMC calculates protected area coverage statistics using a subset of the WDPA and several data processing techniques. Sites are excluded if their status is ‘Proposed’ or ‘Not Reported’, if the site designation is an *UNESCO Man and Biosphere Reserve*, or if the site has no reported areal attribute (point features only). For point areas that have a reported area, a buffer is created to define the area equal to the reported area (for a discussion of the caveats and introduced inaccuracies in this processing see *Visconti et al. 2013*). All buffered point and polygons are then combined and dissolved into singular features, so as to remove overlap in designated areas. For a complete description of their methods visit [https://www.protectedplanet.net/c/calculating-protected-area-coverage](https://www.protectedplanet.net/c/calculating-protected-area-coverage).

We will use the same sub-setting of the WDPA data that UNEP-WCMC uses in calculating National Statistics to map protected area coverage across across Key Biodiversity Areas.

The Key Biodiversity Area data is only available on UN Biodiversity Lab as a subset of the global data, and includes only KBAs that are within your country. The KBA partnership has allowed us to provide you with the KBA polygons within your national project space for the purposes of 6NR. Any other use of the KBA data will require you to request access from Birdlife International, on behalf of the KBA Partnership, by visiting [http://www.keybiodiversityareas.org/site/requestgis](http://www.keybiodiversityareas.org/site/requestgis).

**Analysis**

We cannot carry out any analyses, but we will be able to produce a rough overview of KBA sites access protected coverage statistics in a dashboard; we can then carry out a visual assessment of the spatial coverage of KBAs and how they fall within the protected area network; in our example here we can see that KBA network has little protected coverage in Afghanistan.

**Steps:**

1) Under theme ABT 11 turn on the View Key Biodiversity Areas (KBA) Awaiting to See how KBA data is...

2) Export map.

**Example map:**

---

<table>
<thead>
<tr>
<th>Important Conservation Areas</th>
<th>2018. Cambridge, UK: UNEP-WCMC and IUCN.</th>
<th>Protected Areas (WDPA) - Marine</th>
</tr>
</thead>
</table>
Mapping Standards
Maps included in reports should:

- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
- Have clear and legible text;
- Include basic legends, a scale bar, and directional (north) arrow;
- Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.

--------------------------------------------------------------------

Map: Protection coverage of terrestrial Ecoregions – National Level.

Analysis: What is the protection coverage of terrestrial ecoregions?

Key Spatial Data for Reporting

<table>
<thead>
<tr>
<th>Date types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected Areas</td>
<td>• UNEP-WCMC and IUCN, 2018. Protected Planet: The World Database on Protected Areas (WDPA) [On-line], October</td>
<td>1. The World Database on Protected Areas (WDPA)</td>
</tr>
</tbody>
</table>

6NR Technical Guidance on Spatial Planning – Vol. 2
- 43 -
### Notes on the Data

UNEP-WCMC calculates protected area coverage statistics using a subset of the WDPA and several data processing techniques. Sites are excluded if their status is ‘Proposed’ or ‘Not Reported’, if the site designation is an UNESCO Man and Biosphere Reserve, or if the site has no reported areal attribute (point features only). For point areas that have a reported area, a buffer is created to define the area equal to the reported area (for a discussion of the caveats and introduced inaccuracies in this processing see Visconti et al. 2013.) All buffered point and polygons are then combined and dissolved into singular features, so as to remove overlap in designated areas. For a complete description of their methods visit [https://www.protectedplanet.net/c/calculating-protected-area-coverage](https://www.protectedplanet.net/c/calculating-protected-area-coverage). At the time of writing we are using the October 2018 update to the WDPA.

The Joint Research Centre Digital Observatory for Protected Areas (JRC DOPA) regularly calculates the protection of Ecoregions at the Ecoregion level. We are going to calculate this at the national level though, as countries report at the national level. For Ecoregions that are entirely within your country there will be no difference in the values, but when ecoregions are spread across into neighbouring countries there will be differences in the protection coverage. We follow the same sub-setting methods used by DOPA and UNEP-WCMC to subset the WDPA data; however, we are using three slightly different base layers:

1. Ecoregions2017
2. FAO Countries Boundary Data;
3. And a continuous administrative boundary layer that creates a seamless administrative boundary across the land-sea interface (to reduce conflicts between datasets created using country boundary data), that is produced by merging the Country Boundaries data with EEZ data.

Thus, the numbers we calculate may be slightly different from the DOPA datasets themselves, since different base layer polygons will result in slight differences in total area.

### Making the map

To create this map, there are no analyses that need to be carried out, as this data is already pre-made and included in your national project space on UN Biodiversity Lab. One needs to only

---

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-made maps</td>
<td>3. Terrestrial Ecoregion Protection – 2018 (National Level)</td>
<td></td>
</tr>
</tbody>
</table>
turn on the following Views and dashboards, and add any other features you may want to create your map:

Steps:
1) Under the the ABT 11 turn on the View Terrestrial Ecoregion Protection – 2018 (National Level).
2) Ensure the data dashboard is turned on – this will show you the actual Protected Coverage Values in your country.
   - Note however, that if there are many ecoregions in your country this may not be easy to read.
3) Export map

Example map:

(Example of plot above - note this isn’t necessarily how UNBL widgets might work)
**Mapping Standards**
Maps included in reports should:

- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
- Have clear and legible text;
- Include basic legends, a scale bar, and directional (north) arrow;
- Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.

--------------------------------------------------------------------

**Map: Protection coverage of Marine Ecoregions – National Level.**

**Analysis:** What is the protection coverage of marine ecoregions nationally?

**Key Spatial Data for Reporting**

<table>
<thead>
<tr>
<th>Date types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected Areas</td>
<td>● UNEP-WCMC and IUCN, 2018. Protected Planet: The World Database on Protected Areas (WDPA) [On-line], October 2018. Cambridge, UK: UNEP-WCMC and IUCN.</td>
<td>1. The World Database on Protected Areas (WDPA)</td>
</tr>
<tr>
<td>Pre-made maps</td>
<td></td>
<td>3. Marine Ecoregions of the World Protection – 2018 (National Level)</td>
</tr>
</tbody>
</table>

**Notes on the Data**
UNEP-WCMC calculates protected area coverage statistics using a subset of the WDPA and several data processing techniques. Sites are excluded if their status is ‘Proposed’ or ‘Not Reported’, if the site designation is an UNESCO Man and Biosphere Reserve, or if the site has no reported areal attribute (point features only). For point areas that have a reported area, a buffer is created to define the area equal to the reported area (for a discussion of the caveats...
and introduced inaccuracies in this processing see Visconti et al. 2013.) All buffered point and polygons are then combined and dissolved into singular features, so as to remove overlap in designated areas. For a complete description of their methods visit: https://www.protectedplanet.net/c/calculating-protected-area-coverage. At the time of writing we are using the October 2018 update to the WDPA.

The Joint Research Centre Digital Observatory for Protected Areas (JRC DOPA) regularly calculates the protection of the Marine Ecoregions of the World (MEOW) at the Marine Ecoregion level. We are going to calculate this at the national level though, as countries report at the national level. For Marine Ecoregions that are entirely within you national waters or Exclusive Economic Zone (EEZ), there will be no difference in the values, but when Marine Ecoregions are spread across into neighbouring countries’ marine jurisdictions there will be differences in the protection coverage. We follow the same sub-setting methods used by DOPA and UNEP-WCMC to subset the WDPA data; however, we are using two slightly different base layers:

1) FAO Countries Boundary Data;
2) and a continuous administrative boundary layer that creates a seamless administrative boundary across the land-sea interface (to reduce conflicts between datasets created using country boundary data, such as Ecoregions and Marine Ecoregions of the world(MEOW).)

Thus, the numbers we calculate may be slightly different from the DOPA datasets themselves, since different base layer polygons will result in slight differences in total area.

Making the map
To create this map, there are no analyses that need to be carried out, as this data is already pre-made and included in your national project space on UN Biodiversity Lab. One needs to only turn on the following Views and dashboards, and add any other features you may want to create your map: Many countries with marine borders will cover only a few, or perhaps even a single marine ecoregion - so do no worry that your maps may be appear as all having a single colour.

Steps:
1) Under the the ABT 11 turn on the View Marine Ecoregions of the World Protection – 2018 (National Level).
   • Ensure the data dashboard is turned on – this will show you the actual Protected Coverage Values in your country.
   • Note however, that if there are many ecoregions in your country this may not be easy to read.

3) Export map

Example map:
Mapping Standards
Maps included in reports should:

- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
● Have clear and legible text;
● Include basic legends, a scale bar, and directional (north) arrow;
● Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.

---

**Map: Protected/Connected coverage of Ecoregions.**

**Analysis:** What is the protected and connected coverage of terrestrial ecoregions at the Ecoregion level?

**Key Spatial Data for Reporting**

<table>
<thead>
<tr>
<th>Date types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected Areas</td>
<td>● UNEP-WCMC and IUCN, 2018. Protected Planet: The World Database on Protected Areas (WDPA) [On-line], October 2018. Cambridge, UK: UNEP-WCMC and IUCN.</td>
<td>1. The World Database on Protected Areas (WDPA)</td>
</tr>
<tr>
<td>Indices</td>
<td>● Saura, S., Bastin, L., Battistella, L., Mandrici, A., Dubois, G., 2017. Protected areas in the world’s ecoregions: How well connected are they? Ecological Indicators 76, 144–158.</td>
<td>2. ProtConn</td>
</tr>
</tbody>
</table>

**Notes on the Data**

UNEP-WCMC calculates protected area coverage statistics using a subset of the WDPA and several data processing techniques. Sites are excluded if their status is ‘Proposed’ or ‘Not Reported’, if the site designation is an UNESCO Man and Biosphere Reserve, or if the site has no reported areal attribute (point features only). For point areas that have a reported area, a buffer is created to define the area equal to the reported area (for a discussion of the caveats and introduced inaccuracies in this processing see Visconti et al. 2013.) All buffered point and polygons are then combined and dissolved into singular features, so as to remove overlap in designated areas. For a complete description of their methods visit [https://www.protectedplanet.net/c/calculating-protected-area-coverage](https://www.protectedplanet.net/c/calculating-protected-area-coverage).

The Joint Research Centre Digital Observatory for Protected Areas (JRC DOPA) provides the map of Protected Connected land (ProtConn), which is the percent of Ecoregion area that is covered by protected connected lands). By definition, ProtConn can never be higher that the protected area coverage within an Ecoregion. The datasets differs from most other datasets in UN Biodiversity Lab that refer to the Ecoregions in that is is calculated using the June 2016 versions
of the WDPA and the 2001 version of ecoregions maps. See Saura et al. (2017) for further details on the ProtConn indicator. This ProtConn index is calculated only at the Ecoregion level.

Analysis
This data is already calculated and available in UN Biodiversity Lab. There is no specific metric to report towards. Remember, the ProtConn index is calculated at the Ecoregion level. Therefore, in cases where an ecoregion falls entirely within your national boundaries, the index value is valid for your country. In cases where the Ecoregion crosses international boundaries that will not be the case; for example. In the map of Sri Lanka below, the Deccan Thorn Scrub Forest in northern Sri Lanka (the red area) shows as having a low index value - in reality the vast majority of this Ecoregion falls within India.

Steps:
1) Under the theme ABT 11 turn on View ProtConn.
2) Export Map

Example map:

Mapping Standards
Maps included in reports should:
- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
- Have clear and legible text;
● Include basic legends, a scale bar, and directional (north) arrow;
● Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.

---

**Map: Protected Area Management Effectiveness.**

**Analysis:** What is the status and distribution of protected area management effectiveness?

**Key Spatial Data for Reporting**

<table>
<thead>
<tr>
<th>Date types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
</table>

**Notes on the Data**

The Human Pressure in Protected Area View provides a measurable proxy of the effectiveness of the global Protected Area estate in protecting against and reducing the human drivers that lead to losses in biodiversity. It indicates the percent of each Protected Area under intense human pressure.

The Global Database on Protected Area Management Effectiveness (PAME) is a comprehensive global database of management effectiveness assessments for protected areas (PAME). It indicates if a protected area documented in the World Database on Protected Areas (WDPA) has been assessed. It does not at present however, provide a standardised metric upon which one can compare and and assess what is considered effective management. The data that is being
shown in the dashboard calculates the total area of the preteotec area estate in a country that has been assessed.

**Analysis**
We are going to look at the human pressures Protected Areas in Côte d’Ivoire. To give a little more context we will also overlay data from the terrestrial human footprint, as it may be able to give us an indication of why some protected areas may have intense human pressure, while others do not.

Steps:
1) Under theme ABT 11 turn on the View Human Pressure in Protected Areas.
2) Under them WHERE AM I turn on Human Footprint Difference 1993-2009
3) We will change the order of drawing of the Views, so that the HFP View if behind the Human Pressures polygons — this will make it a bit easier to see.
4) We will also make the Human Pressure polygons slightly transparent so we can better see the HFP data behind it.
5) PAME Dashboards?
6. Export map.

**Example map:**

![Example map](image)

**Mapping Standards**
Maps included in reports should:
- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity
Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.

- Have clear and legible text;
- Include basic legends, a scale bar, and directional (north) arrow;
- Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.
Aichi Biodiversity Target 12

“By 2020, the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.”

Overview:
Human pressure is causing the current rate of species extinction to be more than 100 times the known background extinction rate. The IUCN Red List of Threatened Species (http://www.iucnredlist.org) contains a list of more than 19,000 species that are threatened globally, including in the categories of vulnerable, endangered, or critically endangered. Of these, more than 3,900 species are critically endangered. Countries may also have their own lists of additional threatened species. Preventing extinctions will require concerted efforts to reduce threats to threatened species, ensure adequate habitat protection, and in some cases, promote habitat restoration. For wide-ranging species, preventing extinctions may also require coordination across boundaries with other countries and regions. In order to achieve ABT 12, countries need to identify species at risk of extinction, assess the status and distribution of these species, and, identify key threats and appropriate levels of protection for prioritized species. They will also need to undertake key actions, including developing species recovery plans, reducing threats to key species, and improving the protection status of the habitats of key species.

Key Reporting Targets:
● Species and extinctions
● Focusing on preventing the extinction of species.

Maps in this Section:
15. Map: Threatened Species Richness within Effective Protected Areas.
Map: Species richness/Threatened Species Richness/Critically Threatened Species Richness.

**Analysis:** What is the distribution and status of known threatened species nationally?

**Key Spatial Data for Reporting**

<table>
<thead>
<tr>
<th>Date types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data - Derived</td>
<td></td>
<td>2. Species Richness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Range Rarity</td>
</tr>
</tbody>
</table>

**Notes on the Data**

This Species Richness View represents the number of species of mammals, amphibians and birds potentially occurring in each ~300m grid cell. Species range data were rasterised at 10 arc-seconds (approximately 300m at the equator) from IUCN Red List polygons (IUCN 2017) and raster layers for each species were summed together into a single layer with equal weighting.

Range rarity (or range size-rarity) is a ~300m raster layer based on scores for endemism of all mammals, amphibians and bird species. It is derived from the IUCN Red List polygons (IUCN 2017). Each grid cell is scored for range-size rarity for each species (the proportion of the species’ global range the cell represents), with the total score for each cell being calculated by summing scores across all the species potentially occurring in it. High values show that an area holds a large number of species and/or that the average ranges of the species present in the area are small.

The Threatened Species View show the number of threatened species of mammals, amphibians and birds potentially occurring in each ~1km grid cell. Species range data were rasterised at 30 arc-seconds (approximately 1km at the equator) from IUCN Red List polygons (IUCN 2017) for those with a Red List status of Critically Endangered, Endangered or Vulnerable. Raster layers for each species were summed together with equal weighting into a single richness layer.

**Analysis**

We are going to focus here on South Africa. There are no specific analyses that we will carry out here as the IUCN range polygons have already been converted to richness or rarity maps. Rather the maps can serve to provide a spatial understanding of the richness in biodiversity across one's country.

**Steps:**

1) Add Species Richness
2) Add Threatened Species Richness
3) Add Range Rarity
4) Export each View separately so we can make the separate maps to include side by side in your repo
Example map:
**Mapping Standards**

Maps included in reports should:

- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
- Have clear and legible text;
- Include basic legends, a scale bar, and directional (north) arrow;
- Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.

---------------------------------

**Map: Threatened Species Richness within Effective Protected Areas.**

**Analysis:** What is the spatial coverage of threatened species within the effective protected areas network nationally?

**Key Spatial Data for Reporting**

<table>
<thead>
<tr>
<th>Date types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected Area Effectiveness</td>
<td>• Jones, K.R., Venter, O., Fuller,</td>
<td>1. Human Pressure within Protected Areas</td>
</tr>
<tr>
<td></td>
<td>R.A., Allan, J.R., Maxwell, S.L., Negret, P.J., Watson, J.E.M.,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2018. One-third of global protected land is under intense human pressure.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Science 360, 788–791.</td>
<td></td>
</tr>
<tr>
<td>Species Range Data</td>
<td>• The IUCN Red List of Threatened Species. Version 3.</td>
<td>2. Threatened Species Richness</td>
</tr>
<tr>
<td>Species Range Data (alternative datasets)</td>
<td>• The IUCN Red List of Threatened Species. Version 3.</td>
<td>3. <em>Panthera onca</em> IUCN *</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.iucnredlist.org">http://www.iucnredlist.org</a>.</td>
<td>* Replace with your species of interest</td>
</tr>
<tr>
<td></td>
<td>Downloaded on 5 Nov 2018.</td>
<td></td>
</tr>
</tbody>
</table>

**Notes on the Data**

The Threatened Species View show the number of threatened species of mammals, amphibians and birds potentially occurring in each ~1km grid cell. Species range data were rasterised at 30
arc-seconds (approximately 1km at the equator) from IUCN Red List polygons (IUCN 2017) for those with a Red List status of Critically Endangered, Endangered or Vulnerable. Raster layers for each species were summed together with equal weighting into a single richness layer.

The Human Pressure in Protected Area View provides a measurable proxy of the effectiveness of the global Protected Area estate in protecting against and reducing the human drivers that lead to losses in biodiversity. It indicates the percent of each Protected Area under intense human pressure.

Analysis
There are no specific further analyses that have much meaning to carry out here. We will instead simply create a few maps of overlaying species richness data in Ethiopia to illustrate how even maps without specific quantifiable analyses being carried out on the data can provide important insight into conservation management.

Steps:
1) Under theme ABT 11 turn on the View Human Pressure in Protected Areas (HPPA).
2) Add View Threatened Species Richness
3) We are going to filter the HPPA data by making a very generous assumption – will are going to assume that if an area has a HPPA value below 50 (that is to say less than 50 percent of the PA has intense human pressure) then it is being effectively managed. We will filter the data to include only areas we want by clicking on the value bins under 50 in the legend (as shown below):

![Area Under Intense Pressure (%)](image)

4) Make sure that the drawing order of rasters places them underneath the filtered HPPA polygons.
5) We will adjust the transparency of the raster layers so that they are more visually distinguishable.
6) Export a map for each Species Richness/Rarity View, showing the PAs that we have considered as effectively managed (i.e., under low pressure).

**Example map:**

Threatened Species Richness

![Threatened Species Richness within Effective Protected Areas](image)

**Mapping Standards**
Maps included in reports should:

- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
- Have clear and legible text;
- Include basic legends, a scale bar, and directional (north) arrow;
- Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.
**Aichi Biodiversity Target 14:**

“By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.”

**Overview**

Ecosystems provide a wide range of goods and services that are essential to humans. These include food, fiber, medicines, freshwater, crop pollination, pollution control, sustainable livelihoods, and natural disaster prevention, among many others. Ecosystem services are particularly important for vulnerable sectors of society, who depend disproportionately on them for their well-being. However, many ecosystems around the world have become degraded, and are in urgent need of threat mitigation, protection and/or restoration. In order to achieve ABT 14, countries need to identify the distribution and condition of critical ecosystems and assess the current levels of threat and protection of these ecosystems. They also need to develop and implement key actions, including reducing threats, increasing protection, changing management practices, and restoring degraded ecosystems.

**Key Reporting Targets:**

- Ecosystem services
- Focusing on restoring and safeguarding critical ecosystem services - water, health, and livelihoods;
- Particularly focusing on women, indigenous peoples, local communities, and poor and vulnerable populations.
Maps in this Section:
16. Map: Key usage areas for using ES.
17. Map: Key areas for provisioning ES.

Map: Key usage areas for using ES.

Analysis: What is the distribution of areas/populations/vulnerable populations that are key users of ecosystem services?

Key Spatial Data for Reporting

<table>
<thead>
<tr>
<th>Date types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socioeconomic</td>
<td>• Center for International Earth Science Information Network (CIESIN), Columbia University.</td>
<td>1. Population Density 2015</td>
</tr>
<tr>
<td></td>
<td>• Nordhaus, W.D., and X. Chen. 2016. Global Gridded Geographically Based Economic Data (G-Econ),</td>
<td>5. Global Grid of Probabilities of Urban Expansion to 2030</td>
</tr>
<tr>
<td></td>
<td>• Seto, K., B. Güneralp, and L.R. Hutyra. 2012. Global Forecasts of Urban Expansion to 2030 and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Direct Impacts on Biodiversity and Carbon Pools. Proceedings of the National Academy of Sciences of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the United States of America 109 (40): 16083-16088</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Baseline Water Stress</td>
</tr>
</tbody>
</table>
Notes on the Data
Ecosystem services (ES) usage data is largely localised. One of the most commonly recognised ES is water supply and provisioning of clean water to populations. The Aqueducts database produced by the World Resource Institute (WRI) provides a number of spatial layers on water stress and water storage availability. One of the key constraints in identifying the usage value of any ecosystem service is identifying the communities and people that make use of a service. This kind of data is rarely known spatially explicitly at larger scales; in this case it may be best to make some assumptions about population density and known economic considerations of a country in general. We are going to make a map here focussing on the country of Yemen, which at present is the site of possibly the planet's largest humanitarian crisis, due to war and the destruction of infrastructure by aerial bombing. It is a safe assumption to make that most of the population in Yemen at as risk, and in an arid country, the risk associated with water security are likely compounded by the armed conflict. Thus by overlaying data on population density and baseline water stress, we can readily see that no population centre in Yemen has avoided acute baseline water stress.

Analysis
There are no analyses we are going to carry out here, but instead we will simply activate two layers

Steps:
1) Under theme ABT 14 turn on View Baseline Water Stress
2) Under theme ABT 14 turn on View City Water Intake (TNC)
3) Under theme ABT 14 turn on View Population Density 2020 (CIESEN)
   a) The Colour schemes on these layers are very similar, so we are going to adjust the transparency, and filter for catchments with water stress above 80% (>80%) to allow us to more readily see the darker reds that occur as a result of both high population (red) and high water stress (also red).
4) Export Maps.
Example map:

**Mapping Standards**
Maps included in reports should:

- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
- Have clear and legible text;
- Include basic legends, a scale bar, and directional (north) arrow;
- Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.

-----------------------------------------

**Map: Key areas for provisioning ES.**

**Analysis:** What is the distribution of areas that are important for delivering ecosystem services?

**Key Spatial Data for Reporting**

<table>
<thead>
<tr>
<th>Date types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
</table>

6NR Technical Guidance on Spatial Planning – Vol. 2 - 63 -
<table>
<thead>
<tr>
<th>Coastal Protection</th>
<th>TNC data</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6. Physical Exposure to Tsunamis</td>
</tr>
</tbody>
</table>


Notes on the Data

Ecosystem services (ES) provisioning is largely localised. One of the most commonly recognised ES is water supply and provisioning of clean water to populations. The TNC City Water Map mentioned above is a database of water extraction and supply metrics for over 400 cities worldwide. Similarly, the Aqueducts database provides a number of spatial layers on water stress and water storage availability. Another important ecosystem service is shoreline protection - particularly on island nations around coastal areas with significant human development - and the natural protected that is afforded by features such as coral reefs and mangrove forests. One of the key constraints in identifying the value of coastal protection is identifying both human populations at risk, as well as infrastructure. In the physical exposure to tsunamis data we have data on the human populations that are at risk from tsunami. In concert with data on mangroves and coral reefs, we can begin to identify areas of these ecosystems that of of particular importance for humanity.

Analysis

There are not any further analyses to carry out here. We will make a map to indicate the population at risk of Tsunami in Fiji (fosuggin on the area around the capital, Suva), as well as two natural shoreline features that can protect shoreline from large oceanic waves: mangroves and corals reefs.

Steps:

1) Under theme ABT 14 turn on View Physical Exposure to Tsunamis;
2) Under theme ABT 14 turn on either:
   a) Global Mangrove Cover for the 21 Century
   b) Global Distribution of Warm Water Coral Reefs (2010)
3) Under theme ABT 14 turn on Global Distribution of Warm Water Coral Reefs (2010)
4) We will turn on satellite imagery to improve our map.
5) Export map.

Example map:
**Mapping Standards**

Maps included in reports should:

- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
- Have clear and legible text;
- Include basic legends, a scale bar, and directional (north) arrow;
- Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.
Aichi Biodiversity Target 15

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

Overview:
Deforestation, wetland drainage, mangrove removal, seagrass bed damage, overgrazing of grasslands, and other types of habitat degradation lead to increased emissions of carbon dioxide, methane and other greenhouse gases, and to increased vulnerability to the impacts of climate change. Restoring degraded ecosystems can simultaneously increase carbon sequestration, improve climate resilience, restore essential ecosystem services, and safeguard biodiversity. In order to achieve ABT 15, Parties need to assess the distribution and status of key degraded ecosystems; understand the role of these ecosystems in enhancing climate resilience and sequestering carbon; and identify and prioritize key areas for restoration. They also need to undertake key restoration actions, including restoring natural disturbance regimes, controlling harmful invasive species, managing overabundant species, recreating native communities, reintroducing species, and improving the abiotic environment, among others.

Key Reporting Targets:
- Climate resilience
- Focusing on strengthening climate resilience and carbon sequestration through ecosystem restoration.

Maps in this Section:


Analysis: What is status and location, nationally, of ecosystems with carbon stocks?

Key Spatial Data for Reporting

<table>
<thead>
<tr>
<th>Date types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
</table>

Notes on the Data
The GEOCARBON dataset provides estimates of the aboveground forest biomass globally (in Mg/ha), by merging global maps of both tropical and boreal forest biomass. The data is limited to forest areas, but note that it does not cover every country.

Global Soil Organic Carbon (SOC) is the carbon that remains in the soil after partial decomposition of any material produced by living organisms, and it constitutes a key element of the global carbon cycle through atmosphere, vegetation, soil, rivers and the ocean. The Global Soil Organic Carbon data estimates of the SOC stock in soils at a depth from 0 to 30 cm. The GSOC map represents the first ever global soil organic carbon assessment produced through
a participatory approach in which countries developed their capacities and stepped up efforts to compile all the available soil information at national level.

Mangrove Forests Soil Organic Carbon compiles a large georeferenced database of mangrove soil carbon measurements using a novel machine-learning based statistical model of the distribution of carbon density using spatially comprehensive data at a 30 m resolution. This model, which included a prior estimate of soil carbon from the global SoilGrids 250 m model, was able to capture 63% of the vertical and horizontal variability in soil organic carbon density (RMSE of 10.9 kg m$^{-3}$). This data is intended to serve nations seeking to include mangrove habitats in payment-for-ecosystem services projects and in designing effective mangrove conservation strategies.

The Aboveground Live Woody Carbon Density Change (2003-2014) is a time-series analysis of carbon density change (in Mg/ha) between 2003-2014 spanning tropical America, Africa, and Asia. The original data is provided as two separate rasters representing (1) carbon density net gain and (2) carbon density net loss within each ~463 x 463 metre pixel. We merge the two rasters in UN Biodiversity Lab to provide the net change in carbon over the period 2003-2014 within in each pixel.

Analysis
No further analyses will be carried out here as we are simply making a map of the density of various carbon types across the country.

Steps:
1) Within theme ABT 15 turn on View GEOCARBON inside Protected Areas.
2) Within theme ABT 15 turn on View Global Soil Organic Carbon inside Protected Areas.
3) We will turn on a satellite view as our basemap; customize your map as you see fit.
4) Export maps separately (note that both datasets may not cover your country).

Example map:
Mapping Standards
Maps included in reports should:

- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
- Have clear and legible text;
- Include basic legends, a scale bar, and directional (north) arrow;
- Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.

Map: Carbon Stores in the Protected Area network.

Analysis: What is status of protected ecosystems with carbon stocks?

Key Spatial Data for Reporting

<table>
<thead>
<tr>
<th>Date types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected Areas</td>
<td>• UNEP-WCMC and IUCN, 2018. Protected Planet: The World Database on Protected Areas</td>
<td>1. The World Database on Protected Areas (WDPA)</td>
</tr>
</tbody>
</table>
| Pre-made | 6. GEOCARBON inside Protected Areas.  

**Notes on the Data**
To facilitate calculation of carbon within the protected area network we first created a simplified version of the WDPA, followed the methods used by Jones, et al. 2018 (also see the View Human Pressure inside Protected Areas in UN Biodiversity Lab). Namely, we first filtered the WDPA by:
1. Selecting only protected areas with status of ‘inscribed, ‘established’, or ‘designated’;
2. Excluding sites designated as UNESCO Man and Biosphere Reserves;
3. Excluding sites that are represented in the WDPA as a point;
Then we:
4. Dissolved all overlapping polygons to eliminate overlaps and to avoid double counting of carbon values;
5. Simplified the polygons (tolerance of 1000m);  
6. Clip to land?
7. Removed polygons with areas less than 5km2.

The GEOCARBON dataset provides estimates of the aboveground forest biomass globally (in Mg/ha), by merging global maps of both tropical and boreal forest biomass. The data is limited to forest areas, but note that it does not cover every country.

Global Soil Organic Carbon (SOC) is the carbon that remains in the soil after partial decomposition of any material produced by living organisms, and it constitutes a key element of the global carbon cycle through atmosphere, vegetation, soil, rivers and the ocean. The Global Soil Organic Carbon data estimates of the SOC stock in soils at a depth from 0 to 30 cm. The GSO map represents the first ever global soil organic carbon assessment produced through a participatory approach in which countries developed their capacities and stepped up efforts to compile all the available soil information at national level.

Mangrove Forests Soil Organic Carbon compiles a large georeferenced database of mangrove soil carbon measurements using a novel machine-learning based statistical model of the distribution of carbon density using spatially comprehensive data at a 30 m resolution. This model, which included a prior estimate of soil carbon from the global SoilGrids 250 m model, was able to capture 63% of the vertical and horizontal variability in soil organic carbon density (RMSE of 10.9 kg m$^{-3}$). This data is intended to serve nations seeking to include mangrove habitats in payment-for-ecosystem services projects and in designing effective mangrove conservation strategies.

The Aboveground Live Woody Carbon Density Change (2003-2014) is a time-series analysis of carbon density change (in Mg/ha) between 2003-2014 spanning tropical America, Africa, and Asia. The original data is provided as two separate rasters representing (1) carbon density net gain and (2) carbon density net loss within each ~463 x 463 metre pixel. We merge the two rasters in UN Biodiversity Lab to provide the net change in carbon over the period 2003-2014 within each pixel.

**Analysis**

Zonal statistics were calculated on both GEOCARBON and GSOC data, and summed within each protected area to provide an estimate of the total calculated within each (in Mg - or tonnes). Note that aboveground forest biomass data (GEOCARBON) may not have coverage in all PAs. The data is premade and available in UN Biodiversity Lab. The maps we produce here is centered on Malaysia.

Steps:

1) Export maps separately (note that both datasets may not cover your country).
**Mapping Standards**
Maps included in reports should:

- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
- Have clear and legible text;
- Include basic legends, a scale bar, and directional (north) arrow;
- Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.

--------------------------------------------------------------------

**Map: Heat map of carbon sequestration potential.**

**Analysis:** Where can carbon be most readily sequestered?

**Key Spatial Data for Reporting**

<table>
<thead>
<tr>
<th>Date types</th>
<th>Key Datasets</th>
<th>UN Biodiversity Lab View Names</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><a href="http://www.natureserve.org">www.natureserve.org</a>.</td>
<td></td>
</tr>
<tr>
<td>(alternatives)</td>
<td></td>
<td>3. Increase on SOC in Croplands After 20 Yr - Medium Scenario</td>
</tr>
</tbody>
</table>

**Notes on the Data**

The Potential for Tropical Forest Carbon Sequestration indicator represents the amount of carbon that could be sequestered (i.e., prevented from entering the atmosphere as carbon dioxide) if deforestation were halted in tropical forests. Higher values indicate that a greater amount of carbon (measured as CO2 equivalents/km2) per unit area could potentially be sequestered if deforestation were halted in tropical forests. The estimate of "potential" carbon sequestration when deforestation is completely halted is based on the assumption that when deforestation is stopped, the amount of carbon sequestration potential is the same with the same area as that being loss previously. This View is available at the country level and
catchment level in UN Biodiversity Lab; we are interested in the using catchment level indicator here. not that this data only covers the tropics.

The Increase in SOC on Croplands After 20 Yr scenarios dataset provides estimate of the potential increases in soil organic carbon that would be possible within the top 30 cm of soil in croplands after 20 years, following implementation of better land management practices. The per pixel values in the data take into consideration the percent of each pixel which is classified as cropland. The values have been converted to total tonnes of carbon (x 100) per pixel.

**Analysis**

Here we are making a map of carbon sequestration potential focussing on Peru. We are going to use both the Potential for Tropical Forest Carbon Sequestration View and the Increase on SOC in Croplands After 20 Yr - High Scenario View to highlight some of the spatial differences in sequestration potential across space between approaches aimed at reducing deforestation versus improving land management.

**Steps:**
1) Under theme ABT 15 turn on View Potential for Tropical Forest Carbon Sequestration - Catchment (NatureServe).
2) Under theme ABT 15 turn on View Increase on SOC in Croplands After 20 Yr - High Scenario.
3) Export maps.

**Example map:**

![Example map](image-url)
Mapping Standards
Maps included in reports should:

- Be sufficiently high resolution (pixels per inch: ppi) for them to appear clear to the viewer; maps from UN Biodiversity are exported at ~330 ppi in Portable Document Format (PDF).
- Try not to clutter them with too much data. Clear and concise is best. In UN Biodiversity Lab it may help to increase the shadow outline around your country to highlight mapped features within your country.
- Have clear and legible text;
- Include basic legends, a scale bar, and directional (north) arrow;
- Include basic metadata for the data presented in the map, including: the data source, the projection of the data, who owns or has rights on the data, and the date the map was produced.
Annex 1. 6NR Template

Guidelines for the 6NR were adopted in Decision XIII/27. The 6NR is due on 31 December 2018. The reporting template contains seven sections, which are summarized in Table 4.

Table 4. The Seven Sections of the Sixth National Report to the Convention on Biological Diversity

<table>
<thead>
<tr>
<th>Section I. Information on targets being pursued at the national level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer the following questions:</td>
</tr>
<tr>
<td>1. Has your country adopted national biodiversity targets or equivalent commitments in line with the Strategic Plan for Biodiversity 2011-2020 and the ABTs?</td>
</tr>
<tr>
<td>2. Select the ABTs to which the national target is wholly or partially related.</td>
</tr>
<tr>
<td>3. Select the ABTs to which the national target is indirectly related.</td>
</tr>
<tr>
<td>4. If you developed one or more national target(s), complete the template for each target. Provide the story behind developing the target(s). Explain why your country chose to set this particular target, the thinking process behind it, and why is it relevant to your country.</td>
</tr>
<tr>
<td>5. Indicate to which level of government the target applies.</td>
</tr>
<tr>
<td>6. Provide any other relevant information: the process of developing and adopting the national target, the stakeholders involved or the strategies and plans in which this national target has been included, and any relevant websites links and files.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section II. Implementation measures taken, assessment of their effectiveness, associated obstacles, and scientific and technical needs to achieve national targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>This template should be replicated for each major measure, or action, the country has taken to implement the NBSAP:</td>
</tr>
<tr>
<td>1. Describe a measure taken to contribute to the implementation of your country’s NBSAP. Describe the character of a measure (e.g. is it a legal/regulatory/financial/policy measure?).</td>
</tr>
<tr>
<td>2. Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes:</td>
</tr>
<tr>
<td>Measure has been effective Measure has been partially effective Measure has been ineffective Unknown</td>
</tr>
<tr>
<td>3. Explain the selection in 2 and indicate the tools or methodology used to assess it. Include relevant websites, web links, and files. If it cannot be assessed, explain why.</td>
</tr>
<tr>
<td>4. Provide other relevant information to illustrate how the measure has resulted in, or is expected to result in, outcomes that contribute to NBSAP implementation. Include relevant websites, web links, and files.</td>
</tr>
<tr>
<td>5. Describe the obstacles that have been encountered and any scientific and technical needs for addressing them, including technical and scientific cooperation, capacity development activities or the need for guidance materials. Include relevant websites, web links, and files.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section III. Assessment of progress towards each national target:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess the level of progress made towards each of your country’s national targets or similar commitments. The template should be replicated for each national target. If your country has not set national targets use the ABTs.</td>
</tr>
<tr>
<td>1. List the national targets or ABTs.</td>
</tr>
<tr>
<td>2. Select the category of progress towards implementation of the target and date of assessment:</td>
</tr>
<tr>
<td>On track to exceed target On track to achieve target Progress but at an insufficient rate No significant change Moving away from target Unknown</td>
</tr>
</tbody>
</table>
3. Explain the evidence used in this target's assessment, drawing upon the information provided in Section II, including obstacles in undertaking the assessment.
4. Describe the indicators used in this assessment, and any other tools and methods.
5. Select your level of confidence of the above assessment and explain verbally:
   - Based on comprehensive evidence
   - Based on partial evidence
   - Based on limited evidence
6. Assess the adequacy of monitoring information to support this assessment:
   - Monitoring related to this target is adequate
   - Monitoring related to this target is partial
   - No monitoring system in place
   - Monitoring is not needed
7. Describe how the target is monitored and indicate whether there is a monitoring system in place. Include relevant websites, web links, and files.

### Section IV. Describe the national contribution to the achievement of each global ABT

Describe your country’s contribution towards the achievement of each global ABT. This template should be replicated for each ABT. For Parties whose national targets are identical to the ABTs, some of this information may be captured in Sections II and III. In these cases, provide additional descriptions of your country’s national contribution to the achievement of each global ABT.

1. State the ABT name.
2. Describe how and to what extent your country has contributed to the achievement of this ABT. Summarizes the evidence used to support this description.
3. Describe other activities contributing to the achievement of the ABT at the global level.
4. Based on the description of your country’s contributions to the achievement of the ABT, describe how and to what extent these contributions support the implementation of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals.

### Section V. Describe the national contribution to the achievement of the targets of the Global Strategy for Plant Conservation (optional)

Describe your country’s contribution towards the achievement of the targets of the Global Strategy for Plant Conservation (GSPC). This template should be replicated for each of the 16 targets of the GSPC.

1. If your country has national targets related to the GSPC Targets, provide details on each target.
2. Provide information on any active networks for plant conservation present in your country.
3. For each target, assess the category of progress towards the target of the GSPC at the national level:
   - On track to achieve target at national level
   - Progress towards target at national level but at an insufficient rate
   - No significant change at national level
4. Describe how and to what extent your country has contributed to the achievement of this GSPC Target and summarize the evidence used to support this description.

### Section VI. Information on the contribution of indigenous peoples and local communities (optional)

Provide any additional information on the contribution of indigenous peoples and local communities to the achievement of the ABT if not captured in the sections above.

### Section VII. Updated biodiversity country profiles

Biodiversity country profiles provide an overview of information relevant to your country’s implementation of the Convention. Review and update your country’s biodiversity profile that is currently displayed on the clearing-house mechanism here: [https://www.cbd.int/countries](https://www.cbd.int/countries).

Update the following information:

**Biodiversity Facts**

- Status and trends of biodiversity, including benefits from biodiversity and ecosystem services
- Main pressures on and drivers of change to biodiversity (direct, indirect)
Measures to Enhance Implementation of the Convention

- Implementation of the NBSAP
- Actions taken to achieve the ABTs
- Support mechanisms for national implementation, e.g. legislation, funding, capacity-building, coordination, mainstreaming
- Mechanisms for monitoring and reviewing implementation

National Contacts

- CBD
- Cartagena Protocol on Biosafety
- Nagoya Protocol on Access and Benefit-sharing
- Other relevant focal points, e.g. resource mobilization, Programme of Work on Protected Areas
- Main person developing the 6NR