UNEP

Convention on Biological Diversity

AD HOC TECHNICAL EXPERT GROUP MEETING
 ON INDICATORS FOR THE STRATEGIC PLAN
 FOR BIODIVERSITY 2011-2020
Geneva, Switzerland, 14-17 September 2015

**USING GLOBAL BIODIVERSITY INDICATORS AND UNDERLYING DATA TO
SUPPORT NBSAP DEVELOPMENT AND NATIONAL REPORTING**

Note by the Executive Secretary

1.   The Executive Secretary is circulating herewith, for the information of participants in the meeting of the Ad Hoc Technical Expert Group on Indicators for the Strategic Plan for Biodiversity 2011-2020, an information document on using global biodiversity indicators and underlying data to support the development of national biodiversity strategies and action plans and national reporting.

2.   The document has been prepared by the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) with the support of the Federal Office for Environment, Government of Switzerland. It is presented in the form and language in which it was received by the Secretariat.

USING GLOBAL BIODIVERSITY INDICATORS AND UNDERLYING DATA TO SUPPORT NBSAP DEVELOPMENT AND NATIONAL REPORTING

Roadmap to support NBSAP practitioners

This document has been produced as an output of a UNEP-WCMC project, funded by the Federal Office for Environment (FOEN), Government of Switzerland.

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Acknowledgments

Citation

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Executive Summary

A lack of national level biodiversity data can pose serious challenges for countries when developing and implementing a National Biodiversity Strategy and Action Plan (NBSAP), or preparing a National Report. Many of the global indicators brought together under the Biodiversity Indicators Partnerships (BIP) are comprised of national level data, or in some cases if not derived from national data, can disaggregated at the national level. This road map has been produced to create awareness of the possible use of the global indicators and their underlying data for supporting NBSAP implementation and national reporting requirements.

Why should we use global indicators or underlying data at the national level?

1. Many global indicators are aggregated from national-level data
2. Assisting in the ability to report on progress towards global targets
3. Providing consistent, reliable information for decision making
4. Complementing national datasets
5. Addressing capacity issues

How can the global indicators or underlying data be used in our NBSAP updating and implementation and national reporting?

There are several different ways that global indicators and/or datasets can be used in National Reporting and/or NBSAP updating and implementation:

1. Global indicators can be disaggregated and used at national level.
2. Global indicator methodology can be applied at the national level.
3. Underlying datasets can be utilised for the development of national level indicators, expert assessments, etc.

What global indicators and underlying datasets are currently available for use at the national level?

There are currently 34 indicators available from the Biodiversity Indicators Partnership (BIP) global indicator suite that are ready for use at the national level (see Tables 1 and 2). Of these, 21 are aggregated from national level data and 13 use global level data that can be disaggregated for national level use; these cover 17 of the 20 Aichi Targets. All BIP global indicator partners have confirmed that, where possible, they would be interested in supporting national stakeholders in reproducing their respective indicators at the national level.

Contents

Section 1. Introduction

Purpose and use of this Roadmap

Following decision XI/3[1] of the eleventh meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD COP 11), Parties were invited to "*prioritize the application at national level of those indicators that are ready for use at global level where feasible and appropriate*" and the Biodiversity Indicators Partnership (BIP) was requested to "*develop practical information on the indicators… to assist in the application of each of the indicators*". This Roadmap has been produced as an output of a UNEP-WCMC project, funded by the Federal Office for Environment (FOEN), Government of Switzerland, to examine how the global indicators brought together under the BIP can be utilised to support national level implementation of the Strategic Plan for Biodiversity 2011-2020.

The main objective of this Roadmap is to provide support and guidance to national biodiversity practitioners in the use of the global indicators and/or their underlying datasets in the development and implementation of National Biodiversity Strategy and Action Plans (NBSAPs). The Roadmap presents a framework to assist NBSAP practitioners by creating awareness of how and why global indicators and datasets, which are often generated at the national level, can be incorporated into updated NBSAPs, implementation plans and national reports. The Roadmap is separated into three sections to help national biodiversity practitioners answer the following questions:

- ***Why*** *should we use global indicators or underlying data at the national level? (PAGE 8)*
- ***How*** *can the global indicators or underlying data be used to support national reporting and/or NBSAP updating and implementation? (Page 18)*
- ***What*** *global indicators are currently available from the BIP suite that can be utilised at the national level, how are they accessed and what options are available for their use? (PAGE 23)*

An information document to improve understanding of how global indicators or underlying data and observations can support the development of national biodiversity indicators has been produced to accompany this Roadmap[2]. The information document: discusses the current use of global biodiversity indicators and datasets at the national level; explores the key barriers experienced by CBD Focal Points and biodiversity practitioners; presents examples of how some of these barriers have been overcome at the national level; and proposes a series of options for both global data providers (such as the BIP Partners) and national users (such as indicator developers and biodiversity practitioners) towards the greater use of global datasets at the national level under relevant circumstances.

The evidence base for the Roadmap and information document was principally compiled from two main sources:
- A review of the global indicators and their underlying datasets undertaken in collaboration with the BIP partners
- An online questionnaire distributed via an official CBD Notification (SCBD/SAM/DC/RH/KM/84530) to CBD National focal points and individuals involved in NBSAP revision.

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[1] https://www.cbd.int/doc/decisions/cop-11/cop-11-dec-03-en.pdf
[2] Bowles-Newark, N.J., Chenery, A., Misrachi, M. & Despot Belmonte, K. (2015). Information document: Barriers to the use of global indicators and datasets to support NBSAP implementation and national reporting processes. UNEP-WCMC, In press.

The Biodiversity Indicators Partnership

Whilst many global datasets exist, this Roadmap has been prepared to support biodiversity practitioners in identifying how the global indicators and underlying data brought together under the Biodiversity Indicators Partnership (BIP) could be utilised for updating and implementing NBSAPs and for national reporting purposes.

The CBD-mandated BIP was established in 2007 as a global initiative to promote and coordinate development and delivery of biodiversity indicators in support of the CBD and, subsequently, other Multilateral Environmental Agreements (MEA), IPBES, national and regional governments and a range of other sectors. The BIP brings together over forty organizations working internationally on indicator development to provide the most comprehensive information on biodiversity trends. The BIP has also developed a set of resources to assist the development and use of indicators at the regional and national levels (available from: www.bipindicators.net). These resources include guidance documents, factsheets, a discussion forum for indicator practitioners and an e-learning module on 'Developing Biodiversity Indicators'.

NBSAP Forum

The NBSAP Forum is a global online resource that provides nations with the information they need to revise and implement an effective National Biodiversity Strategies and Action Plan (NBSAP). Through this web portal, each NBSAP Forum member has free and unlimited access to best practices, guidance and resources on each Aichi Biodiversity Target. Members can also connect to 1,150 other individuals and organizations to easily share information, knowledge, resources and request support. The peer review facility allows national teams to share their revised NBSAP and receive technical review, prior to adopting it as a national instrument. The NBSAP Forum also offers an extensive library of self-paced e-learning opportunities on topics ranging from protected areas management to climate resilience. In 2015, experts will teach live online courses on target and indicator development, resource mobilization, and ecosystem services, among many other topics. The Secretariat of Convention on Biological Diversity (CBD), the United Nations Development Programme (UNDP), and the United Nations Environment Programme (UNEP) host it in partnership. Through the NBSAP Forum, they intend to create an international community of practice across a wide range of stakeholders and topics. Access it today: *http://nbsapforum.net/*

Key Terms / Definitions

Indicators

A metric or measure based on verifiable data that conveys information about more than itself. It is information packaged to communicate something important to decision makers[3]. Biodiversity indicators include the whole range from statistically robust and nationally sanctioned to indicators of change based on expert opinion (with varying degrees of verification).

Underlying datasets

Those datasets that contribute to the development of an indicator, without being directly accessible.

Biodiversity practitioners

Biodiversity and natural resource managers involved in policy processes influencing biodiversity outcomes.

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[3] UNEP-WCMC. (2011). *Developing ecosystem service indicators: Experiences and lessons learned from sub-global assessments and other initiatives*. Secretariat of the Convention on Biological Diversity, Montreal, Canada. Technical Series No. 58.

Table 1. Global indicators available from the BIP suite to support national level reporting and/or NBSAP updating and implementation

Strategic Goal	Global indicator (se Section 3)	Aichi Target	Indicator type	Aggregated from national or sub-national level data	Indicator/underlying dataset can be disaggregated at the national level
A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society	Biodiversity Barometer (Page XX)	1	Response	Yes	
	Ecological Footprint (Page XX)	4	Pressure	Yes	
	Red List Index (impacts of utilisation)	4	State	in some cases	Yes
B: Reduce the direct pressures on biodiversity and promote sustainable use	Extent of Forests and Forest Types (Page XX)	5	State	Yes	
	Marine Trophic Index (Page XX)	6	Pressure	Yes	
	Marine Stewardship Council Certified Catch and Fishery Improvements (Page XX)	6	Response	Yes	
	Red List Index (impacts of fisheries on marine species)	6	State	in some cases	Yes
	Area of Forest Under Sustainable Management: Certification (Page XX)	7	Response	Yes	
	Loss of Reactive Nitrogen to the Environment (Page XX)	8	Pressure	Yes	
	Nitrogen Deposition (Page XX)	8	Pressure	No	Yes
	Water Quality Index (Page XX)	8	State	?	
	Red List Index (impacts of pollution)	8	State	in some cases	Yes
	Adoption of National Legislation Relevant to the Prevention or Control of Invasive Alien Species (Page XX)	9	Response	Yes	
	Trends in Invasive Alien Species Vertebrate Eradications (Page XX)	9	Response	No	Yes
	Trends in Numbers of Invasive Alien Species Introduction Events (Page XX)	9	Pressure	No	Yes
	Red List Index (impacts of invasive alien species)	9	State	in some cases	Yes
	Cumulative Human Impact on Marine Ecosystems (Page XX)	10	Pressure	Yes	

Strategic Goal	Global indicator (se Section 3)	Aichi Target	Indicator type	Aggregated from national or sub-national level data	Indicator/underlying dataset can be disaggregated at the national level
	Red List Index (reef-building coral species)	10	State	in some cases	Yes
C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity	Coverage of Protected Areas (Page XX)	11	State	Yes	
	Management Effectiveness of Protected Areas (Page XX)	11	Response	Yes	
	Protected Area Overlays with Biodiversity (Page XX)	11	Response	Yes	
	Wild Bird Index (Page XX)	12	State	Yes	
	Living Planet Index (Page XX)	12	State	in some cases	Yes
	Red List Index (Page XX)	12	State	in some cases	Yes
	Wildlife Picture Index (Page XX)	12	State	Yes	
	Genetic Diversity of Terrestrial Domesticated Animals (Page XX)	13	State	Yes	
D: Enhance the benefits to all from biodiversity and ecosystem services	Red List Index (species used for food and medicine) (Page XX)	14	State	in some cases	Yes
	Nutrition Indicators for Biodiversity (Page XX)	14	State	Yes	
	Ocean Health Index (Page XX)	14	State	Yes	
	Red List Index (pollinating species)	14	State	in some cases	Yes
E: Enhance implementation through participatory planning, knowledge management and capacity building	Index of Linguistic Diversity (Page XX)	18	State	Yes	
	Status and Trends of Linguistic Diversity and Numbers of Speakers of Indigenous Languages (Page XX)	18	State	??	
	Number of Global Biodiversity Information Facility Records Over Time (Page XX)	19	Response	No	Yes
	Official Development Assistance Provided in Support of the Convention (Page XX)	20	Response	Yes	

Section 2. Why should we use global indicators or underlying data at the national level?

The Strategic Plan for Biodiversity 2011-2020 sets a challenging and ambitious vision that biodiversity is fully valued and integrated into national decision making, and that concrete actions are taken to reverse biodiversity losses during the next decade. Biodiversity data are key to the successful development and implementation of National Biodiversity Strategy and Action Plans (NBSAPs), a fundamental conduit for implementing the Strategic Plan and achieving all of the accompanying Aichi Biodiversity Targets. Nearly all of the seven steps advocated by the Convention on Biological Diversity (CBD) for NBSAP development and implementation require the use of biodiversity data in one format or another (Figure 1). Therefore a lack of national level biodiversity data can pose serious challenges for countries when developing and implementing an NBSAP, or preparing a national report. Global indicators and datasets can provide opportunities to fill national and regional data gaps and contextualise national observations to support the development and implementation of NBSAPs.

Figure 1. The seven steps of NBSAP development and implementation[4]

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[4] http://nbsapforum.net/#nbsap-journey

Parties face a number of challenges in reporting on conservation progress and developing national targets corresponding to the global Aichi Targets. . Measuring conservation performance requires reliable datasets that transcend space and time. National capacity to develop indicators or deliver national assessments can often be limited by a lack of resources, technical expertise, or standardized data (see Box 1). Thus improving data collection, metrics and methods is vital to supporting adequate conservation monitoring and reporting.

Box 1. The Biodiversity Indicators Dashboard

In a study conducted by NatureServe, 132 local conservation experts from three geographically diverse regions of critical biodiversity concern (the Tropical Andes, the African Great Lakes, and the Greater Mekong) were surveyed in order to better understand the challenges to effective biodiversity monitoring at national and regional scales and investigate national perceptions of the benefits of utilising global data. Most cited benefits included the ability to: collect, share and analyse information; assess biodiversity status and threats; inform policy planning and decision making; and assess and improve conservation impacts and ecosystem services (see Figure 2).
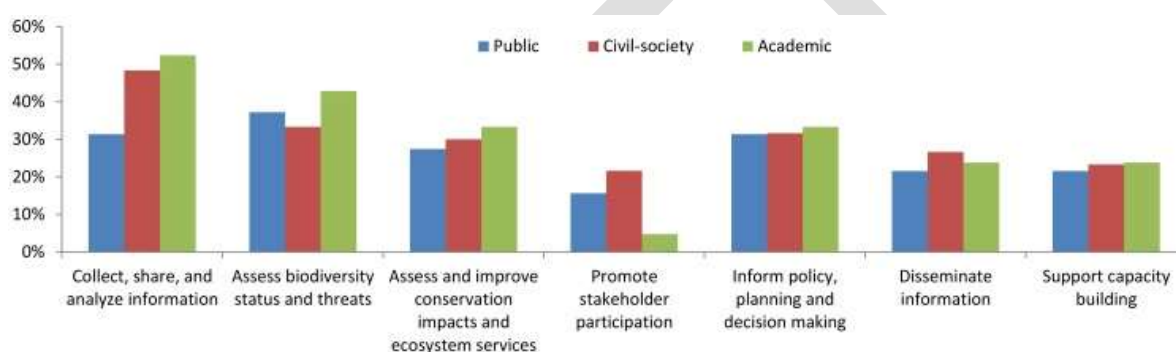

Figure 2. Perceived benefits of using global data within a dashboard approach, by sector. Number of respondent is 51 for public sector, 60 for civil-society, and 21 for academic sector.

NatureServe has created a Biodiversity Indicators Dashboard that enables users to track global indicators of biodiversity and conservation performance.

As a proof-of-concept, initially the global datasets were disaggregated to the regional and national level, in a clear, user-friendly format. The four indicators measure:
- Pressure on biodiversity (deforestation rate)
- State of species (the IUCN Red List Index)
- Conservation response (Key Biodiversity Areas)
- Benefits to human populations (freshwater provision)

Additional Indicators of disaggregated global datasets or regional generated are further developed through Biodiversity Indicators Dashboard and can be visualized at
http://dashboard.natureserve.org

The Dashboard analyses three regions—the tropical Andes, the Great Lakes of Africa, and the Mekong River Valley—and their component countries (see Figure 3). These visualizations include charts that show regional and national trends in biodiversity. The tool helps: track progress toward the Aichi Targets; supports national monitoring and reporting; informs outcome-based policy-making that protects natural resources and allows for direct comparison between countries within the three focal regions.

Figure 3. Screenshot of Biodiversity Dashboard

Source: Xuemei, H., Smyth, R.L., Young, B.E., Brooks, T.M., Sánchez de Lozada, A., Bubb, P., Butchart, S.H.M., Larsen, F.W., Hamilton, H., Hansen, M.C. & Turner, W, R. (2014). A biodiversity indicators dashboard: Addressing challenges to monitoring progress towards the Aichi Biodiversity Targets using disaggregated global data. PLOS One DOI: 10.1371/journal.pone.0112046

National level data play a significant role in supporting analyses that track national progress towards the global Aichi Targets. Consequently, where national biodiversity information is fragmented between different national agencies, monitoring and reporting on conservation efforts is hindered. In cases where national level data has been aggregated in order to create a global indicator (see Table 1), it may be that the corresponding national level data holders are not well connected to the NBSAP or national reporting process. For example, during an assessment of the fourth national reports (4NR)[5], it was found that the 'Extent of forests and forest types' indicator was used in the 4NR by only 50 countries, despite many more than this having reported these data to the FAO Forest Resource Assessment.

Many (insert number, Table 1) of the global indicators under the BIP are aggregated from national level data, and therefore contain a wealth of data that can be utilised to support NBSAP implementation and national reporting requirements. In some cases indicators aren't directly aggregated from global level data and it is possible to disaggregate them to the national level. Accessing global datasets in order to identify where these data may originate from can assist in the integration of these national datasets, however this is not purely a technical issue. Political sensitivities and willingness, as well as poor linkages between national government departments, agencies and institutions, all play a part in limiting the sharing and use of national datasets[6]. There is a growing body of evidence around these more complex issues within the environmental sector. This Roadmap intends to demonstrate ways in which the global indicators and datasets brought together

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[5] Bubb, P., Chenery, A., Herkenrath, P., Kapos, V., Mapendembe, A., Stanwell-Smith, D., and Walpole, M. (2011) National Indicators, Monitoring and Reporting for the Strategy for Biodiversity 2011-2020. UNEP-WCMC: Cambridge, UK
[6] UNEP/CBD/COP/11/INF/8

under the BIP can support national reporting processes, including creating awareness of where national level datasets exist under the global indicators.

Despite global and national biodiversity indicators often being intended for different users and purposes[7], there are global indicators and/or datasets available that can fill gaps in information at the national level, depending upon where indicator data originates from. Utilising these datasets provides opportunities support for national indicator development, national reporting, and NBSAP updating and implementation (see Table 1). This section will highlight real world examples to illustrate the following benefits that can be provided by utilising global indicators and datasets at the national level:

1. Assisting in the ability to report on progress towards global targets
2. Providing consistent, reliable information for decision making
3. Complementing national datasets
4. Addressing capacity issues

Assisting in the ability to report on progress towards global targets

Despite many countries being able to utilise different approaches to report on national-level progress towards the Aichi Biodiversity Targets (reference the national approaches doc for AHTEG). Challenges still existed for many countries in making complete reports of progress towards the Aichi Targets when compiling their fifth national reports (5NR). In an assessment of 64 submitted 5NR, undertaken during the preparation of the Fourth Edition of the Global Biodiversity Outlook, just over 40% did not explicitly assess national progress towards the Aichi Targets. The CBD Secretariat updated these figures in June 2015 to include analysis of an additional 67 5NR – Figure 3 shows the percentage of these reports that did not contain information, even of a qualitative nature, to allow for an assessment of progress towards individual Aichi Targets.
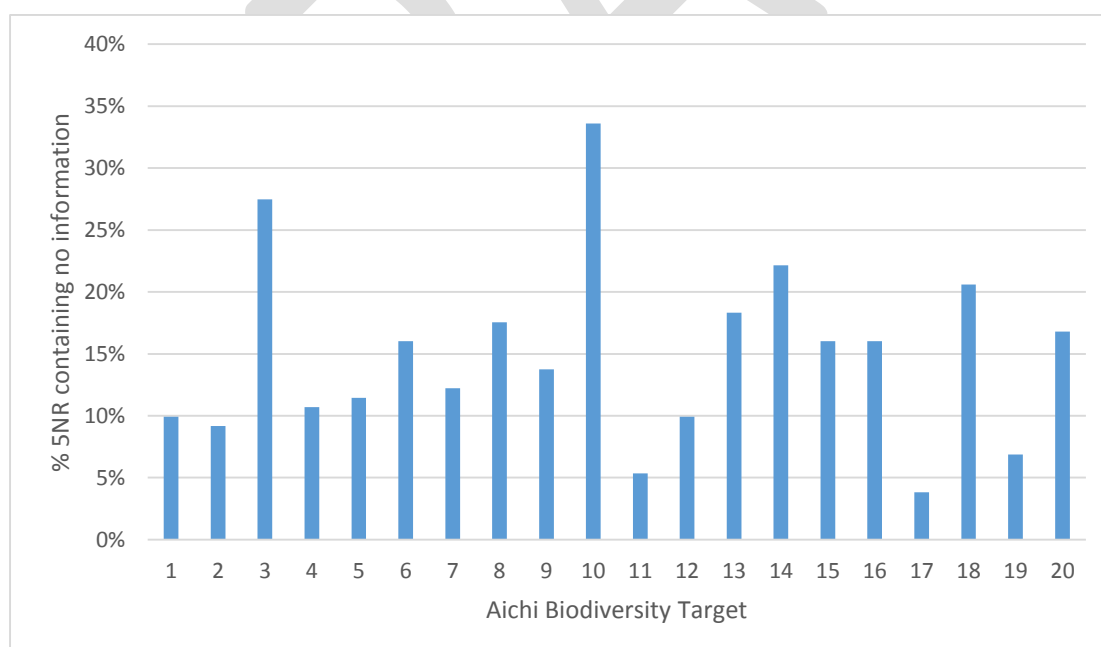

Figure 3. Percentage of Fifth national reports containing no information on assessment of national progress towards individual Aichi Targets. Source sCBD, 2015.

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[7] Bubb, P., Chenery, A., Herkenrath, P., Kapos, V., Mapendembe, A., Stanwell-Smith, D., and Walpole, M. (2011) National Indicators, Monitoring and Reporting for the Strategy for Biodiversity 2011-2020. UNEP-WCMC: Cambridge, UK

There are currently 34 indicators available from the BIP global indicator suite that are ready for use in a number of ways (see section 2) to support assessments at the national level (see Table 1). These cover 17 of the 20 Aichi Targets, including Targets 10, 14 and 18 which have often proved challenging for countries. The BIP global indicator partners have stated that they would be interested in supporting national stakeholders in reproducing their respective indicators at the national level; the ways in which this can be achieved are elaborated on in Section 3 - *How can the global indicators or underlying data be used to support National Reporting and/or NBSAP updating and implementation*?

Standardising monitoring systems

Global indicators and datasets could be usefully applied at the national level in order to standardize conservation monitoring systems both across, and within, countries. Most existing monitoring programs have been designed primarily at localized scales, and often produce information that is disaggregated, heterogeneous, and non-standardized when considered at national or regional scales[8]. The standardisation of data and metadata would also allow for compatibility with larger datasets. On a regional and global scale, the use of a range of different metrics also makes comparisons difficult. Therefore using common indicators and applying common methodologies (taking into account varying country contexts) contributes to greater comparability[9]. The Wild Bird Index is an example of an indicator methodology applied at the national, regional and global level (see Box 2).

Box 2. The Wild Bird Index

Birds are recognised as good indicators of environmental change and as useful proxies of wider changes in nature. The Wild Bird (WBI) measures average population trends of a suite of representative wild birds, as an indicator of the general health of the wider environment. WBIs deliver scientifically robust and representative indicators for birds to support formal measurement and interpretation of national, regional and global targets to reduce, or halt, the rate of biodiversity loss.

The WBI project aims to promote and encourage the development of WBIs from national population monitoring schemes. Where such schemes already exist, it will coordinate and facilitate the collation of bird species' data and the generation of indices and indicators. Where there are none, it will provide tools and support to implement similar data collation and synthesis in a representative set of countries across regions, with the funds available to the project.

The Wild Bird Index was approved in October 2004 by the European Commission as one of the official structural indicators for changes in EU member states. In order to assess and report on the state of agricultural areas, Poland used an aggregated index of common farmland bird species population abundance in their fifth national report[10]. A general long-term decreasing trend was found (Figure 5), tentatively attributed to factors related to the intensification of agriculture, such as the accumulated and/or delayed effects of increasing agricultural engineering. WBIs are being used at the national level in at least 25 other European countries, including Austria, Belgium (Wallonia), Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece,

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[8] Han X, Smyth RL, Young BE, Brooks TM, Sánchez de Lozada A, et al. (2014) A Biodiversity Indicators Dashboard: Addressing Challenges to Monitoring Progress towards the Aichi Biodiversity Targets Using Disaggregated Global Data. PLoS ONE 9(11): e112046. doi:10.1371/journal.pone.0112046

[9] Scott, A., Lucci, P. & Berliner, T. (2015). Mind the gap? A comparison of international and national targets for the SDG agenda. Overseas Development Institute: London.

[10] https://www.cbd.int/doc/world/pl/pl-nr-05-en.pdf

Hungary, Ireland, Italia, Latvia, Luxembourg, Netherlands, Norway, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, and UK.

FIGURE 15. COMMON FARMLAND BIRD POPULATION ABUNDANCE INDEX (FBI 23)
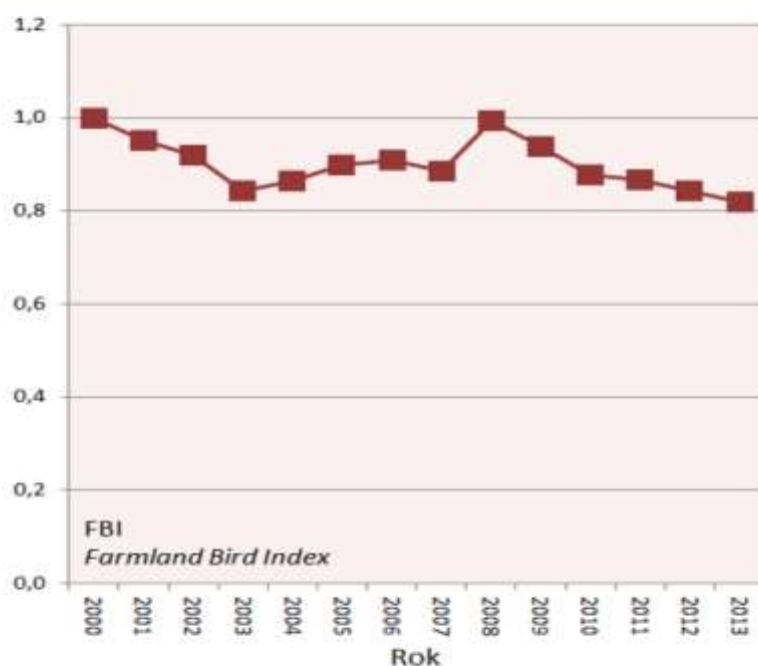
Source: CIEP (2014)

Figure 5. Poland's common farmland bird population abundance index (Source: Poland Fifth national report)

A regional WBI for Europe has already been produced and is being used to measure progress towards the headline target of the new EU Biodiversity Strategy to 2020 - Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss[11]. WBIs have also recently been published for North America, and these two aggregated indices were combined to produce status and trends information towards global achievement of Aichi Target 5 for the fourth edition of the Global Biodiversity Outlook (Figure 6).

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[11]http://ec.europa.eu/environment/nature/info/pubs/docs/brochures/2020%20Biod%20brochure%20final%20lowres.pdf
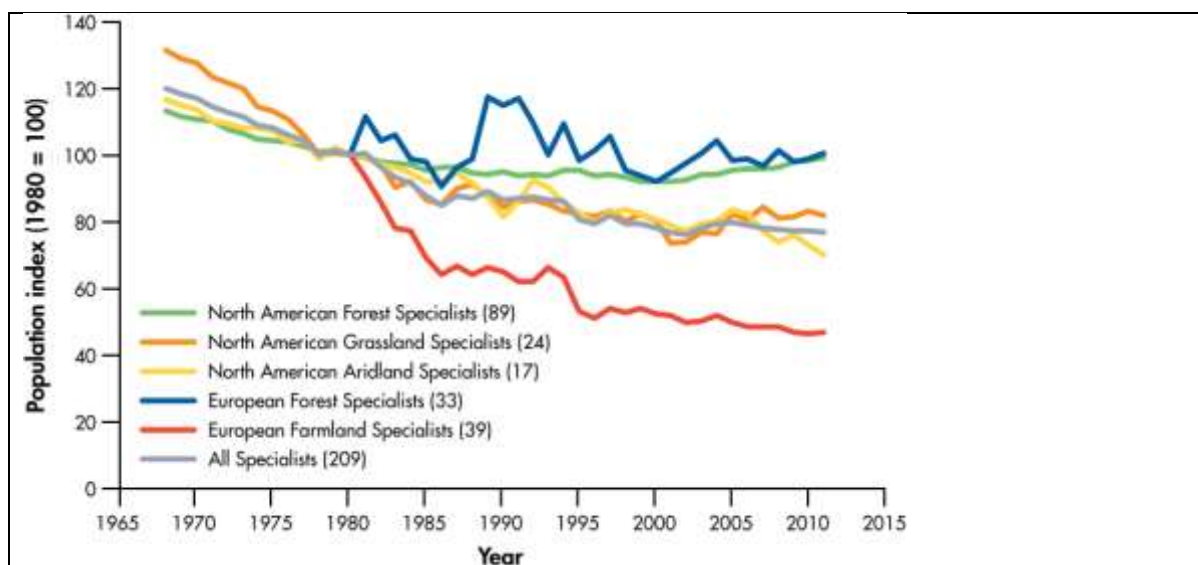
Figure 6 The Wild Bird Index for 209 habitat-specialist bird species in Europe and North America, showing the average population trends of specialist birds have declined by more than 20% since 1980, based on continental-scale systematic surveys and monitoring schemes. Sources: EBCC/RSPB/BirdLife/Statistics Netherlands; Sauers et al. (2014).

Wild Bird Index initiatives have begun in Africa (particularly in Botswana, Kenya and Uganda), Australia and China. The Global Wild Bird Index, will be comprised of these aggregated national level indexes and will continue to expand, hopefully into a truly global indicator.

For more information about producing regional and national Wild Bird Indices, contact Richard Gregory (RSPB; Richard.Gregory@rspb.org.uk) and/or Ian Burfield (BirdLife International; Ian.Burfield@birdlife.org).

Consistent reliable information for decision making

In addition to reporting on progress towards international Multilateral Environmental Agreements (MEAs) such as the CBD, indicators can be used to highlight priority areas to be addressed through government policy making and implementation. National level indicators can allow policy makers to be more sensitive to changes in the natural environment, and to continually increase the efficacy of biodiversity management interventions[12]. Limited availability of data for the production of national indicators impedes the ability of policy makers to adequately account for biodiversity within their processes. Therefore, where indicators are lacking, science and policy remain disconnected.

Global indicators and datasets can offer consistent, reliable and cost-effective information for countries to report on progress towards meeting specific conservation targets. Available data from satellite remote sensing, for example, could be used to monitor progress on national and international targets. Web-based global datasets can provide policy-makers, decision-makers and planners, with reliable and accessible information. However national level capacity to verify and use these data, together with issues around political will, can make the integration of global datasets problematic. Global indicator developers have taken steps to support national level application of global indicator methodologies as tools for translating national data into indicators for policy and decision making (Box 3).

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[12] https://www.cbd.int/indicators/intro.shtml

Box 3. Use of the Ecological Footprint in national decision making

The Ecological Footprint tracks an important element of human pressure on the biosphere: demands for the limited supply of the Earth's renewable resources. The National Footprint Accounts measure overall national consumption levels of provisioning and regulatory ecosystem services, and in parallel measure the national capacity to supply these services.

Ecological Footprint and biocapacity values have been published for more than 200 nations as part of the National Footprint Accounts produced by Global Footprint Network since 2003. A new edition of the National Footprint Accounts is independently calculated by Global Footprint Network and released every year: the most recent edition of the NFA accounts (the NFA 2015 edition) covers the period 1961-2011.

Two governments are currently using the Ecological Footprint as a policy and decision-making tool for accounting resource consumption and pressure generation: the United Arab Emirates developed a Footprint scenario tool to assist in the development of science-based policies, while Ecuador became the first country to set a specific Footprint reduction target into its National Development Plan, that its Footprint be within its biocapacity by 2013. For more information on the various national applications of the Ecological Footprint visit: http://www.footprintnetwork.org/en/index.php/GFN/page/ten_in_ten_campaign/

Complementing national systems and contextualising national observations.

National biodiversity practitioners may have concerns over the quality of global indicators and datasets, particularly their geographical and temporal coverage and the sensitivity of the indicators/datasets to respond to national level changes. Where national information is limited or missing, global datasets can supplement national datasets in order to monitor biodiversity and assess progress towards meeting conservation targets. It is important to recognize that global datasets will not replace local or national data and on-the-ground data may still be required to complement and validate global measures. Supplementation of national datasets with global systems can also contribute to supporting national reporting efforts (Box 4 and 5).

Box 4. Costa Rica use the IUCN Red List in combination with national systems.

Costa Rica have been using the **IUCN Red List** in addition to, and in combination with, their national datasets to identify species present in Costa Rica that are among the threatened species of the IUCN Red List - including birds, mammals, corals and amphibians. In 2010 and 2014 Costa Rica held workshops with IUCN and partners to build on past reviews/data collections and update the IUCN Red Lists for amphibians and reptiles in Costa Rica and update their main national dataset. They used preliminary results to report and included a case study on Costa Rica's amphibians in their 5th national report to the CBD.

Source: https://www.cbd.int/doc/world/cr/cr-nr-05-es.pdf

Box 5. IUCN Red List to supplement the New Zealand Threat Classification System

New Zealand uses information from the **IUCN Red List** to supplement their national threat classification system by including references to the IUCN Red List categories for introduced and naturalised, migrant, vagrant and coloniser species found in the New Zealand Threat Classification System. For example, if an 'Introduced and Naturalised' taxon is threatened in its native range, then the relevant Red List category and source are shown after the taxon's name in the New Zealand list. Current examples of this include the southern bell frog (*Litoria raniformis*), which is listed as 'Endangered' in Australia; and the parma wallaby (*Macropus parma*), which is listed as 'Lower Risk/Near Threatened' there. These taxa are thus listed as: southern bell frog (*Litoria raniformis*) Introduced and Naturalised Threatened Overseas (TO), EN A2ae (IUCN 2006); and parma wallaby (*Macropus parma*) Introduced and Naturalised Secure Overseas (SO), LR/nt (IUCN 2006). More detail and examples can be found in the New Zealand Threat Classification System Manual http://www.doc.govt.nz/documents/science-and-technical/sap244.pdf.

Helping alleviate capacity issues

Biodiversity monitoring involves data-intensive and science-driven processes, yet there are capacity gaps in terms of generation, management and dissemination of information at the national level that need to be addressed. Countries face a number of challenges that impact effective conservation monitoring and reporting. These challenges include: lack of technology; limited financial resources (resource allocation); lack of personnel (staff on-the-ground, technical knowledge, processing expertise); limited access to information; and interoperability issues. In terms of data sharing, some of the challenges include the cost of acquiring data, data processing and access policies. CBD Parties are encouraged to use available global datasets as well as sharing their own data in order to harmonise monitoring systems. Global indicators and datasets, which in some cases are derived of national-level data, may assist countries to bypass national capacity barriers and provide valuable information to monitor progress and inform conservation policy. In turn, global indicator developers can usefully assist countries with data management, standardised scientific methods, data analysis, and indicator development (Box 6 and Box 7).

Box 6. The Ocean Health Index Toolbox

The *Ocean Health Index* indicator measures the current status and likely future state of ten public goals for marine ecosystems. For each goal the index assesses the current state relative to a reference point, recent trends in the current status, cumulative negative pressures on the goal, and existing ecological and social attributes and institutions that provide resilience.
The Index enables scientists, managers, policy makers, and the public to better and more holistically understand, track, and communicate the status of local marine ecosystems, and to design strategic management actions to improve overall ocean health. By balancing information across the ten goals, the Ocean Health Index integrates the social and environmental linkages that can be useful to inform decision-making. It can also serve as a baseline reference against which to measure progress.

The Ocean Health Index framework can be used by anyone to conduct independent assessments at any spatial scale. To facilitate this, the Ocean Health Index developers provide freely-available instruction and a 'Toolbox' to organize data and calculate scores. In the spirit of collaborative, transparent, and reproducible science, the OHI Toolbox was developed with open-source tools: for example, all files are organized and shared with GitHub and calculations are done in R.

Communication has been a pillar of OHI, and as part of the Toolbox they have developed interactive displays to visualize data and scores. There is a website for nearly every coastal nation with data from the global assessment isolated so it is possible to explore data used in the global assessment. However, the primary utility of these website is for nations conducting their own OHI assessments; this is a place where groups can visualize how their own local data fits into the OHI framework and what calculated scores look like on an interactive map. For example, see the website for Spain: http://ohi-science.org/esp

Further information, guides, and media resources for conducting an OHI assessment can be found at:
http://www.oceanhealthindex.org/ohi-plus/
http://ohi-science.org/
https://vimeo.com/oceanhealthindex

Box 7 - Guyana - Involving international organisations in the NBSAP revision process

The process of revising and updating Guyana's previous NBSAP (2007-2011) involved aligning the new NBSAP (2012-2020) with the National Vision, the CBD Strategic Plan for Biodiversity (2011-2020), and the Aichi Targets. This process comprised: extensive desktop reviews of documents; a stocktaking exercise; national consultations; and meetings with key sector stakeholders, international and national NGOs and the private sector.

60 persons from 28 different institutions attended an NBSAP review workshop representing international development organisations, international NGOs, international financial institutions, Caribbean regional institutions, government ministries and agencies, national NGOs, indigenous organisations and communities, private sector, local government and national legal institutions. The inclusion of this wide range of stakeholders allowed the NBSAP team to receive detailed feedback on the draft NBSAP in order to formulate nine strategic objectives.

Recognising the important role that international organisations can play, strategic objective five directly supports to the creation of stronger and wider national, regional and international partnerships that contribute to achieving the goal and objectives of the NBSAP. Together with this, one of the priority areas for action during the NBSAP 2012-2020 is stated as the:

> *Compilation and consolidation of biodiversity data from local, international and web-based sources including traditional knowledge and development of a database system for biodiversity which makes data freely available to users.*

Source: Guyana NBSAP https://www.cbd.int/doc/world/gy/gy-nbsap-v3-en.pdf

Section 3 - How can the global indicators or underlying data be used to support National Reporting and/or NBSAP updating and implementation?

There are several different ways that global indicators and/or datasets can be used in our National Reporting and/or NBSAP updating and implementation:

1. **Reproducing** a global indicator at national level.
2. Applying global indicator **methodologies** at the national level.
3. **Utilising underlying datasets** for the development of national level indicators, expert assessments, etc.

This section highlights examples of how each of these methods can be realistically applied at the national level. Specific advice for NBSAP planning and implementation is also included within this section.

Reproducing a global indicator at national level.

Reproducing the global indicators at the national level can allow countries to use proven methodologies to analyse national data, or to utilise disaggregated data from global datasets. For example, the Living Planet Index (LPI) is not only a global index but can also be calculated for regions and nations, provided there are sufficient data available. LPIs have been produced for a number of different regions and countries including Uganda, Canada, the Mediterranean Wetlands and the Arctic (see Box 8).

Box 8 The Living Planet Index for Uganda

The Living Planet Index (LPI) is an indicator of change in global biodiversity based on change in abundance of vertebrate populations from all around the world. Biodiversity is perhaps most widely understood at the species level, so as a measure of trends in species abundance the LPI has a high degree of resonance with decision makers and the public and links clearly to ecological process and ecosystem function.

The global LPI database can be disaggregated for subsets of data to:
- show trends in population abundance for particular taxonomic groups;
- show trends in population abundance for species in particular habitats or biomes;
- identify regions and ecosystems where the abundance of populations is changing most rapidly;
- explore trends in abundance of populations for species impacted by different threat processes;
- monitor population trends in species listed on conventions such as CITES or CMS.

Makerere University in Uganda has been producing 'State of Uganda's biodiversity' reports since 1998 (Pomeroy *et al*. 2006), using the LPI method to analyse trends and providing a regular input of data into the LPI database. Despite Uganda's recurring political and economic problems over the last four decades, monitoring of at least some species (mainly large savannah ungulates but also some forest primates and wetland species), has been undertaken since the 1960s. From these limited data sets, it has been possible to construct a series of indices using the LPI method, showing the decline in the abundance of certain species in the country's natural ecosystems from 1970 to 2004. The Living Planet Index for Uganda combines the trends from the species population indices of Uganda's forests, freshwaters and savannahs. The savannah data set is relatively extensive, comprising whole-country estimates for populations of 16 species of large mammal, while the data sets for forests and freshwater are smaller and less comprehensive (five and four species respectively.

Figure 2: The Living Planet Index for Uganda 1970-2004, showing the disaggregated bird and mammal indices
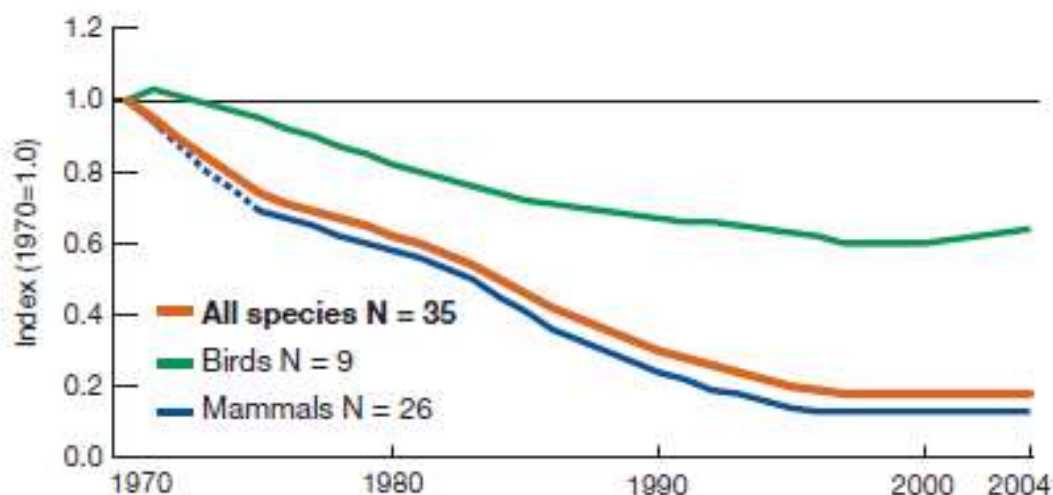
At present, data submitted by nations and regions must be sent directly to the responsible organisations for the LPI, WWF International and ZSL. Work has now been completed to make the database available online in the form of the Living Planet Database (www.livingplanetindex.org) with a view to encourage nations and regions to submit their data to produce both their own indicators and strengthen the global indicator.

Source: McRae, L., Loh. J., Bubb, P.J., Baillie, J.E.M., Kapos, V., and Collen, B. 2008. The Living Planet Index - Guidance for National and Regional Use. UNEP-WCMC, Cambridge, UK.

Applying global indicator methodologies at the national level.

Easy access to biodiversity datasets for monitoring and reporting is needed at multiple scales. However, there are a number of methodological and logistical challenges in regards to the collection, sharing and analysis of data. Applying the peer-reviewed methodology of a global indicator, such as the Red List Index (see Box 9), to nationally derived data can assist in the production of robust indicators at the national level.

Box 9 The Red List Index: Australia

The global Red List Index (RLI; see factsheet #XX) can be disaggregated for use at the national level. However, using the peer-reviewed RLI methodology to calculate a national RLI from national scale assessments of extinction risk can provide a more sensitive measurement of biodiversity loss. Assessing extinction risk at a finer spatial scale allows for a more sensitive metric of the changing status of species.

National-scale assessments were undertaken in Australia in 1990, 2000 and 2010 and the IUCN Guidelines for Application of IUCN Criteria at Regional Levels were followed in order to evaluate trends in the extinction risk for birds nationally.

The results of this study determined that many of the genuine deteriorations in the status of species were driven by factors outside Australia, indicating that enhanced international cooperation would be necessary to halt these national level trends in biodiversity loss.

This study also demonstrated that the calculation of the RLI at the national level is a valuable addition to national biodiversity benchmarking.

For more information see:
http://www.nationalredlist.org/support-information/case-studies/case-study-australia/
http://www.iucnredlist.org/documents/reg_guidelines_en.pdf

Source: Szabo, J.K., Butchart, S.H.M., Possingham, H.P. and Garnett, S.T. 2012. Adapting global biodiversity indicators to the national scale: a Red List Index for Australian birds. Biological Conservation 148(1): 61–68. DOI: 10.1016/j.biocon.2012.01.062.

Utilising underlying datasets for the development of national level indicators, expert assessments, etc.

Many the global indicators are derived from national level data. This data can be utilised by countries for a number of reasons, the development of national level indicators using nationally derived methodologies, to support expert assessments, etc. (see Box 10).

Mozambique uses FAO global datasets to assess progress towards Aichi Target 5

In their assessment of progress towards achievement of the Aichi Targets, Mozambique included information on targets set during the NBSAP 2003-2010 that are in line with the Aichi Targets. A traffic light colour coding system was used to show the level of achievement towards each target. Eight targets are marked in red (not achieved or very low probability of being achieved), including Aichi 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.* The assessment of Mozambique's progress towards Aichi Target 5 uses information derived from FAO global datasets to illustrate that forest cover has been reducing in Mozambique:

I. According to FAO (2005) there was a reduction in the extension of areas of natural forests and other woody formations from 62,431,000 hectares in 1990 to 60,181,000 hectares in 2005.

II. The rate of forest conversion was in 1990 of 219 000 hectares/year and reduced to 211, 400 hectares/year in 2010 (FAO 2010).

Source: Mozambique Fifth national report

Specific advice for NBSAP planning and implementation

There are seven key steps recommended for the preparation or updating of an NBSAP (see Figure 1). Each of these steps can act as points of entry for the use of global indicators or their underlying data. Nearly all of the seven steps in NBSAP development and implementation require the use of biodiversity data in one format or another. However, challenges exist where national level data is lacking or unavailable. Global datasets can provide opportunities to fill national and regional data gaps, contextualise national observations and support development and implementation of NBSAPs. Important considerations at each step will be presented in this section.

Step One: Getting Organised
Important considerations…

- Review the existing NBSAP and consider where global indicators and/or underlying datasets could be incorporated. Weigh up any perceived constraints such as resource availability and capacity requirements against the recognised benefits of including such data in the revised NBSAP. This will also provide decision makers with the opportunity to effectively channel resources into addressing any identified knowledge gaps for national priorities.
- Identify national and international organisations with access to relevant global indicators and underlying data early on in order to formulate an appropriate data management plan.

Step Two: Engaging and communicating with stakeholders
Important considerations…

- Seek the advice of experienced individuals within organisations such as research institutes and Non-Governmental Organisations (NGOs).
- Bring together identified stakeholders to share knowledge and experience with regards to utilising global indicators and underlying datasets. This in turn can lead to the harmonisation of efforts and reveal further opportunities for cross-sectoral activities among organisations.

Step Three: Gathering information
Important considerations…

- Don't be afraid to highlight what is not known. If scientific information is lacking, use appropriate global indicators and datasets to fill these gaps. Some global indicators provide trends at national and local levels, others may need to be integrated with national data.
- Spatially explicit global data can be used to inform regional planning and prioritisation, and globally-derived measures can be validated with national and local monitoring.

Step Four: Developing strategies and actions
Important considerations…

- Think about long-term goals and priorities and how global datasets might inform specific strategies. Identify key actors that can aid in the achievement of these goals.
- Develop targets in conjunction with comprehensive stakeholder engagement and scientific knowledge to ensure they are based on accurate and up-to-date information from the national to global scale. This will ensure the targets produced are realistic and achievable within the given time-scale.
- Include the investigation of available global indicators and datasets into the strategy.

Step Five: Developing implementation and resource mobilisation plans

Important considerations…

- Continue to engage relevant stakeholders, specifically considering the key actors that will be involved in mobilising global indicators and underlying datasets.
- Develop realistic timelines. The application of existing global indicators and datasets that can over a short time-scale in order to provide a 'quick win' in terms of NBSAP implementation. The incorporation of more sophisticated global indicators and datasets can then be planned for the long-term implementation, monitoring and achievement of national targets.
- Incorporate global indicators and datasets as they can not only inform a robust baseline assessment, but can also play an integral role in an effective monitoring plan. The development of a set of relevant indicators based on utilising robust global data ensures consistency in monitoring and reporting against national and international obligations.

Step Six: Implementing the NBSAP

Important considerations…

- Leverage the capacities of the stakeholders and advisors involved in the NBSAP development process, particularly those with experience in the utilisation of global indicators and datasets.
- Include, when estimating the costs of implementing the NBSAP, the potential gains that can be made by utilising global indicators and datasets for delivering the NBSAP outcomes. This can support resource mobilisation by putting resource requirement into context, attracting attention and engaging possible funders.

Step Seven: Monitoring and reporting

Important considerations…

- Consider using appropriate global indicators and datasets in National Reports to support the outcomes and achievements highlighted within the report. Global indicators may be replicated at the national level to track progress towards meeting specific targets
- Use global datasets and maps to compare findings over spatial and temporal scales. This makes the adaptation of priorities a simple, clear-cut process whereby areas of success can be easily distinguished from regions which require further work.

Section 4. What global indicators are currently available from the BIP suite that can be utilised at the national level, how are they accessed and what options are available for their use?

Following a review of the current suite of BIP global indicators and underlying datasets, it was found that 34 of the BIP global indicators are available for use at the national level. These indicators cover 17 of the 20 Aichi targets and can be readily used to support national reporting processes.

Table 3 shows information for each of these indicators and datasets, including:

- Strategic goal
- primary and secondary Aichi Targets
- Indicator type (State, Pressure, Response)
- Sampling dates
- Scale
- Availability of data

All BIP global indicator partners have confirmed that, where possible, they would be interested in supporting national stakeholders in reproducing their respective indicators at the national level. The following indicator/dataset factsheets have been produced as a quick reference guide for biodiversity practitioners to show which indicators and underlying datasets are currently available that can be utilised at the national level. The factsheets contain information on: corresponding Aichi Targets; indicator type (state, pressure, response); sampling dates; scale currently used; level of disaggregation available; if there are any associated datasets; how to access the data; and current availability of the datasets. These characteristics are displayed using a series of icons:

Icons	Description	Icons	Description
	Aichi Target number	*Availability*	
Indicator Type			Online
	State		pdf
	Pressure		Excel
	Response		
Access			
	Freely available for non-commercial use		
	Available with agreements		
	Please contact provider		

Table 3. Global indicators available for use at the national level.

Strategic Goal	Global indicator	Aichi Target	Secondary Aichi Targets	Indicator type	Sampling dates	Aggregated from national or sub-national level data	Geographical range	Availability
A	Biodiversity Barometer (Page XX)	1		Response	2009-2015	Yes	National, sub-global and global	Downloadable online
A	Ecological Footprint (Page XX)	4		Pressure	1961-2011	Yes	National, regional and global	Downloadable online
B	Extent of Forests and Forest Types (Page XX)	5		State	1990-2010	Yes	National, regional and global	Downloadable online
B	Marine Trophic Index (Page XX)	6		Pressure	1950-2006	Yes	National, regional and global	Downloadable online
B	Marine Stewardship Council Certified Catch and Fishery Improvements (Page XX)	6	4	Response	1999-2015	Yes	National, regional and global	Contact
B	Area of Forest Under Sustainable Management: Certification (Page XX)	7		Response	1995-2015	Yes	National, regional and global	Downloadable online
B	Loss of Reactive Nitrogen to the Environment (Page XX)	8		Pressure	2001-2012	Yes	National and regional	Online
B	Nitrogen Deposition (Page XX)	8		Pressure	1860-2015	No	National, sub-national, regional and global	Contact
B	Water Quality Index (Page XX)	8		State	1931-2007	?	National and global	Contact
B	Adoption of National Legislation Relevant to the Prevention or Control of Invasive Alien Species (Page XX)	9	5, 10, 11, 12, 17	Response	2010	Yes	National, regional and global	Excel csv

Strategic Goal	Global indicator	Aichi Target	Secondary Aichi Targets	Indicator type	Sampling dates	Aggregated from national or sub-national level data	Geographical range	Availability
B	Trends in Invasive Alien Species Vertebrate Eradications (Page XX)	9	5, 10, 11, 12, 17	Response	1900-2014	No	National, regional and global	Online database
B	Trends in Numbers of Invasive Alien Species Introduction Events (Page XX)	9		Pressure	1900-2014	No	National, regional and global	Excel csv
B	Cumulative Human Impact on Marine Ecosystems (Page XX)	10	4, 5, 6, 12, 15, 19	Pressure	2008-2013	Yes	National, regional and global	Downloadable online
C	Coverage of Protected Areas (Page XX)	11	5,12,14, 17	State	1995-2015	Yes	National, regional and global	Downloadable online
C	Management Effectiveness of Protected Areas (Page XX)	11		Response	1990-2014	Yes	National, regional and global	Varies
C	Protected Area Overlays with Biodiversity (Page XX)	11	5,12	Response	1872-2014	Yes	National, regional and global	Contact, online
C	Global Wild Bird Index (Page XX)	12	5, 7	State	1961-2011	Yes	National and regional	Downloadable online
C	Living Planet Index (Page XX)	12	5, 6, 7, 8, 9, 10, 11,14	State	1970-2014	in some cases	National, regional and global	Online
C	Red List Index (Page XX)	12	4,5,6,8,9,10,11,14	State	1980-2012	in some cases	National, regional and global	Online
C	Wildlife Picture Index (Page XX)	12	4, 5, 7, 10, 11, 15	State	2007-2015	Yes	National, regional and global	Online
C	Genetic Diversity of Terrestrial Domesticated Animals (Page XX)	13		State	2000-2014	Yes	National, regional and global	Online
D	Red List Index (species used for food and medicine) (Page XX)	14	4, 6, 12	State	1978-2010	in some cases	National, regional and global	Downloadable online, Contact

Strategic Goal	Global indicator	Aichi Target	Secondary Aichi Targets	Indicator type	Sampling dates	Aggregated from national or sub-national level data	Geographical range	Availability
D	Nutrition Indicators for Biodiversity (Page XX)	14		State	2007-2014	Yes	National, sub-national, regional, sub-global and global	Online database
D	Ocean Health Index (Page XX)	14	1, 4, 5, 6, 7, 10, 12, 15	State	2012-2013	Yes	National, regional and global	Downloadable online
E	Index of Linguistic Diversity (Page XX)	18		State	1970-2010	Yes	National, regional and global	Downloadable online
E	Status and Trends of Linguistic Diversity and Numbers of Speakers of Indigenous Languages (Page XX)	18		State	2008-2011	??	National, regional and global	Contact
E	Number of Global Biodiversity Information Facility Records Over Time (Page XX)	19	9, 11, 12, 13	Response	2003-2015	No	National, regional and global	Downloadable online
E	Official Development Assistance Provided in Support of the Convention (Page XX)	20		Response	2007-2013	Yes	National, regional and global	Downloadable online, PDF

BIODIVERSITY BAROMETER

Aichi Biodiversity Target	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
			2009-2015	National	

What is the Biodiversity Barometer?

1

The Biodiversity Barometer indicator measures the level of public awareness of biodiversity in case study countries; an increase in the indicator represents higher biodiversity awareness rates in these countries. The indicator also measures understanding of biodiversity, through the number of people that provided correct definitions of biodiversity. This information helps to identify gaps and distinguish groups which are most in need of awareness raising activity. Although this indicator does not have global coverage yet, the indicator continues to expand each year to include additional countries.

In addition to the above, the Biodiversity Barometer looks into sources of biodiversity awareness, personal importance of biodiversity to people, expectations towards companies. These issues are however not included as BIP indicators.

Producing this indicator nationally...

The biodiversity barometer has been conducted in 16 countries over the last 5 years. These countries are: Brazil, China, Colombia, France, Germany, India, Japan, Mexico, Peru, Netherlands, South Korea, Switzerland, UK, USA and Vietnam. Biodiversity Barometer Summaries from 2009 to 2015 and original datasets are available online *http://ethicalbiotrade.org/biodiversity-barometer/*

Use at the national level...

In the core countries (Brazil, France, Germany, UK and USA), 1000 consumers per country are interviewed every year. Each year, the biodiversity barometer features one or several new countries, in which approximately 1000 consumers are interviewed. The Union for Ethical BioTrade (UEBT) plans to revisit those countries to determine the historical development of biodiversity awareness, for instance in 2015 the survey was conducted again in India.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/biodiversitybarometer

Union for Ethical BioTrade
http://ethicalbiotrade.org/biodiversity-barometer/

2

Union for Ethical BioTrade

ECOLOGICAL FOOTPRINT

Aichi Biodiversity Target	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
			1961-2011	Regional National	

What is the Ecological Footprint?

Direct anthropogenic threats to biodiversity include habitat loss or damage, overexploitation, pollution, invasive species and climate change. These direct threats are the result of more distant, indirect drivers of biodiversity loss arising from consumption of resources and the generation of waste. The ultimate drivers of biodiversity threats are human demands for food, fibre and timber, water and energy and area on which to build infrastructure. As the human population and global economy grow, so do the pressures on biodiversity.

The Ecological Footprint tracks an important element of human pressure on the biosphere: demands for the limited supply of the Earth's renewable resources. The National Footprint Accounts (NFA) measure overall national consumption levels of provisioning and regulatory ecosystem services, and in parallel measure the national capacity to supply these services.

The Ecological Footprint is currently listed as a category "C" indicator for use in monitoring Target 4 of the Strategic Plan for Biodiversity 2011–2020 as it provides a proxy measure of underlying drivers of habitat loss (directly) and biodiversity loss (indirectly) at regional and national scales.

Producing this indicator nationally...

Ecological Footprint and biocapacity values have been published for more than 200 nations as part of the National Footprint Accounts produced by Global Footprint Network since 2003. A new edition of the National Footprint Accounts is independently calculated by Global Footprint Network and released every year: the most recent edition of the NFA (the NFA 2015 edition) covers the period 1961-2011. Detailed information on the methodology used to calculate nations' Ecological Footprints as well as input data and data handling processes are reported in Galli et al., 2014.

Applied at the national level, Ecological Footprint results shows that significant biocapacity deficits (when national consumption of provisioning and regulatory ecosystem services exceeds the capacity of national ecosystems to supply these services) exist in many countries. Moreover, for many of these countries these results seem to indicate that pressure on ecosystems and the consequent habitat loss could be more effectively addressed by reducing the demand for resource provisioning and regulatory ecosystem services elsewhere.

2

Use at the national level...

As of 2005, Global Footprint Network has been running a campaign named "Ten-in-Ten" aiming to have ten national governments adopt the Ecological Footprint by 2015. The ultimate goal of this campaign is for nations to use the Footprint framework to shift policies and investments. During the past 10 years, 68 nations have engaged with the organization directly, 18 nations have completed reviews of the Footprint (many of them independently) and 13 nations have officially applied it resulting in policy and investment shits in 4 nations. Moreover, two governments are currently using the Ecological Footprint as a policy and decision-making tool for accounting resource consumption and pressure generation: the United Arab Emirates developed a Footprint scenario tool to assist in the development of science-based policies, while Ecuador became the first country to set a specific Footprint reduction target into its National Development Plan, that its Footprint be within its biocapacity by 2013. For more information on the Ten-in-Ten campaign and the various national applications of the Ecological Footprint visit: *http://www.footprintnetwork.org/en/index.php/GFN/ page/ten_in_ten_campaign/*

Future developments...

Global Footprint Network continuously improves the Ecological Footprint methodology year after year and plans to keep releasing updated annual editions of the National Footprint Accounts for world countries. As such, users can expect to rely on annual national Ecological Footprint updates, which can be used for benchmarking and monitoring human pressure on ecosystems and biodiversity.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/ecologicalfootprint

Galli, A., Wackernagel, M., Iha, K., Lazarus, E., 2014. Ecological Footprint: implications for biodiversity. Biol. Conserv. 173, 121–132.
On-line at: *http://www.sciencedirect.com/science/article/pii/S0006320713003741*

Global Footprint Network
Advancing the Science of Sustainability

Global Footprint Network

INDICATOR FACTSHEET

EXTENT OF FORESTS AND FOREST TYPES

Aichi Biodiversity Target	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
5	S		1990-2010	Regional National	

What is the Extent of Forests and Forest Types indicator?

Forests cover 30% of the total land area and include some of the most diverse ecosystems on Earth. The extent of forests is an easily understood baseline variable, which provides a first indication of the relative importance of forests in a country or region. Estimates of change in forest area over time provide an indication of the demand for land for forestry and other land uses, as well as of the impact of significant environmental disasters and disturbances on forest ecosystems.

This indicator also serves as a baseline variable in the sense that it directly or indirectly relates to the development of other forest related variables such as the diversity and abundance of species, deforestation, forest fragmentation, area of forest under sustainable management etc. However, the extent of forest is only one factor in assessing the world's forests and their contribution to the conservation of biological diversity. It is also vital to present comparable data on the different forest types, to examine forest health and look at the usage and management of these forests. Further, the net loss of forest area is not in itself sufficient to describe land-use dynamics that include both loss of forests due to deforestation and natural disasters and gains in forest area from planting or natural expansion.

Producing this indicator nationally...

The Global Forest Resources Assessments (FRA) are now produced every five years in an attempt to provide a consistent approach to describing the world's forests and how they are changing. The Assessment is based on two primary sources of data: Country Reports prepared by National Correspondents and remote sensing that is conducted by the Food and Agriculture Organization of the United Nations (FAO) together with national focal points and regional partners. Data are collected and validated at country level.

A number of guidance materials are available for national indicator developers, including:
◆ Terms and definitions
◆ FRA template
◆ Guide for country reporting for FRA 2015

These can be found at: *http://www.fao.org/forestry/fra/83059/en/*

Use at the national level...

FRA work with data sent by the National Correspondents, who are officially nominated by countries. Data are collected and validated at country level. The FRA 2015 has data since 1990.

To access the dataset and the Country Reports please visit: *http://www.fao.org/forestry/fra/en/*

Future developments...

Information on trends in the extent of forest area at national, regional and global scales for the period 1990-2000-2005 and 2010 are available; The next update will be available in 2015, as the FRA is update every 5 years.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/forestextent

FAO Global Forest Resources Assessment
http://www.fao.org/forestry/fra/83059/en/

**Food and Agriculture Organization
of the United Nations**

2

MARINE TROPHIC INDEX

Aichi Biodiversity Target	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
			1950-2006	Regional National	

What is the Marine Trophic Index?

1

The Marine Trophic Index (MTI) has been developed by the **Sea Around Us project** at the UBC Fisheries Centre, and was established to investigate the impacts of fisheries on the world's marine ecosystems. The MTI can be used to describe the complex interactions between fisheries and marine ecosystems and communicate a measure of species replacement indices by fisheries. The concept and underlying methods to estimate the MTI have been well –tested and have undergone substantial peer-review using existing information. The MTI is calculated from catch composition data collected by the Food and Agricultural Organization of the United Nations (FAO), after being spatially allocated to Exclusive Economic Zones (EEZs), Large Marine Ecosystems (LMEs) or other relevant spatial ecosystem components. The concept and approach is now widely accepted.

Producing this indicator nationally...

The MTI is available for the EEZs of every coastal country in the world and for all currently defined LMEs. Furthermore, the MTI indicator can be readily calculated and applied at different scales from global to national. For countries such as Malaysia and Indonesia, with EEZs in different basins, the MTI can be calculated for sub-national areas.

All data, including country level MTIs are available from the Sea Around Us website. For advice about the interpretation of MTIs contact the Sea Around Us Project via the 'feedback' link on the project website.

Use at the national level...

The Marine Trophic Index has been used as an indicator numerous studies at regional, national and sub-national levels, see case studies at *www.fishingdown.org*

Future developments…

The MTI has been further developed into the RMTI that will address issues of spatial expansion that are often masked by the original MTI. The new data will update older data used for every country in the world by including unreported catch data as well as major discards. RMTI to be implemented by late summer 2015 via the Sea Around Us Website (*www.seaaroundus.org*).

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/mti

Sea Around Us project
www.seaaroundus.org

UBC Fisheries Centre
www.fisheries.ubc.ca

**Sea Around Us Project,
University of British Columbia**

MARINE STEWARDSHIP COUNCIL CERTIFIED CATCH AND FISHERY IMPROVEMENTS

Aichi Biodiversity Targets	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
	R	*	1999-2015	Regional National	*

*Some catch data is available from individual fishery reports hosted on the MSC website, but to access more accurate and up to date tonnage data on a global or national basis, it is necessary to contact the MSC monitoring and evaluation team.

1

What is the MSC Certified Catch and Fishery Improvements indicator?

The Marine Stewardship Council's (MSC) Fisheries Standard comprises three core principles that every fishery in the program must meet: (1) Sustainable fish stocks; (2) Minimising environmental impacts; and (3) Effective management of the fishery.

Landings of MSC certified fish reveal trends in the number and size of fisheries which uphold these three pillars of ecological sustainability. Total MSC certified catch can be compared to the Food and Agriculture Organization of the United Nations (FAO) figures on the total wild catch of fish and marine invertebrates to gain an indication of the proportion of global fisheries that are managed to be ecologically sustainable. More broadly, this indicator points to the level of commitment to sustainability from fishers, seafood companies, government bodies, scientists, conservation groups and the public.

A critical aspect of the MSC program is that it allows fisheries that meet the standard's minimum requirements to be certified provided they commit to improvement action plans that result in best practice performance. Examples of improvements include reductions in catch to improve stock status, changes in fishing gear to minimise benthic habitat impact, or conducting a formal review of fishery management performance. Where necessary, improvements must be completed within the 5-year certification cycle, and may include a reduction in uncertainty, improvement in processes or outcomes and/or reduction in management risks. Through this process, the MSC program incentivises positive changes in global fisheries.

Producing this indicator nationally...

This indicator is produced using green weight catch data collected by accredited third party certification companies. Some catch data is available from individual fishery reports hosted on the MSC website, but to access more accurate and up to date tonnage data on a global or national basis, it is necessary to contact the MSC monitoring and evaluation team.

The total tonnage of MSC certified sustainable fish can be compared to FAO wild capture figures in order to calculate the share of global or national wild catch that is sustainably harvested.

These FAO figures can be generated on a national basis using the FAO data portal *http://www.fao.org/fishery/statistics/global-capture-production/en.* The MSC does not include catch of miscellaneous aquatic animal products or whales, seals and other aquatic mammals when calculating this indicator. FAO catch data is published two years in arrears, so the most recent MSC tonnage data is compared to global capture data that is two years out of date.

Eric Isselee/ Shutterstock.com

Use at the national level...

The MSC certified catch compared to the total wild catch of fish and marine invertebrates can be used as an indication of the proportion of national fisheries that are managed to be ecologically sustainable. More broadly, this indicator points to the level of commitment to sustainability from fishers, seafood companies, government bodies, scientists, conservation groups and the public. This indicator also allows countries to compare their national commitment to sustainable fishing to other countries using the proportion of sustainable catch figures.

2

Future developments...

There are no current plans to develop this indicator further on the global or national level. However the next update will be available in 2016.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/certifiedfisheries

Marine Stewardship Council
http://www.msc.org/

Marine Stewardship Council

INDICATOR FACTSHEET

AREA OF FOREST UNDER SUSTAINABLE MANAGEMENT CERTIFICATION

Aichi Biodiversity Target	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
			1995-2015	Regional National	

1

What is the Area of Forest under Sustainable Management Certification indicator?

Certification provides for accurate data of forest area within a country that is independently audited as being sustainably managed. The Area of forest under sustainable management: certification indicator comprises data from two international forest certification systems: the Forest Stewardship Council (FSC) and the Program for the Endorsement of Forest Certification (PEFC). The indicator measures the area of responsibly managed forests, including natural or semi-natural forests that are used to produce timber and non-timber forest products, and forest plantations. An increase in the area of PEFC and FSC certified forest represents an increase in the area for which evidence of sustainable forest management is available in terms of forest managed responsibly with respect to biodiversity conservation, including the protection of critical ecosystems, in addition to promoting the social and economic, cultural and ethical dimensions of sustainable forest management.

Producing this indicator nationally...

FSC

The data for this indicator originate from the global FSC Certificate Database which can also be filtered by country or region. As a result this indicator can be produced at national and regional levels. The FSC Certificate Database contains up-to-date information as well as public summary reports for all issued certificates, allowing to identify relevant forest sites and audit results. It is available online at: *info.fsc.org.*

PEFC

The data for this indicator originate from the global PEFC Certificate Database available at *http://treee.es/find-certified*. This data has been filtered and provides information about national level available at *http://pefc.org/about-pefc/who-we-are/facts-a-figures*

For more information about producing regional and national forest certification indicators contact the FSC International Center at *m.karmann@fsc.org* and PEFC International at i*nfo@pefc.org*

Use at the national level...

FSC

FSC's public certification reports contain info about the area of High Conservation Values (such as e.g. wetlands (Aichi Target 11) and on protected areas (Aichi Target 10) which can be drawn from each of the reports, but not in a standardized format. So with some time investment info can be collected about such features on country level – with the limitation that it would only be about those wetlands which are in the scope of the certified forest management unit. In future FSC might deliver more info about Ecosystem Services (Aichi Target 14) from (FSC certified) forests through the ForCES Program.

2

Examples in which the indicator has been used include:

◆ ITC / SSI / Standard Comparison Tools databases and reports
http://globalgovernanceprogramme.eui.eu/globalisation-database/

◆ FAO Forest Statistics (from time to time)

◆ UNEPs Vital Forest Graphics
http://www.unep.org/vitalforest/Report/VFG-21-Certification-for-sustainable-forest-management.pdf

PEFC

PEFC provides meta-standards for Sustainable Forest Management (SFM) that are used for national level indicator development/production – see *http://pefc.org/resources/technical-documentation/ pefc-international-standards-2010*

Assessment reports of national indicators developed based on the meta standard (as well as the national indicators themselves) are available at *http://pefc.org/resources/technical-documentation/ national-standards*

Future developments...

FSC

FSC's public forest management certification reports provide more information than just the area of forests certified as managed responsibly. Data about protected areas and about high conservation values can be drawn from the reports of the individual certified entities and aggregated on nation, regional or global level. More information about Ecosystem Services of forests might be available soon.

PEFC

We expect that within the next 2-3 years national forest certification systems (and therefore the indicator) will become available in more than a dozen countries (incl. Ghana, Guatemala, India, Japan, Mexico, Montenegro, New Zealand, Republic of Congo, South Africa, Thailand, Turkey, Vietnam)

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/forestcertification

**Forest Stewardship
Council**

**The Programme for the
Endorsement of
Forest Certification**

LOSS OF REACTIVE NITROGEN TO THE ENVIRONMENT

Aichi Biodiversity Target	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
8	P		2001-2012	Regional National	

What is the Loss of Reactive Nitrogen to the Environment indicator?

1

Reactive nitrogen is chemically and biologically active, and is formed via the conversion of non-reactive atmospheric nitrogen (N_2) through artificial fertilizer production and/or fossil fuel burning. Inefficient use of fertilizer and/or fossil fuels results in loss of reactive nitrogen to the environment, which contributes to climate change, the formation of high ozone concentrations in the lower atmosphere, eutrophication of coastal ecosystems, nitrification of forests, soils and freshwater streams and lakes, and loss of biodiversity.

Producing this indicator nationally...

This indicator provides the first steps in identifying the 'nitrogen status' in a country and the possible consequences that might have to biodiversity through the loss of nitrogen to air, water or soil. Guidance documents for producing this indicator at the national level will become available soon through the International Nitrogen Initiative (INI) website (*www.initrogen.org*).

Use at the national level...

The indicator has been used during the compilation of 'The State of Biodiversity in Africa' report – due for publication in 2015 by the United Nations Environment Programme (UNEP).

Future developments...

An update is foreseen with respect to additional years, so a trend in nitrogen loss can be produced on a regional and national level.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/nitrogenloss

International Nitrogen Initiative
http://www.initrogen.org/

Nitrogen Footprint
http://www.n-print.org/

International Nitrogen Initiative

Nitrogen Footprint

2

INDICATOR FACTSHEET

TRENDS IN INVASIVE ALIEN SPECIES VERTEBRATE ERADICATIONS

Aichi Biodiversity Targets	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
			1900-2014	Regional National*	

*Island nations

What is the Trends in Invasive Alien Species Vertebrate Eradications indicator?

Islands are the epicenter of the current global extinction crisis and invasive vertebrates are the leading cause of extinction on islands. Removing invasive vertebrates from islands is a well-established tool to protect and restore island ecosystems and prevent extinctions.

The Database of Island Invasive Species Eradications compiles all of the historical and current invasive vertebrate eradications on islands. Data from each project includes information on the island, methods used in the eradication and contact information for people knowledgeable about the eradication.

Producing this indicator nationally...

Eradication and removal of invasive vertebrate pests from Island countries protects biodiversity and prevents extinctions of threatened native and endemic species. A national level indicator will measure the commitment of the country to protect both globally and nationally threatened native and endemic species that occur in that country and their vulnerable habitats. Data from the Database of Islands and Invasive Species Eradications *http://diise.islandconservation.org/*, developed by Island Conservation, Coastal Conservation Action Laboratory University of California at Santa Cruz, IUCN SSC Invasive Species Specialist Group, University of Auckland and Landcare Research New Zealand was used in the development of this indicator. As of June 2014, the DIISE had 1,847 eradication records.

Use at the national level...

A disaggregated dataset was used in the development of the State of Conservation in Oceania (22 Pacific Islands Countries and territories).

Future developments...

The dataset which informs this indicator will be updated every year and available for national and regional level use.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/iasvertebrateeradications

2

IUCN SSC Invasive Species Specialist Group

Island Conservation

INDICATOR FACTSHEET

TRENDS IN NUMBERS OF INVASIVE ALIEN SPECIES INTRODUCTION EVENTS

Aichi Biodiversity Target	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
			1900-2014	Regional National	

What is the Trends in Numbers of Invasive Alien Species Introduction Events indicator?

This indicator measures the trends of invasive alien species (IAS) introductions. The greater the number of documented IAS the greater the threat to biodiversity from IAS. The indicator is based on data from 21 countries, which were selected for having at least 30 records of species with known invasion date. Species were designated as invasive according to standard evidence-based criteria. The indicator was based on 3914 IAS and 4903 species-country records. While all taxonomic groups were considered, the majority of records are plants, invertebrates, fish, mammals and birds. The trends were calculated as the geometric mean of the cumulative number of IAS across all 21 countries, the year 1970 was set as index value 1.

Producing this indicator nationally...

At the national level this indicator is useful to measure the trends in the presence/occurrence of alien and potentially IAS and inform decisions to do with prevention of alien species introduction and the management and control of IAS causing impacts on biodiversity and ecosystems.

Use at the national level...

Dis-aggregated national datasets were used in the assessment of the State of Conservation in Oceania in 2014 (22 Pacific Island Countries and Territories).

Future developments...

Global coverage is aimed by the end of 2015. Disaggregation at the national level is possible in early 2016 and these data will be available to use.

Further resources

Biodiversity Indicators Partnership website
www.bipindicators.net/iasintroductionevents

2

**IUCN SSC Invasive Species
Specialist Group**

Environment Agency Austria

CUMULATIVE HUMAN IMPACT ON MARINE ECOSYSTEMS

Aichi Biodiversity Targets	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
	P		2008-2013	Regional National	

What is the Cumulative Human Impacts on Marine Ecosystems indicator?

The Cumulative Human Impact on Marine Ecosystems indicator predicts the impact on marine biodiversity and ecosystems from multiple anthropogenic stressors. Cumulative impact scores are high for much of the world's ocean, but coastal areas, where human uses of the ocean are concentrated, are particularly heavily impacted.

Cumulative impact assessments model, or predict, the overall impact from a suite of stressors based on the unique and cumulative vulnerability of biodiversity to anthropogenic stressors such as pollution, climate change and fishing. An increase in the cumulative impact score indicates that a stressor or suite of stressors is having an increased impact on biodiversity. As cumulative impact scores approach zero, biodiversity is decreasingly threatened by human activities.

Producing this indicator nationally...

This indicator provides the only comprehensive, standardized, transparent, quantitative and repeatable means to assess and map cumulative human impacts, providing a unique measure of the likely 'pristineness' of a system. The methods are flexible to use for habitats, taxa, or individual species, and the results can be used to inform a very wide range of policy and management objectives.

Most data and results from the initial assessment (published 2008) are currently available online. Tools, code and full set of data (raw to processed) will be available upon publication of most recent update. Results can also be explored and extracted using the tool SeaSketch (*www.seasketch.org*).

Use at the national level...

A synthesis of the patterns of all types of human impacts across the The Papahānaumokuākea Marine National Monument (Monument), an area surrounding a string of atolls and banks known as the Northwestern Hawaiian Islands (NWHI), was identified as being a useful tool for managers applying local scale spatial management of the Monument with an ecosystem-based perspective.

A more precise and comprehensive view of the spatial distribution of cumulative impacts in the Monument was provided by application of the cumulative impact mapping framework here on a finer scale (1 ha resolution) with location-specific data. Guidance on where to apply different management regulations and which threats are most in need of attention was provided by this analysis.

Future developments...

It is hoped that work will continue for the mapping of cumulative impacts globally on an annual basis. The next update for this indicator is pending, but likely to be summer 2016.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/cumulativehumanimpactsonmarineecosystems

Global Map of Human Impact on Marine Ecosystems
Halpern et al, 2008 A Global Map of Human Impact on Marine Ecosystems Science 319: 948-952

2

**National Centre for Ecological
Analysis and Synthesis**

**Centre for Marine Assessment
and Planning**

COVERAGE OF PROTECTED AREAS

Aichi Biodiversity Targets	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
			1962-2015*	Regional National	**

* The WDPA was established in 1981, but the mandate for the database dates back from 1959 when the United Nations (UN) Economic and Social Council called for a list of national parks and equivalent reserves in Resolution 713 (XXVIII). The first UN List of Protected Areas, as it became known, was subsequently published in 1962.

** Terms of use available at *http://www.protectedplanet.net/terms*

What is the Coverage of Protected Areas indicator?

This indicator directly measures the extent of protected areas across the globe, and hence tracks progress towards the 17% terrestrial and 10% marine coverage targets (Aichi Target 11) looking at geographical coverage only.

Producing this indicator nationally...

The World Database on Protected Areas (WDPA), from which the indicator is calculated, compiles data of all protected areas in a given country. The global indicator is calculated by collating data from government agencies and other authoritative sources over the world and therefore regional and national level indicators can be calculated provided there are sufficient data available. Coverage of protected areas was for example used by the European Environment Agency as an indicator to track progress towards the European 2010 biodiversity target in European countries. The WDPA stores 28 different attributes for a given protected area which could be used to develop new protected area indicators depending on the purpose of the indicator.

The BIP has published guidance for national and regional use of the protected area coverage indicator. This guidance is available on the BIP webpage for this indicator. For more information about national and regional use of the protected area coverage indicator, contact Brian MacSharry at UNEP-WCMC (*brian.macsharry@unep-wcmc.org*).

Use at the national level...

The WDPA, from which the indicator is calculated, was used to produce the Asia Protected Planet Report 2014 which tracks progress towards achieving Aichi Target 11 at a regional and national level. For more information see: *http://www.unep-wcmc.org/resources-and-data/asia-protected-planet-report-2014*

Future developments...

Since March 2015, the WDPA accepts data on other effective area-based conservation measures (OECMs). This expansion of the WDPA is the first step to move forward on the identification and compilation of these conservation areas which are an important element to implement Aichi Target 11.

Further resources

World Database on Protected Areas User Manual
http://wcmc.io/WDPA_Manual

Biodiversity Indicators Partnership website
http://www.bipindicators.net/pacoverage

Protected Planet
To access the WDPA and see country level statistics see: *www.protectedplanet.net*

2

UNEP WCMC
**UNEP World Conservation
Monitoring Centre**

INDICATOR FACTSHEET

MANAGEMENT EFFECTIVENESS OF PROTECTED AREAS

Aichi Biodiversity Target	Indicator type	Availability and Access	Sampling dates	Disaggregation Available
11	**R**	Varies depending on restrictions placed by data providers – data are becoming more freely available and with fewer restrictions*	1990-2014	Regional National

* Situation varies depending on assessment systems and data providers in various countries – in some cases this is possible now, in other cases it is unlikely to be possible in the near future

What is the Management Effectiveness of Protected Areas indicator?

This indicator can provide information on status and trend in effectiveness of management of protected areas that can be disaggregated to examine environmental, social and managerial aspects of protected area management. The indicator records the number and area of protected areas assessed for management effectiveness at a country level. The indicator therefore measures how effectively and equitably managed protected areas are, which is of critical importance in meeting Aichi Target 11, as the declaration of a protected area does not always result in adequate protection.

Producing this indicator nationally...

Management effectiveness of protected areas is calculated from the sites level assessments undertaken in protected areas around the world. UNEP-WCMC host and manage the Global Database on Protected Area Management Effectiveess (GD-PAME), in collaboration with governments, non-governmental organisations, academia and industry. The GD-PAME can be used to report at national, regional and global levels. Site level data is not publically available unless specific approval for this has been granted by the data provider.

Use at the national level...

Many reports have been produced by the World Wide Fund for Nature (WWF) and others on management effectiveness in countries and regions. For example:

The Global Study into management effectiveness evaluation: *http://www.eci.ox.ac.uk/publications/downloads/coad11-protected-areas.pdf*

Thailand: *https://www.mangrovesforthefuture.org/assets/Repository/Documents/Management-Effectiveness-MFF-IUCN-2012.pdf*

South Africa: *https://www.environment.gov.za/sites/default/files/docs/management_effectiveness_saprotected_areas.pdf*

Future developments...

Going forward the aim of UNEP-WCMC is to expand the remit of Protected Planet to encompass additional information on other elements of CBD Aichi Target 11, such as management effectiveness, thereby establishing Protected Planet as the central hub for the communication, exchange, acquisition and analysis of all knowledge and data on the status and trends of protected areas.

Further resources

2

Biodiversity Indicators Partnership website
http://www.bipindicators.net/pamanagement

UNEP WCMC
UNEP World Conservation
Monitoring Centre

THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA
University of Queensland

PROTECTED AREA OVERLAYS WITH BIODIVERSITY

Aichi Biodiversity Targets	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
			1959-2014*	National	

* The WDPA dates from 1981 and the UN list which it is based upon from 1959

What is the Protected area overlays with biodiversity indicator?

The protected area overlays indicator is currently made up of a composite of three sub indicators that together help to measure progress towards relevant elements of Target 11: 1) the degree of protection of terrestrial and marine ecoregions of the world; 2) the degree of protection of Important Bird Areas (IBAs); and 3) the degree of protection of Alliance for Zero Extinction sites (AZEs). IBAs and AZEs are two types of key biodiversity areas, i.e. site-scale priorities for biodiversity conservation, for which global data is available.

The sub indicators are calculated based on overlays of ecoregions, IBAs and AZEs with all designated protected areas recorded in the World Database on Protected Areas (WDPA). The WDPA is the most comprehensive global spatial dataset on marine and terrestrial protected areas available. The methodology used to create a global protected areas layer from the WDPA follows the one used to calculate the protected area coverage indicator.

By monitoring the percentage of eco-regions meeting the area targets set out by Aichi Target 11 this indicator tracks the progress towards ensuring that protected areas are ecologically representative. Furthermore, tracking the percentage coverage of AZEs and IBAs gives an indication of coverage of areas of particular importance for biodiversity.

The indicator can be used to assess the status of protection and trends in protection over time. It can be widely applied at various scales to measure policy response to biodiversity loss. UNEP-WCMC is working closely with the Alliance for Zero Extinction, BirdLife International and Conservation International to further improve the datasets and methodology used to calculate the IBA and AZE Protection Indices.

Producing this indicator nationally...

The Ecoregion Protection Indicator can be aggregated into protected area coverage of terrestrial biomes, marine provinces and biogeographic realms, and disaggregated at the regional and national level. The IBA and AZE Protection Indices can also be disaggregated in different ways to reveal underlying patterns in the degree of protection. For more information on how to produce this indicator nationally contact Naomi Kingston (*Naomi.Kingston@unep-wcmc.org*) or Neil Burgess (*Neil.Burgess@unep-wcmc.org*) at UNEP-WCMCM.

Use at the national level...

Protected area overlays are not only a global indicator but can also be calculated for regions and nations provided that there are sufficient data available. The 2012 Environmental Performance Index, calculated by the Yale Center for Environmental Law and Policy and the Center for International Earth Science Information Network (CIESIN) at Columbia University, includes two protected area overlay indicators: one measures the degree to which countries achieve the target of protecting at least 17% of each terrestrial biome within their borders, the other measures if countries protect all the Alliance for Zero Extinction sites on their territory.

The BIP has published some guidance for national and regional use of the protected areas overlay indicator. This guidance is available on the BIP webpage for this indicator (*http://www.bipindicators. net/paoverlays*).

Future developments...

The datasets and methodology used to calculate this indicator will continue to evolve. Improvements in data coverage and quality in the World Database on Protected Areas (WDPA) and the data on ecoregions, IBAs and AZEs result in improved indicator quality.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/paoverlays

**UNEP World Conservation
Monitoring Centre**

Birdlife International

**Alliance for
Zero Extinction**

**Conservation
International**

2

WILD BIRD INDEX FOR HABITAT SPECIALISTS

Aichi Biodiversity Targets	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
			1961-2011	Already produced by listed countries*	

*Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Latvia, Netherlands, Norway, Portugal, Slovenia, Spain (Catalonia), Sweden, Switzerland, and United Kingdom

What is the Wild Bird Index for Habitat Specialists indicator?

Birds are recognised as good indicators of environmental change and as useful proxies of wider changes in nature. The Wild Bird Index (WBI) measures average population trends of a suite of representative wild birds, as an indicator of the general health of the wider environment. The WBI is an easy-to-understand indicator that can be calculated for different geographic areas and habitats. This means that different WBIs can be produced for areas such as farmland and woodland, or inside and outside protected areas if suitable data is available. It is useful for analysis, interpretation of environmental issues and communication.

WBIs deliver scientifically robust and representative indicators for birds to support formal measurement and interpretation of national, regional and global targets to reduce, or halt, the rate of biodiversity loss. WBIs measure extinction and colonisation processes at a local scale among widespread and familiar birds in the environment (the survey methods count all bird species detected). In doing so, they shed light on the sustainability of the human use of that environment and how human impact is changing. By grouping species tied to particular habitats, it is possible to create habitat-based indices, hence providing an insight into the health of those habitats and an indication of the sustainability of human use.

Producing this indicator nationally...

The WBI project aims to promote and encourage the development of WBIs from national population monitoring schemes. Where such schemes already exist, it will coordinate and facilitate the collation of bird species' data and the generation of indices and indicators. Where there are none, it will provide tools and support to implement similar data collation and synthesis in a representative set of countries across regions, with the funds available to the project.

The Global WBI, which will be built on national data, is still in development. However, nations and regions have produced their own WBIs already from national bird monitoring schemes (e.g. Europe and North America) and these data will feed in to the global indicator.

Use at the national level...

WBIs are being used at a national level in at least 18 European countries, including in Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Latvia, Netherlands, Norway, Portugal, Slovenia, Spain (Catalonia), Sweden, Switzerland, and United Kingdom, and are in development in several others.

New bird monitoring schemes are being initiated in a number of countries in Europe, with the Africa region piloting this approach, but others elsewhere. These will produce data to allow national indicators to be produced, and to contribute to a global WBI in due course.

For more information about producing regional and national Wild Bird Indices, contact Richard Gregory at the Royal Society for the Protection of Birds (RSPB) (*Richard.Gregory@rspb.org.uk*) and/or Ian Burfield at BirdLife International (*Ian.Burfield@birdlife.org*).

Future developments...

There is a huge amount of ongoing and historic bird monitoring information (bird surveys and atlases) available across the globe; the challenge is to collate such data and to assess the degree to which it might contribute meaningfully to a global WBI. Information on such bird monitoring programmes and initiatives is being gathered from across the globe by the WBI project. The Wild Bird Index for habitat specialists will continue to expand, hopefully into a truly global indicator, and will soon include data from several African countries, including Uganda and Botswana, and from China. The latest data used in this storyline is from 2012; the next data update is due in 2015. New bird-monitoring schemes are now ongoing in countries such as Botswana, Kenya, Uganda and China. Assistance and encouragement is being provided to other countries. RSPB and BirdLife International hope to take this work forwards with indicator partners and other experts. Future development is funding dependent.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/WBI

Royal Society for the Protection of Birds

BirdLife International

U.S. Geological Survey

2

LIVING PLANET INDEX

Aichi Biodiversity Targets	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
			1970-2014	Regional National	

What is the Living Planet Index indicator?

1

The Living Planet Index (LPI) is calculated using time-series data on more than 10,000 populations of over 3,000 species of mammal, bird, reptile, amphibian and fish from all around the globe. The LPI is the aggregate of indices of vertebrate populations from terrestrial, freshwater and marine systems. The method has recently been adapted with a new weighting procedure to give a better representation of global vertebrate diversity and to correct for a bias towards well studied species from Europe and North America.

The LPI uses time-series data that is of high temporal resolution and spatially explicit through being tied to a particular location. This allows for the recording of extensive metadata on local pressures or threats and conservation action, which could be specific to the assessment of national level biodiversity trends. The LPI data are readily accessible online through the Living Planet Database (*www.livingplanetindex.org*).

Producing this indicator nationally...

The LPI is not only a global index but can also be calculated for regions and nations, provided that there are sufficient data available.

LPIs have been produced for Uganda, Canada, Mediterranean Wetlands and the Arctic. At present, data submitted by nations and regions must be sent directly to the responsible organisations for the LPI, the World Wide Fund for Nature (WWF) and the Zoological Society of London (ZSL). Work has now been completed to make the database available online in the form of the Living Planet Database (*www.livingplanetindex.org*) with a view to encourage nations and regions to submit their data to produce both their own indicators and strengthen the global indicator.

For more information about producing regional and national Living Planet Indices, please contact Louise McRae (*louise.mcrae@ioz.ac.uk*) or Robin Freeman (*robin.freeman@ioz.ac.uk*).

2

Use at the national level...

LPIs have been produced for a number of different regions and countries. In 2006, 2008 and 2010, the LPI was applied at the national level to assess vertebrate trends in Uganda for their State of Uganda's Biodiversity reports. In 2008, the indicator formed the basis for an assessment of the change in population abundance in wetlands across the Mediterranean region (*static.zsl.org/files/ med-wetlands-report-1061.pdf*). The LPI project has also had a long-standing collaboration with the Conservation of Arctic Flora and Fauna (CAFF), the biodiversity working group of the Arctic Council. This has resulted in a number of reports, such as the Arctic Species Trend Index (ASTI) in 2010 and an update in 2011, which focussed particularly on marine populations (*www.caff.is/asti/asti-publications*). Most recently, the LPI has been used to assess trends in Canadian biodiversity in the form of the Canadian Species Index (CSI).

Future developments...

We are keen to collaborate to a greater extent with outside organisations over the coming year, with a specific view to developing our national datasets. In-country partners are now able to directly access and contribute to the LPI through the online portal (*www.livingplanetindex.org*), which should facilitate the improvement of population data coverage in these regions. In combination with the established LPI method and additional training we can provide, we hope that this will allow for more national and regional-level indicators to be produced.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/lpi

Zoological Society of London | **World Wide Fund for Nature**

RED LIST INDEX

Aichi Biodiversity Targets	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
			1980-2012	Regional National	

What is the Red List Index?

1

The Red List Index (RLI) shows trends in the extinction risk of sets of species. It requires data from repeated assessments of species using the Red List categories and criteria, which are available for many more species than detailed reliable time-series of population abundance data. Because such data are generally available for entire suites of species (e.g. all species worldwide in a particular taxonomic group, or all regularly occurring species in a country for a particular taxonomic group) they produce potentially less-biased indicators than those based on a subset of better-studied species.

Producing this indicator nationally

National RLIs can be calculated either by disaggregating the global indices, or by repeatedly assessing extinction risk at the national scale. Examples of both approaches have been published. Many countries have compiled national red lists which form the basis of the latter approach (see *www.nationalredlist.org*), and an increasing number have done this twice or more using consistent methods, allowing national RLIs to be produced.

More information about producing national RLIs can be found in the publication, IUCN Red List Index – Guidance for National and Regional Use available from: *http://intranet.iucn.org/webfiles/doc/SpeciesProg/RLI_Guidelines_Final_4march09.pdf*

Use at the national level

There are at least 515 national Red Lists for various taxonomic groups, covering at least 122 countries, of which Red Lists for 43 countries are available online at *http://www.nationalredlist.org*

Not all these use the Guidelines for application of the IUCN Red List Categories and Criteria at regional and national scales, so results may not be comparable between countries.

2

Examples of national RLIs include:

BirdLife International (2012) Developing and implementing National Biodiversity Strategies and Action Plans: How to set, meet and track the Aichi Biodiversity Targets. Cambridge, UK; BirdLife International. p. 17 *http://www.birdlife.org/datazone/sowb/sowbpubs#NBSAP2012*

Gärdenfors, U. 2010. Rödlistade arter i Sverige 2010 - the 2010 red list of Swedish species ArtDatabanken, SLU, Uppsala.

Herrando & Anton (2013) Changes in the conservation status of breeding birds in Catalonia (NE Iberian Peninsula) in the period 2002–2012 Revista Catalana d'Ornitologia 29:20-34.

Juslen et al 2013 Application of the Red-List Index at a National Level for Multiple Species Groups. Cons Biol 27: 398–406.

Lopez 2011 State of Paraguay's Birds. *http://www.birdlife.org/datazone/userfiles/file/sowb/pubs/Paraguay_en.pdf*

Pihl and Flensted 2011 A Red List Index for breeding birds in Denmark in the period 1991-2009. Dansk Orn. Foren. Tidsskr. 105: 211-218.

Quayle et al 2007 Trend in the Status of Breeding Bird Fauna in British Columbia, Canada, Based on the IUCN Red List Index Method. Conservation Biology 21: 1241–1247.

Rondinini, C., Battistoni, A., Teofili, C. 2014. Lo stato della Biodiversità in Italia: l'applicazione per il volume dell'approccio Sampled Red List e Red List Index. *http://www.iucn.it/pdf/Lo_Stato_della_Biodiversita_in_Italia.pdf*

Saiz et al 2015 Application of the Red List Index for conservation assessment of Spanish vascular plants. Cons Biol In press

Szabo et al 2012 Adapting global biodiversity indicators to the national scale: A Red List Index for Australian birds. Biol Cons 148: 61-68.

Woinarski et al 2015 Ongoing unraveling of a continental fauna: Decline and extinction of Australian mammals since European settlement. Proc Nat Acad Sci USA 112: 4531–4540.

Xu et al 2009 China's Progress toward the Significant Reduction of the Rate of Biodiversity Loss. BioScience 59: 843–852.

And for the latest list of relevant references, see *http://www.iucnredlist.org/about/publication/red-list-index*

Future developments...

We plan to develop functionality on the IUCN Red List website to make data and graphs available to facilitate calculation of RLIs at the national scale based on disaggregation of the global data.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/globalindicators

IUCN Red List Index
http://www.iucnredlist.org/about/publication/red-list-index

Additional indicators can be calculated using the RLI, however as these represents a more restricted subset of the global RLI dataset, in some countries there may be insufficient data for a meaningful index to be disaggregated at the national scale. In such cases it is better to calculate the index based on repeated assessments of national extinction risk based on national Red Lists, if these are available.

RLI (impacts of utilisation) (Aichi Target 4)
This version of the RLI is based on data for birds, mammals and amphibians only, and includes only those Red List category changes driven by utilisation or its control i.e. species uplisted to higher categories of extinction risk owing to unsustainable utilisation or species downlisted to lower categories of extinction risk owing to effective control or management of utilisation. It is relevant for showing whether consumption is sustainable and "the impacts of use of natural resources [are] well within safe ecological limits".

RLI (impacts of fisheries on marine species) (Aichi Target 6)
This version of the RLI is based on data for seabirds only, and is relevant for showing whether "fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems". The key reference for this indicator is Croxall et al 2012.

Croxall, J. P, Butchart, S. H. M., Lascelles, B., Stattersfield, A.J., Sullivan, B., Symes, A. and Taylor, P. (2012) Seabird conservation status, threats and priority actions: a global assessment. Bird Conserv. Int. 22: 1-34.

RLI (impacts of pollution) (Aichi Target 8)
This version of the RLI includes only those Red List category changes driven by pollution or its control i.e. species uplisted to higher categories of extinction risk owing to the negative impacts of pollution or species downlisted to lower categories of extinction risk owing to effective control or management of threats from pollution. It is relevant for demonstrating whether pollution "has been brought to levels that are not detrimental to ecosystem function and biodiversity".

RLI (impacts of invasive alien species) (Aichi Target 9)
This version of the RLI includes only those Red List category changes driven by invasive alien species (IAS) or their control i.e. species uplisted to higher categories of extinction risk owing to the negative impacts of IAS, or species downlisted to lower categories of extinction risk owing to effective control or management of IAS. It is relevant for showing whether invasive alien species have been adequately "controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment". The key reference for this indicator is McGeoch et al 2010.

McGeogh, M.A., Butchart, S.H.M., Spear, D., Marais, E., Kleyhans, E.J., Symes, A., Chanson, J. and Hoffmann, M. 2010. Global indicators of biological invasion: species numbers, biodiversity impact and policy responses. Diversity and Distributions 16: 95-108

3

RLI (reef-building coral species) (Aichi Target 10)
This version of the RLI shows trends for reef-building corals, and is relevant for demonstrating whether "the multiple anthropogenic pressures on coral reefs...are minimized, so as to maintain their integrity and functioning".

RLI (pollinating species) (Aichi Target 14)
This version of the RLI is based only on data for birds and mammals that are known or inferred to be pollinators, and is relevant for showing whether "ecosystems that provide essential services" have been adequately "restored and safeguarded". The key reference for this indicator is Regan et al 2015.

Regan, E. C., Santini, L., Ingwall-King, L., Hoffmann, M., Rondinini, C., Symes, A., Taylor, J. and Butchart, S. H. M. (2015) Global trends in the status of bird and mammal pollinators. Cons. Lett. DOI: 10.1111/conl.12162.

4

International Union for Conservation of Nature

Birdlife International

International Union for Conservation of Nature - Species Survival Commission

Royal Botanic Gardens Kew

Zoological Society of London

Natural History Museum, London

IUCN SSC Invasive Species Specialist Group

INDICATOR FACTSHEET

WILDLIFE PICTURE INDEX

Aichi Biodiversity Targets	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
			2007-2015	Regional National	

1

What is the Wildlife Picture Index indicator?

The index was developed collaboratively by the Wildlife Conservation Society and the Zoological Society of London as an indicator derived from primary camera trap data (O'Brien et al 2010)[1]. The *Wildlife Picture Index* (WPI) was designed to meet the requirements of biodiversity monitoring indexes as described by Buckland et al. (2005)[2], and it monitors ground-dwelling tropical medium and large mammals and birds, species that are important economically, aesthetically and ecologically.

The WPI is defined as the geometric mean of the occupancies of the species in the community relative to the first year of sampling (baseline). The WPI can be aggregated upward from the site to the global level, and it can be disaggregated to capture trends at regional levels, functional groups of interest, or national level (if adequate national data are available).

Producing this indicator nationally...

The indicator has data available on tropical forest that has been collected for the past 7 years, which may be used by countries for qualitative assessments. However, data available from this indicator needs to be supplemented with data collected at the national level so that the indicator can be adapted at the country level.

Use at the national level...

There are a few publications on tropical forest that provide sub-global examples. We examine several aspects of terrestrial mammal species and community diversity (species richness, species diversity, evenness, dominance, functional diversity and community structure) at seven sites around the globe. The sites are located in Uganda, Tanzania, Indonesia, Lao PDR, Suriname, Brazil and Costa Rica. Please see *http://tinyurl.com/qbf3owf*

More detail on the methodology and the tools available to calculate the WPI are available here *http://tinyurl.com/o7zg6z5*. Please see *http://tinyurl.com/olaofww* for further information on our approach to calculate the WPI and how it can be disaggregated for different groups of species.

1 O'Brien, T.G., Baillie, J.E.M., Krueger, L. & Cuke, M. (2010). The Wildlife Picture Index: monitoring top trophic levels. *Animal Conservation*, 13, 4, 335-343

2 Buckland, S.T., Magurran, A.E., Green, R.E. & Fewster, R.M. (2005). Monitoring change in biodiversity through composite indices. *Philos Trans R Soc Lond B Bio Sci*, 360 (1454), 243-254

Future developments...

We are currently working with countries (Brazil, South Korea, the Philippines and China) to adapt this indicator at the national level to monitor protected areas effectiveness. There is also interest from Colombia and Peru to pilot this approach.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/wildlifepictureindex

Wildlife Picture Index website
http://wpi.teamnetwork.org/wpi/welcome

2

TEAM Network

INDICATOR FACTSHEET

GENETIC DIVERSITY OF TERRESTRIAL DOMESTICATED ANIMALS

Aichi Biodiversity Target	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
13	S		2000-2014	Regional National	

What is the Genetic Diversity of Terrestrial Domesticated Animals indicator?

Genetic diversity in livestock species is important to agriculture and food production because it enables livestock to be raised in a wide range of production environments and to provide a wide range of products and services (food, fibres, manure, draught power, etc.). It also provides the basis for adapting livestock populations to future changes in environmental conditions or in demand for products and services. Livestock genetic diversity is threatened by various factors including the trend towards greater homogeneity in the world's livestock production systems and a lack of appropriate management strategies and policies. Planning measures to promote the sustainable use, development and conservation of animal genetic resources requires information on the diversity of these resources nationally and internationally.

The indicator is intended to show whether or not the objective of maintaining the genetic diversity of farmed and domesticated animals has been met using e.g. the proportion of breeds being at risk of extinction. The risk status of a breed is based on its population size.

Producing this indicator nationally...

It is possible to calculate the indicator at global, regional and national levels. For more information on producing a national indicator for the genetic diversity of terrestrial domesticated animals contact *Roswitha.Baumung@fao.org*

Use at the national level...

Yes, regional reports and a national warning tool are available from the European Regional Focal Point for Animal Genetic Resources at *http://efabis.tzv.fal.de/* under the link "breeds".

Future developments...

The indicator is ready for use on national level, however improvements are to be made to the reporting tools in the Domestic Animal Diversity Information System DAD-IS *http://www.fao.org/dad-is* with regard to improved user-friendliness and flexibility.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/domesticatedanimals

2

**Food and Agriculture Organization
of the United Nations**

RED LIST INDEX (SPECIES USED FOR FOOD AND MEDICINE)

Aichi Biodiversity Targets	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
			1978-2010	Regional National	

* Regional and national cuts could be made but the data on species are at the global level

What is the Red List Index (species used for food and medicine) indicator?

Biodiversity harvested for food and medicine contribute to health, livelihoods and well-being. Unsustainable use and other threats to species used for food and medicine must be prevented and ecosystems maintained to ensure these vital ecosystem services continue to contribute to human health, livelihoods and well-being, particularly for the poor and vulnerable who may have no alternatives for their primary health care.

The indicator comprises two elements: the *Red List Index (RLI) for amphibians, birds and mammals used for food and medicine*; and an *Accessibility Index* to track the changes in affordability of wild sourced products compared with generic/staple products.

Producing this indicator nationally...

The RLI element of this indicator focuses on the global status of species used for food and medicines. National RLIs for utilized species can be calculated either by disaggregating the global indices, or by repeatedly assessing extinction risk at the national scale. Many countries have complied national red lists (generally for all vertebrate species) which form the basis of the latter approach (see *www.nationalredlist.org*). As they increasingly do so many more national RLIs will become available which can be disaggregated for utilized and non-utilized species.

The accessibility element of this indicator is primarily focused at the national scale as data has been collected in eight countries. Price data are required on selected wild products as well as "domestic" alternatives. Global data sets can be used on income. Regional trends may also be identified if the countries selected are assumed to represent Africa, Asia and Latin America. It would be relatively simple to conduct regularly and inexpensively at the national level.

Use at the national level...

This version of the RLI is based on data for birds, mammals and amphibians that are coded on the IUCN Red List as being used by humans for food and medicine. As this represents a more restricted subset of the global RLI dataset, in some countries there may be insufficient data for a meaningful index to be disaggregated at the national scale. In such cases it is better to calculate the index based on repeated assessments of national extinction risk based on national Red Lists, if these are available.

Information on producing national RLIs can be found in the 2010 BIP publication, IUCN Red List Index – Guidance for National and Regional Use, available from the 2010 BIP website (*www.twentyten.net/guidancedocumentsfornationaluse*).

If you are interested in producing the Red List Index (species used for food and medicine) indicator at the national level, please contact Thomasina Oldfield at TRAFFIC (*Thomasina.oldfield@traffic.org*).

Future developments...

Currently no future plans.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/foodandmedicine

2

TRAFFIC

IUCN SSC Medicinal Plant Specialist Group

International Union for Conservation of Nature

Birdlife International

NUTRITION INDICATORS FOR BIODIVERSITY

Aichi Biodiversity Target	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
14	S		2007-2014	Regional National	

What is the Nutrition Indicators for Biodiversity indicator?

1

The Nutrition Indicators for Biodiversity, which formed part of the original BIP indicator suite, are currently inactive. However, the underlying database which supported their production includes a wealth of data which could support national level monitoring and implementation.

Data of sufficient quality and quantity on food composition and food consumption for biodiverse foods are a prerequisite to incorporate food biodiversity aspects into different aspects of nutrition (e.g. a more precise estimation of nutrient intakes), health (e.g. favour food-based approaches including biodiversity to combat malnutrition), agriculture (increase the mass production of foods with higher nutrient contents to combat malnutrition) or environment (in view of climate change know which foods are suitable and nutritious for a given ecosystem). Nutrition and biodiversity feature directly in the UN Millennium Development Goals to "Halve the proportion of people who suffer from hunger" (Goal 1) and to "Ensure environmental sustainability" (Goal 7).

Agricultural biodiversity has played a pivotal role in sustaining and strengthening food, nutrition, and health and livelihood security all over the world. Although progress has been made in enhancing productivity through the sustainable use of genetic resources for food and agriculture, over 800 million people suffer from hunger and malnutrition. There is a need to integrate biodiversity into food security and anti-hunger policies. In order to do so our knowledge on food composition and consumption of biodiverse foods must improve, which then can be used to improve related programmes and policies.

The FAO/INFOODS Food Composition Database for Biodiversity was developed with the following objectives:

1. To publish a compendium of scrutinized analytical data (without any additional estimations, imputation or calculation of missing values) for foods counting for biodiversity: at least one compositional value must be reported at variety/cultivar/breed level for common foods or at species level (or with local name) for wild and underutilized foods;

2. To allow food composition database compilers to include nutritional values for wild and underutilized foods as well as for foods below species level based on the data available in this database;

3. To allow researchers in nutrition to estimate the contribution of biodiversity to nutrition;

4. To estimate nutrient intake estimations more correctly taking variation due to biodiversity into account (if corresponding food consumption data would be available);

5. To promote biodiversity and foods with a superior nutritional profile in nutrition education programmes and other policies; and

6. To allow researchers in agriculture to select those crops/breeds with a high-quality nutritional profile for agricultural research and large-scale production.

Producing this indicator nationally...

The database is constructed in a way that it can be used easily. However, those using it would need to have a basic understanding of food composition, which can be acquired through the FAO/INFOODS e-Learning Course on Food Composition Data (*http://www.fao.org/infoods/infoods/training/en/*) and through studying the FAO/INFOODS guidelines on food composition at *http://www.fao.org/infoods/infoods/standards-guidelines/en/*. The database represents a collection of food composition data from analysis without any estimations or calculation, thus there are many missing values, especially vitamins and often minerals are missing.

Use at the national level...

Our database (*http://www.fao.org/infoods/infoods/tables-and-databases/faoinfoods-databases/en/*) was used to construct the Bangladesh food composition table of 2013 and the West African Food Composition table of 2012. The database was also used in making members of the Commission on genetic resources for food and agriculture (CGRFA) aware of the importance of biodiversity for nutrition through agriculture, leading to the endorsement of the 'Voluntary Guidelines for Mainstreaming Biodiversity into Policies, Programmes and National and Regional Plans of Action on Nutrition' in 2015.

Future developments...

Update the database regularly with more data and on more foods, depending on availability of funds.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/nutritionindicators

International Network of Food Data Systems (INFOODS)
http://www.fao.org/infoods/infoods/food-biodiversity/en/

Food and Agriculture Organization of the United Nations

Bioversity International

OCEAN HEALTH INDEX

Aichi Biodiversity Targets	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
14 1 4 5 6 7 10 12 15	S		2012-2013	Regional National	

What is the Ocean Health Index indicator?

1

The Ocean Health Index (OHI) indicator measures the current status and likely future state of ten public goals for marine ecosystems. For each goal the index assesses the current state relative to a reference point, recent trends in the current status, cumulative negative pressures on the goal, and existing ecological and social attributes and institutions that provide resilience.

The Index enables scientists, managers, policy makers, and the public to better and more holistically understand, track, and communicate the status of local marine ecosystems, and to design strategic management actions to improve overall ocean health. By balancing information across the ten goals, the Ocean Health Index integrates the social and environmental linkages that can be useful to inform decision-making. It can also serve as a baseline reference against which to measure progress.

The Ocean Health Index framework can be used by anyone to conduct independent assessments at any spatial scale. To facilitate this, we provide freely-available instruction and a 'Toolbox' to organize data and calculate scores. In the spirit of collaborative, transparent, and reproducible science, the OHI Toolbox was developed with open-source tools: for example, all files are organized and shared with GitHub and calculations are done in R.

Producing this indicator nationally...

The Ocean Health Index is the first integrated assessment framework that scientifically combines key ecological, economic, and social elements of the ocean's health. These scores are calculated using the best available data and indicators at the appropriate scale. By combining ten widely held goals, scores reflect how well coastal regions optimize their potential ocean benefits and services in a sustainable way relative to a reference point (target), on a scale of 0 to 100. Independent assessments can be done at any spatial scale and allow for exploration of variables influencing ocean health at the scale at which policy and management decisions are made. Regional assessments also enable goal models and targets to be adapted to higher resolution data, indicators, and priorities to produce scores that better reflect local realities. To facilitate the independent assessment process, we developed a series of guides (*http://www.oceanhealthindex.org/ohi-plus/*) and the *Ocean Health Index Toolbox and Manual,* (*http://ohi-science.org/manual/*) which help users develop models adapted to management needs and synthesize data and indicators from multiple disciplines into a single framework.

2

Use at the national level...

As part of the Toolbox we have developed interactive displays to visualize data and scores. There is a website for nearly every coastal nation populated with data from the global assessment, making it possible to explore data used in the global assessment. However, the primary utility of these website is for nations conducting their own OHI assessments; this is a place where groups can visualize how their own local data fit into the OHI framework and what calculated scores look like on an interactive map. For example, see the website for Spain: *http://ohi-science.org/esp*

Further information, guides, and media resources for conducting an OHI assessment can be found at: *http://www.oceanhealthindex.org/ohi-plus/*
http://ohi-science.org/
https://vimeo.com/oceanhealthindex

Other examples include:

Brazil: The National Center for Ecological Assessment and Synthesis (NCEAS) and Conservation International developed and published and assessment case study for Brazil's 17 coastal states (*http://www.oceanhealthindex.org/ohi-plus/brazil_assessment_english; http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0092589*)

U.S. West Coast: The National Center for Ecological Assessment and Synthesis (NCEAS) and Conservation International developed and published an assessment for California (divided into three regions), Oregon, and Washington *(http://www.oceanhealthindex.org/ohi-plus/us_westcoast_assessment; http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0098995)*

Fiji: The National Center for Ecological Assessment and Synthesis (NCEAS) and Conservation International developed and published an assessment for the whole country (*http://www.oceanhealthindex.org/ohi-plus/fiji_assessment; http://jenniferoleary.weebly.com/uploads/6/7/0/2/6702754/seligetal2015_ecosystemservices.pdf*)

Future developments...

We continue to calculate global scores annually, launching results each September. We hope to continue doing this indefinitely. We also are leading or supporting regional applications of the Ocean Health Index in countries and regions around the world, and offer this support to other regions upon request. The 'Toolbox' and supporting materials continue to be refined and improved.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/oceanhealthindex

| **National Centre for Ecological Analysis and Synthesis** | **Centre for Marine Assessment and Planning** | **Conservation International** |

INDEX OF LINGUISTIC DIVERSITY

Aichi Biodiversity Target	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
18	S		1970-2010	Regional National	

*National census data

What is the Index of Linguistic Diversity indicator?

Traditional environmental knowledge is expressed and transmitted largely through language. If a language is in decline that generally means that the knowledge it conveys is also in decline. The downward trend in the level of linguistic diversity and in particular indigenous languages, therefore suggests that the traditional knowledge, innovations and practices of indigenous and local communities are also declining, with detrimental consequences for the conservation and sustainable use of biodiversity.

Current data in the Index of Linguistic Diversity (ILD) database could be used to provide a first-cut picture of national linguistic diversity. If finer-grained data from the national level (e.g., dialect censuses) is available, it could be fed into the ILD methodology to provide a much more detailed picture of national linguistic diversity.

Producing this indicator nationally...

The ILD depends on estimates of speaker numbers, which are known to vary widely in quality. The ILD uses data-filtering techniques to try to eliminate those data points that are most likely to be anomalous. The reliability of speaker numbers is something that has to be accounted for at all levels, from global on down.

The ILD can be applied nationally and regionally. No change in methodology is needed, just the relevant data.

Use at the national level...

The report *Loh, J. and Harmon, D. 2014. Biocultural Diversity: Threatened species, endangered languages. WWF Netherlands* has the latest updates for global and regional indices, as well as Australia and New Guinea indices. The report may be downloaded from *http://biocultural.org.uk/ or http://wwf.panda.org/wwf_news/press_releases/?222890/Biocultural-Diversity-Threatened-Species-Endangered-Languages*

Future developments...

Pending funding, we plan an update to the published global ILD.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/ild

2

Terralingua

World Wide Fund for Nature

NUMBER OF GLOBAL BIODIVERSITY INFORMATION FACILITY (GBIF) RECORDS OVER TIME

Aichi Biodiversity Targets	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
			2003-2015	Regional National	

1

What is the Number of Global Biodiversity Information Facility (GBIF) records over time indicator?

Each country needs access to information to identify threats to biodiversity and determine priorities for conservation and sustainable use. While nearly all Parties report that they are taking actions related to monitoring and research, most also indicate that the absence or difficulty in accessing scientific information is an obstacle to the implementation of the goals of the Convention. Action taken to reach this target will also benefit the other targets of the Strategic Plan by encouraging new research, the development of new technologies and improved monitoring. Such actions will strengthen the policy-science interface and will contribute to the fulfilment of the other elements of the Strategic Plan.

The data published through the Global Biodiversity Information Facility (GBIF) includes species occurrence data from digitized natural history specimen collections, observations from citizen science networks, surveys and research projects, historic literature and a range of other sources. GBIF also deals with names and taxonomic checklists, as well as structured metadata describing biodiversity datasets.

Producing this indicator nationally...

Free and open access to all available data on biodiversity is an essential component of a country's ability to develop evidence-based biodiversity strategies, and to address the goals of the Strategic Plan on Biodiversity 2011-2020. National-level metrics on mobilization of data through GBIF indicate the extent to which data from different sources within a country are being mobilized and shared using standard digital formats, and are discoverable through global or national web platforms for use in research and policy. Use of this indicator, supplemented by the additional metrics provided through *www.gbif.org/analytics,* can help countries to monitor national progress towards Target 19, and by identifying gaps and biases can help to inform national strategies on further data mobilization.

Use at the national level...

Mobilization of data records through GBIF at national level is used by many national GBIF nodes to indicate progress on availability of biodiversity information for national research and policy.

Future developments...

One significant development is that by October 2015, GBIF will provide summary pdf reports for all countries providing a range of metrics relating to data mobilization and use, to be updated twice a year and generated automatically via the country pages on *GBIF.org* (or upon request).

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/numberofgbifrecordsovertime

Convention on Biological Diversity website
http://www.cbd.int/sp/targets/rationale/target-19/

2

GBIF

**Global Biodiversity
Information Facility**

INDICATOR FACTSHEET

OFFICIAL DEVELOPMENT ASSISTANCE PROVIDED IN SUPPORT OF THE CONVENTION

Aichi Biodiversity Target	Indicator type	Availability	Sampling dates	Disaggregation Available	Access
20	R	PDF	2007-2013*	Regional National	🔓

* Data is also available for the period 2002-2006; however, reporting only became mandatory in 2007, therefore data collected before this date may not be complete.

** The OECD Development Assistance Committee collects data at activity level through its Creditor Reporting System and the "biodiversity" Rio marker is also applicable at the level of each activity. This allows the production of aggregates of "ODA in support of biodiversity" per provider country, partner country, region, as well as by sector, by type of finance instruments, etc.

What is the Official Development Assistance provided in support of the Convention indicator?

Adequate access to resources is essential for effective implementation of the Convention on Biological Diversity (CBD). Developed countries that have ratified the CBD have committed themselves through Target 11.2 of the CBD to transfer new and additional financial resources to developing country Parties, to allow for effective implementation of their commitments under the Convention. The Official Development Assistance (ODA) indicator monitors bilateral biodiversity development finance commitments targeting objectives of the CBD through the use of "Rio markers".

OECD DAC data is collected through an institutionalised structure that maintains and develops underlying standards (e.g. definitions and classifications), creates a common understanding of their application, and undergoes rigorous quality control, making it a high quality, standardised data source for the development of indicators. Activity-level data is collected and can be aggregated by provider country (the 29 DAC members) and by partner country, making it appropriate for producing national level indicators. There are over 50 fields of descriptive information, including on sectors and sub-sectors, making it possible to create more detailed indicators of interest.

It should be borne in mind that this data does not capture multilateral development finance flows to biodiversity, therefore it only provides a partial picture of biodiversity-related development finance. Furthermore, it is recommended to consider general trends using multi-year averages, as year-on-year fluctuations can arise from large multi-year projects programmed and committed in a given year.

These data are taken from the OECD DAC Creditor Reporting System using the "Rio markers". The Rio markers are descriptive rather than strictly quantitative. They allow for an approximate quantification of financial flows targeting the objectives of the Rio Conventions (biodiversity, climate change, and desertification). Biodiversity finance as reported by Parties to the CBD is often based on, but may not be directly comparable to, Rio marker data.

Producing this indicator nationally...

The ODA indicator provides a global picture of bilateral biodiversity-related development finance commitments. National use of the indicator is limited to the 29 DAC members which report development finance data through the OECD DAC Creditor Reporting System (CRS). ODA recipient countries could also use the data to track biodiversity-related development finance committed to their country each year.

◆ Summary statistics are periodically produced by the OECD – for the latest see OECD DAC Statistics, Biodiversity-related development finance (2015).

◆ Headline statistics can be viewed online through the data visualisation portal

◆ Activity-level data can be accessed through the OECD DAC CRS

Use at the national level...

CRS data on biodiversity-related development finance is used to produce regional analyses, see for example this analysis by CBD: *http://www.cbd.int/doc/meetings/cop/cop-09/information/cop-09-inf-05-en.pdf*. The OECD Secretariat has done regional analysis of climate-related ODA flows (see links below); the same could be done for biodiversity.

◆ Climate-related Aid to Africa *http://www.oecd.org/dac/environment-development/Climate-related%20aid%20to%20Africa%20Flyer_FINAL_CLEARED%20(2).pdf*

◆ Climate-related Aid to Latin America and the Caribbean *http://www.oecd.org/dac/environment-development/Latin%20America_FINAL.pdf*

A range of resources are available for users of the data:

◆ Rio markers handbook *http://www.oecd.org/dac/stats/48785310.pdf*

◆ User guide *http://www.oecd.org/dac/stats/User%20guide%20for%20extracting%20environmental%20data_v3.pdf*

◆ Frequently asked questions *http://www.oecd.org/dac/stats/46818511.pdf*

◆ Materials from the training workshop *http://www.oecd.org/dac/environment-development/training-workshop.htm*

A data visualisation portal is now available to view biodiversity-related ODA. The data gives a global overview of biodiversity-related ODA flows and can also be filtered by individual donor country and individual recipient country. The OECD DAC Secretariat also produces routine flyers on trends in biodiversity-related ODA. See the following website for these resources: *http://www.oecd.org/dac/stats/biodiversity.htm*

Future developments...

The OECD DAC with its members and the international community is working to "fine tune" the biodiversity Rio marker definition and improve the coverage of biodiversity-related development finance data captured within DAC statistics, in particular for other official flows and multilateral flows. At present, most multilateral institutions do not yet report on biodiversity-related finance flows in the CRS, but the DAC is working with the multilateral development banks to integrate their data on biodiversity into the CRS, when they have developed and implemented their methodology for tracking biodiversity finance.

Further resources

Biodiversity Indicators Partnership website
http://www.bipindicators.net/oda

OECD websites
http://oe.cd/RioMarkers
http://www.oecd.org/dac/stats/biodiversity.htm

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