



United Nations Decade on Biodiversity

AICHI TARGETS PASSPORT



UNEP WCMC



Convention on
Biological Diversity



Introduction

Established in 2007, the Biodiversity Indicators Partnership (BIP) is a global initiative established to bring together organizations working at the forefront of indicator development to monitor progress towards international biodiversity targets. In 2010 the Strategic Plan for Biodiversity 2011-2020 was adopted. At the heart of this overarching framework for international biodiversity action are the Aichi Biodiversity Targets which cover a wide range of biodiversity-related topics. Many of these, such as public awareness, economic incentives and policy mainstreaming, were not reflected in previous targets but are key to sustaining biodiversity.

The Aichi Passport

This Beta version of the Aichi Passport is a “proof of concept” for annual indicator reporting by the Biodiversity Indicators Partnership. For each of the Aichi Biodiversity Targets, one or two indicators are presented to highlight:

- 1) what progress has been made towards the targets to date
- 2) what baselines exist from which future progress can be monitored.

The passport is available as both a hardcopy and a Smartphone App (available to download at App Store / Google play store)










As the Aichi Biodiversity Targets are multi-faceted, in most cases an individual indicator is insufficient if used in isolation to assess overall progress towards a target. The BIP is working to enhance and increase the number of global indicators available for each of the targets. Future editions of the passport will see the linking of indicators under the Aichi Biodiversity Targets to provide more comprehensive storylines of progress.

For information on all the indicators brought together by the BIP for monitoring progress towards the Aichi Biodiversity Targets visit the BIP website: www.bipindicators.net/indicators

The indicators presented in the Aichi Passport do not replace what has been agreed through CBD SBSTTA Recommendation XV/1. The Passport will be further updated as more information becomes available and following the outcomes of CBD COP 11 in October 2012.

The key

Icons are used to show the level of progress made towards the target, the status of the indicator within the BIP and trends available.

Progress towards achieving Aichi Target*		Indicators and Partners	
	Positive changes		This is a new indicator brought into the BIP following adoption of the Strategic Plan for Biodiversity 2011-2020 to monitor progress towards the Aichi Biodiversity Target/s.
	Negative changes		
	No clear change		This indicator is one of the original suite brought together by the BIP to monitor progress towards the 2010 Biodiversity Target. This indicator is now being taken forward to track progress towards the Aichi Biodiversity Targets.
	Baseline		A new Indicator Partner has been welcomed into the BIP to support the production of this indicator.
	Under development		This indicator Partner was originally a member of the BIP to develop indicators for the 2010 Target. Their role in the Partnership continues as they take forward and/or develop new indicators for the Aichi Targets.

* It is important to note that only one or two indicator updates are presented per Aichi Biodiversity Target, as examples in the Beta version of the passport.

Indicator Projections and Future Scenarios

The development of global indicators for monitoring progress towards targets is one component of the BIP's work. Partners are also working to use their indicators in novel ways to predict future trends or project the results of different policy scenarios. Some examples of this new and exciting work are presented in the **Indicator Projections** section of the passport.

BIP support to national indicators

As well as bringing together global indicators, the BIP has an extensive programme of supporting national and regional Indicator development. For more information please go to: www.bipnational.net

Acknowledgements

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Convention on
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Aichi Targets: Indicator Updates Overview

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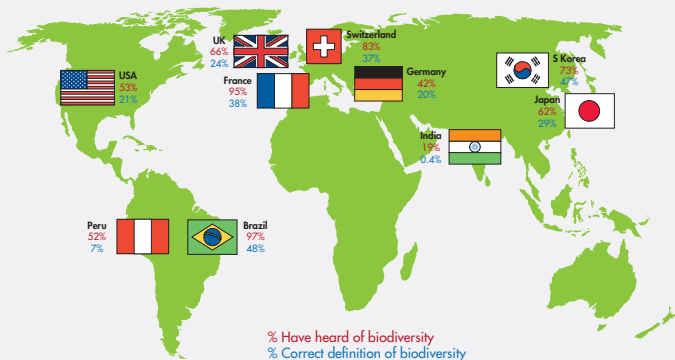


Aichi Target 1: Awareness of biodiversity values

Indicator: Biodiversity Barometer



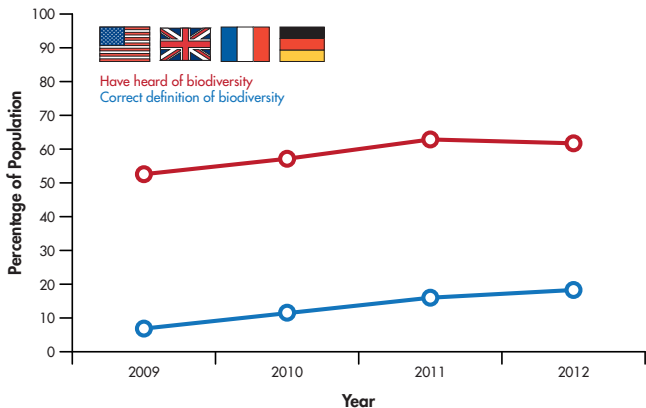
Biodiversity awareness in sampled countries is on the rise. The number of people who have heard of biodiversity in the UK, USA, France and Germany has increased from 56% in 2009 to 64% in 2012.



Biodiversity awareness around the world – IPSOS survey

Feb 2012 (France, Germany, UK, Switzerland, USA, Brazil, Peru, India);
October 2011 (South Korea); September 2010 (Japan). Total sample
10,000 consumers

Source: UEBT 2012



Awareness of biodiversity in USA, UK, France and Germany

Source: UEBT and IPSOS

The full story

Awareness of biodiversity in sampled countries is generally high, with particularly high awareness rates in countries like Brazil, France, and South Korea. Significant differences exist between countries, even within the same region. The understanding of biodiversity, measured through the number of people that provided correct definitions of biodiversity is often very limited: nowhere does it exceed 50%.

Since 2009 the number of people that provided correct definitions of biodiversity went up from 16 to 26 % in Germany, France, UK and USA. The 2010 International Year of Biodiversity campaign was one of the factors that contributed to this increase in awareness.

Indicator relationship to Aichi Target 1

Target 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

The *Biodiversity Barometer* indicator is a measure of the level of public awareness of biodiversity. Such information also helps to identify gaps and groups which are most in need of awareness raising.

To view all available indicators under this Aichi Biodiversity Target visit:
www.bipindicators.net/indicators

Indicator Partner



Union for Ethical BioTrade

Further Information

For further information on the *Biodiversity Barometer* indicator visit:
www.bipindicators.net/biodiversitybarometer



Aichi Target 2: Integration of biodiversity values

No indicator yet available



Aichi Target 3: Incentives

No indicator yet available

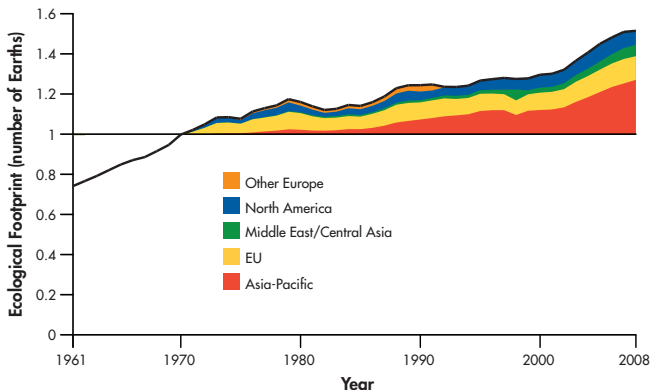


Aichi Target 4: Use of natural resources

Indicator: Ecological Footprint



Human demand on ecological assets has more than doubled in the period 1961-2008. Globally, in 2008 human demands for the biosphere's provision of resources and absorption of wastes exceeds the sustainable level by at least 50%.



Global Ecological Footprint, with biological demand that exceeds natural supply broken down by consuming region

Source: Global Footprint Network

The full story

The production and consumption activities of humans currently require the resources and waste absorption services of 2.7 global hectares of land (2.7 hectares of average productivity land). In comparison, only 1.8 global

hectares of land are available per person, suggesting that at the global level we are depleting resources and/or allowing the build-up of wastes.

Asia's demand for biosphere services is nearly twice its available capacity to supply it, at 1.6 global hectares per person. North America also is placing a much greater demand on natural systems than can be supported locally, at 7.1 global hectares per person.

Indicator relationship to Aichi Target 4

Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

The *Ecological Footprint* is a measure of the demands placed on the biosphere, and its capacity to support these demands. Through this simple supply-demand framework, a sustainable level of resource extraction and waste production can be determined. This measure can then be used to inform policies and practices in the realms of agriculture, forestry, aquaculture, and energy use. By adjusting for trade in resources and embodied waste emissions, the Ecological Footprint framework also evaluates the ecological assets demanded through consumption activities. With further analysis, this Ecological Footprint of consumption can be shown by consumption category - informing policies targeted at sustainable consumption.

To view all available indicators under this Aichi Biodiversity Target visit:
www.bipindicators.net/indicators

Indicator Partner



Global Footprint Network
Advancing the Science of Sustainability

Further information

For more information on the *Ecological Footprint* indicator visit:
www.bipindicators.net/ecologicalfootprint

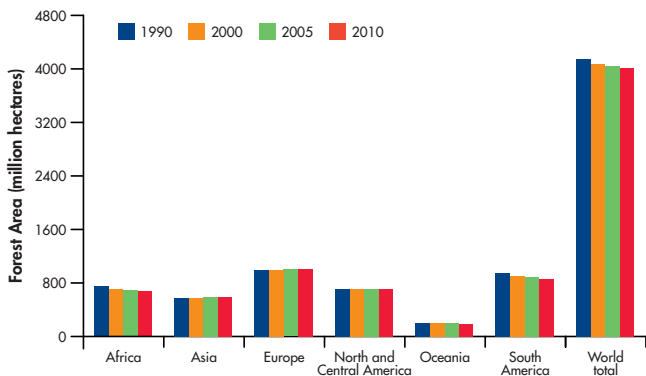


Aichi Target 5: Loss of habitats

Indicator: Extent of forests and forest types

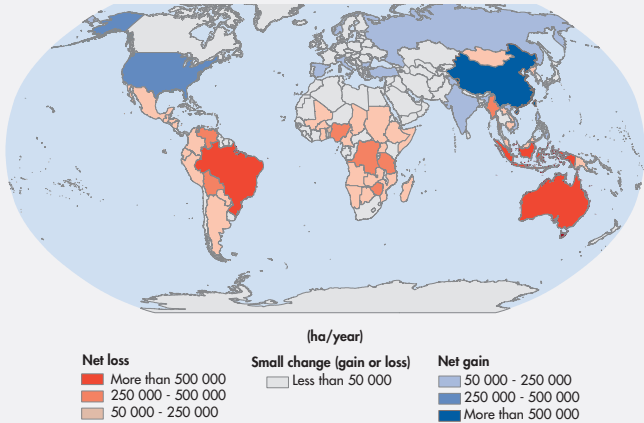


The loss of forest through conversion to other uses or natural causes has declined from 16 million hectares per year in the 1990s to 13 million hectares per year in 2010.



Trends in forest area, 1990-2010 (million ha)

Source: FAO, 2010



Net change in forest area by country, 2005 -2010 (ha/year)

Source: FAO, 2010

The full story

The rate of deforestation – mainly the conversion of tropical forest to agricultural land – shows signs of decreasing in several countries but continues at a high rate in others. Both Brazil and Indonesia, which had the highest net loss of forest in the 1990s, have significantly reduced their rate of loss, while in Australia, severe drought and forest fires have exacerbated the loss of forest since 2000.

Afforestation and natural expansion of forests in some countries and regions have reduced the net loss of forest area significantly at the global level. The net change in forest area in the period 2000-2010 is estimated at -5.2 million hectares per year (an area about the size of Costa Rica), down from -8.3 million hectares per year in the period 1990-2000.

Indicator relationship to Aichi Target 5

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 *Extent of forests and forest types* indicator measures trends in forest area over time, enabling the loss of forests to be monitored.

To view all available indicators under this Aichi Biodiversity Target visit: www.bipindicators.net/indicators

Indicator Partner



Food and Agriculture Organization of the United Nations

Further Information

For further information on the *Extent of forests and forest types* indicator visit: www.bipindicators.net/forestextent

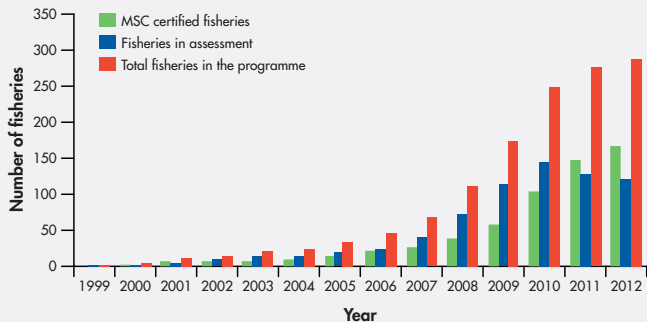


Aichi Target 6: Sustainable fisheries

Indicator: Number of MSC certified fisheries



In the last five years, the number of fisheries in the Marine Stewardship Council certification and ecolabeling programme has shown a three-fold increase, currently corresponding to ca. 10% of the global wild capture.



Number of fisheries in the Marine Stewardship Council certification and ecolabeling programme

Source: MSC

The full story

The Marine Stewardship Council (MSC) mission is to use the ecolabel and fishery certification program to contribute to the health of the world's oceans by recognising and rewarding sustainable fishing practices and thus creating incentives for fisheries to improve management practices and deliver environmental benefits. There are three MSC environmental principles that every fishery in the program must prove it meets: (1) health

of the target species; (2) health of the ecosystem; and (3) management effectiveness. In addition, measurable environmental improvements need to be demonstrated for a fishery to keep MSC certification.

This positive trend in fisheries becoming MSC certified indicates an increased commitment of fisheries management systems globally to attain sustainable practices and is an indication that at least 10% of the global wild harvest (FAO 2012) is extracted within sustainable limits and minimizing impacts on the ecosystem.

Indicator relationship to Aichi Target 6

Target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe biological limits.

The *Number of MSC certified fisheries* indicator measures the number of fisheries in the Marine Stewardship Council certification and ecolabeling programme. To qualify for the certification programme fisheries must meet certain environmental principles which work to ensure the sustainable harvest and management of fisheries.

To view all available indicators under this Aichi Biodiversity Target visit: www.bipindicators.net/indicators

Indicator Partner



Marine Stewardship Council

Further Information

For further information on the *Number of MSC certified fisheries* indicator visit: www.bipindicators.net/certifiedfisheries

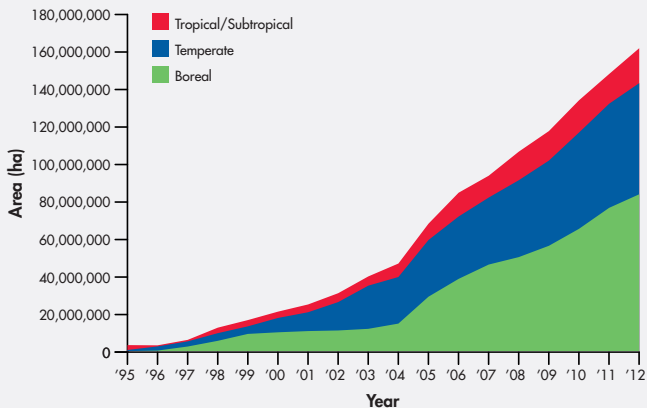


Aichi Target 7: Areas under sustainable management

Indicator: Area of forest under sustainable management: certification



The area of FSC certified forest has increased from 3.24 million hectares in 1995 to 162.33 million hectares as of August 2012. The annual growth rate is relatively constant since 2005, only once falling below 10 million hectares.



Total FSC certified forest area (ha)

Source: FSC, 2012

The full story

The indicator shows a positive response in regard to the sustainable management of forests. The area of Forest Stewardship Council (FSC)

certified forest has increased from 3.24 million hectares in 1995 to 162.33 million hectares as of August 2012. The annual growth rate is relatively constant since 2005, only once falling below 10 million hectares.

After a first peak in 1999 of >50%, the share of boreal forest area dropped to 30% in 2003, but since then has increased and stabilised at the 50% level. The share of (sub)tropical forest area has been rather stable since 2003, fluctuating between 11% and 15%.

Nearly two thirds of the certified forest area is within natural forests (64%), more than a quarter (28%) has been issued for semi-natural and mixed (plantation and natural) forests and less than a tenth for plantations (8%).

Relationship to Aichi Target 7

Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.

The *Area of forest under sustainable management: certification* 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 FSC certified forest represents an increase in the area of commercial forest managed responsibly with respect to biodiversity conservation, such as establishment of set-aside areas, protection of rare, threatened and endangered species and their habitats, identification and preservation of High Conservation Values, as well as exclusion of forest conversion to plantations or non-forest land uses.

To view all available indicators under this Aichi Biodiversity Target visit: www.bipindicators.net/indicators

Indicator Partner



FSC Forest Stewardship Council

Further Information

For further information on the *Area of forest under sustainable management: certification* indicator visit: www.bipindicators.net/forestcertification

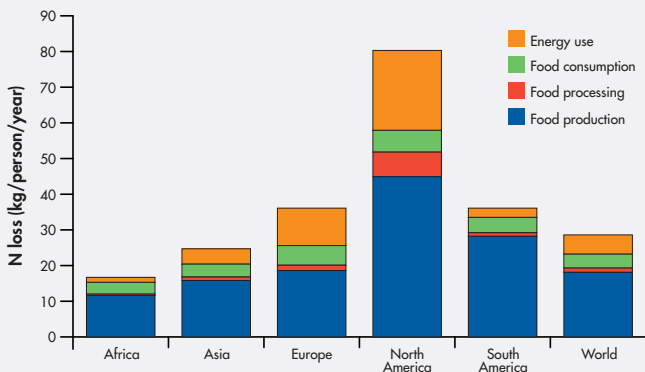


Aichi Target 8: Pollution

Indicator: Loss of reactive nitrogen to the environment



The current average global loss of reactive nitrogen to the environment stands at 29kg per inhabitant per year. 62% and 17% of this reactive nitrogen loss results from food production and energy use respectively.



Average loss of reactive nitrogen per inhabitant in 2008

Source: INI, 2012

The full story

Inefficient use of fertilizer and/or fossil fuels results in loss of reactive nitrogen to the environment.

Reactive nitrogen is chemically and biologically active, and is formed via the conversion of non reactive atmospheric nitrogen through artificial fertilizer production and/or fossil fuel burning.

Eventually, most of the lost reactive nitrogen to the environment will end up close to the sources or in remote areas (e.g. through transport of this nitrogen via air or water) located far from human activities, where it is often the dominant source of reactive nitrogen in nitrogen-limited systems. Once introduced to these systems, the increased reactive nitrogen levels can severely impact the associated biodiversity.

This indicator shows the reactive nitrogen loss for different regions of the world as a result of the production and consumption of food and the use of energy (e.g. for electricity production, industry and transport), and is expressed as the reactive nitrogen loss per capita per year, without making a distinction between losses to air, soil and water. This loss is a measure of potential reactive nitrogen pollution; the actual pollution depends on environmental factors and the extent to which the waste flows at production and consumption of food and energy are being reused.

In 2008, the global production and consumption of food and energy results in an average reactive nitrogen loss of 29 kg of nitrogen per inhabitant per year. Of the total loss, 5 kg is the result of energy use, 18 kg is from food production (agriculture), 1 kg due to food processing and 4 kg is released during food consumption.

The European reactive nitrogen loss per person is about 10 kg higher than the global loss and is almost half of that in North America, but twice as high as in Africa. The energy component is relatively large in industrialized countries, while the contribution of food production and consumption is large in countries with an extensive livestock sector and high levels of meat consumption.

Indicator relationship to Aichi Target 8

Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

The *Reactive Nitrogen Loss* indicator is a measure of potential reactive nitrogen pollution. Reactive nitrogen is implicated in the high concentration of ozone in the lower atmosphere, the eutrophication of coastal ecosystems, the acidification of forests, soils, and freshwater streams and lakes, and loss of biodiversity.

To view all available indicators under this Aichi Biodiversity Target visit:
www.bipindicators.net/indicators

Indicator Partners



International Nitrogen Initiative

International Nitrogen Initiative



Nitrogen Footprint

Further information

For more information on the *Reactive Nitrogen Loss* indicator visit:
www.bipindicators.net/nitrogenloss



Aichi Target 9: Invasive Alien Species

Indicator: Trends in Invasive Alien Species: Pressure



Lists of invasive alien species (IAS) remain essential for preventing, managing and reporting on biological invasions. However, at present only 11% of countries have adequate IAS data.



Indicator Coming Soon

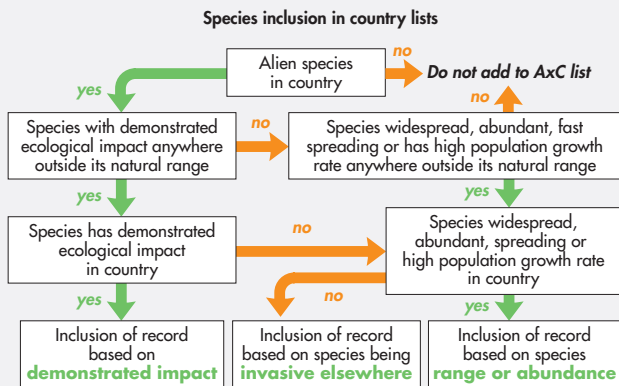
The full story

Lists of invasive alien species (IAS) remain essential for preventing, managing and reporting on biological invasions. These lists suffer from at least 10 forms of uncertainty and a range of errors, amongst which lack of knowledge, data quality and accessibility rank high. This has serious consequences for the science, policy, and management of invasions.

A key message to emerge for biological invasions from the 2010 Biodiversity Target was that only 11% of countries have adequate IAS data. It was recommended that information delivered by the indicator on the effects of country development status and data availability be used to inform future activities and capacity-building efforts.

A significant step was taken to overcome this hurdle with the release of an information document to the 15th meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) to increase the interoperability of existing information resources, including existing databases and networks. The effectiveness of existing information services on IAS will be improved, and a Global Invasive Alien Species Information Partnership (GIASIP) has been proposed to implement the Joint Work Programme.

Data generation and ready access to credible information is essential to achieving and reporting on Aichi Target 9, and efforts to this end are now underway.



Systematic decision making process used to reduce uncertainty and improve the transparency and repeatability of invasive alien species listing exercises

Source: modified from McGeoch *et al.* 2012

Indicator relationship to Aichi Target 9

Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

The *Trends in Invasive Alien Species* indicator consists of three sub-indicators: Pressure, State and Response. The Pressure indicator detailed in this section will be expressed as the number of documented IAS per country.

To view all available indicators under this Aichi Biodiversity Target visit: www.bipindicators.net/indicators

Indicator Partners



DST-NRF
Centre of Excellence
for Invasion Biology



MONASH
University Monash
University



BirdLife
International



IUCN Invasive
Species Specialist
Group



UNIVERSITE
Concordia
UNIVERSITY Concordia
University

Further Information

The indicator information in this section is taken from the recent article: McGeoch *et al.* (2012) Uncertainty in invasive alien species listing. *Ecological Applications*, **22**, 959-971.

The Information Document for SBSTTA 15 on the *Joint Work Programme to Strengthen Information Services on Invasive Alien Species as a Contribution towards Aichi Biodiversity Target 9* can be viewed online: www.cbd.int/doc/meetings/sbstta/sbstta-15/information/sbstta-15-inf-14-en.pdf

For further information on the *Trends in Invasive Alien Species* indicator visit: www.bipindicators.net/invasivealienspecies

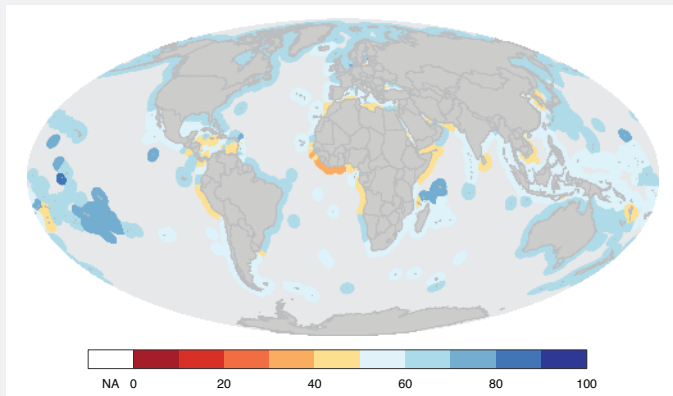


Aichi Target 10: Vulnerable ecosystems

Indicator: Ocean Health Index



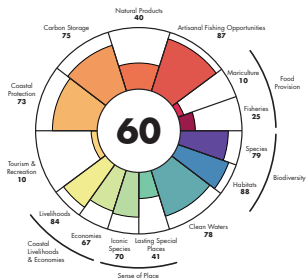
The Ocean Health Index uses a portfolio of ten public goals for measuring overall condition of marine ecosystems. The index score for the ocean within Exclusive Economic Zone (EEZ) boundaries is 60 out of 100, providing an important benchmark and indicating substantial room for improvement across the goals.



Map of index and individual goal scores per country

All waters within 171 exclusive economic zones (EEZs), were assessed and are represented on the map

Source: Halpern *et al.* 2012



Index scores (inside circle) and individual goal scores (coloured petals) for global area-weighted average of all countries

The outer ring is the maximum possible score for each goal, and a goals score and weight (relative contribution) are represented by the petal's length and width, except for 'food provision' sub-goals which are weighted by relative actual yield despite equal width of petals.

Source: Halpern *et al.* 2012

The full story

The *Ocean Health Index* uses a portfolio of ten public goals for measuring overall condition of marine ecosystems. It is a standardized, quantitative, transparent and scalable measure that can be used by scientists, managers, policy makers and the public to better understand, track and communicate ecosystem status and design strategic actions to improve overall ocean health.

The index score for the ocean within EEZ boundaries is 60 out of 100, providing an important benchmark and indicating substantial room for improvement across the goals. Index scores varied greatly by country ranging from 36 to 86, with many West African, Middle Eastern and Central American countries scoring poorly, and parts of Northern Europe, Canada, Australia, Japan and various tropical island countries and uninhabited regions scoring highly. Of all EEZs, 32% had an index score of less than 50 whereas only 5% had a score of greater than 70.

Indicator relationship to Aichi Target 10

Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

The *Ocean Health Index* measures the current status and likely future state of ten public goals. 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 biodiversity goal in particular tracks assessed species and mapped habitats, separately, as proxy measures for how overall biodiversity is faring. The extinction risk of coral reef species are tracked as part of the species goal and changes in coral reef condition are included in the habitats sub-goal.

To view all available indicators under this Aichi Biodiversity Target visit: www.bipindicators.net/indicators

Indicator Partners



National Centre for
Ecological Analysis and
Synthesis



Centre for Marine
Assessment and Planning

Further Information

This indicator information was taken from the recent article: Halpern *et al.* (2012) An index to assess the health and benefits of the global ocean. *Nature*, **488**, 615-620.

For further information on the *Ocean Health Index* visit: www.bipindicators.net/oceanhealthindex

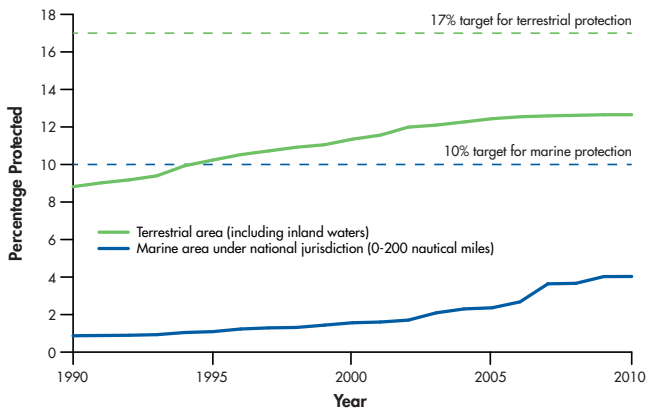


Aichi Target 11: Protected Areas

Indicators: Coverage of protected areas and overlays with biodiversity



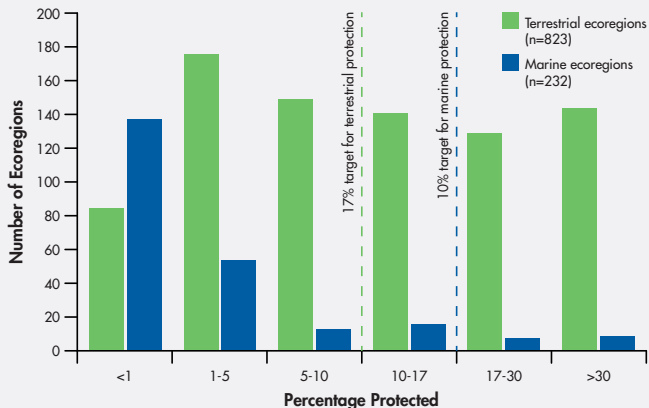
Over the past two decades protected areas have increased in number and extent. By 2010, 12.7% of terrestrial and inland waters and 4% of all marine areas under national jurisdiction were protected. The global protected area network does not provide adequate coverage of the world's ecoregions and areas of particular biodiversity importance.



Growth in the percentage of the terrestrial and marine area protected, 1990-2010.

Lags in national reporting are likely to be responsible for the slowing increase in recent years because it takes time for new protected areas to be included in the World Database on Protected Areas (WDPA).

Source: WDPA 2011



Protection status of terrestrial and marine ecoregions in 2010 (marine ecoregions out to 200 nautical miles)

Source: WDPA 2012

The full story

The extent of the global protected area network continues to grow as governments, communities, organisations and individuals designate additional protected areas in order to conserve biodiversity. In 2010, nationally designated protected areas covered 17 million square kilometres of terrestrial and inland water areas, an area twice the size of Brazil, or 12.7% of the world's terrestrial area outside Antarctica. To meet the 17% target, an additional 6 million square kilometres will have to be recognized as protected, an area 10 times the size of Madagascar (this estimate does not take into account additional requirements in Target 11 such as ecological representativeness). Around 6 million square kilometres (1.6%) of the global ocean area is protected. Of the total marine area under national jurisdiction, 4% is protected. To meet the target for marine areas under national jurisdiction, an additional 8 million square kilometres of marine and coastal areas will have to be recognized as protected, an area 14 times the size of Madagascar (see above).

The global protected area network does not yet provide adequate coverage of the world's ecoregions. Applying the new global 17% target to each terrestrial ecoregion, at present a third of the 823 ecoregions would meet this target. Marine ecoregions continue to be considerably less well protected than terrestrial ecoregions, and few marine ecoregions meet the 10% target originally set for 2012. Limited progress has also been made with protecting areas of particular biodiversity importance, with half of the best described sites (Alliance for Zero Extinction sites and Important Bird Areas) still entirely unprotected.

Indicator relationship to Aichi Target 11

Target 11: By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider land.

The *Coverage of protected areas* indicator utilizes information contained within the WDPA to monitor the coverage of terrestrial and marine protected areas. The PA overlays with biodiversity indicator provides a measure of how 'ecologically representative' the protected area network is and whether areas of particular biodiversity importance are being protected.

To view all available indicators under this Aichi Biodiversity Target visit: www.bipindicators.net/indicators

Indicator Partner



UNEP



WCMC

UNEP World Conservation Monitoring Centre

Further Information

This indicator information was taken from the recent report:
Bertzky *et al.* (2012) Protected Planet Report 2012: Tracking progress
towards global targets for protected areas. IUCN, Gland, Switzerland and
UNEP-WCMC, Cambridge, UK..

For further information on the indicators visit:

Coverage of protected areas - www.bipindicators.net/pacoverage

PA overlays with biodiversity - www.bipindicators.net/paoverlays

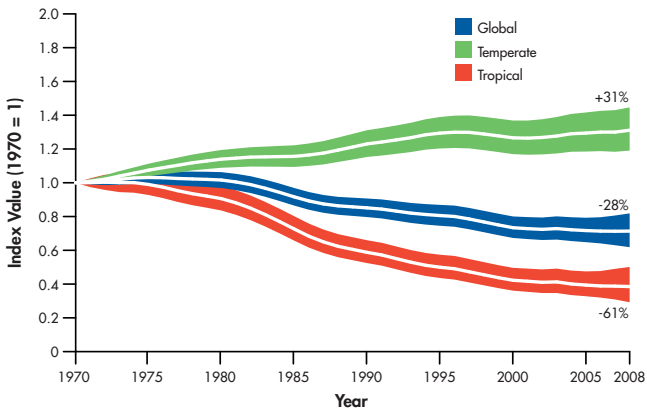


Aichi Target 12: Preventing extinctions

Indicators: Living Planet Index and IUCN Red List Index

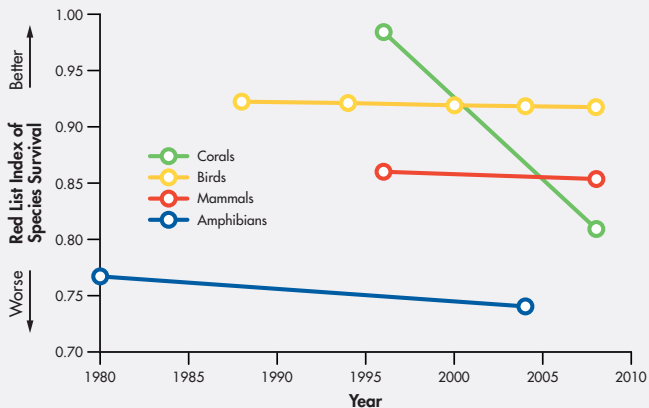


Across the globe, vertebrate population sizes have on average declined since 1970. In the tropics, population sizes have declined by just over 60%, while in temperate regions they have increased by 31%. The status of the world's warm-water corals, birds, mammals and amphibians has declined, and overall these groups have become more threatened with extinction over the last two decades.



The global, tropical and temperate Living Planet indices

Source: WWF/ZSL, 2012



Red List Index for the world's mammals, birds, amphibians and corals

Source: IUCN

The full story

The *Living Planet Index* (LPI) suggests that across the globe, vertebrate populations were on average one third smaller in 2008 than they were in 1970. The tropical LPI declined by just over 60% from 1970 to 2008, while the temperate LPI increased by 31% over the same period. This difference holds true for mammals, birds, amphibians and fish; for terrestrial marine and freshwater species and across all tropical and temperate biogeographical realms. Recent average population increases do not necessarily mean that temperate ecosystems are in a better state than tropical ecosystems. The observed temperate LPI trend is the result of four intertwined phenomena: recent baseline; differences in trajectory between taxonomic groups; notable conservation successes; and recent relative stability in species' populations. For example, if the temperate index extended back centuries rather than decades, it would very likely show a long-term decline at least as great as that of the tropical index in recent years.

The IUCN *Red List Index* (RLI) shows that all species groups with known trends are deteriorating in status, as more species are pushed towards extinction than away from it. Amphibians are more threatened than birds and mammals, but corals are deteriorating in status fastest, owing to increased frequency of ‘bleaching events’ brought about by climate change.

Indicator relationship to Aichi Target 12

Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

The IUCN *Red List Index* shows changes in the overall extinction risk of sets of species, based on the rate at which species move through IUCN Red List categories towards or away from extinction. It is calculated from the number of species in each category (Least Concern, Near Threatened, Vulnerable, Endangered, Critically Endangered, Extinct), and the number of changing categories between assessments as a result of genuine improvement or deterioration in status (category changes owing to improved knowledge or revised taxonomy are excluded). The indicator is directly related to Target 12 by monitoring the extinction risk of species groups.

The *Living Planet Index* is a composite indicator that measures changes in the size of wildlife populations to indicate trends in the state of biodiversity. The global LPI is based on trends in the size of 9,014 populations of 2,688 mammal, bird, reptile, and amphibian and fish species. Information on population trends is vital in being able to assess if conservation actions are successful and the conservation status of species are being improved.

To view all available indicators under this Aichi Biodiversity Target visit: www.bipindicators.net/indicators

Indicator Partners



Further Information

This LPI indicator information was taken from the 2012 *Living Planet Report*:
www.panda.org/about_our_earth/all_publications/living_planet_report/

For further information on the indicators visit:

IUCN *Red List Index* – www.bipindicators.net/rli

Living Planet Index – www.bipindicators.net/lpi

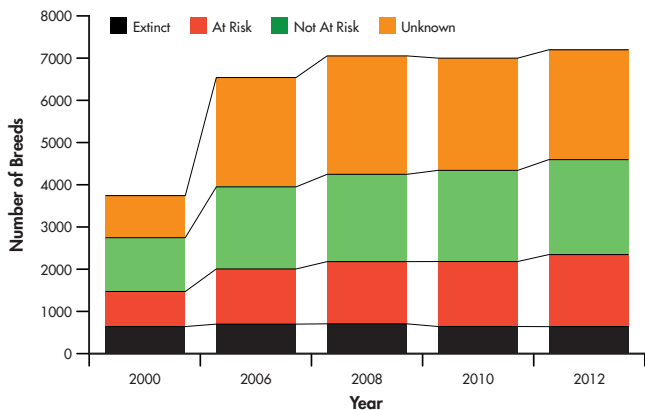


Aichi Target 13: Agricultural biodiversity

Indicator: Genetic diversity of domesticated animals
and ex situ crop collections



The number of local domestic livestock breeds categorized as at risk of extinction has increased from 1,543 (22%) in 2010 to 1,711 (24%) in 2012. Since 1996, more than 1.4 million germplasm accessions have been added to ex situ collections of cultivated plants, bringing the total number now conserved worldwide to about 7.4 million.



Changes in the risk status of local breeds from 2000 to 2012

Status as of June 2012

Source: FAO, 2012

The full story

Because of a lack of available data on diversity at the genetic level, the global status of animal genetic resources is currently assessed in terms of the extinction risk faced by the world's livestock breeds.

Between 2010 and 2012, the number of local breeds categorized as at risk from extinction increased from 22% to 24%. The absolute number of local breeds categorized as at risk increased from 1,543 to 1,711. This increase is largely caused by an increase in the number of at-risk breeds reported in the Europe and the Caucasus region. The proportion of local breeds categorized as not at risk remained the same (31%). The proportion classified as being of unknown risk status declined from 38% to 36%, reflecting the improvement in the state of reporting. As of June 2012, 8% of the reported breeds were classified as extinct.

Since the publication of the first State of the World Report on Plant Genetic Resources for Food and Agriculture (PGRFA), more than 1.4 million germplasm accessions have been added to *ex situ* collections, bringing the total number now conserved worldwide to about 7.4 million, representing significant amounts of genetic diversity of major crops conserved. However, no information exists for the extent of diversity *in situ*/on farm. FAO is currently developing a suite of indicators to monitor the status and trends of PGRFA, which will be considered for adoption by the next meeting of the Commission on Genetic Resources for Food and Agriculture in April 2013. Further, an Enrichment Index has been developed for measuring increase in genetic diversity of cultivated plants and their crop wild relatives in *ex situ* crop collections. This index is currently being tested.

Indicator relationship to Aichi Target 13

Target 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

The *Genetic diversity of terrestrial domesticated animals* indicator examines the risk status of livestock breeds. An increase in the percentage of livestock breeds categorized as at risk or extinct indicates a decline in genetic diversity.

The *Ex situ crop collections* indicator monitors the number of accessions to genebanks across the globe. An increase in the number of accessions indicates that crop genetic diversity is being safeguarded.

To view all available indicators under this Aichi Biodiversity Target visit:
www.bipindicators.net/indicators

Indicator Partner



Food and Agriculture Organization of the United Nations

Further Information

For further information on the indicators visit:

Genetic diversity of terrestrial domesticated animals – www.bipindicators.net/domesticatedanimals

Ex situ crop collections – www.bipindicators.net/cropcollections

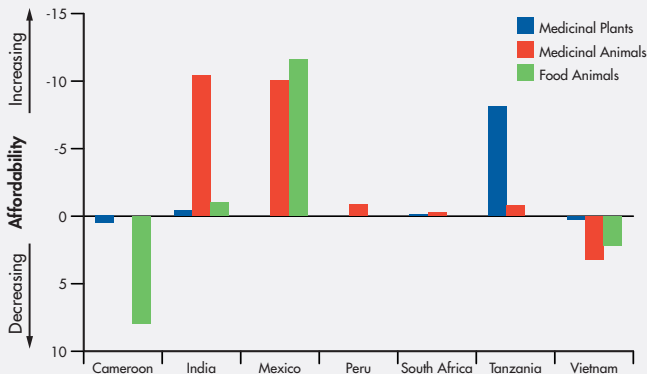


Aichi Target 14: Essential Ecosystem Services

Indicator: Accessibility to biodiversity for food and medicine



Where people rely on buying foods and medicine made from wild animal and plant species, access for poorer members of society to these products is a function of their price and affordability. In five of the seven countries sampled, wild products are becoming increasingly affordable to the poorest 10% of the population.



Change in the percentage of GDP per capita for 10% poorest used to purchase baskets of goods (MP =medicinal plants, MA=medicinal animals and FA= food animals), 2000-2010, indicating affordability

Source: TRAFFIC and IUCN SSC, 2010

The full story

Where people rely on buying wild food and medicines for their healthcare and dietary needs, their ability to access these commodities is a function of their price and affordability. These in turn depend on resource availability and other factors influencing supply and demand.

Current and historical price data were collected for wild food and medicine species selected from markets in seven countries, representing Latin America, Africa and Asia. They were compared with local income from published data on Gross Domestic Product (GDP) per capita for 10% of the poorest members of society.

In terms of affordability, all but two of the sampled countries' wild products were apparently becoming increasingly affordable to the poorest 10% of the population, particularly so for animal products in Mexico and medicinal animals in India. Medicinal plants in Tanzania were found to be becoming increasingly more affordable. However, wild food animals have decreased in affordability in Cameroon, despite wild meat remaining cheaper than domestic meat, whereas in Tanzania wild meat has remained at an almost constant level of affordability. In Vietnam, where wild meat is considered more of a luxury product and its sale is illegal, it has seemingly decreased in affordability in the past 10 years. For the other countries, sampled wild products are becoming relatively more affordable even though global indicators show that in general animal species that are used for food and medicine are becoming more threatened.

Indicator relationship to Aichi Target 14

Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

The *Accessibility Index*, a sub-indicator of the *Biodiversity for food and medicine* indicator, provides information on how the accessibility of species used for food and medicine to poorer people is changing through time. The indicator relates to Target 14 by establishing whether essential provisioning services, such as food and medicine, which rely on ecosystems are available to the poor and vulnerable in society.

To view all available indicators under this Aichi Biodiversity Target visit:
www.bipindicators.net/indicators

Indicator Partners

TRAFFIC

the wildlife trade monitoring network

TRAFFIC International



SSC

Species Survival Commission

IUCN Species Survival Commission

Further information

For more information on the Biodiversity for food and medicine indicator visit: www.bipindicators.net/foodandmedicine



Aichi Target 15: Ecosystem resilience

No indicator yet available

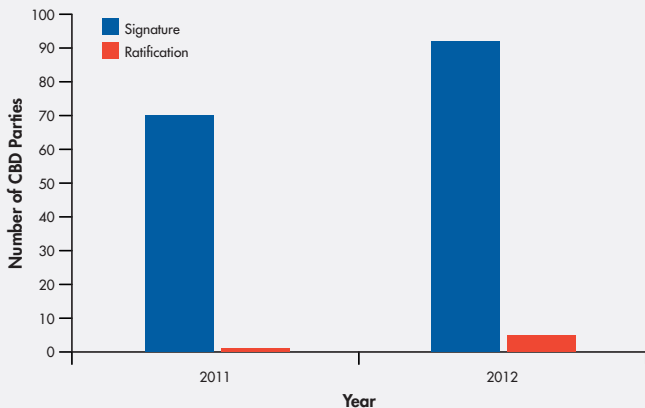


Aichi Target 16: Nagoya Protocol on Access and Benefit-sharing

Indicator: Ratification status of the Nagoya Protocol



Since adoption in 2010, 92 (48%) CBD Parties have signed the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization. As of 1 September 2012 five Parties to the CBD have deposited their instruments of ratification, acceptance, approval or accession.



Cumulative number of signatures and ratifications to the Nagoya Protocol

Source: CBD Secretariat, 2012

The full story

The *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization* was adopted by the Conference of the Parties to the Convention on Biological Diversity at its tenth meeting on 29 October 2010 in Nagoya, Japan. It provides a transparent legal framework for the effective implementation of one of the three objectives of the CBD: the fair and equitable sharing of benefits arising out of the utilization of genetic resources. The Protocol covers genetic resources and traditional knowledge associated with genetic resources, as well as the benefits arising from their utilization by setting out core obligations for its contracting Parties to take measures in relation to access, benefit-sharing and compliance.

Before the closing of signatures, ninety two Parties to the CBD (48%) had signed the Nagoya Protocol. As of 1 September 2012, five Parties have to date deposited their instruments of ratification, acceptance, approval or accession. Many countries have initiated national -level processes towards the ratification of the Protocol and it is expected that a number of these will ratify the Protocol before the end of 2012.

Indicator relationship to Aichi Target 16

Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation. This target addresses several issues:

- **Entry into force of the Nagoya Protocol by 2015;** The Nagoya Protocol was opened for signature by Parties to the Convention from 2 February 2011 until 1 February 2012. The Protocol will enter into force 90 days after the date of deposit of the fiftieth instrument of ratification. As such for this target to be met, 50 countries must ratify the Protocol by October 2015 at the latest.
- **The Nagoya Protocol is operational, consistent with national legislation:** The Nagoya Protocol, to be operational, will require that certain enabling conditions are met at the national level for its effective implementation. In particular, countries will need, depending on their specific circumstances, to revise legislative, administrative or policy

measures already in place or develop new measures in order to meet the obligations set out under the Protocol. Countries will also need to determine the institutional structure needed for implementing the Protocol.

The *Ratification status of the Nagoya Protocol* indicator directly measures progress towards the first of the target issues, by monitoring how many countries have ratified the Nagoya Protocol and thereby committed to meet the obligations set out in Protocol.

To view all available indicators under this Aichi Biodiversity Target visit: www.bipindicators.net/indicators

Indicator Partner



Convention on
Biological Diversity

Further Information

This indicator information was taken from the Nagoya Protocol web pages of the CBD website: www.cbd.int/abs/nagoya-protocol/signatories/

For further information on the *Ratification status of the Nagoya Protocol* indicator visit: www.bipindicators.net/NagoyaProtocolratification

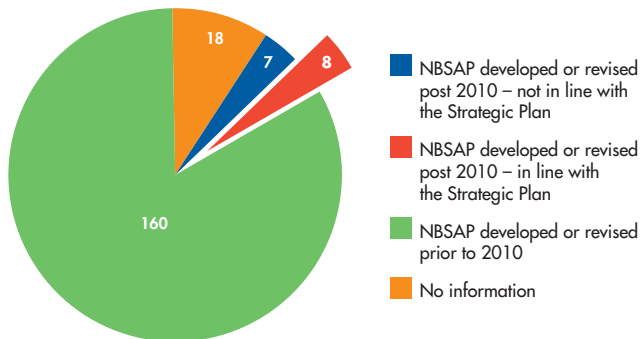


Aichi Target 17: National Biodiversity Strategies and Action Plans

Indicator: Status of NBSAPs



Of the 193 Parties to the CBD, 175 have developed National Biodiversity Strategies and Actions Plans (NBSAPs) in line with Article 6 of the CBD. Since the adoption of the Strategic Plan for Biodiversity 2011-2020, nine Parties have developed or revised their NBSAPs in line with the Strategic Plan.



Status of NBSAP development across CBD Parties

Source: CBD Secretariat, 2012

The full story

On ratifying the Convention on Biological Diversity, each Party through Article 6 is obliged to develop a National Biodiversity Strategy and Action Plan (NBSAP) which reflects the objectives of the Convention and integrates the conservation and sustainable use of biodiversity into relevant sectoral or cross-sectoral plans, programmes and policies. As of August 2012, 175

(91%) Parties have developed NBSAPs in line with Article 6. Of these Parties, 160 have completed or revised their first NBSAP, 13 currently have their NBSAP under revision and 41 have revised their NBSAP once or even several times.

In order to implement the new Strategic Plan for Biodiversity and achieve the Aichi Biodiversity Targets, Decision X/2 also invited parties to update and revise their NBSAPs in line with the Strategic Plan for Biodiversity 2011-2020. So far 15 Parties (8%) have developed or revised their NBSAP since the adoption of the Strategic Plan, however just over half of these (8 Parties) have aligned their NBSAPs with the Strategic Plan. The number of Parties developing and revising their NBSAPs in line with the Strategic Plan is predicted to rise over the coming years as Parties work to achieve Aichi Target 17.

Indicator relationship to Aichi Target 17

Target 17: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and undated national biodiversity strategy and action plan.

The *Status of NBSAPs* indicator directly monitors progress towards Aichi Target 17, by measuring how many CBD Parties have developed and revised their NBSAPs in line with Article 6 and the Strategic Plan for Biodiversity 2011-2020.

To view all available indicators under this Aichi Biodiversity Target visit: www.bipindicators.net/indicators

Indicator Partner



Convention on
Biological Diversity

Further Information

This indicator information was taken from the NBSAPs web pages of the CBD website visit: www.cbd.int/nbsap/

For further information on the *Status of NBSAPs* indicator visit: www.bipindicators.net/statusofNBSAPs

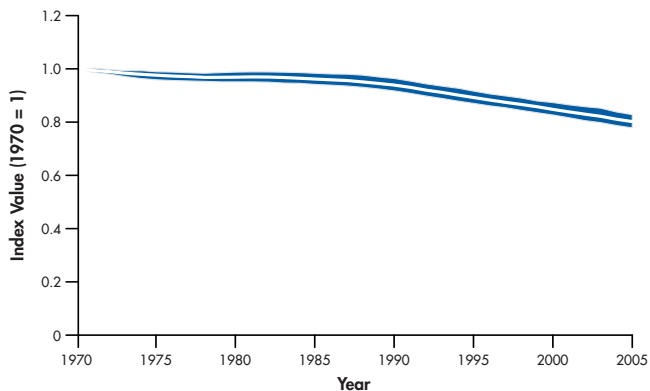


Aichi Target 18: Traditional knowledge

Indicator: Index of Linguistic Diversity

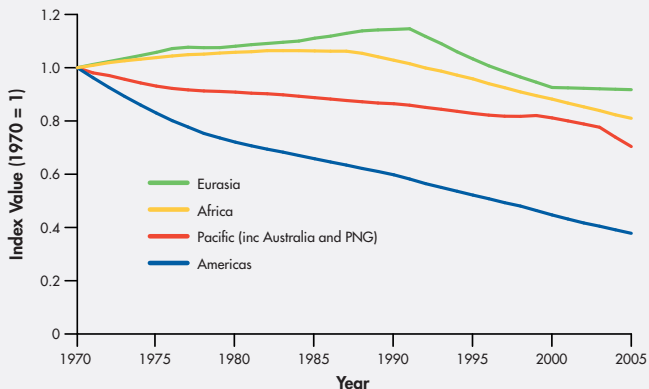


Global linguistic diversity has declined by 20% in just 35 years, between 1970 and 2005. Languages spoken by indigenous peoples, who make up 80% to 85% of the world's languages, have been especially affected.



Global Index of Linguistic Diversity

Source: Terralingua, 2012



Regional indigenous Indexes of Linguistic Diversity

Source: Terralingua, 2012

The full story

Linguistic diversity is part and parcel of the diversity of life in nature and culture. The *Index of Linguistic Diversity (ILD)* measures not just the number of languages, but also the linguistic and cultural diversity they represent. The ILD shows that global linguistic diversity has declined 20% in just 35 years, between 1970 and 2005.

Languages spoken by indigenous peoples, which make up 80% to 85% of the world's languages, have been especially affected. The global rate of decline for indigenous languages is slightly faster (21%) than the global average for all languages, with enormous variations between different regions of the world. Between 1970 and 2005, indigenous linguistic diversity declined by about 60% in the Americas, 30% in the Pacific, and 20% in Africa.

The dramatic decline in linguistic diversity is due to ever-growing social and economic pressures that are inducing or even forcing people to switch from generally smaller, more geographically restricted languages to larger languages, especially global languages like Mandarin Chinese, Hindi,

English, or Spanish, or regionally dominant languages like Swahili. The top 16 languages spoken worldwide increased their share of the global population from 45% in 1970 to 55% in 2005.

Indicator relationship to Aichi Target 18

Target 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

Linguistic diversity is part and parcel of the diversity of life in nature and culture. The loss of a language, also represents a loss in the cultural traditions and cultural knowledge it conveys. The *Index of Linguistic Diversity* therefore functions as an indicator of traditional knowledge and its loss.

To view all available indicators under this Aichi Biodiversity Target visit: www.bipindicators.net/indicators

Indicator Partner



Terralingua

Further Information

For further information on the *Index of Linguistic Diversity* indicator visit: www.bipindicators.net/ild



Aichi Target 19: Biodiversity Knowledge

Indicator: Number of maintained species inventories being used to implement the CBD



Effective conservation and management of biodiversity depends in large part on our understanding of status and trends in biodiversity. It has long been recognized that the knowledge gaps in the taxonomic system hinder effective decision making.



Indicator Coming Soon

The full story

Effective conservation and management of biodiversity depends in large part on our understanding of taxonomy. Unfortunately, inadequate taxonomic information and infrastructure, coupled with declining taxonomic expertise, hinders our ability to make informed decisions about conservation, sustainable use and sharing of the benefits derived from genetic resources.

Species inventories are a key mechanism for improving the taxonomic information base. The Global Taxonomy Initiative is working to produce an

indicator on the 'Number of maintained species inventories being used to implement the CBD'. The indicator would potentially consist of a number of sub-indicators populated using a range of data sources including National Biodiversity Strategies and Action Plans (NBSAPs) and online species databases such as the Catalogue of Life and Global Biodiversity Indicators Facility (GBIF).

Indicator relationship to Aichi Target 4

Target 19: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.

Taxonomic information is vital for making informed decisions about the conservation of biodiversity. The *Number of maintained species inventories being used to implement the CBD* indicator monitors the level of taxonomic information available via species inventories to support these decisions.

To view all available indicators under this Aichi Biodiversity Target visit: www.bipindicators.net/indicators

Indicator Partner



Further information

For more information on the Number of maintained species inventories being used to implement the CBD indicator visit: www.bipindicators.net/speciesinventories

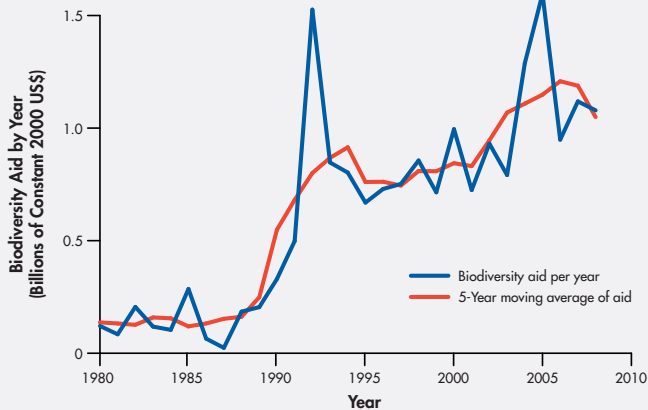


Aichi Target 20: Resource Mobilization

Indicator: Official Development Assistance
in support of the CBD



Biodiversity aid has increased substantially since 1980. Aid flows are positively and strongly associated with national numbers of threatened species, species richness, and endemic species.



Temporal trends in biodiversity aid, 1980-2008

Source: Miller *et al.* 2012

The full story

Although biodiversity related aid exhibits substantial inter-annual fluctuations, a five-year moving average reveals an overall upward trend. Biodiversity funding averaged about \$200 million annually in the 1980s, increasing to an average \$800 million annually in the 1990s. Growth during the post-1990 period is traceable to the creation of the Global Environment Facility (GEF) in 1991 and pledges at the 1992 Rio Summit. Since 2002, biodiversity aid has shifted to a new average of \$1.1 billion annually, a 4.5 fold increase from the 1980s. Despite the increase, funding falls well short of the amounts promised in Rio.

The aid that has been allocated appears to be reaching countries with greater conservation needs. Aid flows are strongly associated with national numbers of threatened species, species richness, and endemic species. Biodiversity-related aid is also positively associated with indicators of good governance within recipient countries.

Indicator relationship to Aichi Target 20

Target 20: By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan 2011-2020 from all sources and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resources needs assessments to be developed.

The *Official Development Assistance (ODA)* in support of the CBD indicator monitors the level and flow of international biodiversity aid. ODA was adopted by the CBD as a sub indicator for monitoring progress towards implementation of the Strategy on Resource Mobilization.

To view all available indicators under this Aichi Biodiversity Target visit: www.bipindicators.net/indicators



AidData



Organisation for Economic Co-operation and Development

Further Information

This indicator information was taken from the recent article: Miller *et al.* (2012) Biodiversity Governance, and the allocation of international aid for Conservation. *Conservation Letters*. doi:10.1111/j.1755-263x.2012.00270.x

For further information on the *Official Development Assistance in support of the CBD* indicator visit: www.bipindicators.net/oda



Indicator Projections and Future Scenarios

Partners are also working to use their indicators in novel ways to predict future trends or project the results of different policy scenarios. Here are some examples of this new and exciting work:

Projecting the Ecological Footprint to 2050

The Ecological Footprint Scenario calculator can be used to project the footprint in 2015, 2030 and 2050.



Using indicators to project outcomes of future biodiversity policies

Indicators can serve as strong predictive tools in decision making for the Aichi Targets.



THE UNIVERSITY OF
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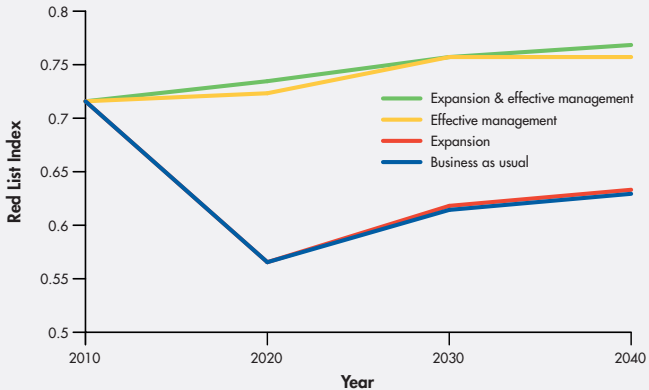
Imperial College
London

Currently, global biodiversity indicators are used to report on the present trends and status of biodiversity; however they could also potentially aid decision making by being projected forwards and predicting the outcomes of different biodiversity policies and evaluating their actions. This approach has been tested using the IUCN *Red List Index* and the *Living Planet Index* for two Aichi target relevant case studies, and revealed the potential of indicators as a strong predictive tool in decision making.



Case study 1: Performance of protected areas in sub-Saharan Africa

Results showed that increasing effective management of existing protected area benefitted biodiversity more that if protected areas were simply expanded, and that expansion without improvements in management provided little benefit over a business as usual scenario. This is important because Aichi Target 11 calls for protection of at least 17% of terrestrial areas.





Case study 2: Reducing bottom trawling

The results were not so simple. The impacts of either halving or eliminating bottom trawling were modelled across six ocean ecosystems. These are potential policy scenarios in reaching Aichi Target 6 which calls for sustainable harvest and management of fish and invertebrate stocks. Projections of the Living Planet Index did not reflect the anticipated increases in vertebrate biomass. Monitoring data are biased towards such groups as seabirds, which declined in the model due to a fall in discarded fish, and a shortage of data for some of the groups which improved, such as rays.

Further information

Further information on projecting the IUCN *Red List Index* and *Living Planet Index* to assess the impacts of different biodiversity policies be found in the recent article: Nicholson E *et al.* (2012) Making Robust Policy Decisions Using Global Biodiversity Indicators. *PLoS ONE* 7(7): e41128. doi:10.1371/journal.pone.0041128

For more information on the IUCN *Red List Index* visit: www.bipindicators.net/rli

For more information on the *Living Planet Index* visit: www.bipindicators.net/lpi



Projecting the Ecological Footprint to 2050

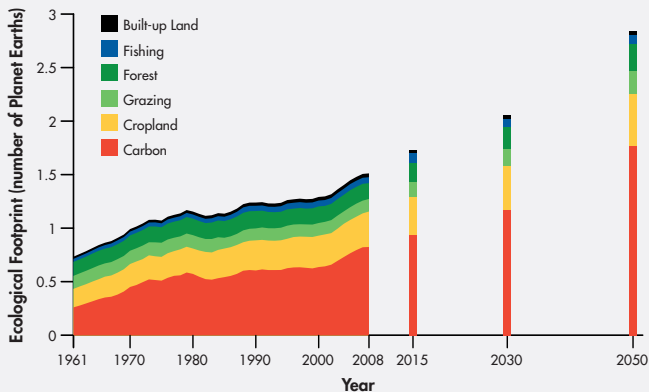


Global Footprint Network
Advancing the Science of Sustainability

The Ecological Footprint Scenario Calculator reveals that if a “business as usual” pathway is followed, by 2050 humanity would require 2.9 planets to support its needs.

The world’s population and per capita consumption are predicted to increase rapidly over the next half century. This will have a considerable impact on humanity’s demand for natural resources.

The *Ecological Footprint Scenario Calculator* utilises existing Footprint data (1961-2008) in conjunction with data from other scenario models (population, land use, land productivity, energy use, diet and climate change) to project the Ecological Footprint to 2015, 2030 and 2050.



“Business as usual” scenario of the Ecological Footprint from 2009 to 2050

Source: Global Footprint Network, 2012

The projected results show that the “business as usual” scenario will dramatically increase humanity’s Ecological Footprint, placing more and more pressure on the planet. By 2050 humanity would require an equivalent of 2.9 planets to support the “business as usual” assumptions.

Further information

Further information on the *Ecological Footprint Scenario calculator* can be found in the recent article: Moore, D., Cranston, G., Reed, A. and Galli, A. (2012) Projecting future human demand on the Earth’s regenerative capacity. *Ecological Indicators*. 16:3-10.

For more information on the Ecological Footprint indicator:
www.bipindicators.net/ecologicalfootprint

www.unep.org

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