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## Report on analysis of national indicator products

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# Report on analysis of national indicators products

*This document has been prepared to support the revision of the SEBI set in relation with national initiatives. It will help to ensure better links between SEBI process and national initiatives. Based on the 2010 production of national biodiversity reports, there is a need to re-assess the SEBI set vis-à-vis adoption of individual indicators at national level.*

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*Some of the data used comes from a contract let by the United Kingdom Department for Environment Food and Rural Affairs, undertaken by the United Nations Environment Programme World Conservation Monitoring Centre to review national use of indicators as an input to the CBD Ad-Hoc Technical Expert Working Group meeting held in June 2011 in High Wycombe UK; permission to use these data is gratefully acknowledged.*

# 1 Sources used for this report

The main sources of information used for the elaboration of this report have been the Fourth National Reports (4NR) to the United Nations Convention on Biological Diversity (CBD) prepared by the 38 EEA countries: 32 member countries (the 27 European Union Member States together with Iceland, Liechtenstein, Norway, Switzerland and Turkey) and six cooperating countries (Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Montenegro and Serbia). However, when this report was written, the 4NR of Greece, Iceland and Italy were not available.

When the 4NR pointed at a specific website or national report as a reference for more detailed information regarding biodiversity indicators, these additional sources have also been checked. In these cases, if there were discrepancies between the 4NR and the additional sources, the most up-to-date information has been used in the analysis.

More general sources such as decisions of the Tenth meeting of the Conference of the Parties to the CBD, the EU Biodiversity Strategy to 2020, SEBI reports and information documents for the Ad Hoc Technical Expert Group Meeting on Indicators for the Strategic Plan for Biodiversity 2011-2020 have also been used as scoping and background documents.

A detailed list of the sources used is given in Annex 1.

## 2 Analysis of National biodiversity indicators against the structure of the CBD Strategic Plan 2002-2010

The analysis in this document is based on the 4<sup>th</sup> National Reports (4NR) of 38 European (<sup>1</sup>) Parties to the CBD, which were screened for biodiversity indicators. Inspired by the approach used by Bubb et al., 2011, five different categories were established according to the level of information reported on the indicator/subject:

- 1- Indicator reported with results, figures.
- 2- Indicator mentioned (no figure). The indicator is mentioned or listed in the report, but no figures, data or graphs are provided.
- 3- Alluded to in the report. The subject is mentioned in the report without specific allusion to an indicator and no data are provided.
- 4- Alluded to in the report with figure. The subject is mentioned in the report without specific allusion to an indicator, but data, figures or graphs are provided.
- 5- Indicator under development. It is specifically mentioned in the report that the indicator is under development.

In this report, when an indicator is referred to as *mentioned*, *used* or *reported* in a report/by a country this means that it was included in the 4NR (or additional sources analyzed) under any of the five categories described above. The term '*evidence*' is used when the indicator is reported following the criteria of categories 1 or 4. '*Without evidence*' is applied to indicators under categories 2, 3 and 5.

In addition, when talking about proportion of countries, the total number of countries considered is 35 (instead of the 38 countries), since the 4NR for Greece, Iceland and Italy were not available.

The indicators found in the 4NR have been listed following the SEBI indicators structure as described in table 2.1, which closely corresponds to the focal areas used in the CBD 2002-2010 Strategic Plan (<sup>2</sup>). The first part of the list corresponds to the 26 SEBI indicators, which are written preceded by their sequence number in the SEBI set. Other indicators that are not components of the SEBI set or differ significantly from those included in the set are not numbered. Indicators that do not fit in the existing SEBI Headline indicator headings are listed under 'others'.

Some very specific indicators have been kept in the list as individual indicators rather than including them under a more general indicator. In addition, some of the countries have also incorporated in the reports more general indicators on sustainable development and growth, such as 'Population density', 'Vehicle fleet per capita', 'Sectoral contributions to GDP', 'Water consumption' or 'Waste generation'; these indicators have also been taken into account for the analysis. This makes the list quite long, but allows the level of detail reflected in the 4NR to be maintained. The complete list of the 332 national indicators used by the countries is available in Annex 2.

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<sup>1</sup> The 27 European Union Member States together with Iceland, Liechtenstein, Norway, Switzerland, Turkey, Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Montenegro and Serbia

<sup>2</sup> In this document, when talking about focal areas we refer to the focal areas used in the CBD 2002-2010 Strategic Plan

**Table 2.1 CBD focal areas and SEBI headline indicators**

<b>CBD focal area<sup>3</sup></b>	<b>SEBI Headline indicator</b>
Status and trends of the components of biological diversity	Trends in the abundance and distribution of selected species
	Change in status of threatened and/or protected species
	Trends in extent of selected biomes, ecosystems and habitats
	Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socio-economic importance
	Coverage of protected areas
Threats to biodiversity	Nitrogen deposition
	Trends in invasive alien species (numbers and costs of invasive alien species)
	Impact of climate change on biodiversity
Ecosystem integrity and ecosystem goods and services	Marine Trophic Index
	Connectivity/fragmentation of ecosystems
	Water quality in aquatic ecosystems
Sustainable use	Area of forest, agricultural, fishery and aquaculture ecosystems under sustainable management
	Ecological Footprint of European countries
Status of access and benefits sharing	Percentage of European patent applications for inventions based on genetic resources
Status of resources transfers	Funding to biodiversity
Public opinion (additional EU focal area)	Public awareness and participation

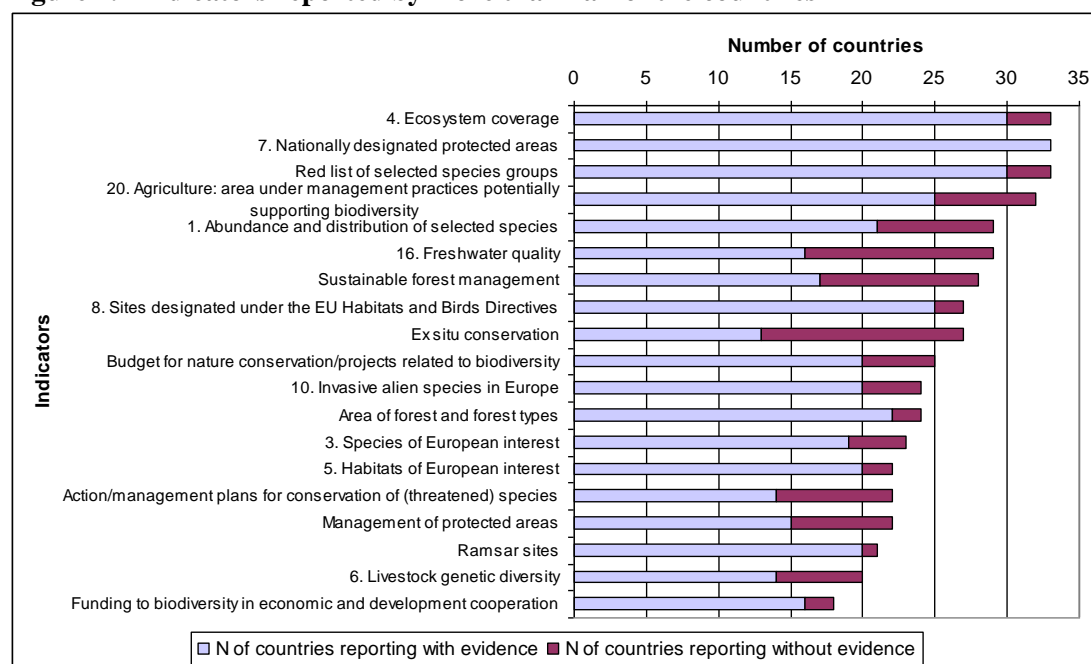
<sup>3</sup> The CBD Focal areas were adapted in the SEBI set to include Public Opinion instead of Traditional Knowledge.

## 2.1 Indicators reported by more than half of the countries

As illustrated in Figure 2.1, the ten indicators used by the greatest number of countries are:

- ‘4. Ecosystem coverage’;
- ‘7. Nationally designated protected areas’;
- ‘Red list of selected species groups’;
- ‘20. Agriculture: area under management practices potentially supporting biodiversity’;
- ‘1. Abundance and distribution of selected species’;
- ‘16. Freshwater quality’;
- ‘Sustainable forest management’;
- ‘8. Sites designated under the EU Habitats and Birds Directives’;
- ‘Ex situ conservation’; and
- ‘Budget for nature conservation/projects related to biodiversity’.

**Figure 2.1 Indicators reported by more than half of the countries**



**Note:** The indicators preceded by a number are indicators from the SEBI set.

In addition to the 10 most reported indicators, another 9 indicators are mentioned by more than half of the countries. From the 19 indicators, 10 are part of the SEBI set.

As illustrated in table 2.2, from the 19 indicators reported by more than half of the countries, three are reported by 33 countries and another 7 are reported by at least 25 countries. Three of the 19 indicators are reported without evidence by more than 10 countries and five indicators are reported without evidence by more than 5 countries. The remaining 11 indicators are reported without evidence by less than 6 countries.

**Table 2.2 Indicators reported by more than half of the countries: total number of countries reporting the indicator and number of countries reporting the indicator without evidence**

Indicators	Total number of countries reporting the indicator	Number of countries reporting the indicator without evidence
4. Ecosystem coverage	33	3
7. Nationally designated protected areas	33	0
Red list of selected species groups	33	3
20. Agriculture: area under management practices potentially supporting biodiversity	32	7
1. Abundance and distribution of selected species	29	8
16. Freshwater quality	29	13
Sustainable forest management	28	11
8. Sites designated under the EU Habitats and Birds Directives	27	2
Ex situ conservation	27	14
Budget for nature conservation/projects related to biodiversity	25	5
10. Invasive alien species in Europe	24	4
Area of forest and forest types	24	2
3. Species of European interest	23	4
5. Habitats of European interest	22	2
Action/management plans for conservation of (threatened) species	22	8
Management of protected areas	22	7
Ramsar sites	21	1
6. Livestock genetic diversity	20	6
Funding to biodiversity in economic and development cooperation	18	2

**Note:** The indicators preceded by a number are indicators from the SEBI set.

As illustrated in table 2.3, five of the 7 CBD focal areas and 9 of the 16 SEBI Headline indicators are represented by the 19 indicators reported by more than half of the countries. The focal area 'Status of access and benefits sharing' and the additional EU focal area 'Public opinion' are not represented by the 19 indicators.

**Table 2.3 Indicators reported by more than half of the countries according to CBD focal areas and SEBI Headline indicators**

CBD focal area	SEBI Headline indicator	Indicator
Status and trends of the components of biological diversity	Trends in the abundance and distribution of selected species	1. Abundance and distribution of selected species
	Change in status of threatened and/or protected species	3. Species of European interest Red list of selected species groups Action/management plans for conservation of (threatened) species
	Trends in extent of selected biomes, ecosystems and habitats	4. Ecosystem coverage 5. Habitats of European interest Area of forest and forest types



	Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socio-economic importance	6. Livestock genetic diversity
	Coverage of protected areas	Ex situ conservation
		7. Nationally designated protected areas
		8. Sites designated under the EU Habitats and Birds Directives
		Ramsar sites
		Management of protected areas
Threats to biodiversity	Trends in invasive alien species (numbers and costs of invasive alien species)	10. Invasive alien species in Europe
Ecosystem integrity and ecosystem goods and services	Water quality in aquatic ecosystems	16. Freshwater quality
Sustainable use	Area of forest, agricultural, fishery and aquaculture ecosystems under sustainable management	20. Agriculture: area under management practices potentially supporting biodiversity
		Sustainable forest management
Status of resources transfers	Funding to biodiversity	Budget for nature conservation/projects related to biodiversity
		Funding to biodiversity in economic and development cooperation

**Note:** The indicators preceded by a number are indicators from the SEBI set.

Regarding SEBI Headline indicator, the following ones are not represented by the 19 indicators:

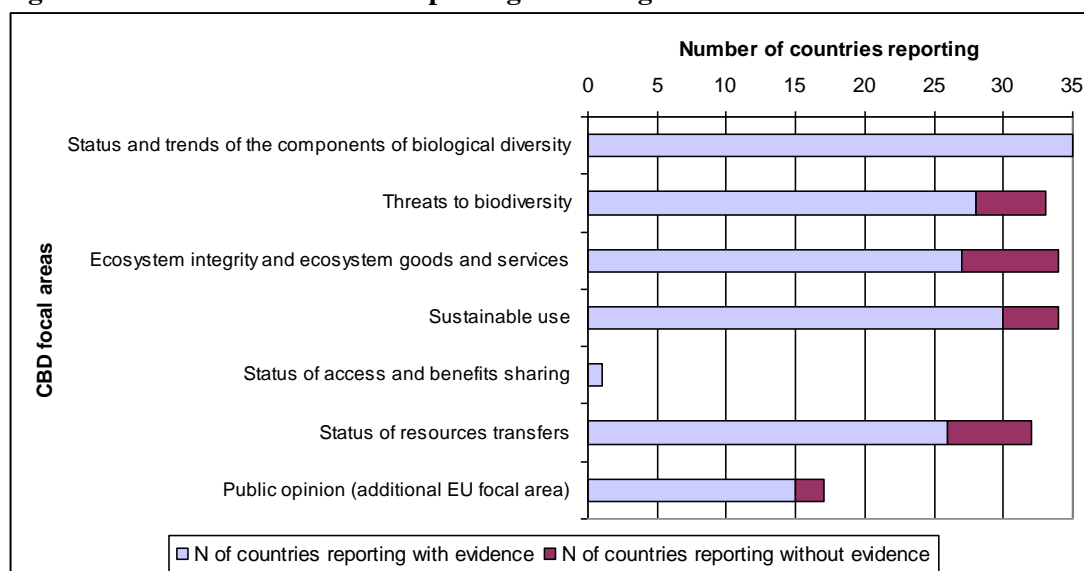
- Nitrogen deposition;
- Impact of climate change on biodiversity;
- Marine Trophic Index;
- Connectivity/fragmentation of ecosystems;
- Ecological Footprint of European countries;
- Percentage of European patent applications for inventions based on genetic resources; and
- Public awareness and participation.

## 2.2 Countries reporting according to CBD focal areas and SEBI Headline indicators

As illustrated in figure 2.2,

- More than 30 countries reported some data for five of the CBD focal areas;
- Seventeen countries reported on ‘Public opinion’ (an additional EU focal area);
- Only one country reported on ‘Status of access and benefits sharing’.

**Figure 2.2 Number of countries reporting according to CBD focal areas**



Without taking into account Greece, Iceland and Italy, for which the 4NR are not available, aggregation of indicators according to CBD focal areas show that:

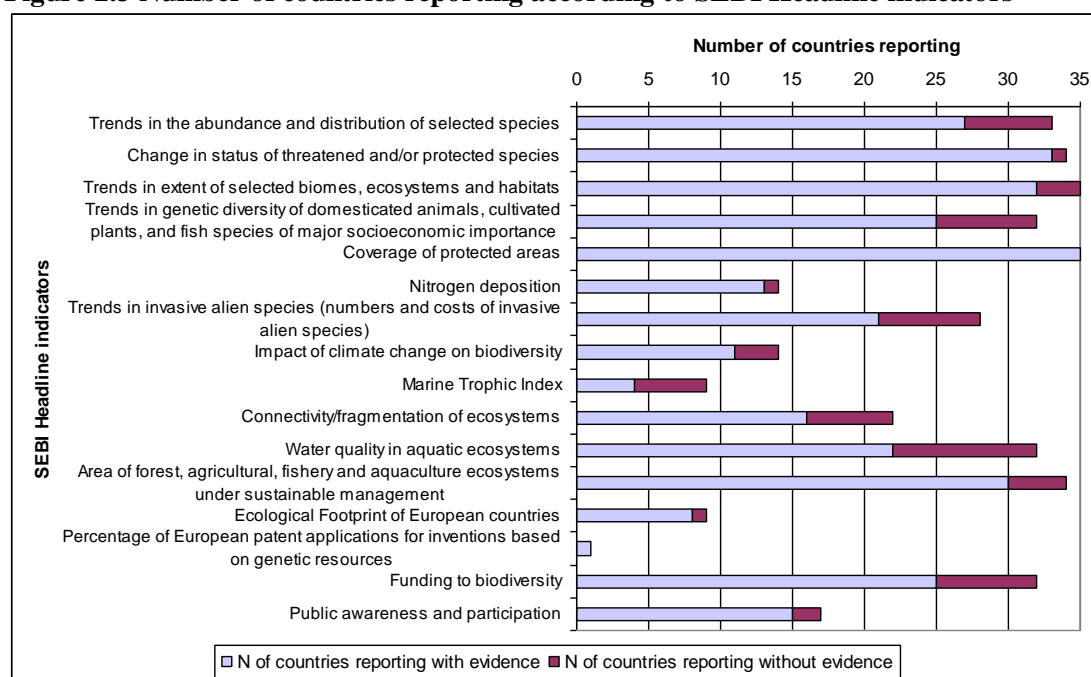
- 100 % of the countries reported with evidence on at least one indicator for the focal area ‘Status and trends of the components of biological diversity’;
- 80 % of the countries reported with evidence on at least one indicator for the focal area ‘Threats to biodiversity’;
- 77 % of the countries reported with evidence on at least one indicator for the focal area ‘Ecosystem integrity and ecosystem goods and services’;
- 86 % of the countries reported with evidence on at least one indicator for the focal area ‘Sustainable use’;
- 74 % of the countries reported with evidence on at least one indicator for the focal area ‘Status of resource transfers’.
- 43 % of the countries reported with evidence on at least one indicator for the additional EU focal area ‘Public opinion’.

As illustrated in figure 2.3 showing number of countries reporting according to SEBI Headlines indicators:

- More than 30 countries reported some information on 8 of the 16 SEBI Headline indicators:
  - ‘Trends in the abundance and distribution of selected species’ – 33 countries;
  - ‘Change in status of threatened and/or protected species’ – 34 countries;

- ‘Trends in extent of selected biomes, ecosystems and habitats’ – 35 countries;
- ‘Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socioeconomic importance’ – 32 countries;
- ‘Coverage of protected areas’ – 35 countries;
- ‘Water quality in aquatic ecosystems’ – 32 countries;
- ‘Area of forest, agricultural, fishery and aquaculture ecosystems under sustainable management’ – 34 countries; and
- ‘Funding to biodiversity’ – 32 countries.
- Five Headline indicators were reported by less than 15 countries:
  - ‘Nitrogen deposition’ – 14 countries;
  - ‘Impact of climate change on biodiversity’ – 14 countries;
  - ‘Marine Trophic Index’ – 9 countries;
  - ‘Ecological Footprint of European countries’ – 9 countries; and
  - ‘Percentage of European patent applications for inventions based on genetic resources’, for which only one country reported some data – 1 country.

**Figure 2.3 Number of countries reporting according to SEBI Headline indicators**



Without taking into account Greece, Iceland and Italy, for which the 4NR are not available, aggregation of indicators according to SEBI Headline indicators show that:

- 100 % of the countries reported with evidence on at least one indicator for the Headline indicator ‘Coverage of protected areas’;
- About 90 % of the countries reported with evidence on at least one indicator for:
  - ‘Change in status of threatened and/or protected species’;
  - ‘Trends in extent of selected biomes, ecosystems and habitats’; and
  - ‘Area of forest, agricultural, fishery and aquaculture ecosystems under sustainable management’.
- In addition, more than 50 % of the countries reported with evidence on at least one indicator for the Headline indicators:

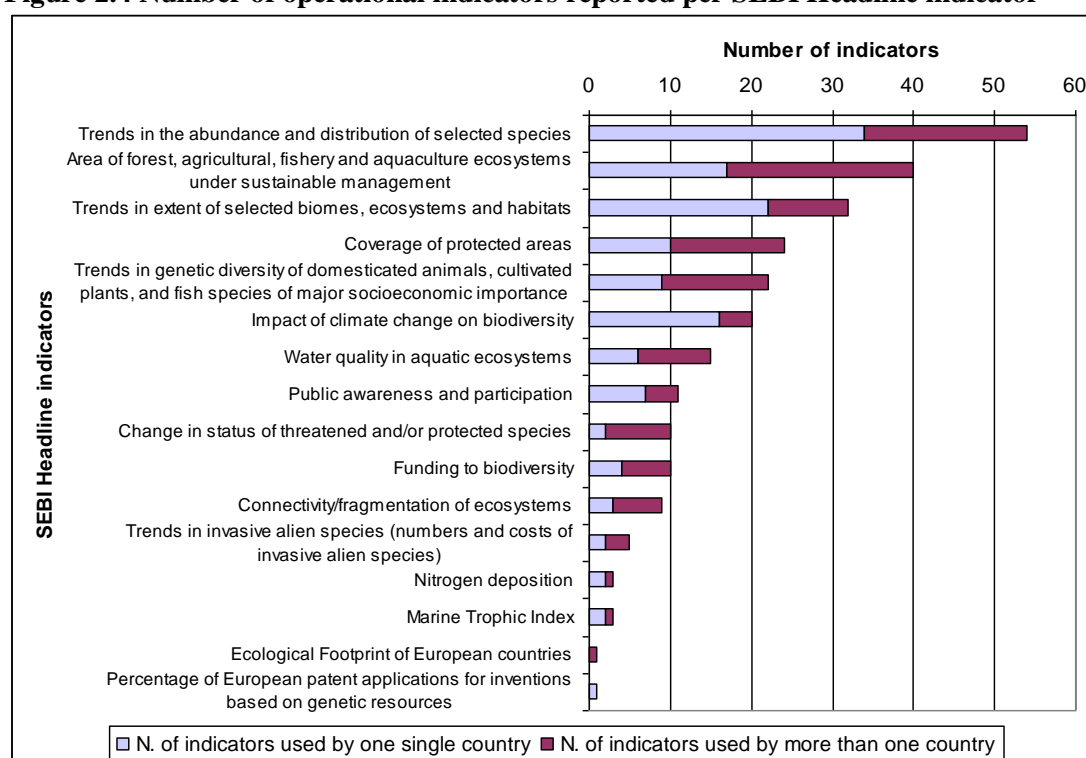
- 'Trends in the abundance and distribution of selected species';
- 'Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socioeconomic importance';
- 'Trends in invasive alien species (numbers and costs of invasive alien species)';
- 'Water quality in aquatic ecosystems'; and
- 'Funding to biodiversity'.
- Three Headline indicators were reported with evidence on at least one indicator by less than 30 % of the countries:
  - 'Marine Trophic Index';
  - 'Ecological Footprint of European countries'; and
  - 'Percentage of European patent applications for inventions based on genetic resources'.

## 2.3 Indicators and frequency of reporting according to SEBI Headline indicators

Figure 2.4 shows the highest numbers of operational indicators reported for the following SEBI Headline indicators:

- ‘Trends in the abundance and distribution of selected species’ – 54 indicators;
  - ‘Area of forest, agricultural, fishery and aquaculture ecosystems under sustainable management’ – 40 indicators;
  - ‘Trends in extent of selected biomes, ecosystems and habitats’ – 32 indicators;
  - ‘Coverage of protected areas’ – 24 indicators;
  - ‘Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socioeconomic importance’ – 22 indicators; and
  - ‘Impact of climate change on biodiversity’ – 20 indicators.
- ‘others’

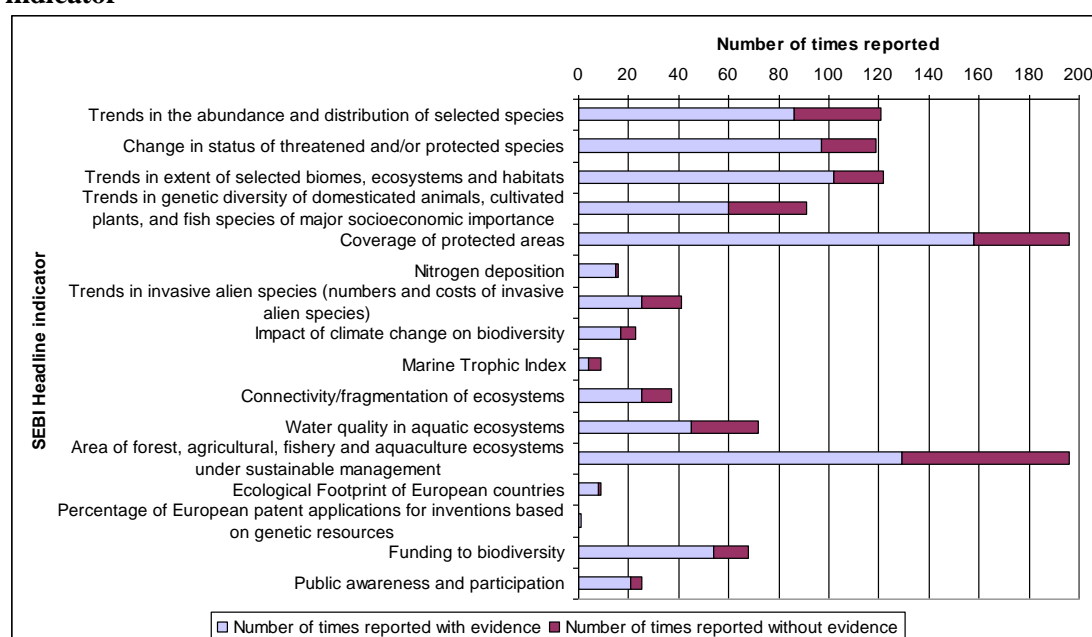
**Figure 2.4 Number of operational indicators reported per SEBI Headline indicator**



However, more than 50 % of the operational indicators reported under the following SEBI Headline indicators are used by one single country:

- ‘Trends in the abundance and distribution of selected species’;
- ‘Trends in extent of selected biomes, ecosystems and habitats’;
- ‘Impact of climate change on biodiversity’
- ‘Public awareness and participation’;
- ‘Nitrogen deposition’;
- ‘Marine Trophic Index’; and
- ‘Percentage of European patent applications for inventions based on genetic resources’.

**Figure 2.5 Number of times that indicators are reported according to SEBI Headline indicator**



As illustrated in Figure 2.5, the operational indicators that have been reported a higher number of times according to aggregation per SEBI Headline indicator are:

- ‘Coverage of protected areas’ – 196 times;
- ‘Area of forest, agricultural, fishery and aquaculture ecosystems under sustainable management’ – 196 times;
- Trends in extent of selected biomes, ecosystems and habitats’ – 122 times;
- ‘Trends in the abundance and distribution of selected species’ – 121 times;
- ‘Change in status of threatened and/or protected species’ – 119 times.

Aggregation of indicators under the following Headline indicators have been reported less than 10 times by the countries:

- ‘Marine Trophic Index’ – 9 times;
- ‘Ecological Footprint of European countries’ – 9 times; and
- ‘Percentage of European patent applications for inventions based on genetic resources’ – 1 time.

Overall, 75 % of the indicators are reported with evidence. However:

- More than 50 % of indicators under the headline indicator ‘Marine Trophic Index’ are reported without evidence;
- More than 30 % of the indicators reported under the following Headline indicators are reported without evidence:
  - ‘Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socio-economic importance’,
  - ‘Trends in invasive alien species (numbers and costs of invasive alien species)’
  - ‘Connectivity/fragmentation of ecosystems’
  - Water quality in aquatic ecosystems’, and
  - ‘Area of forest, agricultural, fishery and aquaculture ecosystems under sustainable management’

### 3 Linkage of existing national indicators with the new targets

An analysis of the relevance of national indicators in relation to the new biodiversity targets has been done for those indicators mentioned by more than half of the countries. Nineteen indicators meet this criterion, 10 of these are part of the SEBI set.

**Table 3.1 Indicators reported by more than half of the countries**

Indicator
1. Abundance and distribution of selected species
3. Species of European interest
4. Ecosystem coverage
5. Habitats of European interest
6. Livestock genetic diversity
7. Nationally designated protected areas
8. Sites designated under the EU Habitats and Birds Directives
10. Invasive alien species in Europe
16. Freshwater quality
20. Agriculture: area under management practices potentially supporting biodiversity
Red list of selected species groups
Action/management plans for conservation of (threatened) species
Area of forest and forest types
Ex situ conservation
Ramsar sites
Management of protected areas
Sustainable forest management
Budget for nature conservation/projects related to biodiversity
Funding to biodiversity in economic and development cooperation

**Note:** The indicators preceded by a number are indicators from the SEBI set.

#### 3.1 National indicators and the CBD Strategic Plan for Biodiversity 2011-2020

The 19 indicators have been mapped to the Strategic Goals and the Aichi Biodiversity Targets adopted by the Conference of the Parties to the CBD through its decision X/2 (CBD, 2010) as follows:

**Table 3.2 Indicators according to Strategic Goals and Aichi Biodiversity Targets**

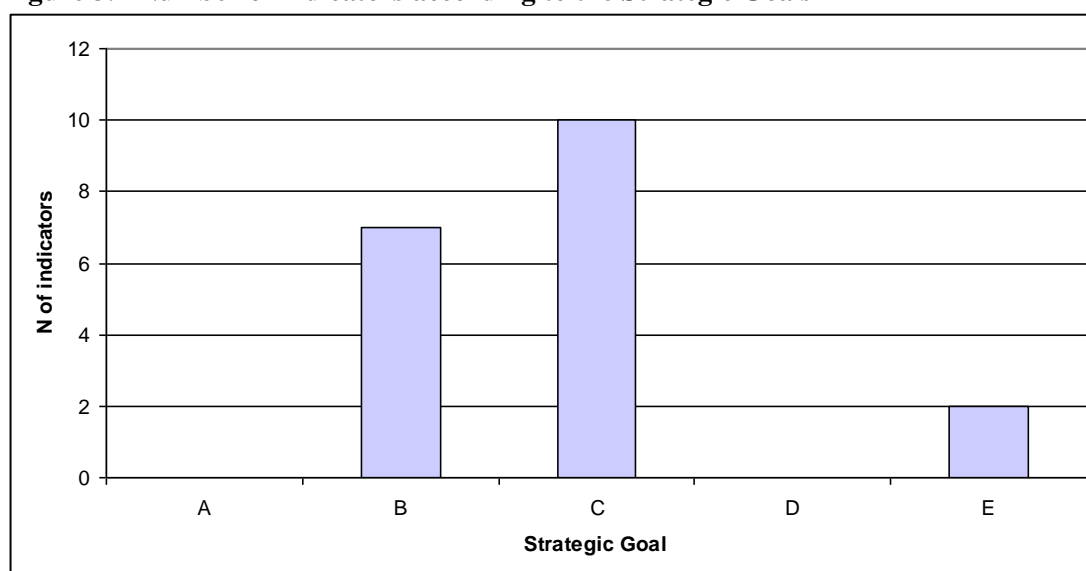
Strategic Goal	Target	Indicator
B	5	4. Ecosystem coverage
B	5	5. Habitats of European interest
B	5	Area of forest and forest types
B	7	20. Agriculture: area under management practices potentially supporting biodiversity
B	7	Sustainable forest management
B	8	16. Freshwater quality
B	9	10. Invasive alien species in Europe
C	11	7. Nationally designated protected areas
C	11	8. Sites designated under the EU Habitats and Birds Directives

C	11	Ramsar sites
C	11	Management of protected areas
C	12	1. Abundance and distribution of selected species
C	12	3. Species of European interest
C	12	Red list of selected species groups
C	12	Action/management plans for conservation of (threatened) species
C	13	6. Livestock genetic diversity
C	13	Ex situ conservation
E	20	Budget for nature conservation/projects related to biodiversity
E	20	Funding to biodiversity in economic and development cooperation

**Notes:** 1. A list of the Strategic Goals and Aichi Biodiversity Targets is available in Annex 3.  
2. The indicators preceded by a number are indicators from the SEBI set.

The 19 indicators map to three of the Strategic Plan for Biodiversity 2011-2020 Goals and to 8 of the 20 Aichi Biodiversity Targets.

**Figure 3.1 Number of indicators according to the Strategic Goals**



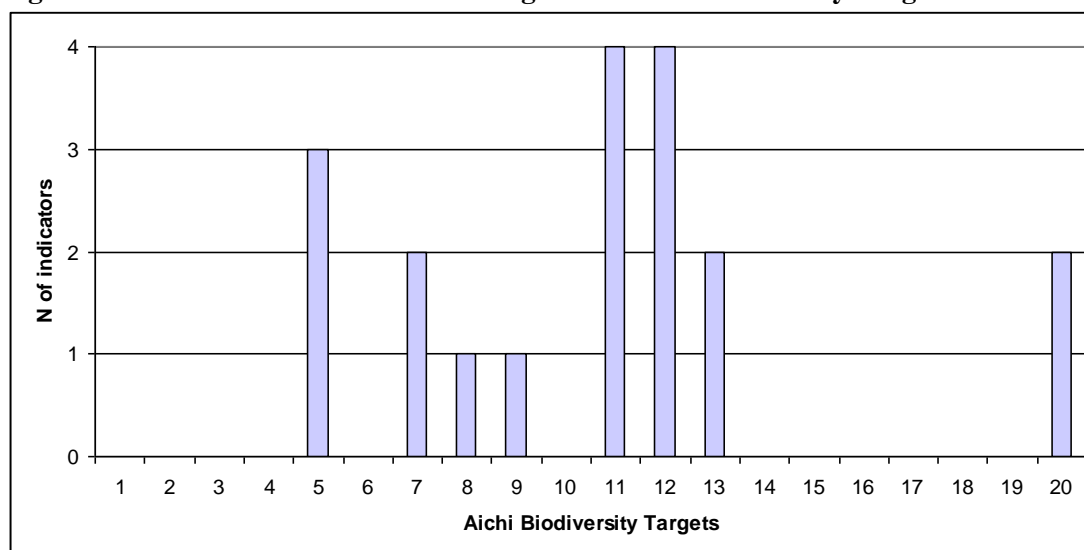
The Strategic Plan Goals represented by the 19 indicators and the number of indicators considered relevant to each Goal are listed below:

- ‘B-Reduce direct pressures on biodiversity’ – 7 indicators;
- ‘C-Improve the status of biodiversity’ – 10 indicators;
- ‘E-Enhance implementation’ – two indicators.

None of the 19 indicators map to Strategic Plan Goals A (Mainstream biodiversity across government and society) or D (Enhance the benefits to all from biodiversity and ecosystems).



**Figure 3.2 Number of indicators according to the Aichi Biodiversity Targets**



The Aichi Biodiversity Targets represented by the 19 indicators and the number of indicators considered relevant to each Target are the following:

- ‘5-Loss of habitats’ – three indicators;
- ‘7-Areas under sustainable management’ – two indicators;
- ‘8-Pollution’ – one indicator;
- ‘9-Invasive alien species’ – one indicator;
- ‘11-Protected areas’ – four indicators;
- ‘12-Threatened species’ – four indicators;
- ‘13-Genetic diversity’ – two indicators; and
- ‘20-Resource mobilization’ – two indicators.

The indicators relevant to Target 20 refer to ‘Budget for nature conservation/projects related to biodiversity’ and ‘Funding to biodiversity in economic and development cooperation’ and are not necessarily in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, as stated in the Target.

## 3.2 National indicators and the EU biodiversity strategy to 2020

The 19 indicators used by more than half of the countries have also been checked according to their relevance in relation to the Targets and Actions established in the EU biodiversity strategy to 2020 (EC, 2011). However, it has been difficult to assess which indicators are relevant to each Target and very few links with Actions were possible.

**Table 3.3 Indicators according to the EU Targets and Actions**

Target	Action	Main indicator/ additional indicator	Indicator
1		Main indicator	3. Species of European interest
1		Main indicator	5. Habitats of European interest
1		Additional indicator	Red list of selected species groups
	1	Additional indicator	8. Sites designated under the EU Habitats and Birds Directives
	1	Additional indicator	Management of protected areas
2		Additional indicator	1. Abundance and distribution of selected species

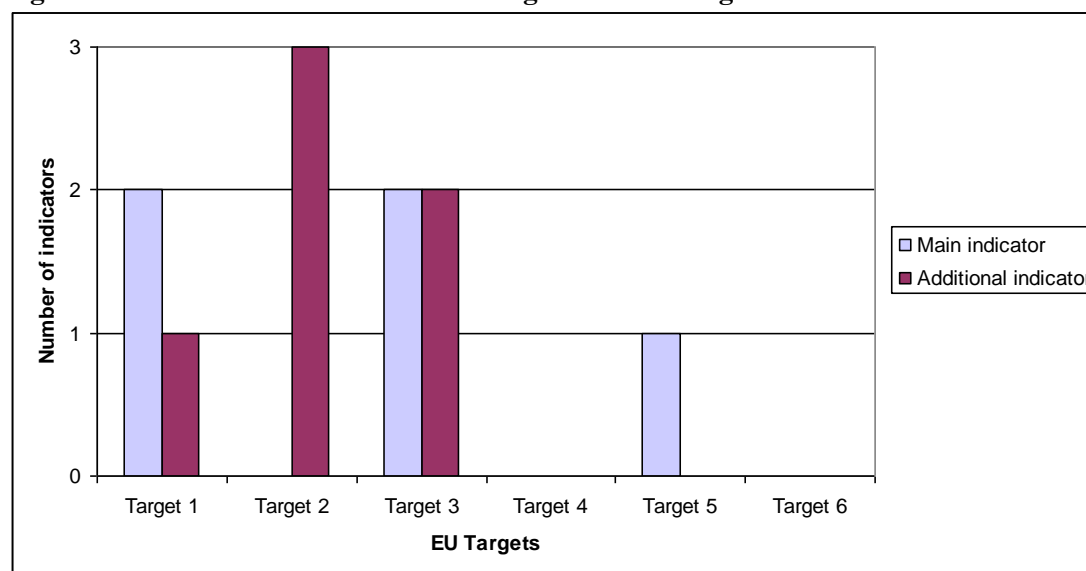
2		Additional indicator	4. Ecosystem coverage
2		Additional indicator	Area of forest and forest types
3		Main indicator	3. Species of European interest
3		Main indicator	5. Habitats of European interest
3		Additional indicator	20. Agriculture: area under management practices potentially supporting biodiversity
3		Additional indicator	Sustainable forest management
	10	Additional indicator	6. Livestock genetic diversity
	10	Additional indicator	Ex situ conservation
5		Main indicator	10. Invasive alien species in Europe
	18	Additional indicator	Funding to biodiversity in economic and development cooperation
?	?		7. Nationally designated protected areas
?	?		Action/management plans for conservation of (threatened) species
?	?		Ramsar sites
?	?		Budget for nature conservation/projects related to biodiversity
?	?		16. Freshwater quality

**Notes:** 1. A list of the EU Biodiversity targets and actions is available in Annex 4.  
2. The indicators preceded by a number are indicators from the SEBI set.

For the mapping of the indicators to the EU Targets and Actions, a distinction has been made:

- Main indicators are indicators that can be used to assess each target by themselves;
- Additional indicators are indicators that support the assessment of each target.

**Figure 3.3 Number of indicators according to the EU Targets**



Only three of the EU Targets are represented with main indicators by the 19 indicators used by more than half of the countries:

- ‘Target 1: Fully implement the Birds and Habitats Directives’ – two indicators;
- ‘Target 3: Increase the contribution of agriculture and forestry to maintaining and enhancing biodiversity’ – two indicators;
- ‘Target 5: Combat Invasive Alien Species’ – one indicator.

‘Target 2: Maintain and restore ecosystems and their services’ is represented by three additional indicators.

In relation to Actions, only three of the 20 actions are represented by the 19 indicators and solely by additional indicators.

No relevant links to the Targets and Actions were found for 5 of the 19 indicators.

## 4 Use of the SEBI indicators

According to the information contained in the 4NR to the CBD and additional sources analyzed, of the 19 indicators used by more than half of the countries 10 belong to the SEBI set, which shows the wide use of the set in national initiatives.

However, five of the 26 SEBI indicators were not reported by over 90 % of the countries, as illustrated in Figure 4.1:

- '11.Impact of climate change on bird populations';
- '22.Aquaculture: effluent water quality from finfish farms';
- '24.Patent applications based on genetic resources';
- '25.Financing biodiversity management'; and
- '26.Public awareness'.

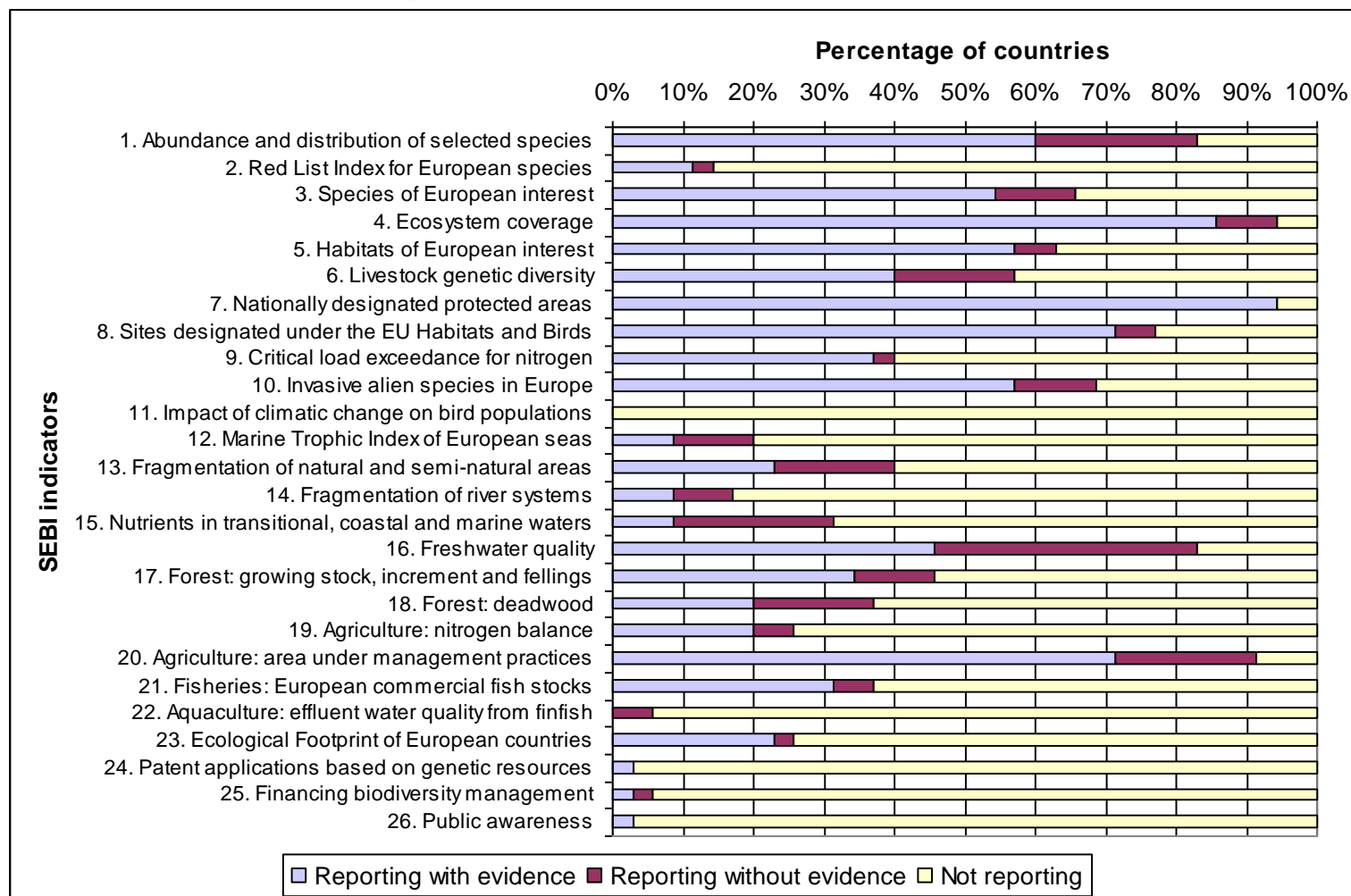
Information about funding to biodiversity and public awareness and participation is reported by the countries in several ways, even though it does not entirely correspond with the issues covered by the indicators SEBI 25 and SEBI 26.

In addition, three other indicators are reported with evidence by less than 10 % of the countries:

- '12.Marine Trophic Index',
- '14.Fragmentation of river systems' and
- '15.Nutrients in transitional, coastal and marine waters'.

This could suggest that some SEBI indicators and/or methodologies might need to be revised, so that there are more data available.

**Figure 4.1 Percentage of countries reporting on SEBI indicators**



# Annex 1: Sources

## *General sources*

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## Annex 2: List of national indicators used by the countries

CBD focal area	Headline indicator	Indicator
<b>SEBI indicators</b>		
Status and trends of the components of biological diversity	Trends in the abundance and distribution of selected species	1. Abundance and distribution of selected species
	Change in status of threatened and/or protected species	2. Red List Index for European species
		3. Species of European interest
	Trends in extent of selected biomes, ecosystems and habitats	4. Ecosystem coverage
		5. Habitats of European interest
	Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socio-economic importance	6. Livestock genetic diversity
	Coverage of protected areas	7. Nationally designated protected areas
Threats to biodiversity		8. Sites designated under the EU Habitats and Birds Directives
	Nitrogen deposition	9. Critical load exceedance for nitrogen
	Trends in invasive alien species (numbers and costs of invasive alien species)	10. Invasive alien species in Europe
Ecosystem integrity and ecosystem goods and services	Impact of climate change on biodiversity	11. Impact of climatic change on bird populations
	Marine Trophic Index	12. Marine Trophic Index of European seas
	Connectivity/fragmentation of ecosystems	13. Fragmentation of natural and semi-natural areas
		14. Fragmentation of river systems
	Water quality in aquatic ecosystems	15. Nutrients in transitional, coastal and marine waters
Sustainable use		16. Freshwater quality
	Area of forest, agricultural, fishery and aquaculture ecosystems under sustainable management	17. Forest: growing stock, increment and fellings
		18. Forest: deadwood
		19. Agriculture: nitrogen balance
		20. Agriculture: area under management practices potentially supporting biodiversity
		21. Fisheries: European commercial fish stocks
		22. Aquaculture: effluent water quality from finfish farms
Status of access and benefits sharing	Ecological Footprint of European countries	23. Ecological Footprint of European countries
	Percentage of European patent applications for inventions based on genetic resources	24. Patent applications based on genetic resources
Status of resources	Funding to biodiversity	25. Financing biodiversity

CBD focal area	Headline indicator	Indicator
transfers		management
Public opinion	Public awareness and participation	26. Public awareness
<b>Additional indicators</b>		
Status and trends of the components of biological diversity	Trends in the abundance and distribution of selected species	Wildlife richness
		Species diversity
		Species diversity in landscapes
		Species diversity in habitats
		Species diversity of dry grassland sites
		Plant diversity in wider countryside
		Mean species numbers in landscapes with and without dry meadows and pastures
		Mean species numbers in mountainous regions
		Development of species diversity and number of seabed creature species
		Developments in sea creature density in animal groups
		Number of endemic species
		Population size of endangered species
		Endangered species living in protected areas
		Index of population demography of indicator species
		Trend of mammals listed under the Habitats Directive annex IV
		Abundance/litters of top predators
		Population size of game species
		Small mammals
		Ground squirrels
		Bats
		Cetaceans
		Seals
		Overwintering waterfowl
		Trends of waterbird species
		Breeding birds
		Trend of breeding birds listed under the Birds Directive Annex I
		Archipelago birds
		Inland water birds
		Urban birds
		Shore birds
		Mire birds
		Number of amphibian and reptile species
		Marine turtles
		Trends in abundance of freshwater fish

CBD focal area	Headline indicator	Indicator
		Trends in abundance of marine fish
		Wild salmon
		Eels
		Population/reproduction of freshwater pearl mussel
		Trends in ground beetles
		Mire butterflies
		Average number of sensitive insects of watercourses
		Soil organisms (Gamasidae)
		Flora
		Change of flora on summits of the Alps
		Change in number of selected plant species connected to water and wetland ecosystems
		Change in number of selected plant species connected to grassland and xerotherm ecosystems
		Forest vegetation
		Mire vegetation
		Shore vegetation
		Mosses
		Fungi (Macromycetes)
		Pollution sensitive lichens
		Biomass and activity (soil)
Change in status of threatened and/or protected species		Red list of selected species groups
		Number of threatened/endangered species (per habitat type)
		Number of threatened species (IUCN)/number of protected species
		Number of threatened species (IUCN)/number of species with management plans
		Protected species (of selected groups)
		Action/management plans for conservation of (threatened) species
		Species recovery/reintroduction programmes
		Follow up of infractions related to nature conservation protection
Trends in extent of selected biomes, ecosystems and habitats		Coefficient of ecological stability
		Natural Capital Index (NCI)
		Nature index
		Dominance of low artificialized landscapes
		Size of wilderness areas

CBD focal area	Headline indicator	Indicator
		Size of valuable habitats
		Quality of valuable habitats
		Red List of biotope types
		Trends in the representation of endangered and rare habitat types
		Action/management plans for conservation of habitats
		Coverage of habitat types within protected areas
		Change of farmland diversity (Shannon–Wiener Index)
		Length of linear landscape features
		Shoreline used for buildings
		Land use in urban areas
		Parks – state of public green area
		Area of forest and forest types
		Extensive grassland (rough meadows and pastures)
		Area of wetlands
		Lichen pastures
		Mangroves
		Coral reefs
		Extent of glaciers
		Extent of sea ice
		Total suspended soils
		Bird species groups as indicators of habitat quality
		Dragonflies as indicators of wetland quality
		Orchids as indicators of habitat quality
		Diversity of species and habitats at alpine pastures
		Old trees as habitats
	Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socio-economic importance	Genetic diversity in populations of selected species
		Productive livestock worthy of preservation
		Population of domestic animal breeds
		Threat category of domestic animal races
		Traditional animal breeds of national importance protected by law
		Genetic resources of fish
		Genetic resources of bees
		Crop genetic resources
		Number of plant varieties
		Diversity of fruit species
		Changes in the number of registered taxa and cultivars

CBD focal area	Headline indicator	Indicator
		Plantation for preservation and seed orchards (ex situ)
		Ex situ conservation
		Increase of taxa and accessions of seed-propagated species
		Number of institutions holding plant genetic resources collections
		Number of farmers producing indigenous varieties or rearing domestic breeds
		Genetic engineering in agriculture
		Gene protection forests
		Plantation of woody plants with natural seed stocks
		Surface area for production of indigenous varieties
		Sexual reproduction able to function by plant species
	Coverage of protected areas	Potential Emerald sites
		Ecological network
		Important Bird Areas (IBAs)
		Important Plant Areas (IPAs)
		Prime Butterfly Areas (PBAs)
		Ramsar sites
		Biosphere reserves
		UNESCO World Heritage Sites
		European Diploma sites
		Transboundary protected areas
		Natural forest reserves
		Surface of water protection areas
		Sites requiring IPPC permits
		Protected area of habitat types
		Protected areas in cities
		National urban parks
		Game reserves
		Threat status of protected areas
		Condition of features on protected sites
		Management of wilderness areas
		Management of waterfowl wetlands
		Management of protected areas
Threats to biodiversity	Nitrogen deposition	Average nitrogen deposition
		Nutrient supply in the soil
	Trends in invasive alien species (numbers and costs of invasive alien species)	Costs of invasive alien species
		Action/management plans for IAS
		Ballast water
	Impact of climate change on biodiversity	Forest area dominated by non-indigenous trees
		Population Index of Climate sensitive species
		Spring index



CBD focal area	Headline indicator	Indicator
		Arrival date of migrating birds
		Arrival of southern bird species
		Climate change impact on hatchling survival
		Northward spread of marine species
		Changes in distribution of freshwater fish population
		Flying season of dragonflies
		Spread of dragonflies species
		Trend of Southern European dragonfly species
		Changes in range of butterfly species
		Consequences of climate changes for biota
		Annual growing season length
		Flowering time of selected species
		Flowering time of cultivated varieties
		Impact of climate change on forests
		Biomass of mosses and lichens
		Consequence of climate change for hydrological conditions
		Sea level
	Others	Main pressures/threats to nature/biodiversity
		Natural areas transformed to artificial surfaces per year
		Forest fires
		Desertification
		Infractions at borders (CITES)
		Illegal trapping
		Old environmental burdens
		Amounts of discharged pollution
		Fertilizers used in farming practices
		Pesticides use
		Index of AOT exposition for vegetation protection
		Extent of burden
		Off-road traffic
		Maritime transport
		Oil discharges in marine/coastal areas
		Green house gas emissions
		Emissions of acidifying and eutrophying gases and ozone precursors tropospheric
		Particulate matter concentrations
		Ozone concentrations

CBD focal area	Headline indicator	Indicator
Ecosystem integrity and ecosystem goods and services		Concentration of benzene and other volatile organic compounds
		Emissions of light
		Population density
		Housing permissions
		Vehicle fleet per capita
		Sectoral contributions to GDP
		Electricity generation
		Daily number of tourists
		Area covered by Operational Quarries
	Marine Trophic Index	Energy intensity of the economy
		Jellyfish aggregations
	Connectivity/fragmentation of ecosystems	Spawning cod biomass
		Use of land by transport and settlement (sealing)
		Density of road network
		Forest roads
		(Proportion of) regulated/ecomorphologically impacted watercourses
		Integrity of wilderness areas
		Trends in diversity of low artificialized land use at local level
		Fragmentation of pristine mires
	Water quality in aquatic ecosystems	Trend of ecological status in watercourses: fish index
		Proportion of freshwater bodies in good ecological status/risk status
		Proportion of transitional and marine water bodies in good ecological status
		Nitrate and chloride levels at WSC pumping stations
		Hazardous substances/heavy metals in inland waters
		Hazardous substances in sediment of transitional, coastal and marine waters
		Bathing water quality
		Acidification
		Organic matter
		Algae
		Oxygen and benthic invertebrates
		Visibility depth
		Water protection measures
	Others	Eutrophication and acidification by nitrogen compounds (soil)
		Soil organic matter
		Soil pollution
		Soil degradation
		Soil erosion

CBD focal area	Headline indicator	Indicator
		Ground ozone
		Ecological quality of forests
		Health status of woodland
		Forest defoliation
		Area of drained land
		Ditch clearing
		Harvest of wild berries
		Crop of marketable mushrooms
		Collection of medicinal plants
		Semi-natural grazing land
		Overgrazing
		Amount of catch of wildlife game
		Hunted and trapped birds
		Fish (and other aquatic/marine organisms) catch
		Peat extraction
		Other uses of mires
		Extraction of natural mineral resources
		Benefits of ecosystem services
		Forests provision of ecosystem services
		Habitat restoration/revitalization (per habitat type)
		Artificial reef creation
		Money Generation Model (MGM2)
Sustainable use	Area of forest, agricultural, fishery and aquaculture ecosystems under sustainable management	Sustainable forest management
		Degree of forest exploitation
		FLEGT agreements
		Tree species composition
		Percentage of trees older than 100 years
		Forest age structure
		Undisturbed forest
		Soil preparation
		Regeneration
		Artificial regeneration
		Prescribed burning
		Impact of browsing by game species on regeneration
		Ecological compensation areas
		Agricultural field size
		Intensity of agricultural land use
		Alpine agricultural holdings
		Voluntary activities on alpine pastures and alpine farms
		Field margins and buffer strips
		Weeds in spring cereal fields
		Livestock numbers/density
		Livestock on alpine pastures
		Organic livestock production

CBD focal area	Headline indicator	Indicator
		Consumption of organic products
		Nature management of wooded mires
		Deadwood on wooded mires
		Re-use of peat extraction sites
		Capacity of fishing fleet
		Aquaculture managed in a sustainable way
		Aquaculture/mariculture production
		Fresh water fish stocks
		Artificial fish planting in inland waters
		By-catch
		Game management
		Changes in official game bag for hares
	Ecological Footprint of European countries	
	Others	Sustainable tourism strategies
		Fair trade
		Water consumption (per sector)
		Mean price of water for urban use
		Cost of water services
		Population connected to water treatment systems
		Domestic material consumption
		Waste generation
		Municipal waste generation per capita
		Waste recycled
Status of access and benefits sharing	Percentage of European patent applications for inventions based on genetic resources	
Status of resources transfers	Funding to biodiversity	Local incentives
		Funded meadows on steep slopes
		Public environmental expenditure
		Funding under CAP cross compliance, GAEC, Rural development programme
		Budget for nature conservation/projects related to biodiversity
		Research funds for nature conservation
		Funding to biodiversity in economic and development cooperation
		International scientific cooperation
		Funding for traditional breeds
	Others	Paid jobs in the nature conservation sector

<b>CBD focal area</b>	<b>Headline indicator</b>	<b>Indicator</b>
Public opinion	Public awareness and participation	Jobs in organic farming
		Jobs related to protected areas
		Expenditure in nature-focused sports
		Annual sales related to protected areas
		Number of published articles
		Monitoring of commonly known species by amateur biologists
		Monitoring of species by farmers
		Activities fostering biodiversity
		Take-up of voluntary schemes
		Visits to protected areas, nature and forest areas
		Membership of non governmental organisations for nature conservation
		Municipalities signing the Countdown 2010 declaration
		Number of visitor centres, nature schools, eco bases
		Importance given to biodiversity among environmental issues
		Volunteer time

## Annex 3: Strategic Goals and Aichi Biodiversity targets

Goal/target	
<b>Strategic Goal A</b>	<b>Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society</b>
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.
Target 2	By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.
Target 3	By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio-economic conditions.
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.
<b>Strategic Goal B</b>	<b>Reduce the direct pressures on biodiversity and promote sustainable use</b>
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.
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 ecological limits.
Target 7	By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.
Target 8	By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.
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.
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.
<b>Strategic Goal C</b>	<b>To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity</b>
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

<b>Goal/target</b>	
	and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascapes.
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.
Target 13	By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of 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.
<b>Strategic Goal D</b>	<b>Enhance the benefits to all from biodiversity and ecosystem services</b>
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.
Target 15	By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.
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.
<b>Strategic Goal E</b>	<b>Enhance implementation through participatory planning, knowledge management and capacity building</b>
Target 17	By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.
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.
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.
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 and reported by Parties.

## Annex 4: EU Biodiversity Targets and Actions

Target/Action	
<b>Target 1</b>	<b>Fully implement the Birds and Habitats Directives</b>
Action 1	Complete the establishment of the Natura 2000 network and ensure good management
Action 2	Ensure adequate financing of Natura 2000 sites
Action 3	Increase stakeholder awareness and involvement and improve enforcement
Action 4	Improve and streamline monitoring and reporting
<b>Target 2</b>	<b>Maintain and restore ecosystems and their services</b>
Action 5	Improve knowledge of ecosystems and their services in the EU
Action 6	Set priorities to restore and promote the use of green infrastructure
Action 7	Ensure no net loss of biodiversity and ecosystem services
<b>Target 3</b>	<b>Increase the contribution of agriculture and forestry to maintaining and enhancing biodiversity</b>
Action 8	Enhance direct payments for environmental public goods in the EU Common Agricultural Policy
Action 9	Better target Rural Development to biodiversity conservation
Action 10	Conserve Europe's agricultural genetic diversity
Action 11	Encourage forest holders to protect and enhance forest biodiversity
Action 12	Integrate biodiversity measures in forest management plans
<b>Target 4</b>	<b>Ensure the sustainable use of fisheries resources</b>
Action 13	Improve the management of fished stocks
Action 14	Eliminate adverse impacts on fish stocks, species, habitats and ecosystems
<b>Target 5</b>	<b>Combat Invasive Alien Species</b>
Action 15	Strengthen the EU Plant and Animal Health Regimes
Action 16	Establish a dedicated instrument on Invasive Alien Species
<b>Target 6</b>	<b>Help avert global biodiversity loss</b>
Action 17	Reduce indirect drivers of biodiversity loss
Action 18	Mobilise additional resources for global biodiversity conservation
Action 19	'Biodiversity proof' EU development cooperation
Action 20	Regulate access to genetic resources and the fair and equitable sharing of benefits arising from their use



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