EEA Technical report | No 11/2012

Streamlining European biodiversity indicators 2020: Building a future on lessons learnt from the SEBI 2010 process

ISSN 1725-2237

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European Environment Agency

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Cover design: EEA
Layout: EEA/Pia Schmidt
Cover photo: © Pia Schmidt

Luxembourg: Publications Office of the European Union, 2012

ISBN 978-92-9213-326-9
ISSN 1725-2237
doi:10.2800/55751

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Foreword

The Streamlining European Biodiversity Indicators (SEBI) process was started in 2005 to provide a streamlined set of biodiversity indicators for Europe. This followed the decision, via the Kiev Resolution on Biodiversity in 2003, to 'reinforce [Europe's] objective to halt the loss of biological diversity at all levels by the year 2010'.

The SEBI process represents an exemplary case of cooperation at a pan-European level between various key players. Since the process began seven years ago, SEBI brought together many partners and developed a very specific type of governance to allow for agreement on and joint development of an agreed set of biodiversity indicators. These were then used at the highest policy level in Europe in addition to acting as a strong communication tool able to explain the relevance of biodiversity.

This report marks the end of the current SEBI cycle noting SEBI milestones and drawing lessons for further improving the process and the indicator set.

The report's publication provides a bridge to the new SEBI cycle underpinned by the following policies: the Strategic Plan for Biodiversity 2011–2020 together with the Aichi 2020 targets at the global level, the EU 2020 Biodiversity Strategy and the Pan-European 2020 Biodiversity Strategy. For all these strategies SEBI team members worked to allow for the best possible alignment with their targets. This is an appropriate moment to thank the SEBI Coordination Team and all of the experts for their commitment and hard work.

With the EEA and the European Commission's Directorate General for Environment as key drivers of the SEBI process, coupled with the European Parliament's resolution of 20 April 2012 calling for development of reliable indicators of environmental sustainability, the SEBI process can be viewed as a key instrument to monitor progress in achieving the 2020 target.

SEBI has the strength and credibility to undertake a coordinating role to consolidate a coherent set of indicators for measuring progress and reporting on the new global and EU biodiversity targets.

SEBI has:

- demonstrated its capabilities to mobilise existing data and expertise;
- created a stakeholder process to identify policy-relevant biodiversity indicators;
- made strong links to national, EU, pan-European and global processes demonstrating the vigour of Eionet and the EEA's strong networking capacities;
- streamlined the process of biodiversity indicator development and reporting at several levels, therefore reducing the burden of reporting requirements.

Mapping the current SEBI indicator set against the EU and global 2020 targets demonstrates the robustness of the set while identifying some gaps. Certainly new indicators are required to fill in these gaps alongside streamlining with other indicator processes. The SEBI brand should benefit from this experience with further development of key indicators in order to monitor progress in halting biodiversity loss and restoring ecosystem services by 2020.

A final word goes to the Chair of the SEBI Coordination Team, present during the entire process — Gordon McInnes, Deputy Director of the EEA. With his dedication, perseverance, networking skills and expertise the SEBI process has certainly received excellent guidance.

Professor Jacqueline McGlade,
Executive Director

Executive summary

Measuring biodiversity in Europe

Loss of biodiversity in Europe is a fact. Yet measuring the extent of the loss and the threat it poses is a challenge. Many European countries have been developing their own indicators to measure changes in biodiversity in their territory. At the same time, progress had also been measured at the global level. Ensuring consistency between indicators at national, regional and global level was and still is essential.

The Streamlining European Biodiversity Indicators (SEBI) process was started in 2005 to provide a streamlined and workable set of biodiversity indicators for Europe to measure progress towards the target of holding biodiversity loss in Europe by 2010. SEBI aim was to build on current monitoring and available data to avoid duplication of efforts and to complement and not replace other activities to describe, model and understand biodiversity and the pressures upon it.

This report is predominantly separated into three parts. Firstly, it describes the process and organisation of SEBI 2010. Following its initiation in 2005 SEBI began with the establishment of a Coordination Team and the involvement of six thematic expert groups. This involved around 140 experts from across the pan-European region and from international intergovernmental organisations and NGOs. Each group provided a range of technical expertise and geographical coverage.

SEBI institutional partners are the European Environment Agency (and its European Topic Centre on Biological Diversity), the European Centre for Nature Conservation, UNEP's World Conservation Monitoring Centre, the European Commission, the Joint Secretariat of the Pan-European Biological and Landscape Diversity Strategy (PEBLDS), and the Czech Republic (as lead country for the Kiev Resolution action plan on biodiversity indicators).

This preparatory work led to an agreed list of 26 indicators which were published in an EEA report in November 2007. The 2007 EEA report also provided the basis for indicator-based assessments of Europe's progress towards its target of halting biodiversity loss by 2010 published in 2009 and 2010.

The report then analyses lessons learnt from the use of the indicator set and SEBI input to other processes. Producing the SEBI indicators involved some considerable reflections on the methodological process to be used. The identification of these issues was largely achieved by the SEBI working group on interlinkages. While some of the lessons learnt are very specific to the 2010 target, others can be useful for the revision of the current set in order to measure progress towards the new biodiversity targets.

Looking forward

Finally, the report looks ahead to 2020 and the EU's biodiversity strategy. A meeting in 2010 of the Conference of the Parties to the Convention on Biological Diversity in Japan adopted a Strategic Plan for Biodiversity for the period 2011–2020 once it became clear that the original global target had not been met (CBD, 2010a). The Strategic Plan reconfirmed the relevance of setting clear goals and targets to guide actions aiming at halting biodiversity loss and proposed a new vision and mission, five strategic goals and 20 new targets, entitled the Aichi Targets (CBD, 2010c).

In line with this plan a new EU biodiversity strategy — *Our life insurance, our natural capital: an EU biodiversity strategy to 2020* — was adopted by the European Commission in May 2011. This provided a framework for the EU to meet its own biodiversity objectives and its global commitments as a party to the CBD. The Strategy sets out a long-term 2050 vision and the 2020 headline target.

In order to ensure the maximum possible alignment of the SEBI indicator set with the new targets, SEBI coordination team members followed and contributed to the discussions at various relevant fora and actively participated in key scientific and policy events in 2011.

The results of the mapping (presented in Annexes 2 and 3 of the report) show that all the SEBI indicators can be used to measure progress against the six new EU Targets and the 20 Aichi Targets. Gaps have also been identified — which will need to be further considered by thematic experts.

The report highlights the importance of SEBI in guiding those involved in measuring and tracking biodiversity and that it remains a valuable part of a process moving ahead to the 2020 targets and beyond.

1 Introduction

1.1 Towards 2020 targets: SEBI in the new political context

The loss of biodiversity is an issue of local, regional and global concern. The Convention of Biological Diversity (CBD) was signed together with the Climate Change and the Desertification Conventions at the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992. The objectives of the Convention are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

Two decades after the Convention on Biological Diversity (CBD) came into force, biodiversity loss continues to be a part of high level political discourse. Governments all over the world have made ambitious commitments to act and have taken steps to increase policy integration and coherence. The importance of biological diversity is now broadly recognised, not just because of its intrinsic value, but also because of its contribution to the provision of ecosystem services that are fundamental to human well-being.

The World Summit on Sustainable Development in Johannesburg in 2002 stressed the importance of biodiversity and endorsed the target of achieving by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth reducing the rate of loss of biodiversity by 2010. It reiterated the central role of biodiversity in sustainable development and global poverty reduction and acknowledged the primary role of the Convention in achieving this target.

Having set an even more ambitious target to halt the loss of biodiversity by 2010 in Europe in 2003, it became essential to examine and report on progress. The Streamlining European Biodiversity Indicators (SEBI) process was set up in response to a request from the EU Environment Council. Its aim was to streamline national, regional and global indicators and, crucially, to develop a simple and workable set of indicators to measure progress and help reach the 2010 target.

As it became clear that the global 2010 target had not been met and biodiversity loss had been continuing the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity in Nagoya, Japan, adopted in 2010 the Strategic Plan for Biodiversity 2011–2020. The Strategic Plan reconfirmed the relevance of setting clear goals and targets to guide actions aiming at halting biodiversity loss and proposed a new vision and mission, five strategic goals and 20 new targets ([1]). These Aichi targets provide a global framework for action across all CBD parties.

In line with the results of the tenth Conference of the Parties (COP) of the CBD, a new EU biodiversity strategy — *Our life insurance, our natural capital: an EU biodiversity strategy to 2020* ([2]) — was adopted by the European Commission in May 2011. This provided a framework for the EU to meet its own biodiversity objectives and its global commitments as a party to the CBD. The Strategy set out a long-term 2050 vision and the 2020 headline target as follows (EC, 2011):

- **2050 vision**
  By 2050, European Union biodiversity and the ecosystem services it provides — its natural capital — are protected, valued and appropriately restored for biodiversity's intrinsic value and for their essential contribution to human wellbeing and economic prosperity, and so that catastrophic changes caused by the loss of biodiversity are avoided.

([1]) http://www.cbd.int/sp/targets/.
([2]) http://ec.europa.eu/environment/nature/biodiversity/comm2006/2020.htm.

- **2020 headline target**
  Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss.

The strategy is built around six mutually supportive targets which address the main drivers of biodiversity loss and aim to reduce the key pressures on nature and ecosystem services in the EU. Each target is further translated into a set of time-bound actions and other accompanying measures. The strategy also highlights the need to enhance contributions from other environmental policies and initiatives including sectoral integration across EU policies such as agriculture, fisheries, forestry, water, climate and energy (Council of the European Union, 2011).

The six key targets are the following:

- Target 1: Fully implement the Birds and Habitats Directives.
- Target 2: Maintain and restore ecosystems and their services.
- Target 3: Increase the contribution of agriculture and forestry to maintaining and enhancing biodiversity.
- Target 4: Ensure the sustainable use of fisheries resources.
- Target 5: Combat invasive alien species.
- Target 6: Help avert global biodiversity loss.

The strategy includes the development of a coherent framework for monitoring, assessing and reporting on progress in implementing actions and and in reaching the targets. The Council ([3]) agreed that such a framework is needed to link existing biodiversity data and knowledge systems with the strategy and to streamline EU and global monitoring, reporting and review obligations under environmental and other relevant legislation as well as to avoid duplication and increase of reporting and administrative burden.

In this new policy context, the SEBI Coordination Team has undertaken steps to assess the usefulness of the current SEBI indicator set to underpin measurement of the 2020 targets and discussed next steps for indicator work building on the initial experiences and outcomes.

This report serves two purposes. First, it summarises and documents the achievements of the SEBI process related to measuring progress towards the 2010 target. Second, it outlines strengths of both the process and the indicator set to underpin measurement of the 2020 targets as well as the challenges of making the proposed indicators a high quality, operational set.

([3]) Council conclusions of 19 December 2011.

2 Process and organisation of SEBI 2010

2.1 The origins of SEBI 2010

Through the UN Convention on Biological Diversity (CBD) in 1992 the international community committed itself to addressing biodiversity loss. Following on from this the European Union commenced a process, via its Biodiversity Conservation Strategy (ECBS), adopted in 1998, which aimed to provide a comprehensive response to the many requirements of the CBD. Key elements of this process have included:

- The four biodiversity action plans (natural resources, agriculture, fisheries and development), adopted in 2001, laid out in detail what actions should be taken to implement the strategy.

- In the same year, the objective of 'managing natural resources more responsibly: to protect and restore habitats and natural systems and halt the loss of biodiversity by 2010' was adopted by the EU in its Strategy for Sustainable Development (2001).

- One year later, the Convention on Biological Diversity's sixth Conference of the Parties adopted the Strategic Plan for the Convention in Decision VI/26. The Decision says: 'Parties commit themselves to a more effective and coherent implementation of the three objectives of the Convention, to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth.'

- The Kiev Resolution on Biodiversity was adopted at the fifth Ministerial Conference 'Environment for Europe' in 2003 and included the committment to 'reinforce our objective to halt the loss of biological diversity at all levels by the year 2010'.

- A review of the implementation of the EC Biodiversity Conservation Strategy was initiated in 2004 and led, via the 'Message from Malahide', to the EC Communication on halting the loss of biodiversity by 2010 (CEC, 2006).

- A significant number of European countries subsequently included the 2010 target as part of their national biodiversity strategies.

- In June 2004, the EU Environment Council welcomed the European set of biodiversity indicators referred to in the 'Message from Malahide' (produced under the Irish Presidency of the EU that year), based on the first set of indicators adopted globally earlier in 2004 at the CBD 7th Conference of the Parties in Kuala Lumpur.

- The Council also urged the European Commission to further develop, test and finalise the EU set of indicators by 2006 having regard to its evolving nature. This list of indicators was also adopted by the PEBLDS (Pan-European Biological and Landscape Diversity Strategy) Council in 2005.

Having set a target to halt the loss of biodiversity by 2010, it became essential to examine and report on progress. To make this process meaningful to a range of audiences, a set of indicators was needed. This would provide a quick, easy-to-understand reference point for measuring progress that would be understandable to both technical and non-technical audiences alike. The indicators would be underpinned by sound scientific knowledge and analysis. The European Environment Agency (EEA), in cooperation with its European Topic Centre on Biological Diversity, DG Environment of the European Commission (DG ENV), the Czech Republic (as lead country for the Kiev Resolution action plan on biodiversity indicators), ECNC (the European Centre for Nature Conservation), UNEP/ PEBLDS Secretariat, and UNEP-WCMC (the World Conservation Monitoring Centre) therefore agreed to establish the activity on Streamlining European 2010 Biodiversity Indicators (SEBI2010). SEBI2010 was launched in January 2005 to produce and develop consistency across global, regional, EU and national indicators.

Global biodiversity indicators

In 2004, CBD COP 7 adopted a framework which recommended the use of a range of indicators to track the 2010 Biodiversity target (Decision VII/30), and requested its scientific advisory body to work further on these with an Ad Hoc Technical Expert Group (AHTEG) specifically formed for this purpose,). In 2006, CBD COP 8 then elaborated on this framework and called for the the establishment of a consortium of indicator developers to produce a suite of indicators (Decision VIII/15). The Biodiversity Indicators Partnerships (BIP) was formed to respond to the COP decision. The BIP is a global initiative to develop and promote indicators for the consistent monitoring and assessment of biodiversity. It was established with substantial support from the Global Environment Facility (GEF), together with fund from EC and partner co-financing. During 2007–2010 the three main objectives of the BIP are:

- to generate information on biodiversity trends which is useful to decision-makers;
- to ensure improved global biodiversity indicators are implemented and available;
- to establish links between biodiversity initiatives at the regional and national levels to enable capacity building and improve the delivery of the biodiversity indicators.

The Partnership contributed the indicators used in the Third Edition of Global Biodiversity Outlook (CBD 2010a); and produced a comprehensive summary of lessons learned as a CBD Technical report (CBD 2010d) The BIP has strengthened since 2010 to continue to support the tracking of the Aichi Targets to 2020, combined with extensive capacity strengthening activities in regional communities of practice of indicator development, with a specific focus on supporting the updating of Countries' National Biodiversity Strategy and Action Plans (NBSAPs). For more information see: www.bipindicators.net.

2.2 Purpose, process and organisation of SEBI 2010

The SEBI 2010 process was set up to streamline national, regional and global indicators and, crucially, to develop a simple and workable set of indicators to measure progress and help reach the 2010 target. It should be noted that SEBI was a thorough stakeholder-based process that began with the generation of over 140 possible biodiversity indicators that were reduced via the application of rigorous criteria to 26 by 2007. As such it should be recognized as a comprehensive, peer group reviewed and validated set of indicators.

Following its initiation in 2005, SEBI 2010 began with the establishment of a coordination team and the involvement of six thematic expert groups, involving around 140 experts (see Annex 4). Each group provided a range of technical expertise and geographical coverage in order to help ensure that:

- current practice was fully considered;
- national, international and specific technical requirements and limitations were fully taken into account;
- the development and implementation of indicators was streamlined as far as possible across national, EU, pan-European and global levels.

Each of the six expert groups met between three and five times to discuss the options for inclusion in the pan-European set, the availability of suitable data within Europe and strengths and weaknesses of the various options both individually and as part of an interlinked set. The Coordination Team developed guidance for the expert groups on evaluating and documenting candidate indicators, reviewing progress, discussing how to frame the first indicators as an interconnected set, and planning next steps. They met eight times during the period 2005 to mid-2007. Members of the Coordination Team also participated in a range of relevant stakeholder meetings. In January 2007 the Coordination Team drew up the list of 26 indicators presented in Table 2.1, to be put forward to the EU and PEBLDS for endorsement within Europe.

By the end of 2007 the 26 indicators had been published in an EEA report (EEA Techical report No 11/2007). During that year work was also carried out in order to elaborate the indicators for presentation to an external audience to be ready for publication in 2008 as a set of factsheets annexed to the EC BAP midterm review. The 2007 EEA report also provided the basis for a first indicator-based assessment of Europe's progress towards its target of halting biodiversity loss by 2010.

Box 2.1 sets out the criteria which provided the basis for the selection of the current 26 SEBI 2010 indicators. These were rigorously applied to all the proposed indicators and have proved useful in an evaluation of further indicators that have emerged,

for example, in relation to biodiversity and climate change.

2.3 The first set of indicators

The European Community's 2006 Biodiversity Communication and Action Plan provided a detailed strategic response to accelerate progress towards the 2010 targets at Community and Member State level. Building on the conceptual framework provided by the CBD, the European Union and the Pan-European Biological and Landscape Diversity Strategy agreed a set of headline indicators within the focal areas of the CBD Strategic Plan 2006–2010. The CBD focal areas were:

- status and trends of the components of biological diversity (where we are now and where we may be heading);
- threats to biodiversity (the main pressures that need to be countered through policy measures and action);

Box 2.1 Criteria for selection of the proposed indicators

- Policy-relevant and meaningful: indicators should send a clear message and provide information at a level appropriate for policy and management decision-making by assessing changes in the status of biodiversity (or pressures, responses, use or capacity), related to baselines and agreed policy targets if possible.
- Biodiversity-relevant: indicators should address key properties of biodiversity or related issues as pressures, state, impacts and responses.
- Progress towards 2010: indicators should show clear progress towards the 2010 target.
- Well founded methodology: the methodology should be clear, well defined and relatively simple. Indicators should be measurable in an accurate and affordable way, and constitute part of a sustainable monitoring system. Data should be collected using standard methods with known accuracy and precision, using determinable baselines and targets for the assessment of improvements and declines.
- Acceptance and intelligibility: the power of an indicator depends on its broad acceptance. Involvement of policy-makers as well as major stakeholders and experts in the development of an indicator is crucial.
- Routinely collected data: indicators must be based on routinely collected, clearly defined, verifiable and scientifically acceptable data.
- Cause-effect relationship: information on cause-effect relationships should be achievable and quantifiable in order to link pressures, state and response indicators. These relationship models allow scenario analysis and represent the basis of the ecosystem approach.
- Spatial coverage: indicators should ideally be pan-European and include adjacent marine areas, if and where appropriate.
- Temporal trend: indicators should show temporal trends.
- Country comparison: as far as possible, it should be possible to make valid comparisons between countries using the indicators selected.
- Sensitivity towards change: indicators should show trends and, where possible, permit distinction between human-induced and natural changes. Indicators should thus be able to detect changes in systems in timeframes and on scales that are relevant to the decisions, but also be robust enough to measure errors that do not affect interpretation.

In addition, the following criteria were used to evaluate the set as a whole:

- Representative: the set of indicators provides a representative picture of the DPSIR chain.
- Small in number: the smaller the total number of indicators, the easier it is to communicate cost-effectively to policy-makers and the public.
- Aggregation and flexibility: aggregation should be facilitated on a range of scales.

- ecosystem integrity and ecosystem goods and services (functioning of ecosystems in terms of their ability to provide goods and services);
- sustainable use (specifically in relation to forestry, agriculture and fisheries);
- status of traditional knowledge, innovations and practices (this focal area was not included at the European level);
- status of access and benefit-sharing (the sharing of benefits derived from biodiversity, particularly from genetic resources);
- status of resource transfers (the extent to which society is willing to invest in biodiversity conservation (by providing financial resources).

At the European level, 'public awareness and participation' was included as an additional focal area in line with the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention). This United Nations Economic Commission for Europe (UNECE) convention established a number of rights of the public (individuals and their associations) with regard to the environment.

While SEBI 2010 is pan-European in scope, some of the indicators specifically link to the European Union's policy framework that exists for EU Member States. Headline indicators are clustered under each of the focal areas. For each headline indicator one or more specific indicators were selected on the basis of rigorous and scientifically and policy robust criteria. The SEBI 2010 process and indicator set provided the best coverage possible at that time in relation to the existing information and resources in Europe. Table 2.1 presents the 26 SEBI 2010 indicators, selected according to the above criteria, within the CBD focal areas and the EU headline indicators. It can be seen that for a number of the headline indicators more than one specific indicator has been selected. For example, in order to articulate the 'Area of forest, agricultural, of fishery and aquaculture ecosystems and the sustainable management' headline indicator, it was necessary to identify six specific indicators. However, it is impossible to measure all components of biodiversity let alone monitor their trends or to unravel their role in ecosystems or the goods and services they provide. It can therefore be seen that the set of 26 is an indication of progress to the 2010 target rather than attempting to be comprehensive.

Some indicators provide specific measurements and trends on genetic, species and ecosystem/landscape diversity, but many have a more indirect link to biodiversity. Very few were established specifically to assess biodiversity. The status indicators on species only cover birds and butterflies, since these are the only taxa/species groups for which harmonized European monitoring data are available. The inclusion of butterflies was valuable in order to meet the concern that species with a narrow niche should be represented. At the time it was recognized that wider coverage of taxa could be developed in the future.

2.4 Developments in European and global biodiversity policies towards the year 2010

In 2008, the EU Biodiversity Action Plan mid-term report ([4]) provided an assessment of the state of biodiversity in the EU in relation to the 2010 target (CEC, 2008). In 2010, the assessment report ([5]) (EC, 2010b) confirmed that the EU missed its target of halting the loss of biodiversity by 2010. For both of these reports the SEBI indicators provided a fundamental set of information. Nevertheless, the assessment reveals that significant progress had been made over the previous two years. The 2010 assessment also included facts and data on actions taken to halt biodiversity loss in the 27 EU Member States, a synthesis comparing the performance of individual Member States and an update of SEBI 2010 (EU, 2010d).

In June 2009 the Environment Council adopted conclusions on the mid-term assessment of implementing the EU Biodiversity Action Plan, highlighting the importance of strengthening the integration of biodiversity and ecosystem concerns into relevant sectoral policies and of effective implementation of existing EU policies and legislation to address the biodiversity challenge. Regarding SEBI 2010, the Council welcomed the efforts to streamline European Biodiversity Indicators through the SEBI 2010 project, but stressed that they needed to be complemented by

([4]) COM(2008) 864 final, http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/bap_2008_en.pdf.
([5]) COM(2010) 548 final, http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/bap_2010/1_EN_ACT_part1_v2.pdf.

Table 2.1 SEBI 2010 indicators within CBD focal areas and EU headline indicators

CBD focal area	Headline indicator	SEBI 2010 specific 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
		a. Birds
		b. Butterflies
	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 socioeconomic importance	6. Livestock genetic diversity
	Coverage of protected areas	7. Nationally designated protected areas
		8. Sites designated under the EU Habitats and Birds Directives
Threats to biodiversity	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
	Impact of climate change on biodiversity	11. Impact of climatic change on bird populations
Ecosystem integrity and ecosystem goods and services	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
		16. Freshwater quality
Sustainable use	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
	Ecological Footprint of European countries	23. Ecological Footprint of European countries
Status of access and benefits sharing	Percentage of European patent applications for inventions based on genetic resources	24. Patent applications based on genetic resources
Status of resource transfers	Funding to biodiversity	25. Financing biodiversity management
Public opinion (additional EU focal area)	Public awareness and participation	26. Public awareness

other indicators, especially indicators designed to assess progress in sectoral policies.

In its January 2010 ([6]) Communication, the European Commission set out possible future options for biodiversity policy in the EU for the period after 2010 (EC, 2010a). In its conclusions of 15 March (Council of the European Union, 2010a), the Environment Council agreed a new long-term vision and mid-term headline target for biodiversity in the EU for the period beyond 2010, adopting the most ambitious of the four options. The Council also further developed the EU position ahead of the international negotiations on biodiversity under the United Nations Convention on Biological Diversity, building on earlier conclusions on this issue that had been adopted on 22 December 2009.

In March 2010 the European Council committed to the EU post-2010 vision and target for biodiversity and underscored the urgent need to reverse continuing trends of biodiversity loss and ecosystem degradation (European Council, 2010).

In October 2010, the European Parliament adopted its resolution on the EU strategic objectives for the 10th Meeting of the Conference of the Parties to the CBD, held in Nagoya (Japan) from 18 to 29 October 2010 ([7]) (European Parliament, 2010b), highlighting its concern about the absence of a sense of the urgency of halting the loss of biodiversity on the international political agenda.

At global level, the 3rd Global Biodiversity Outlook (CBD, 2010a) was published in May 2010 concluding that the 2010 target of significantly reducing the rate of biodiversity loss by 2010 had not been met and warning that the pressures on biodiversity continue to intensify.

In October 2010 the 10th meeting of the Conference of the Parties to the CBD adopted the Strategic Plan for Biodiversity 2011–2020 and the Aichi Targets (CBD, 2010b).

([6]) COM(2010) 4 final, http://ec.europa.eu/environment/nature/biodiversity/policy/pdf/communication_2010_0004.pdf.
([7]) P7_TA-PROV(2010)0353, http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P7-TA-2010-0353+0+DOC+XML+V0//EN&language=EN.

3 Learning lessons from SEBI

3.1 Review of the SEBI indicator set — strengths and weaknesses

3.1.1 Main methodological lessons

Producing the SEBI indicators involved some considerable reflections on the methodological process to be used. The identification of these issues was largely achieved by the SEBI working group on interlinkages, set up by the SEBI Coordination Team, and which worked from December 2007 to April 2009. A full report (SEBI, 2011) discussing the work of this group is available on the Biodiversity Information System for Europe (BISE) ([8]) and the European Biodiversity Clearing House Mechanism webpage ([9]).

While some of the lessons learnt are very specific to the set of targets and indicators for the original 2010 target, others can be useful if the current set of indicators is revised to be used to measure progress towards the 2020 targets in the global and the EU 2011–2020 Strategic Plans.

The key lessons learnt from the process of developing the SEBI indicators are listed below.

3.1.2 Answering the policy questions

According to the CBD (UNEP 2003 ([10])), four key questions to be addressed by indicators are:

- *What is changing?*,
- *Why is it changing?*,
- *Why is it important?* and
- *What are we doing about it?*

No individual indicator can answer all of those questions sufficiently, but a subset of indicators could if well designed and mutually coherent. Selecting indicators should be done considering not only their individual merit but also the way they can complement each other to answer each of the policy questions.

The issue of scale is important. A lesson from SEBI as a regional level process is that as answers to the policy questions may vary greatly in different parts of Europe, a way needs to be found to show these varying trends. Two additional scales between Europe and the country level might provide the required information for policymakers and may be feasible from the perspective of financial resources and data collection, firstly according to major ecosystem type and secondly according to sub regional scales such as Mediterranean or Scandinavian.

3.1.3 Illustrating loss of biodiversity with indicators

Given the complexity of biodiversity there is no easy answer on how to illustrate the status, changes and trends in the selected components of biological diversity including the loss of biodiversity. Individual indicators provide very specific perspectives on changes in components of biodiversity at the level of ecosystems, species and genes. Very few indicators are available with good Europe-wide coverage for assessing these trends.

Many indicators selected in the SEBI set were not originally devised to measure progress towards a biodiversity target but to illustrate several types of pressures on biodiversity (for example, nitrogen balance, deadwood etc). The fact that post 2010 targets are more specific and in many cases better linked to drivers and sectors will probably make the problem of making sound conclusions based on a varied set of indicators easier to resolve.

([8]) http://biodiversity.europa.eu/topics/sebi-indicators.
([9]) http://biodiversity-chm.eea.europa.eu/information/indicator/F1090245995/SEBI%20publications-2005-2010/reports-sebi-working-groups/interlinkages-between-the-european-biodiversity-indicators-improving-their.
([10]) UNEP/CBD/SBSTTA/9/10.

3.1.4 Building reliable indicators and drawing sound conclusions from them

Monitoring, models, scenarios, targets, baselines and critical levels are elements supporting any indicator. In practice they are treated as separate entities because they are often developed by different people working in different fields and for different purposes (key monitoring programmes in many cases by NGOs and government agencies; models, baselines and critical levels by scientists; indicators and targets by policymakers or governmental institutions). Development and interpretation of indicators are often hampered by lack of one or more of these elements or by lack of coordination between the elements.

Monitoring is a major concern. For several indicators, the data are non-standardised or incomplete, or there is a serious lack of geographical coverage. The monitoring of the state of biodiversity is slowly improving. Threats, goods (such as fish and timber) and some responses are reasonably well-monitored as part of the well-developed socio-economic and environmental monitoring. Services are hardly monitored, partly because they are still ill-defined.

Models: Models which link indicators of threats, state, use and response have received little attention and have hardly been developed.

Targets: The 2010 target of halting biodiversity loss applies to the indicators of the state of biodiversity. Targets for pressure, goods and services and their sustainable use were lacking. The sub-targets in the EU Biodiversity Strategy 2011–2020 are more concrete and specific.

Baselines: There are various approaches to define a baseline for an indicator. A current state can be assessed by comparing it with: i) a particular reference year; or (ii) a particular reference state that is, for example, a critical value or an intact or natural state. Reference state or critical values are largely absent for most indicators in the (pre-2010) focal areas on ecosystem integrity and sustainable use ranges. Only a few critical levels are available. This may impede clear interpretation of the indicators.

3.1.5 Interpreting indicators — make assumptions explicit.

An indicator is defined by specific spatial and temporal scales, a baseline and an assessment principle. However, these are often not mentioned explicitly. The SEBI set contains different spatial scales, assessment principles, baselines and time

The following definitions and proposals could help increase clarity for the future set of indicators to be used:

- A clear distinction should be made between assessment principles, baselines, critical levels and targets.
- An assessment principle is the basic view on which change is evaluated. The suitability of these assessment principles can be judged against a number of criteria, such as policy relevance, ease of communication, and feasibility.
- A baseline should be clearly stated. Unfortunately the baseline value is often driven by data availability.
- A critical level is a value, the exceedance of which may lead to severe changes in, for example, a population of a species or structure of an ecosystem. Examples include the level of acidity or nitrogen deposition which cannot be absorbed by a semi-natural habitat. Estimation of these values often requires additional research.
- A target is often a political choice, balancing socio-economic and ecological interests. Scientific knowledge can help to define feasible and realistic targets.
- Baselines and assessment principles for a set of indicators should be selected in advance and in a coherent way. Each indicator should be accompanied by clear documentation of how the absolute level and change, respectively, should be interpreted.

3.1.6 Cooperation with data providers and indicator updating

The first SEBI phase was dedicated to the selection of indicators, their definitions and methodologies through a process of discussion with several expert groups. The second phase was dedicated to the production of the indicators based on the work achieved during the first step. The production was supported by gaining an agreement with the data providers and then receiving the most update version of each dataset, preparing and documenting graphs illustrating each indicator.

The SEBI set of 26 indicators was implemented by producing 58 graphs published in several reports and available through the European Environment Agency's Indicator Management System. Three different types of data sources were identified:

1. European Environment Agency;
2. European Commission and its various DGs;
3. External data held by organisations (NGOs, International institutions, Universities) collecting data as a result of different activities (monitoring schemes, research projects).

Figure 3.1 **Sources of data supporting the production of 58 graphs in the SEBI set**

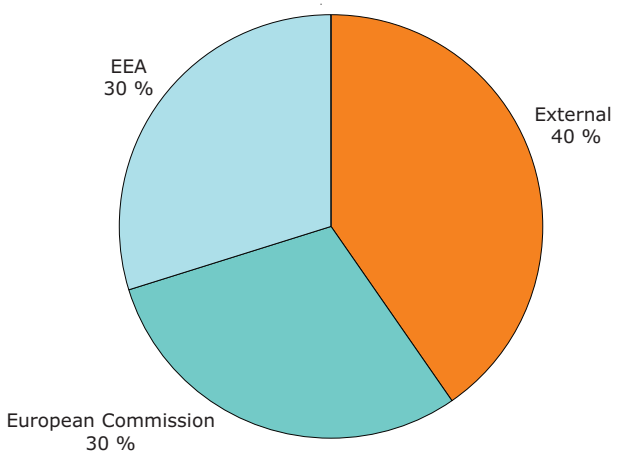
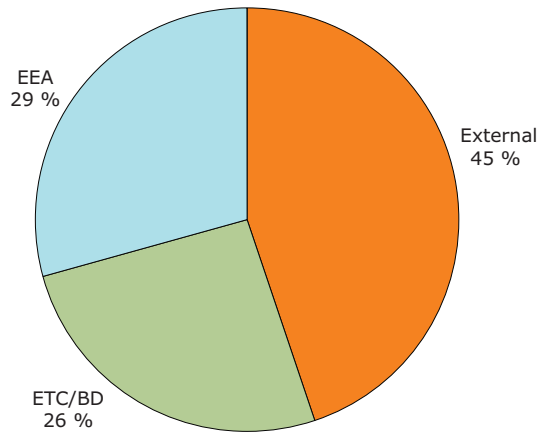


Figure 3.2 **Organisations supporting the production of 58 graphs in the SEBI set**



Most of the graphs were prepared by the EEA and external data holders. The European Topic Centre on Biological Diversity prepared most of the graphs based on the Commission data, with the remainder prepared by the Joint Research Centre (JRC).

As shown in Figures 3.1 and 3.2, 40 % of the graphs produced in 2010 were based on external data sources and 45 % were produced by external organisations.

3.1.7 Temporal and geographic coverage of the indicators

Ideally the indicators would be used as a set to support an integrated assessment; this is easier if there is a common time coverage between all the indicators. Figure 3.3 shows that the length of the period between the first point and the last point can be very variable. Ten indicators rely on a period of 20 years, six on ten years, two on 50 years and two on a 100 years period

While SEBI is pan-European in scope, some of the indicators specifically link to the community policy framework that exists for EU Member States. The geographic coverage of each indicator is variable. Figure 3.4 shows how many countries are covered for each indicator. The coverage area varies from five up to fifty countries.

Figure 3.5 shows how far each country is represented in each indicator. However, that does not necessarily mean each indicator exists at national level. In addition some countries may have datasets relevant for one of these indicators but if these datasets are not collected by the European data holder, this country is not included in the current version of the SEBI set. There are thus opportunities to further expand the geographic scope of the SEBI indicators

3.2 SEBI 2010 input to other processes

3.2.1 Support for the evaluation of the EU biodiversity and environmental policies

- SEBI indicators have been used in a variety of ways e.g. in other policy-relevant indicator sets such as the EEA core set of indicators or the Environment Policy Review to monitor progress in implementation of the EU Sixth Environment Action Programme. The European Commission used the SEBI 2010 indicator set to support its assessment of progress in implementing the Biodiversity Action Plan. The EU 2010 Biodiversity Baseline is based on SEBI indicators

Figure 3.3 Time series for each SEBI indicator

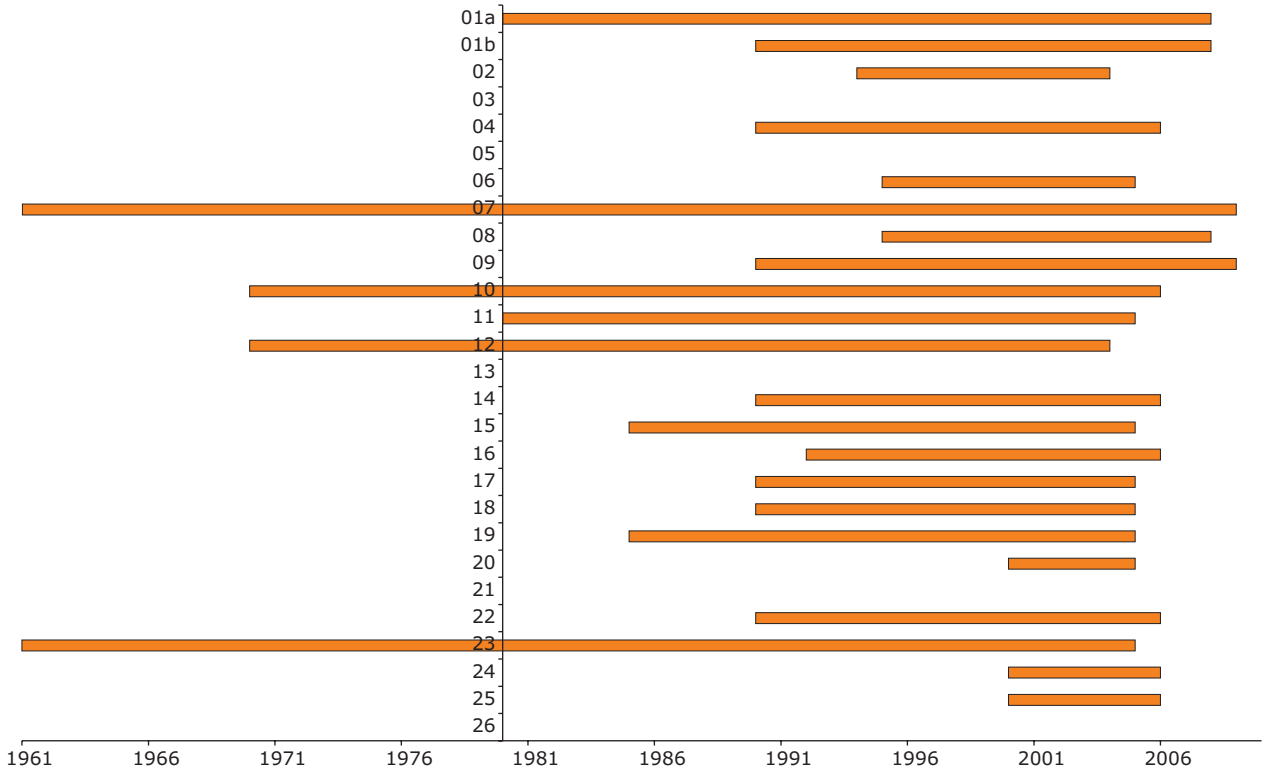


Figure 3.4 Number of countries covered by each indicator

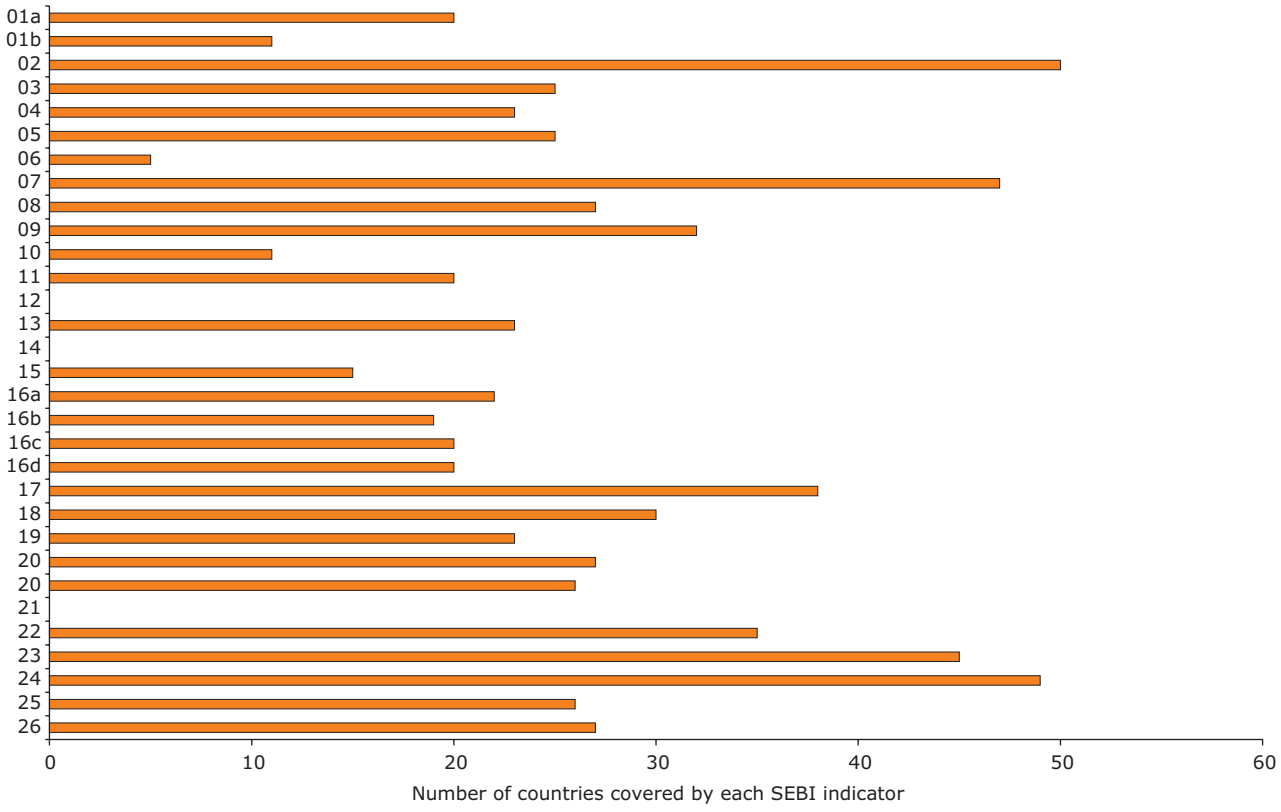
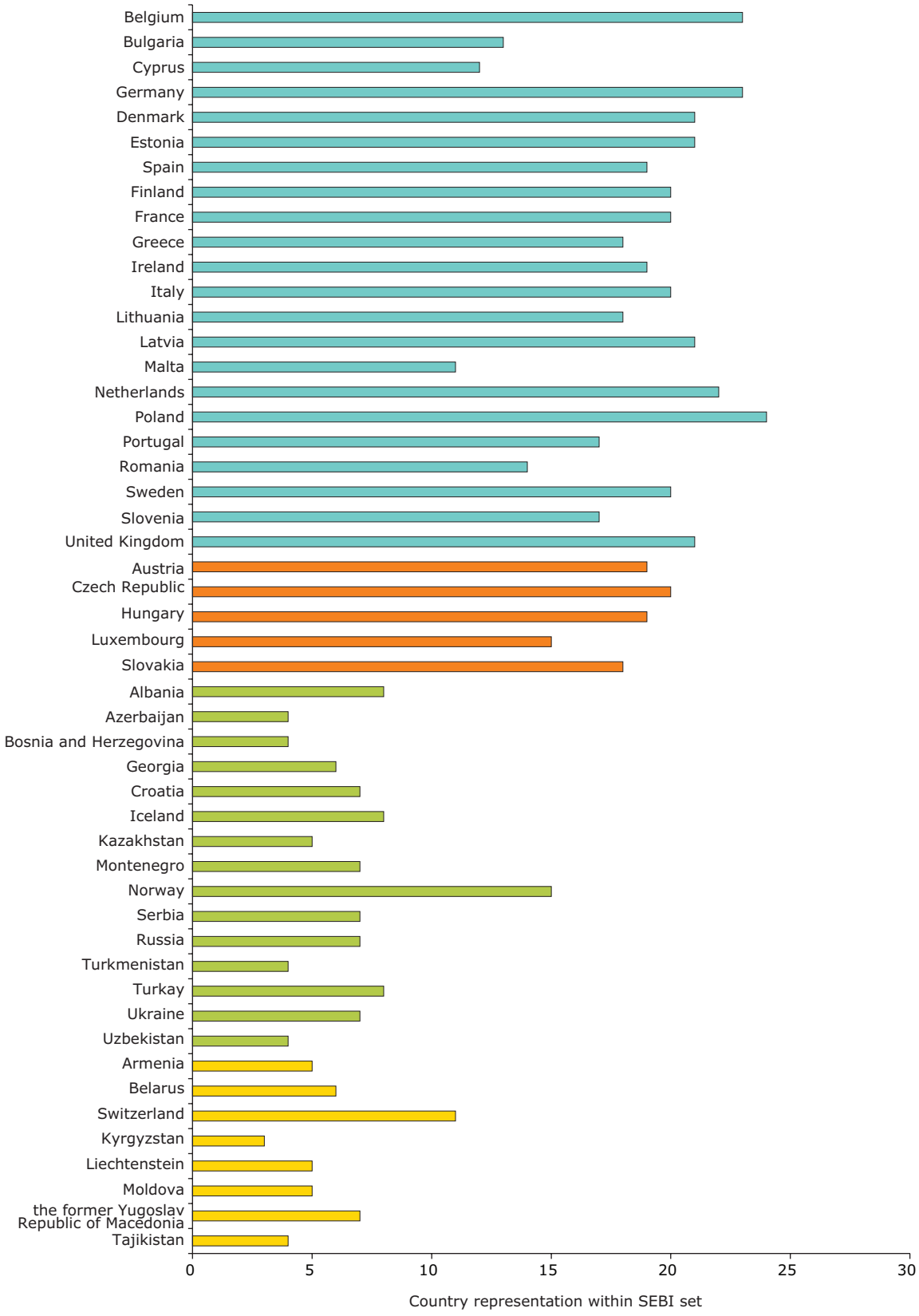


Figure 3.5 Representation of countries in the SEBI set



Note: Blue: EU Member States; Orange: non-coastal EU Member States; Green: non-EU countries; Yellow: non-EU and non-coastal countries.

and methodological guidance. SEBI indicators were also used in the EEA publication series '10 messages for 2010' (EEA, 2010c).

- SEBI has been presented at a number of side events (e.g. Green Week, CBD COP9, EU Council and European Parliament) and training courses have been provided in pan-Europe with the support of UNEP and EU.

- In 2008 SEBI received an award from the Spanish magazine *Red Life* and the Fundación Caja Rural del Sur as 'one of 10 best ideas to save nature in 2008'.

3.2.2 Collaboration with global indicators, NGOs and other stakeholders

The SEBI initiative represents European biodiversity indicator work on the Steering Committee of the 2010 Biodiversity Indicators Partnership (BIP). SEBI was also a stimulus and an example to regional-regional cooperation; for example the recently launched ASEAN (Association of Southeast Asian Nations) biodiversity outlook and the indicator capacity strengthening work undertaken in the BICS (Biodiversity Indicators Capacity Strengthening) Africa project.

4 The way forward

4.1 Mapping existing indicators to new targets

A review of the original SEBI indicators started in 2010 to focus on the 2020 targets. In order to ensure the maximum possible alignment of the SEBI indicator set with the new targets, SEBI Coordination Team members followed and contributed to the discussions at various relevant fora and actively participated in key scientific and policy events in 2011. These included the CBD Ad Hoc Technical Expert Group (AHTEG) on Indicators and the 15th meeting of the CBD Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA).

As integration across different sectors, such as agriculture, fisheries and forestry, is essential, it was necessary to include in the mapping other relevant indicator sets, resulting from other policy processes, such as the Marine Framework Strategy Directive and the Common Monitoring Framework of the Rural Development Plans.

The results of the mapping (presented in Tables 4.1 and 4.2) show that all the SEBI indicators can be used to measure progress against the six new EU Targets and the 20 Aichi Targets. Gaps have also been identified — which will need to be further considered by thematic experts.

To measure progress towards the new targets at both European and global levels, the following work will be required:

- updating existing indicators — where an existing SEBI indicator has been identified, regular updating of the indicator will be required. New data points should be added as new data become available;
- improving existing SEBI indicators — for some indicators, the methodology may need to be updated or the scope changed (e.g. increasing taxonomic or geographic coverage);
- developing new indicators — where the mapping identifies gaps consideration of how the issues could be effectively and efficiently measured is necessary (e.g. ecosystem services).

Table 4.1 EU 2020 Biodiversity Strategy and relevant SEBI and other indicators

How to read the table:

The column 'EU 2010 Biodiversity Baseline' shows which of the SEBI indicators have been included in the 'EU 2010 Biodiversity Baseline' (EEA Technical report 12/2010) (http://www.eea.europa.eu/publications/eu-2010-biodiversity-baseline).

The column 'Headline Indicator (Strategic Plan for Biodiversity 2011–2020)' lists indicators included in the CBD SBSTTA 15 recommendation XV/1 of 11 November 2011, which are relevant to the EU 2020 Biodiversity Strategy targets.

CSI: EEA Core Set Indicator (http://www.eea.europa.eu/data-and-maps/indicators/#c7=all&c5=&c0=10&b_start=0&c10=CSI).

AEI: Agri-Environmental Indicators (http://ec.europa.eu/agriculture/envir/indicators/index_en.htm).

* By default, baseline refers to the years and figures of the relevant indicators published in the EU 2010 Biodiversity Baseline, http://www.eea.europa.eu/publications/eu-2010-biodiversity-baseline.

Table 4.1 EU 2020 Biodiversity Strategy and relevant SEBI and other indicators (cont.)

Possible EU indicator/sub indicator	Baseline year *	EU 2010 Biodiversity Baseline	Headline indicator: Strategic Plan for Biodiversity 2011–2020
2020 EU headline target: *'Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss.'*			
Target 1 Nature Conservation: Fully implement the nature directives: To halt the deterioration in the status of all species and habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status by 2020 compared to current assessments: 100 % more habitat assessments and 50 % more species assessments under the Habitats Directive show an improved conservation status and more 50 % more species assessments under the Birds Directive show a secure or improved status.			
SEBI 03 Species of European interest	2007	*Indicator included*	Trends in abundance, distribution and extinction risk of species
SEBI 05 Habitats of European interest	2007	*Indicator included*	Trends in coverage, condition, representativeness and effectiveness of protected areas and other area-based approaches
Target 2 Maintain and restore ecosystems and their services By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15 % of degraded ecosystems.			
SEBI 01 Abundance and distribution of selected species	1980 (birds) 1990 (butterflies)	*Indicator included*	Trends in abundance, distribution and extinction risk of species
SEBI 04 Ecosystem coverage also: CSI 014 Land take	1990	*Indicator included*	Trends in extent, condition and vulnerability of ecosystems, biomes and habitats
SEBI 07 Nationally designated protected areas	1895	*Indicator not included*	Trends in coverage, condition, representativeness and effectiveness of protected areas and other area-based approaches
SEBI 09 Critical load exceedance for nitrogen also: CSI 005 Exposure of ecosystems to acidification, eutrophication and ozone	1990	*Indicator included*	Trends in pressures from habitat conversion, pollution, invasive species, climate change, overexploitation and underlying drivers
SEBI 11 Impact of climatic change on bird populations	1980	*Indicator included*	Trends in pressures from habitat conversion, pollution, invasive species, climate change, overexploitation and underlying drivers
SEBI 13 Fragmentation of natural and semi-natural areas	1990	*Indicator included*	Trends in extent, condition and vulnerability of ecosystems, biomes and habitats
SEBI 14 Fragmentation of river systems		*Indicator not included*	Trends in extent, condition and vulnerability of ecosystems, biomes and habitats

Table 4.1 EU 2020 Biodiversity Strategy and relevant SEBI and other indicators (cont.)

Possible EU indicator/sub indicator	Baseline year *	EU 2010 Biodiversity Baseline	Headline indicator: Strategic Plan for Biodiversity 2011–2020
SEBI 16 Freshwater quality Also: CSI 020 Nutrients in freshwater	1992	*Indicator included*	Trends in pressures from habitat conversion, pollution, invasive species, climate change, overexploitation and underlying drivers
Target 3 Increase the contribution of agriculture & forestry to maintaining & enhancing biodiversity A) Agriculture: By 2020, maximise areas under agriculture across grasslands, arable land and permanent crops that are covered by biodiversity-related measures under the CAP so as to ensure the conservation of biodiversity and to bring about a measurable improvement in the conservation status of species and habitats that depend on or are affected by agriculture and in the provision of ecosystem services as compared to the EU2010 baseline, thus contributing to enhance sustainable management. B) Forests: By 2020, forest management plans or equivalent instruments, in line with Sustainable Forest Management (SFM), are in place for all forests that are publicly owned and for forest holdings above a certain size (to be defined by the Member States or regions and communicated in their rural development programmes) that receive funding under the EU rural development policy so as to bring about a measurable improvement (*) in the conservation status of species and habitats that depend on or are affected by forestry and in the provision of related ecosystem services as compared to the EU 2010 baseline. (*) For both targets, improvement is to be measured against the quantified enhancement targets for the conservation status of species and habitats of EU interest in Target 1 and the restoration of degraded ecosystems under Target 2.			
SEBI 03 Species of European interest	2007	*Indicator included*	Trends in abundance, distribution & extinction risk of species
SEBI 05 Habitats of European interest	2007	*Indicator included*	Trends in coverage, condition, representativeness and effectiveness of protected areas and other area-based approaches
Indicators relevant for Target 3 A) 'Agriculture'			
SEBI 06 Livestock genetic diversity	1995	*Indicator not included*	Trends in genetic diversity of species
SEBI 19 Agriculture: Nitrogen balance also: CSI 025 Gross nutrient balance AEI 15 Gross nitrogen balance	1985	*Indicator not included*	Trends in pressures from unsustainable agriculture, forestry, fisheries and aquaculture
SEBI 20Agriculture: area under management practices supporting biodiversity: HNV farmland — also AEI 23 2008 Organic farming — also CSI 026, and AEI 4 2000		*Indicator not included*	Trends in pressures from unsustainable agriculture, forestry, fisheries and aquaculture
Additional indicators: The common set of baseline, output, result and impact indicators for the rural development programmes — (Common Monitoring Framework — CMEF) *in particular related to AXIS 2* ([11])			

([11]) http://ec.europa.eu/agriculture/rurdev/eval/index_en.htm.

Table 4.1 EU 2020 Biodiversity Strategy and relevant SEBI and other indicators (cont.)

Possible EU indicator/sub indicator	Baseline year *	EU 2010 Biodiversity Baseline	Headline indicator: Strategic Plan for Biodiversity 2011–2020
Indicators relevant for Target 3 B)'Forests'			
SEBI 17 Forest: growing stock, increment and fellings	1990	*Indicator included*	Trends in pressures from unsustainable agriculture, forestry, fisheries and aquaculture
SEBI 18 Forest: deadwood	1990	*Indicator included*	Trends in pressures from unsustainable agriculture, forestry, fisheries and aquaculture
Additional indicators: Indicators developed in the frame of the pan-European FOREST EUROPE initiative (formerly: MCPFF) *in particular indicators of: Maintenance, Conservation and Appropriate Enhancement of Biological Diversity in Forest Ecosystems (FOREST EUROPE Criterion 4)* ([12])			
Target 4 Ensure sustainable use of fisheries resources Achieve Maximum Sustainable Yield (MSY) by 2015. Achieve a population age and size distribution indicative of a healthy stock, through fisheries management with no significant adverse impacts on other stocks, species and ecosystems, in support of achieving Good Environmental Status by 2020, as required under the Marine Strategy Framework Directive.			
SEBI 21 Fisheries: European commercial fish stocks	2006	*Indicator included*	Trends in pressures from unsustainable agriculture, forestry, fisheries and aquaculture
SEBI 12 Marine Trophic Index (Methodology for this indicator is currently under discussion (see Branch et al., 2010. The trophic fingerprint of marine fisheries. Nature 468, pp. 431–435)	1950	*Indicator included*	
Additional indicators: Indicators developed under the Marine Strategy Framework Directive, related to criteria for good environmental status relevant to the descriptors of Annex I to Directive 2008/56/EC ([13])			
Target 5 Combat Invasive Alien Species By 2020, Invasive Alien Species (IAS) and their pathways are identified and prioritised, priority species are controlled or eradicated, and pathways are managed to prevent the introduction and establishment of new IAS.			
SEBI 10 Invasive alien species in Europe	1900	*Indicator included*	Trends in pressures from habitat conversion, pollution, invasive species, climate change, overexploitation and underlying drivers
Target 6 Help avert global biodiversity loss By 2020, the EU has stepped up its contribution to averting global biodiversity loss			
SEBI 23 Ecological Footprint of European countries	1961	*Indicator included*	Trends in distribution, condition and sustainability of ecosystem services for equitable human well-being

([12]) http://www.foresteurope.org/filestore/foresteurope/Publications/pdf/State_of_Europes_Forests_2011_Report_Revised_November_2011.pdf.

([13]) http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32008L0056:en:NOT.

Table 4.2 Alignment of the SEBI indicator set with global targets and headline indicators

Based on CBD SBSTTA 15 recommendation XV/1 of 11 November 2011 (UNEP/CBD/SBSTTA/15/INF/6).

Aichi target	Possible CBD Headline Indicator	Relevant existing SEBI indicators
Strategic goal A. Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society		
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	Trends in awareness, attitudes and public engagement in support of biological diversity and ecosystem services	SEBI 26: Public awareness
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 nation accounting, as appropriate, and reporting systems	Trends in integration of biodiversity, ecosystem services and benefits sharing into planning, policy formulation and implementation and incentives	
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	Trends in integration of biodiversity, ecosystem services and benefits-sharing into planning, policy formulation and implementation and incentives	SEBI 12: Marine Trophic Index of European seas SEBI 17: Forest: growing stock, increment and fellings SEBI 18: Forest: deadwood SEBI 19: Agriculture: nitrogen balance SEBI 20: Agriculture: area under management practices potentially supporting biodiversity (distribution of High Nature Value Farmland & share of total UAA occupied by organic farming) SEBI 21: Fisheries: European commercial fish stocks (proportion of stocks within and outside safe biological limits) SEBI 22: Aquaculture: effluent water quality from finfish farms
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	Trends in pressures from unsustainable agriculture, forestry, fisheries and aquaculture Trends in pressures from habitat conversion, pollution, invasive species, climate change, overexploitation and underlying drivers Trends in integration of biodiversity, ecosystem services and benefits-sharing into planning, policy formulation and implementation and incentives	SEBI 12: Marine Trophic Index of European seas SEBI 17: Forest: growing stock, increment and fellings SEBI 18: Forest: deadwood SEBI 19: Agriculture: nitrogen balance SEBI 20: Agriculture: area under management practices potentially supporting biodiversity (distribution of High Nature Value Farmland & share of total UAA occupied by organic farming SEBI 21: Fisheries: European commercial fish stocks (proportion of stocks within and outside safe biological limits) SEBI 22: Aquaculture: effluent water quality from finfish farms SEBI 23: Ecological footprint of EU Member States

Table 4.2 Alignment of the SEBI indicator set with global targets and headline indicators (cont.)

Aichi target	Possible CBD Headline Indicator	Relevant existing SEBI indicators
Strategic Goal B. Reduce the direct pressures on biodiversity and promote sustainable use		
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	Trends in extent, condition and vulnerability of ecosystems Trends in pressures from unsustainable agriculture, forestry, fisheries and aquaculture Trends in pressures from habitat conversion, pollution, invasive species, climate change, overexploitation and underlying drivers	SEBI 01: Abundance and distribution of selected species SEBI 02: Red List Index for European species SEBI 03: Species of European interest SEBI 04: Ecosystem coverage SEBI 05: Habitats of European interest SEBI 07: Nationally designated protected areas SEBI 08: Sites designated under the EU Habitats and Birds Directives SEBI 13: Fragmentation of natural and semi-natural areas SEBI 14: Fragmentation of river systems *(when available)*
6. By 2020, all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying eco-system 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	Trends in pressures from unsustainable agriculture, forestry, fisheries and aquaculture Trends in integration of biodiversity, ecosystem services and benefits-sharing into planning, policy formulation and implementation and incentives	SEBI 02: Red List Index for European marine species SEBI 03: Species of European interest (marine) SEBI 04: Ecosystem coverage (marine) SEBI 05: Habitats of European interest (marine) SEBI 07: Nationally designated protected areas (marine) SEBI 08: Sites designated under the EU Habitats and Birds Directives (marine) SEBI 12: Marine Trophic Index of European seas SEBI 21: Fisheries: European commercial fish stocks (proportion of stocks within and outside safe biological limits) SEBI 22: Aquaculture: effluent water quality from finfish farm
7. By 2020, areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity	Trends in pressures from unsustainable agriculture, forestry, fisheries and aquaculture	SEBI 01: Abundance and distribution of selected species SEBI 02: Red List Index for European species SEBI 03: Species of European interest SEBI 04: Ecosystem coverage SEBI 05: Habitats of European interest SEBI 07: Nationally designated protected areas SEBI 08: Sites designated under the EU Habitats and Birds Directives SEBI 12: Marine Trophic Index of European seas SEBI 13: Fragmentation of natural and semi-natural areas SEBI 14: Fragmentation of river systems *(when available)* SEBI 17: Forest: growing stock, increment and fellings SEBI 18: Forest: deadwood SEBI 19: Agriculture: nitrogen balance SEBI 20: Agriculture: area under management practices potentially supporting biodiversity (distribution of High Nature Value Farmland & share of total UAA occupied by organic farming SEBI 21: Fisheries: European commercial fish stocks (proportion of stocks within and outside safe biological limits) SEBI 22: Aquaculture: effluent water quality from finfish farms

Table 4.2 Alignment of the SEBI indicator set with global targets and headline indicators (cont.)

Aichi target	Possible CBD Headline Indicator	Relevant existing SEBI indicators
8. By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity	Trends in pressures from habitat conversion, pollution, invasive species, climate change, overexploitation and underlying drivers	SEBI 09: Critical load exceedance for nitrogen SEBI 15: Nutrients in transitional, coastal and marine waters
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	Trends in pressures from habitat conversion, pollution, invasive species, climate change, overexploitation and underlying drivers Trends in integration of biodiversity, ecosystem services and benefits-sharing into planning, policy formulation and implementation and incentives	SEBI 10: Invasive alien species in Europe
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	Trends in pressures from habitat conversion, pollution, invasive species, climate change, overexploitation and underlying drivers	SEBI 11: Impact of CC on bird populations
Strategic goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity		
11. By 2020, at least 17 per cent of terrestrial and inland water areas 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 landscape and seascape	Trends in coverage, condition, representativeness and effectiveness of protected areas and other area-based approaches	SEBI 03: Species of European interest SEBI 05: Habitats of European interest SEBI 07: Nationally designated protected areas SEBI 08: Sites designated under the EU Habitats and Birds Directives SEBI 13: Fragmentation of natural and semi-natural areas SEBI 14: Fragmentation of river systems *(when available)*
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	Trends in abundance, distribution and extinction risk of species	SEBI 02: Red List Index for European species

Table 4.2 Alignment of the SEBI indicator set with global targets and headline indicators (cont.)

Aichi target	Possible CBD Headline Indicator	Relevant existing SEBI indicators
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	Trends in genetic diversity of species Trends in integration of biodiversity, ecosystem services and benefits-sharing into planning, policy formulation and implementation and incentives	SEBI 06. Livestock genetic diversity
Strategic goal D: Enhance the benefits to all from biodiversity and ecosystem services		
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	Trends in distribution, condition and sustainability of ecosystem services for equitable human well-being	SEBI 12: Marine Trophic Index of European seas SEBI 13: Fragmentation of natural and semi-natural areas SEBI 14: Fragmentation of river systems (when available)
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 % of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification	Trends in coverage, condition, representativeness and effectiveness of protected areas and other area-based approaches Trends in distribution, condition and sustainability of ecosystem services for equitable human well-being	SEBI 04: Ecosystem coverage SEBI 05: Habitats of European interest
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	Trends in access and equity of benefit-sharing of genetic resources	SEBI 24: Patent applications based on genetic resources
Strategic goal E: Enhance implementation through participatory planning, knowledge management and capacity-building		
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	Trends in integration of biodiversity, ecosystem services and benefits-sharing into planning, policy formulation and implementation and incentives	

Table 4.2 Alignment of the SEBI indicator set with global targets and headline indicators (cont.)

Aichi target	Possible CBD Headline Indicator	Relevant existing SEBI indicators
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	Trends in integration of biodiversity, ecosystem services and benefits-sharing into planning, policy formulation and implementation and incentives Trends in accessibility of scientific/ technical/traditional knowledge and its application	
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	Trends in accessibility of scientific/ technical/traditional knowledge and its application	SEBI 25. Financing biodiversity management
20. By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 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	Trends in mobilisation of financial resources	

Note: More information on the global indicator framework and national implementation can be found on the Biodiversity Indicator Partnership (BIP) dedicated web site (www.bipindicators.net).

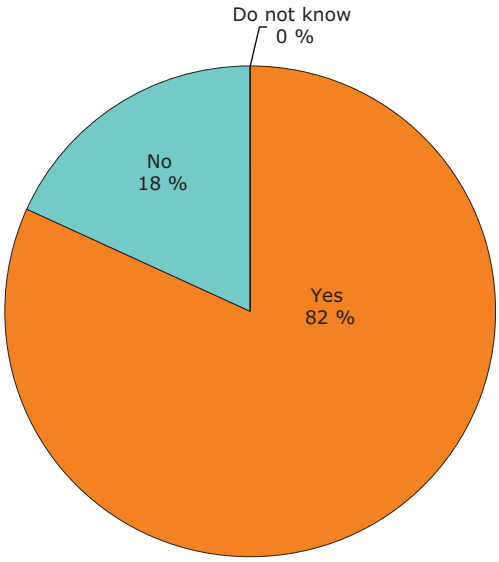
4.2 Updating, improving and developing indicators

In May 2011, the EEA circulated a questionnaire to Eionet in order to collect feedback on the impact of the SEBI process on national activity on indicators and to help identify priorities for the post-2010 period. 56 % of the 39 countries canvassed answered the questionnaire, often including detailed comments (see Annex 1).

From this questionnaire it was possible to summarise that 63 % of respondents agreed that the SEBI initiative helped them to support the development of indicators (Figure 4.1) for different reasons including helping to convince national authorities of the interest in establishing an indicator system, to develop specific indicators or to benchmark their own system. Negative answers were mainly related to already existing processes of indicators or weak information on the SEBI process. Translation into national languages could help improve the above mentioned facts.

Meanwhile 82 % estimated that the SEBI initiative supported the technical development of indicators (Figure 4.2) through exchanges with other European experts and organisations or by using methodological guidelines. It also helped to improve coherence between European and national sets.

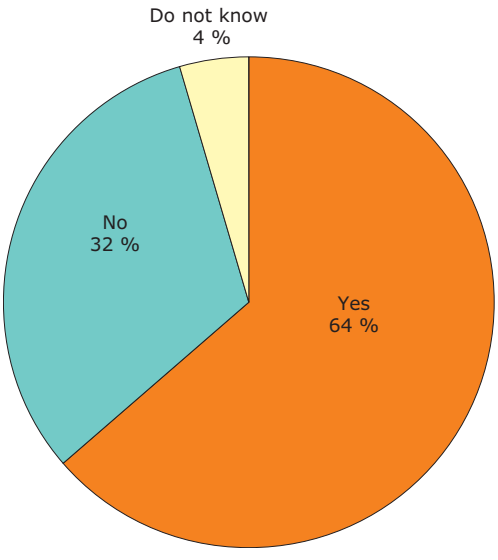
Figure 4.2 **Did the SEBI initiative help you to support any technical developments? ***



Note: * i.e. definition of the national set, methodological guidelines,...

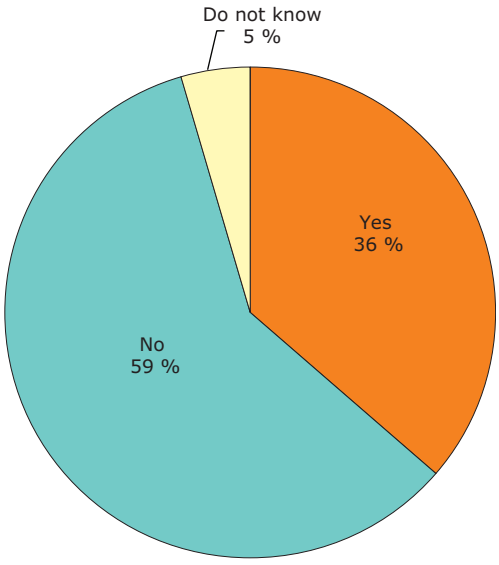
Only 36 % of respondents agreed that SEBI helped to reinforce data collection (Figure 4.3). The main reason for this is that countries still rely on existing data sets. Respondents felt that SEBI helped to develop monitoring programmes with improved focus and efficiency.

Figure 4.1 **Did the SEBI initiative help you to support the development of your national set? ***



Note: * e.g. helped to convince political or administrative level about the importance of indicators for carrying out biodiversity assessments.

Figure 4.3 **Did the SEBI initiative help you to support reinforcing biodiversity data collection?**



Responses from the country consultation suggested that indicators linked to sectors must be reinforced and the geographical coverage must be enlarged. Several countries had more specific suggestions such as the inclusion of an indicator on plant species abundance. On the SEBI process, dissemination of SEBI findings is considered as the most important priority, followed by a reinforcement of the stakeholders' involvement (see Figures 4.4 and 4.5 and Annex 1).

Figure 4.4 In your opinion, what should be the priorities in the post-2010 phase of SEBI for the indicator set?

Please rate from 1 to 5, where: 1 is most important, 5 is least important:
- a) refining the set of indicators in view of the new EU and global biodiversity targets
- b) reinforcing the ecosystem services approach
- c) reinforcing the sectoral approach (ie agriculture, forestry, fisheries…)
- d) increasing geographical coverage of indicators (as the coverage in the current SEBI indicator set is very uneven)
- e) other

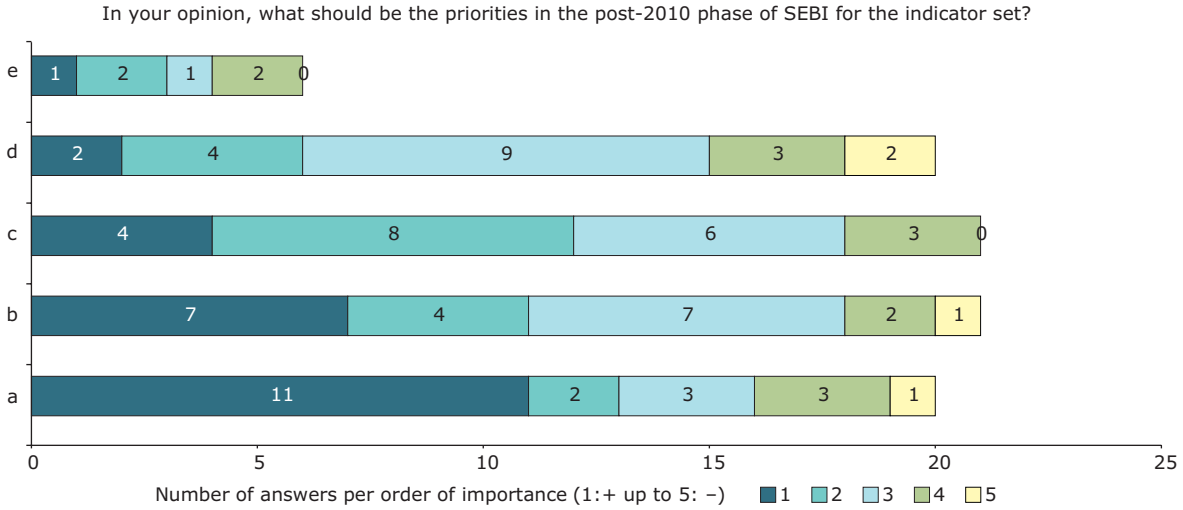
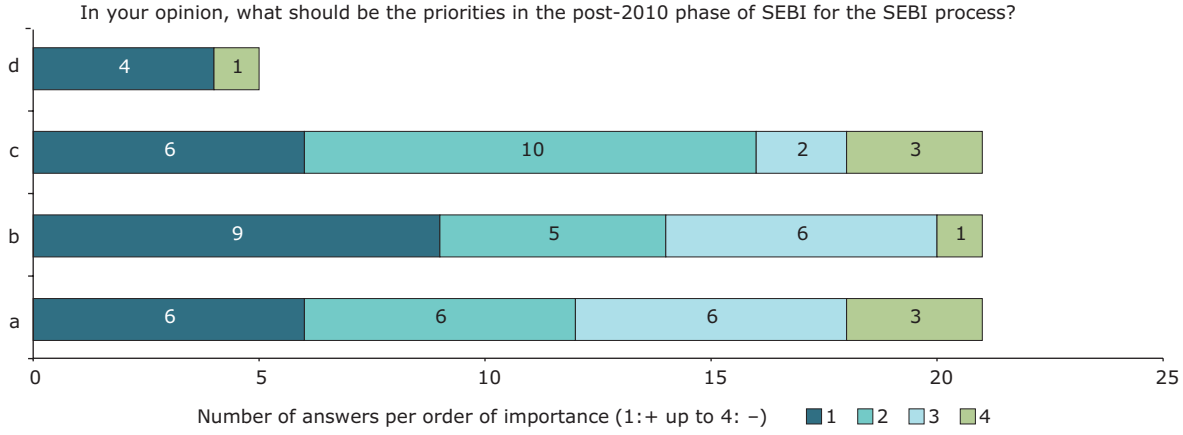


Figure 4.5 In your opinion, what should be the priorities in the post-2010 phase of SEBI for the SEBI process?

Please rate from 1 to 4, where: 1 is most important, 4 is least important
- a) increasing efforts into communicating SEBI findings to the public
- b) increasing dissemination of SEBI findings/planned activities to national/regional environmental administration
- c) strengthening stakeholder involvement (i.e. NGOs, research bodies, etc)
- d) other?



5 Conclusion

The SEBI process represents seven years of cooperation at the pan-European level between a number of key players. Its governance, development processes and outcomes are an excellent example of a combined regional effort. Much effort went into bringing partners together, developing a jointly agreed set of indicators, for use at the highest policy level in Europe, and communicating the efforts and the outcomes in a variety of ways.

Key strengths of SEBI have been:

- mobilising existing data and expertise;
- developing a stakeholder process to identify policy-relevant biodiversity indicators;
- links to and anchoring in national, EU, pan-European and global processes;
- streamlining the process of biodiversity indicator development and reporting at several levels, therefore reducing (national) efforts and workload for contributions to international indicator initiatives and reporting requirements;
- links to networks of experts across Europe.

This report draws lessons from the processes that could assist those involved in further improving indicators for measuring European progress towards the new global, pan-European, and EU biodiversity targets. This phase of indicator development will be defined by recent policy developments, such as the Strategic Plan for Biodiversity 2011–2020, the EU 2020 Biodiversity Strategy and the Pan-European 2020 Biodiversity Strategy. At EU level the Common Implementation Framework (CIF) for the EU 2020 Biodiversity Strategy shapes the context for further updating and development of the SEBI indicator set.

With the EEA and the European Commission's Directorate General for Environment as key drivers of the SEBI process, and the European Parliament in its resolution of 20 April 2012 calling for development of reliable indicators of environmental sustainability, the SEBI process is ready to be more firmly embedded in the CIF as the key tool to monitor progress in achieving the 2020 target.

CBD COP decision X/2, requests Parties to report on progress towards the Aichi targets through their fifth national reports in 2014. The SEBI indicators offer an opportunity to support work to coordinate and consolidate a coherent set of indicators for measuring progress and reporting on the new global and European biodiversity targets, thereby creating streamlined reports between EU Member States and non-EU European countries.

In this respect SEBI's future efforts should work towards the development of new indicators and the alignment of the new set with the CBD structure of headline indicators and targets. This would support countries in the production of a workable set of indicators that matches both the EU biodiversity targets and the CBD flexible indicator framework that is developed in follow up of adopting the Aichi targets (UNEP, 2011; see Tables 4.1 and 4.2) and filling in identified gaps.

Close linkages with other EU environmental policies such as the Common Agricultural Policy, Marine Strategy Framework Directive and the Water Framework Directive as well as policies related to Invasive Alien Species, forestry and other sectors should be made and the use of indicators reported under those processes should be encouraged.

In conclusion, the SEBI process and brand should continue to be used to further reap the benefits of its experience and further develop the indicator set — the key toolbox — for monitoring progress in halting biodiversity loss and restoring ecosystem services in the years to come.

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Annex 1 Eionet consultation on SEBI process

Eionet consultation on SEBI process: outcomes, lessons learnt and future challenges (May 2011), number of respondents: 22 countries

Question 1

Did the SEBI initiative help you to support the development of your national set?

Selected answers

- [Belgium — Flanders] The SEBI initiative came for Flanders at the perfect moment. It provided INBO, the Flemish Research Institute of Nature and Forest, with a framework to benchmark our own set of policy indicators that had been created in 2003. It also helped to structure the communication with policy agencies such as the Agency of Nature and Forest, and the Department of Environment, Nature and Energy, in developing and modifying indicators for the Environmental Policy Plan (MINA-plan), the Flemish Regional Indicators (VRIND), and other policy processes.

- [Cyprus] Yes, the SEBI initiative helped us in developing our national set. The indicators developed by SEBI were used for the establishment of the Natura 2000 in Cyprus resulting in 40 sites being included in the Network as SCI sites (Habitats Directive) and 29 as SPA (Birds Directive).

- In addition, through the Rural Development Plan 2007–2013 the Ministry, with the support of BirdLife Cyprus, carried out a survey on the Farmland Bird Indicator, using the information available from SEBI.

- As a general comment we could say that even though the indicators are not yet broadly used, the positive messages coming out from initiatives such as SEBI help the competent authorities in dealing with nature conservation to establish their own system on biodiversity indicators.

- [Czech Republic] The SEBI 2010 biodiversity indicator set was used for producing a comprehensive national study entitled 'Report on Implementing the 2010 Biodiversity Conservation Target in the Czech Republic', by the Ministry of the Environment of the Czech Republic in late 2010. Within the report, 24 SEBI 2010 indicators were applied. In total, the report was prepared by 27 experts from the Academy of Sciences of the Czech Republic, universities, research institutes, NGOs and the Agency for Nature Conservation and Landscape Protection of the Czech Republic.

- [Denmark] The SEBI initiative was one convincing reason to establish a national indicator system as part of the National Strategy on Biological Diversity. In general SEBI indicators were used as a model to develop some national indicators. The existence of SEBI provided weight to the argument to develop a national indicator as regards the conservation status of habitats and various species. Stakeholders can influence the dissemination of information as regards the indicators.

- [The Netherlands] Most of the indicators had already been available in the Netherlands. SEBI helped to develop them into a core set that is internationally shared. The indicator developed for genetic diversity is a major step forward and could be most promising in the future.

- [Norway] Yes. SEBI was a very useful framework for our work and provided real professional focus and inspiration. SEBI made it possible to communicate easier with high level political and ministerial contacts as well as other sectors.

- [Slovenia] We had already established a national set of indicators. Our national indicator set partly coincides with SEBI set — some indicators are the same, but most indicators are similar.

Question 2

Did the SEBI initiative help you to support any technical developments?

Selected answers

- [Belgium – Flanders] By 2003 INBO had already developed several indicators in order to evaluate the present state of nature in Flanders, in cooperation with the Agency for Nature and Forest, the Department of Environment, Nature and Energy and the Study Unit of the Flemish Government. Since 2006 this report contains 21 biodiversity indicators which give the closest interpretation of the 26 European biodiversity indicators. In the near future these indicators will be modified so they will correspond to the SEBI definition.

- [Switzerland] Yes. The collaboration in working groups was very fruitful, as information from the European context and other national experiences could be accessed.

- [Denmark] Primarily by providing the headline indicators. In some cases the methodology was also useful and but the technical report was certainly helpful in shaping the existing mindset. We had to gather data nationally and in addition had to build an entire indicator set from scratch using available data from existing indicators.

- [Norway] Yes, or partly. Norway has, during this period, developed the bird index and a Norwegian Nature Index. This was in part possible due to the development of the Strategic Plan and its biodiversity indicators.

- [United Kingdom] Developments in the United Kingdom were informed by the SEBI work, and vice-versa, as UK took part in most of the technical working groups and the Coordination Team. The UK indicators were first published in 2007, and have been published annually thereafter.

Question 3

Did the SEBI initiative help you to support reinforcing biodiversity data collection?

Selected answers

- [Belgium – Flanders] Certainly as the process underlined the crucial role the collection of data on biodiversity represents for the country, in order to have reliable and updated information on species, habitats and ecosystems.

- [Switzerland] Although biodiversity data collection started before the SEBI initiative, this initiative stimulated data collection to develop new indicators, corresponding to the SEBI definition. In addition, SEBI stimulated data collection harmonisation. With regard to indicators that refer to policy output we can stress the importance of biodiversity data to our data providers.

- [Cyprus] Yes, SEBI supported us in reinforcing our biodiversity data collection. SEBI supported Cyprus in completing a flora data book. Relevant departments from the Ministry of Agriculture, Natural Resources and Environment are collecting data such as water indicators (chemical and ecological) and climate change indicators. A biodiversity data collection exists via some management plans arising from the Natura 2000 areas. The SEBI initiative is certainly considered a valuable tool.

- [The former Yugoslav Republic of Macedonia] It has contributed towards a monitoring program which will allow for efficient collection of data, through a methodology for measurement, observation, assessment and control of the state of species, habitats, types of habitats, environmentally significant areas, ecosystems, landscape types, monitoring and assessment of geological values and monitoring of the state of natural heritage.

- [Slovenia] Unfortunately at the moment data collection is not strictly connected to the implementation of indicators. In general data is gathered from many different and scattered sources.

- [United Kingdom] The indicators are based on data collection at national or subnational level with the driver for the indicators being CBD rather than SEBI.

Question 4

In your opinion, what should be the priorities in the post-2010 phase of SEBI for the indicator set?

Selected answers

- [Croatia] Indicators have to be refined in order to be easily defined and assessed
- [Czech Republic] Review the indicator set in relation to the Aichi-targets: can the main targets of the mission for 2020 be assessed with the SEBI set?
- [Denmark] Improve discussions focussing on any uncertainties linked with the indicators.
- [Italy] Incorporating ecosystem services and biodiversity based indicators into all other economic sectors is a key tool for moving towards post 2010 targets.
- [Croatia] Support countries that implement SEBI indicators at a national level.
- [Ireland] SEBI could be used to refine an existing world database on ecosystem services indictors.
- [Italy] Stimulating and assisting more countries to carry out indicator activities, with guidelines, workshops and handbooks.
- [Estonia] A sectoral approach is important because the indicators proposed in the SEBI 2010 process allow for more efficiency in benchmarking, data collection and efficient assessments.
- [The Netherlands] The SEBI set has a wide range of information. Reinforcing the set is more important then extending the set.
- [Poland] Aligning the indicator set to new EU biodiversity targets.
- [United Kingdom] Need to start with an analysis of why the indicators have the geographic coverage they do. Expanding coverage is likely to need different approaches for different indicators.

Question 5

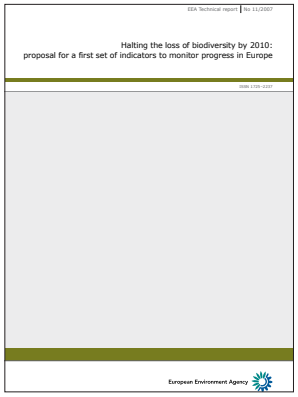
In your opinion, what should be the priorities in the post-2010 phase of SEBI for the SEBI process?

- [Albania] National and regional activities need to be developed quickly in order to provide adequate and up to date messages.
- [Cyprus] Involve stakeholders in the management and decision making process in order to have effective/positive results about biodiversity targets.
- [Czech Republic] The governments should participate in the process at the very beginning, to allow for them to considering their involvement as integral to SEBI rather than the project being uniquely and formally linked to Brussels and Copenhagen.
- [Estonia] Providing regular and up to date information and offering participation in various SEBI activities, from testing the outputs of the process at different stages to supplying reliable and checked data.
- [Finland] It is very important that SEBI findings and post 2010 indicators that are related to strategic targets will be disseminated throughout the environmental sector.
- [France] Work to develop indicators based on themes familiar to the public.
- [Poland] Publish promotional materials, organise workshops and make the results of the process as accessible to the public as is possible.
- [Serbia] Stakeholders can influence the dissemination of information on indicators and also can engage others in achieving better results.
- [Slovakia] The key audience for SEBI is policy makers, not the general public.
- [United Kingdom] Use stakeholders to develop the indicators — but in a very interactive workshop way, not in formal meetings with lots of presentations. Consider language issues and perhaps provide translation.

Annex 2 SEBI 2010 publications and communication activities

2007

- A technical report describing the SEBI2010 process as well as specifications of the 26 indicators selected was published in 2007 (EEA, 2007), available at: http://reports.eea.europa.eu/technical_report_2007_11/en.



2009

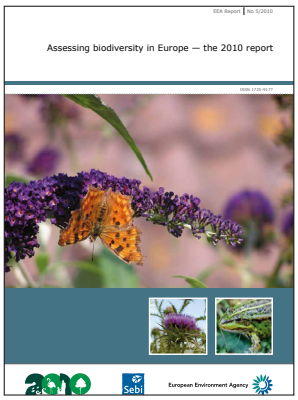
- The first assessment of progress towards the 2010 targets based on the SEBI 2010 indicators was published in 2009 (EEA, 2009a), available at http://www.eea.europa.eu/publications/progress-towards-the-european-2010-biodiversity-target. This report supported the message from the former European Commissioner for Environment, Mr Stavros Dimas, at the European Commission Conference on Biodiversity Protection – Beyond 2010 (Priorities and options for future EU Policy) held in Athens in April 2009 who acknowledged that the European target of halting the loss of biodiversity across the continent by 2010 would not be met.

- SEBI 2010 indicator fact sheets were also published in 2009 (EEA, 2009b), each containing short assessments for each indicator. These are available at: http://www.eea.europa.eu/publications/progress-towards-the-european-2010-biodiversity-target-indicator-fact-sheets.

- A logo was adopted in order to support the communication on SEBI.

2010

- In 2010 the SEBI indicators were made available on-line through the EEA Indicators Management System (IMS). This was part of the launch of the EEA managed European Biodiversity Data Centre accessible at: http://www.eea.europa.eu/themes/biodiversity/dc and of the Biodiversity Information System for Europe – BISE http://biodiversity.europa.eu/



- In 2010 the report Assessing Biodiversity in Europe – the 2010 report (EEA, 2010b), available at: http://www.eea.europa.eu/publications/assessing-biodiversity-in-europe-84, made use of the SEBI 2010 indicators, and other relevant national and regional information sources, to present the status, changes and trends in components of pan-European biodiversity, and the implications of these trends for biodiversity management policy and practice. The report also reflects on the challenges that remain for the conservation and sustainable use of Europe's biodiversity.

- The SEBI set constituted a major source for the 2010 European Biodiversity Baseline, available at: http://www.eea.europa.eu/publications/eu-2010-biodiversity-baseline.

Annex 3 List of SEBI working groups and experts

SEBI 2010 Phase 1: 2005–2007

The Coordination Team, initially established in January 2005, consisted of a representative of the EEA, covering EU/EEA countries; of ECNC, covering other PEBLDS countries and of UNEP-WCMC, covering links to the global/CBD activities.

During 2005, the Team was expanded to include (initially informally, eventually more formally) the coordinators and chairs of the six Phase 1 Expert Groups plus representatives of DG ENV, PEBLDS joint secretariat and the Czech Republic (as lead country for the PEBLDS action plan on biodiversity indicators):

Gordon McInnes (EEA): SEBI 2010 Coordinator,
Frederik Schutyser (EEA): SEBI 2010 secretariat,
Vibeke Horlyck: SEBI 2010 secretariat (2005 and early 2006),
Ivone Pereira Martins (EEA),
Lawrence Jones-Walters (and Ben Delbaere in 2005 and 2006) (ECNC),
Jerry Harrison (UNEP-WCMC),
Anne Teller (European Commission DG Environment),
Ivonne Higuero (PEBLDS Joint Secretariat),
Jan Plesnik (Czech Republic).

Chairs and coordinators of the Working Groups active during the period 2005–2007

Expert Group 1:
Coordinator — Sophie Condé (ETC-BD),
Chair — James Williams (Joint Nature Conservation Committee, United Kingdom, ETC-BD).

Expert Group 2:
Coordinator — Rania Spyropoulou (EEA),
Chair — Laurent Duhautois (France).

Expert Group 3:
Coordinator — Dominique Richard (ETC-BD),
Chair — Ulla Pinborg (Denmark).

Expert Group 4:
Coordinator — Ben Delbaere (ECNC),
Chair — Simon Bareham (Countryside Council for Wales, United Kingdom, ETC-BD).

Expert Group 5:
Coordinator — Tor-Björn Larsson (EEA),
Chair — Snorri Baldursson (Iceland).

Expert Group 6:
Coordinator — Ivonne Higuero (PEBLDS),
Chair — Ben ten Brink (the Netherlands).

Members of the Expert Groups are listed below:

EG 1
Larisa Nikolaevna Aleinikova, Ministry of Natural Resources (Russia),
Ian Burfield, BirdLife International,
Stuart Butchart, BirdLife International,
Denis Couvert, Muséum National d'Histoire Naturelle (France),
Luc De Bruyn, Flemish Government,
Mireille De Heer, (formerly) Environment Assessment Agency (the Netherlands),
Jan Dušek, Agency for Nature Conservation and Landscape Protection (Czech Republic),
Christoph Eichen, Ministry for the Environment (Germany),
Erik Framstad, Institute for Nature Research (Norway),
Marie Therese Gambin, Environment and Planning Authority (Malta),
Ward Hagemeijer, Wetlands International,
Borja Heredia, Ministerio de Medio Ambiente (Spain),
Maria Ingimarsdottir, Institute of Natural History (Iceland),
Nevana Ivanova, Executive Environment Agency (Bulgaria),
Romain Julliard, Muséum National d'Histoire Naturelle (France),
Fons Koomen, Ministry of Agriculture, Nature & Food Quality (the Netherlands),
Ulla-Maija Liukko, Environment Institute (Finland),
Jonathan Loh, WWF International,
Grégoire Loïs, European Topic Centre on Biological Diversity,

Edmund McManus, (formerly) UNEP-WCMC, now CEFAS (United Kingdom),
Svetozar Petkovski, BIOECO (FYR of Macedonia),
Didier Pont, National Centre for Scientific Research (France),
Liutauras Raudonikis, Institute of Ecology of Vilnius (Lithuania),
Angelika Rubin, European Commission DG Environment,
Norber Sauberer, Umweltbundesamt (Austria),
Andrej Saxa, State Nature Conservancy (Slovakia),
Larry Speers, GBIF,
Andreas Streit, UNEP/EUROBATS,
Andrew Terry, IUCN - The World Conservation Union,
Dace Vainauska, Environment Agency (Latvia),
Chris van Swaay, Butterfly Conservation Europe BCE/Dutch Butterfly Conservation,
Ildikó Varga, Ministry of Environment and Water (Hungary),
Adrian Zangger, BDM Coordination Office (Switzerland),
Hanno Zingel, Environment Information Centre (Estonia).

EG 2
Danial Baláž, State Nature Conservancy (Slovakia),
Pavla Bortlova, European Landowners Association,
Irene Bouwma, Centre for Geo-Information (the Netherlands),
Robertina Brajanoska, Ministry of environment and physical planning (FYR of Macedonia),
Geert De Blust, ECOLAND Institute of Nature Conservation (Belgium),
Ellen Dieme, Wetlands International,
Edward Mackay, Scottish Natural Heritage (United Kingdom),
Ásrún Elmarsdóttir, Institute of Natural History (Iceland),
Franz Essl, Umweltbundesamt (Austria),
Christine Estreguil, Joint Research Centre,
Livia Kisné, Ministry of Environment and Water (Hungary),
Georg Frank, BFW (Austria),
Lauri Klein, Environment Information Centre (Estonia),
Marco Marchetti, AISF-UNIMOL,
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EG 3
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EG 4
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EG 6
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SEBI 2010 Phase 2: end of 2007 until mid-2012

During the second phase of SEBI 2010 (end of 2007 until mid-2012), the composition of the SEBI 2010 Coordination Team was as follows:

- Gordon McInnes, Ivone Pereira Martins, Frederik Schutyser, Katarzyna Biala (European Environment Agency)
- Anne Teller (European Commission);
- Ivonne Higuero, Thierry Lucas (Joint Secretariat of the Pan-European Biological and Landscape Diversity Strategy (PEBLDS));
- Damon Stanwell-Smith/Matt Walpole (United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC)),
- Jan Plesnik (the Czech Republic),
- Chairs and coordinators of the Phase 2 working groups.

Chairs and coordinators of the Working Groups

WG1 interlinkages between indicators — coordinator: Sophie Condé (MNHN-ETC/BD), chair: Ben ten Brink (PBL);

WG2 climate change and biodiversity — coordinator: Dominique Richard (MNHN-ETC/BD), chair: Snorri Baldursson (Icelandic Institute of Natural History);

WG3 communication — coordinator: Lawrence Jones-Walters (ECNC-ETC/BD), chair: James Williams (JNCC-ETC/BD).

All experts that participated in the SEBI 2010 process were invited to comment on draft SEBI 2010 reports.

The following experts participated in the work of the SEBI 2010 Working Groups during the second phase of SEBI 2010:

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**Streamlining European biodiversity indicators 2020:
Building a future on lessons learnt from the SEBI 2010 process**

2012 — 45 pp. — 21 x 29.7 cm

ISBN 978-92-9213-326-9
ISSN 1725-2237
doi:10.2800/55751

TH-AK-12-011-EN-N
doi:10.2800/55751

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ISBN 978-92-9213-326-9

Publications Office

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