GreenFacts
Facts on Health and the Environment

Scientific Facts on

Biodiversity

A Global Outlook

Source document:
CBD (2006)

Summary & Details:
GreenFacts

Context - The Convention on Biological Diversity (CBD) has set, in 2002, the ambitious target of reducing the rate of biodiversity loss by 2010.

A number of indicators of biological diversity were created to assess progress towards meeting that target.

Why is it important to reduce biodiversity loss? Can the 2010 Biodiversity Target be reached and what actions are needed to ensure that it is?

This Digest is a faithful summary of the leading scientific consensus report produced in 2006 by the Convention on Biological Diversity (CBD):
"Global Biodiversity Outlook 2"

The full Digest is available at: https://www.greenfacts.org/en/global-biodiversity-outlook/

This PDF Document is the Level 1 of a GreenFacts Digest. GreenFacts Digests are published in several languages as questions and answers, in a copyrighted user-friendly Three-Level Structure of increasing detail:

- Each question is answered in Level 1 with a short summary.
- These answers are developed in more detail in Level 2.
- Level 3 consists of the Source document, the internationally recognised scientific consensus report which is faithfully summarised in Level 2 and further in Level 1.

All GreenFacts Digests are available at: http://www.greenfacts.org/

1. Why is biodiversity loss a concern?

Read also our summary of the Biodiversity Synthesis Report of the Millennium Assessment [see https://www.greenfacts.org/en/biodiversity/index.htm]

Biodiversity reflects the number, variety and variability of living organisms as well as how these change from one location to another and over time. It includes diversity within species, between species, and among ecosystems, in sum the diversity of all life on earth.

Ecosystems provide the basic necessities of life such as food, clean air and water. They offer protection from natural disasters and disease, shape human cultures and spiritual beliefs, and maintain the planet's essential life processes. Biodiversity loss affects ecosystems, making them more vulnerable to perturbations and less able to supply humans with valuable services.

The impact of humans on the natural environment is significant and growing: changes in biodiversity have been more rapid in the past 50 years than at any time before in human history.

Ecosystems provide valuable services. Source: C. Allan Morgan/ Alpha Presse

2. What are the Convention on Biological Diversity and its 2010 Biodiversity Target?

The Earth Summit in 1992 led to the creation of the CBD. Source [see http://www.mtholyoke.edu/~danov20d/site/history.htm]

2.1 Deep concern over the rapid loss of biodiversity and the recognition of its important role in supporting human life led to the adoption in 1992, of the Convention on Biological Diversity (CBD). The objectives of this legally binding global treaty are the conservation and sustainable use of biodiversity, as well as a fair sharing of the benefits of the utilization of genetic resources.

2.2 In 2002, the Conference of the Parties to the Convention agreed "to achieve, by 2010, a significant reduction of the current rate of biodiversity loss". To assess progress towards that target, it adopted a framework to guide action and identified indicators to assess the status and trends of biodiversity.

3. What is the role of biodiversity indicators?

Inspecting illegal logging sites in Cambodia Source: Joerg Boethling / Alpha Presse

3.1 The indicators were established to monitor the status and trends of biological diversity, and to provide information on ways to improve the effectiveness of biodiversity policies and management programmes. These indicators cover seven focal areas which include reducing the rate of biodiversity loss, addressing its major threats, promoting its sustainable use, and maintaining ecosystem health.

3.2 While we still lack comprehensive global scale measures to assess progress towards the 2010 target, it is possible to describe trends in the status of biodiversity using these indicators. Taken together, they allow us to establish current trends regarding some important aspects of biodiversity, particularly when they are analysed and interpreted as a set.

4. At what pace is biodiversity lost?

The first focal area of the 2010 framework consists in reducing the rate of loss of biodiversity at ecosystem, species, and genetic levels.

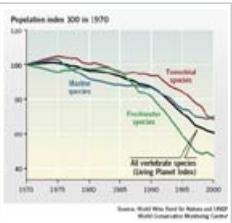
4.1 Over the last 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history. For example, the conversion of forests for agriculture and pasture continues at an alarmingly high rate. Similar negative trends have been observed for other ecosystems such as grasslands, savannas, deserts, and freshwater, coastal and marine ecosystems

See also our Digest on Arctic Climate Change [see https://www.greenfacts.org/en/arctic-climate-change/index.htm]

4.2 The abundance and distribution of selected species are an indicator of ecosystem quality. Several assessments have revealed that the population size and/or geographic range of the majority of species assessed is declining. Exceptions include domestic species, invasive species, and species that have been protected through specific measures.

See also our Digest on Ecosystem Change [see https://www.greenfacts.org/en/ecosystems/index.htm]

4.3 Over the past few hundred years, it is estimated that humans have been responsible for up to a thousand times more extinctions than the natural rate. According to the IUCN Red List of Threatened Species, up to one out of two species within well-studied groups such as amphibians, birds or mammals is threatened with extinction, and the situation is deteriorating.



The Living Planet Index [see Annex 4, p. 9]

4.4 The genetic diversity of cultivated and domesticated species is of great importance from a human perspective, because it allows the species to adapt to changing conditions. It is estimated that one third of all domesticated animal breeds are presently threatened with extinction. For non-cultivated species, genetic diversity is threatened mainly by overexploitation, as well as habitat destruction and fragmentation.

4.5 Protected areas are crucial to countering the continuing loss of ecosystems and species. They currently cover about one eighth of the Earth's land surface, but only a small fraction of marine and coastal areas. However, there are substantial differences in coverage among ecological regions, and many types of ecosystems are almost not protected at all.

5. Are ecosystems healthy enough to provide resources and essential services?

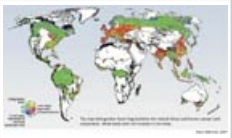
The second focal area consists of maintaining the integrity of ecosystems and their ability to support human livelihoods.

See also our Digest on Fisheries [see https://www.greenfacts.org/en/fisheries/index.htm]

5.1 Intense fishing has led to the decline of many species, notably cod and tuna. In the North Atlantic, the populations of large fish have declined by two-thirds in the last 50 years. The preferred fish for human consumption are becoming increasingly rare, forcing a shift to smaller fish and invertebrates and eventually reducing the overall supply for human consumption.

See also our Digest on Desertification [see https://www.greenfacts.org/en/desertification/index.htm]

5.2 In many terrestrial and inland water ecosystems, human activities lead to the fragmentation of habitats. The resulting smaller patches of habitat support smaller populations, which as a result become more vulnerable to local extinction. Forests and river systems both show high levels of fragmentation.

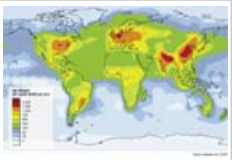


Estimates of forest fragmentation due to anthropogenic causes [see Annex 1, p. 8]

5.3 The quality of inland waters has been affected by pollution, increased sedimentation, climate change, the extraction of fresh water for agricultural and industrial use, human consumption, and physical alterations such as diversion and canalization of watercourses. Since the 1980s, river water quality has improved in Europe and the Americas but it has deteriorated over the same period in Africa, Asia, and the Pacific region.

6. What are the main threats to biodiversity?

The third focal area concerns the five major threats to biodiversity: invasive alien species, climate change, nutrient loading and pollution, habitat change, and overexploitation.

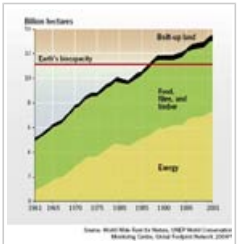


Estimated total reactive nitrogen deposition from the atmosphere [see Annex 2, p. 9]

6.1 The availability and use of fertilizers on a commercial scale contributes to the growing productivity of agriculture. However, nitrogen and phosphorus from those fertilizers can have severe impacts on the environment. The human production of nitrogen has increased sharply since 1960.

6.2 Invasive alien species can have devastating impacts on native species, causing extinctions and affecting natural and cultivated ecosystems. Some invasive alien pests or diseases can entail enormous economic costs. In the recent past, the rate and risk associated with alien species introductions have increased significantly, notably because of increased travel, trade and tourism.

7. To what extent are ecosystems used sustainably?



Global Ecological Footprint
[see Annex 3, p. 9]

7.1 The sustainable use of biodiversity is the fourth focal area in the 2010 framework. Possible indicators could be the proportion of ecosystems under sustainable management or being certified as meeting certain criteria for sustainability.

7.2 The ecological footprint is a concept that calculates the area of land and water needed to sustain a defined human population, based on the population's use of energy, food, water, building material and other consumables. In 1961 humanity was globally using about half of the Earth's capacity to renew its natural resources. Now this capacity is exceeded, and overuse is still growing.

8. Are other objectives of the Convention on Biological Diversity being met?


Traditional knowledge is important for the protection of local biodiversity
Source: Nicole Duplaix / Alpha Presse

8.1 The fifth focal area addresses traditional knowledge of indigenous people and local communities , which provide the basis for the management and protection of local biodiversity. There is great concern over the continuing survival of this knowledge as it is often transmitted using indigenous languages which are generally spoken only by a small number of people.

8.2 The fair and equitable sharing of the benefits arising out of the utilization of genetic resources, which makes up the sixth focal area, would provide incentives to protect biodiversity. Some countries have implemented laws to control access to genetic resources. However, there is no reliable central source of information on national access and benefit-sharing measures.

8.3 The seventh focal area covers the financial and technical resources required for the implementation of the Convention, particularly for developing countries. The total aid to developing countries for biodiversity has declined since 1998.

9. How is the Convention on Biological Diversity being implemented?

Translating the content of the Convention into policy and practice is extremely challenging

9.1 Policy instruments developed by the Convention include:

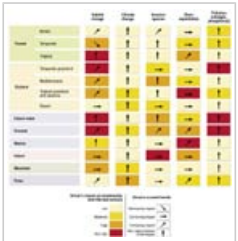
- Thematic programmes of work of the Convention, covering seven major biomes;
- Programmes of work on technology transfer, protected areas and classification of organisms (taxonomy); and
- Principles and guidelines on issues relevant to all thematic areas, including biodiversity monitoring, impact assessment, incentive measures, and invasive alien species.

9.2 The Conference of the Parties adopted in 2002 a Strategic Plan which encompasses four goals. Progress has been

- reasonable towards promoting international cooperation in support of the Convention.
- limited towards ensuring that Parties have improved capacity to implement the Convention.

- far from sufficient regarding planning and implementing, at national level, actions to achieve the objectives of the Convention.
- mixed towards achieving a better understanding of the importance of biodiversity and of the Convention.

10. Are we on track for meeting the 2010 BiodiversityTarget?


Main direct drivers of change in biodiversity and ecosystems
[see Annex 5, p. 11]

Both an analysis of current trends and different plausible scenarios, indicate that biodiversity loss is likely to continue in the foreseeable future, and certainly beyond 2010. Unprecedented additional efforts at all levels will be needed to achieve the 2010 Biodiversity Target.

10.1 It is too soon to assess progress towards the goals and targets set by the Convention, but prospects seem better for some targets than others. It is possible to achieve many of the targets if the Convention on Biological Diversity is properly implemented. However, it appears very unlikely that all the targets will be achieved globally by 2010.

10.2 Most of the factors causing biodiversity loss—habitat change, climate change, invasive alien species, overexploitation, and pollution—are projected to remain constant or increase in the near future. Additional actions are required to address these factors.

10.3 It is imperative to integrate biodiversity concerns into economic and development planning, programmes and policies and to engage the main actors in key economic sectors. More specifically, biodiversity concerns should be integrated into the food and agriculture sector, the energy sector, trade policies, and poverty alleviation strategies.

11. Conclusion: What actions are needed?


It is important to include biodiversity in sectors such as agriculture and energy.
Source: Paul Springett / Alpha Presse

Much progress has been made in terms of developing policies and tools for implementing the Convention on Biological Diversity, but implementation at national level has so far been limited. Urgent and unprecedented actions are needed to achieve the 2010 Biodiversity Target.

11.1 In order to meet the 2010 target, the Parties to the Convention should develop and ensure the implementation of comprehensive national biodiversity strategies and action plans; promote greater awareness of the importance of biodiversity; and integrate biodiversity concerns into national policies, programmes and strategies on trade, agriculture, forestry and fisheries, and development planning.

11.2 Meetings of the Conference of the Parties to the Convention offer the opportunity to agree upon necessary actions for addressing threats to biodiversity. Meeting the objectives of the Convention requires concerted action from all nations of the world. Therefore all countries should adhere to the Convention since it is critical to sustain life on Earth.

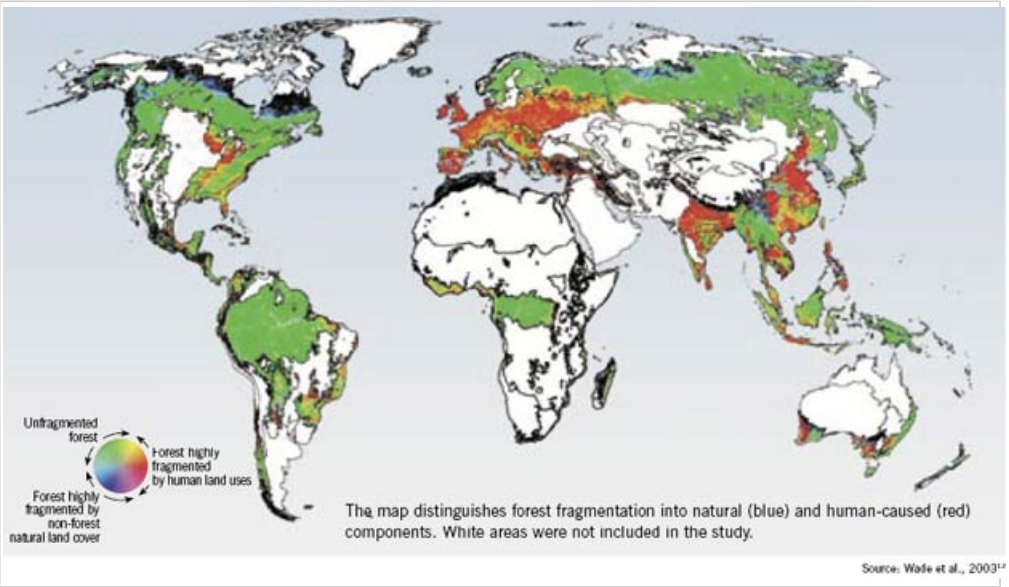
11.3 As individuals, we all have an essential part to play in promoting biodiversity conservation and sustainable use. We can demand action from all levels of government. Moreover, in our everyday choices, we all can have direct positive impacts on biodiversity and the state of our planet's ecosystems, for instance by supporting sustainable consumption and waste reduction.

Corporations should also assume responsibility for the environmental impacts of their activities and choose suppliers that adopt sustainable practices.

Annex

Annex 1:

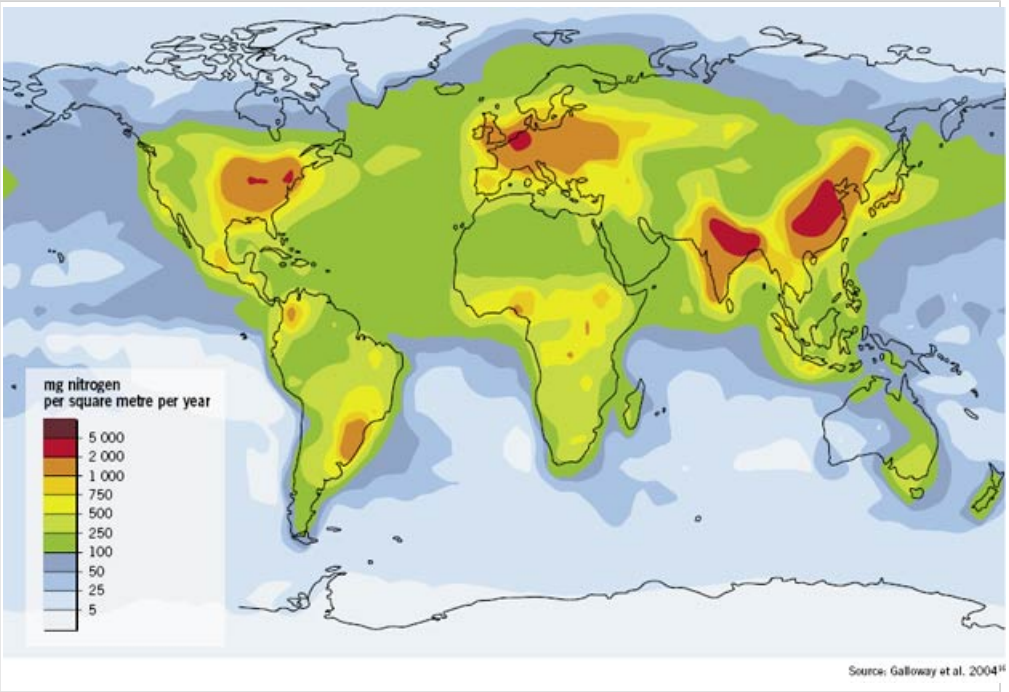
Figure 2.13 Estimates of forest fragmentation due to anthropogenic causes



Source: CBD Global Biodiversity Outlook 2 [see http://www.biodiv.org/doc/gbo2/cbd-gbo2.pdf] (2006), Chapter 2: The 2010 Biodiversity Target: Establishing current trends, p.32

Annex 2:

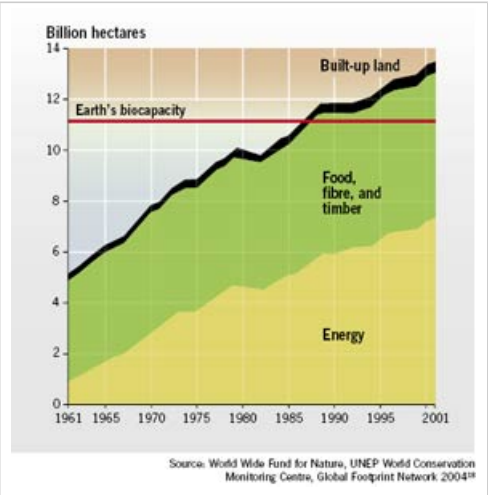
Figure 2.16 Estimated total reactive nitrogen deposition from the atmosphere (wet and dry) (early 1990s)



Source: CBD Global Biodiversity Outlook 2 [see http://www.biodiv.org/doc/gbo2/cbd-gbo2.pdf] (2006), Chapter 2: The 2010 Biodiversity Target: Establishing current trends, p.35

Annex 3:

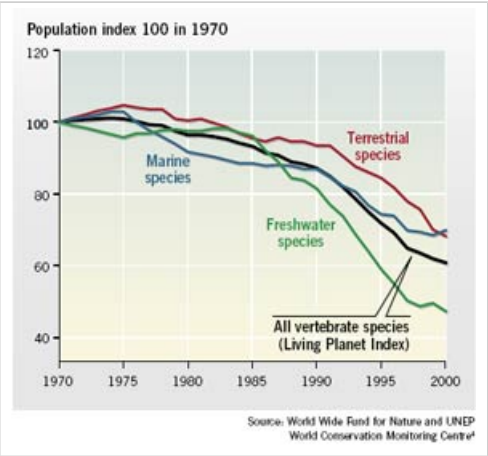
Figure 2.18 Global Ecological Footprint



Source & © CBD Global Biodiversity Outlook 2 [see http://www.biodiv.org/doc/gbo2/cbd-gbo2.pdf] (2006), Chapter 2: The 2010 Biodiversity Target: Establishing current trends, p.37

Annex 4:

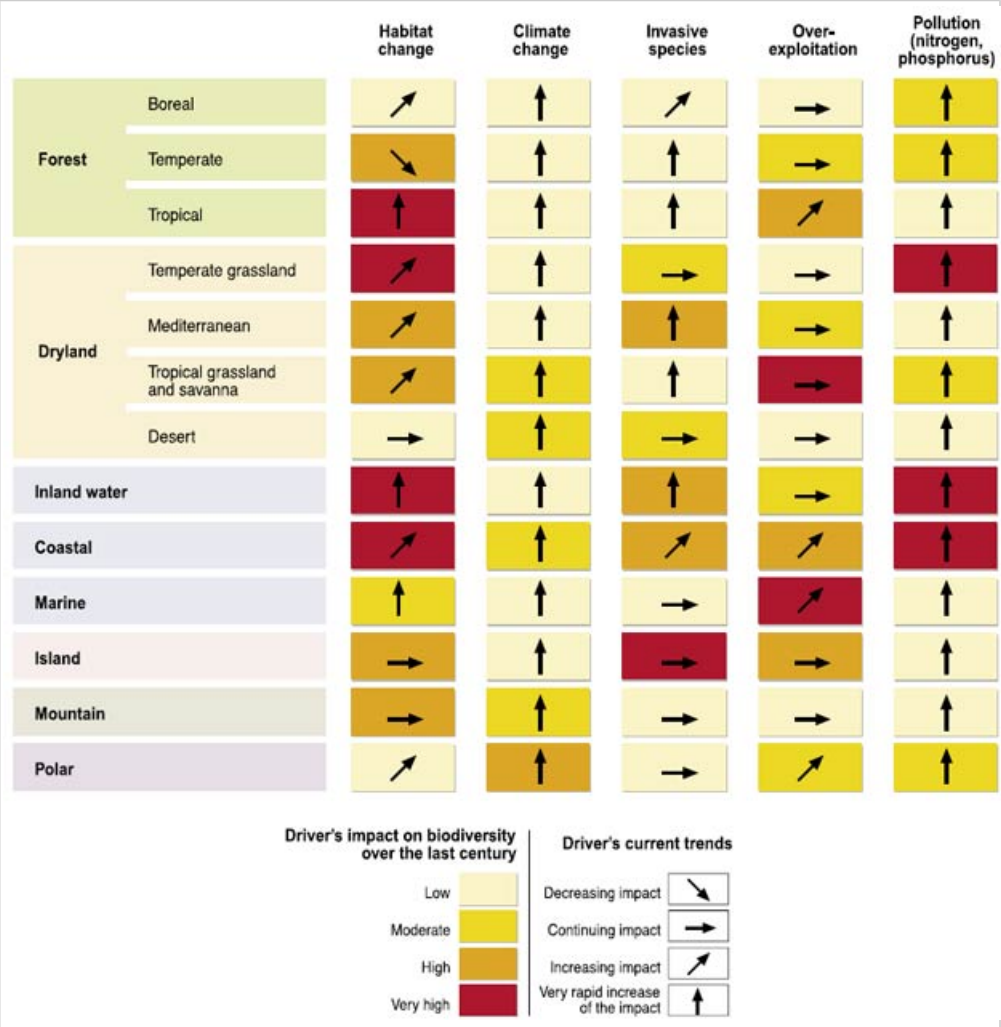
Figure 2.4 The Living Planet Index: trends in populations of terrestrial, freshwater, and marine species worldwide



Source & © CBD Global Biodiversity Outlook 2 [see http://www.biodiv.org/doc/gbo2/cbd-gbo2.pdf] (2006), Chapter 2: The 2010 Biodiversity Target: Establishing current trends, p.25

Annex 5:

Figure 4.1 Main direct drivers of change in biodiversity and ecosystems



The cell colour indicates the impact of each driver on biodiversity in each type of ecosystem over the past 50 to 100 years. High impact means that over the last century the particular driver has significantly altered biodiversity in that biome; low impact indicates that it has had little influence on biodiversity. The arrows indicate the trend in the driver. Horizontal arrows indicate a continuation of the current level of impact; diagonal upward and vertical arrows indicate progressively increasing trends in impact; and diagonal downward arrows indicate decreasing trends in impact. For example, if an ecosystem had experienced a very high impact of a particular driver in the past century (such as the impact of invasive species on islands), a horizontal arrow indicates that this very high impact is likely to continue. This figure is based on expert opinion consistent with and based on the analysis of drivers of change in the various chapters of the assessment report of the Condition and Trends Working Group of the Millennium Ecosystem Assessment. The figure presents global impacts and trends that may vary among regions.

Source: CBD Global Biodiversity Outlook 2 [see http://www.biodiv.org/doc/gbo2/cbd-gbo2.pdf] (2006), Chapter 4: Prospects and Challenges for achieving the 2010 Biodiversity Target, Section 4.2, p.63

Partners for this publication

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