

Facts on biodiversity

What is biodiversity?

Biological diversity (biodiversity) comprises diversity of species and habitats as well as the genetic diversity within the individual species of fauna and flora. All three areas are closely interconnected and interact with each other. They are continually forming new combinations – like a gigantic net in which new knots are constantly being tied. This network of biological diversity makes the Earth a unique, habitable place for human beings.

There are no concrete figures on the number of species which actually exist on our planet. Estimates range from 10 to 100 million, experts assume there are approximately 15 million existing species. Around 1.8 million species are currently known and described, 40,000 have been studied with regard to their endangered status. Two thirds of all known species belong to the insect class. There are about twice as many species of beetles alone as there are plant species.

Biological diversity is not distributed equally across the Earth. Approximately 70% of all species can be found in the 17 so-called megadiversity countries – tropical and subtropical regions which are extremely rich in species diversity. With regard to the higher plant species, for example, Brazil tops the list with around 56,000 species, followed by Columbia with around 51,000 species and China with around 32,000 species. In contrast, diversity in Germany is comparatively poor, with only 2,682 higher plant species.

Loss of biodiversity

Biodiversity is declining steadily throughout the world. Directly or indirectly, humans bear the main responsibility for this loss of diversity. The greatest threats include

- wide-scale destruction, reduction and fragmentation of habitats
- environmental destruction and environmental damage such as pollution of the air, seas, rivers and soils
- overexploitation of natural resources through hunting, fishing, deforestation, land-use change, monocultures etc.
- climate change and
- immigrant species and organisms or non-resident species and organisms (so-called invasive alien species) introduced by humans which compete for habitats with native species, in the worst cases completely displacing them.

Species

The current rate of global extinction of species is 100 to 1000 times faster than the assumed natural extinction rate. According to the Red List of endangered species, published in 2006 by the World Conservation Union IUCN, around 15,500 species worldwide are critically endangered, including 23% of all mammals, 12% of birds and 31% of amphibians. Between 1970 and 2000, the total number of species fell by 40%.

Ecosystems

Not only species of fauna and flora but also numerous ecosystems are endangered worldwide. In 1990, the UN Food and Agriculture Organization (FAO) estimated that 42% of tropical rainforest had probably been destroyed, and the destruction has persisted ever since. Each year ½ to 1% of tropical forests are still being lost.

Genetic diversity

Diversity is also declining massively within individual species. Experts are now talking of "genetic erosion". In wild species, it is difficult to estimate the magnitude of this as there are considerable gaps in the data. More is known about cultivated species used for agricultural purposes. For thousands of years around 3,000 types of wheat, 5,000 types of rice and 6,000 types of maize were cultivated. Today, however, only a handful of high-yield breeds are grown. Globally, just 30 species provide around 95% of plant-based food. The rest is scarcely used any longer and is in danger of disappearing forever.

Genetic diversity and wealth of species are closely interconnected. The lower the genetic diversity within a species, the greater the risk that the species will die out. However, if a species has wide genetic diversity there is a greater chance that part of the population will adapt to new environmental conditions – such as climate change – and survive.

Loss of biodiversity

- Deforestation, mainly conversion of forests to agricultural land, continues at an alarmingly high rate – about 13 million hectares per year
- Primary forests account for 36% of forest area – but 6 million hectares are lost or modified each year
 - 80% of the Caribbean coral reefs have been destroyed.
 - 35% of all mangroves worldwide were destroyed within just 20 years.
- 25% of all marine fish stocks are endangered, more than 50% are already exploited so intensively that it is no longer possible to increase the stocks; species such as cod, haddock and halibut are already critically endangered.

The impacts of the loss of biodiversity

The loss of biological diversity is a cause for concern not only because of the significant intrinsic value of nature, but also because it leads to a loss of the services provided by natural ecosystems. The 2005 Millennium Ecosystem Assessment (MA) established that the current massive wave of extinctions caused by human activity threatens the well-being and future of mankind itself. The MA focuses in particular on the dependence of human welfare on so-called ecosystem services. With its diversity, intact nature supplies services which could otherwise not exist at all or could only be solved technically with major effort and at very high cost: for example production of food, fuels and fibres, regulation of the water regime and climate, oxygen formation, soil fertility, drinking water extraction, supply of raw materials and medicines and protection against natural disasters such as floods.

Services of nature

- 10,000 to 20,000 plant species worldwide are used to produce medicines.
- Around 100 million tonnes of aquatic organisms such as fish, molluscs and crustaceans are caught each year, making a considerable contribution to securing global food supply.
- The more intact the self-cleaning powers of water bodies, the simpler and more cost-effective it is to extract drinking water.
- The greater the natural soil fertility, the less fertiliser needs to be spread.

The destruction of biological diversity has substantial global economic impacts. The monetary value of global ecosystem services is estimated at between 16 and 64 trillion US dollars. The sector of forestry products is estimated to account for a share of around 1% of world gross domestic product and 3% of international goods trade. The annual turnover of timber products (round timber, building timber, paper etc.) is in excess of 200 billion US dollars. It is difficult to quantify the value of non-material forestry products or the climate service provided by forests, but these services secure the livelihood of around 600 million people in developing countries.

Securing biological diversity is therefore an integral part of sustainable development and represents the basis for competitiveness, growth and employment and for improving living conditions.

Protection of biodiversity

The key international instrument for the protection of biodiversity is the Convention on Biological Diversity (CBD) – one of the three international agreements adopted at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992. In the framework of the CBD and at the 2002 World Summit on Sustainable Development in Johannesburg, the international community agreed *the 2010 biodiversity target*: to achieve a significant reduction in the rate of loss of biological diversity by 2010. At its Gothenburg summit in 2001 the EU went even further and adopted the aim of actually halting the loss of biodiversity within the EU by 2010.

The implementation status of this target will be a key topic of the 9th Conference of the Parties to the CBD (COP 9), taking place in May 2008 in Germany. This conference is the last meeting of the parties before 2010, and the international community will then have just two years to implement the target. Thus, pressure is growing to use this COP to decisively advance the international efforts for the protection of biological diversity.

The next conferences of the preparatory bodies will take place early in the second half of 2007. They include the two meetings of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) and Working Group meetings on Access and Benefit Sharing (ABS), Protected Areas, Article 8j (rights of indigenous population groups) and the implementation of the Convention.

An intensive preparatory process has long been underway, focal points for the preparation of COP 9 have been identified. It is especially necessary

- to achieve fundamental progress in the area of access to genetic resources and equitable sharing of benefits (Access and Benefit Sharing, ABS) so that the negotiations on an international regime on ABS can be successfully concluded by 2010.

Not only plants, animals and their products are usable resources, but also the genetic component of each individual. These are especially significant inter alia for scientific research, agriculture, biotechnology, medicine and the cosmetics industry. While the richest biological diversity and thus also the majority of genetic resources are found in developing countries, it is primarily industrialised countries which have the relevant technologies to use these resources. An aim of the CBD is therefore to grant access to genetic resources and enable the countries of origin to participate fairly in the benefits arising from the use of genetic resources. This participation can take different forms - cash payments, participation or training of national researchers, transfer of biotechnological equipment or a share of the profits are some of the possibilities.

In the upcoming negotiations Germany is aiming in principle for an agreement on internationally binding rules on this issue, for example a certification system on the origin of genetic resources.

- Establishing a comprehensive global network of terrestrial and marine protected areas and making it viable by combining, harmonising and utilising criteria, data and instruments.

By 2010 on land and by 2012 at sea it is planned to set up a global network of protected areas covering all habitats of the Earth, which can effectively protect global biological diversity. This network will include existing and new protected areas. The local and indigenous population should be able to use these regions sustainably so that the network of protected areas also contributes to combating poverty and strengthening local communities. There is still a major gap in the global network on the high seas. The Conference of the Parties aims to adopt criteria for the selection of high seas regions eligible for protection. Furthermore, progress should be made with regard to financing the global network of protected areas.

- Protecting the biodiversity of forests by improving the links between climate protection policy and biodiversity policy, reviewing and specifying the CBD programme of work on forest biological diversity and setting up protected areas for forests.

The programme of work on forest biological diversity adopted in 2002 will be reviewed and if necessary further developed. The aims of the Conference are to establish further protected areas for forests, promote the conservation of forests and address the issue of illegal logging. Cooperation between the CBD and the UN Framework Convention on Climate Change should be improved in order to enable synergy effects between climate protection and nature conservation instruments to be used to greater effect. For climate change and loss of biological diversity are closely connected. The destruction of forests or conversion of forests to intensively managed woods and plantations is one of the main causes of climate damaging CO₂ emissions. At the same time, climate change has considerable impacts on biological diversity: as a result of global warming, for example, the Brazilian Amazon rainforest is under threat of drying out. The limited ability of species to adapt to such changes leads to loss of species. One third of all species living today are under threat of extinction because of climate change.

Germany's dual Presidency in the EU and G8 is especially significant for the preparation of COP 9. In the framework of the German EU Presidency, an important course has been set for the EU negotiating position. The G8 Presidency will place particular emphasis on the need to intensify joint activities for the global protection of forests.