

# **National Strategy on Biological Diversity**

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## Preamble

Plants, animals, fungi and microorganisms purify the water and air, and ensure fertile soils. The intact ability of the soils and waters to perform self-purification is therefore crucial for the abstraction of drinking water. The natural fertility of the soil ensures a supply of wholesome food. These are not mechanical processes, but instead form part of a complex structure of ecological interactions. Ecosystems have a high absorption capacity and ability to regenerate, but they too have their limitations.

Modern society and the economy are dependent upon the use of nature and the countryside. Agriculture and forestry are the most obvious examples of dependency, but this is also equally true of transport, tourism, commerce and human habitation. In a modern industrial society, how can the protection and use of biological diversity be structured in such a way as to preserve the diversity of species and natural habitats while at the same time realising our social and economic interest in using this diversity appropriately? Achieving an optimum balance between the two is pivotal to sustainable development.

Back in the Seventies, scientists drew our attention to signs of an alarming worldwide decline in biological diversity. The loss of species, genes and habitats means that nature is impoverished, and the natural foundations of human life are under threat. Once biodiversity has been lost, it cannot be regained; the loss is irreversible.

The international community recognises that this is a highly complex problem which cannot be solved through isolated nature conservation activities. It is a matter of

- Protecting habitats and protecting wild animals, plants, fungi and microorganisms
- Ensuring the sustainable use of wild and farmed species and their genetic diversity
- Safeguarding access to the world's genetic resources, ensuring the equitable distribution of benefits resulting from the use of such genetic resources, and

thereby improving the development opportunities of poorer countries in particular, which are often rich in biodiversity.

Mindful of these issues, the Convention on Biological Diversity (CBD) was adopted at the United Nations Conference for the Environment and Development (UNCED) in 1992 in Rio de Janeiro. This Convention is not confined to nature conservation *per se*; it also addresses the use – and hence the economic potential – of natural resources as the key to conserving biological diversity. It also regulates cooperation between industrialised countries on the one hand, which possess much of the technical knowledge required to utilise biodiversity; and developing countries on the other, which are home to much of the world's biological diversity and which also possess valuable traditional knowledge about traditional usage forms. The Convention on Biological Diversity is dedicated to preserving the foundations of life for future generations.

189 countries and the European Community have since acceded to the Convention on Biological Diversity. Germany ratified the Convention in 1993 (Act concerning the Convention on Biological Diversity of 30 August 1993, Federal Law Gazette <BGBI.> II No. 32, p. 1741 ff).

The German Government has made the conservation of biological diversity through protection and sustainable use a top priority. Germany was extensively involved in the development of the Convention and actively promotes its advancement through a wide range of initiatives. Germany will host the 9<sup>th</sup> Conference of the Parties to the Convention on Biological Diversity in 2008.

This comprehensive “National Strategy on Biological Diversity” fulfils Germany's obligations under Article 6 of the Convention on Biological Diversity, which states that “Each Contracting Party shall ... develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose its existing strategies, plans or programmes”.

The National Strategy serves to implement the Convention at national level and also outlines Germany's contribution to the conservation of biological diversity worldwide by placing it in a European context, with due regard for international correlations. It not only addresses all government institutions at Federal, *Land* and local

government level, but also all social players. The strategy is designed to mobilise and pool all social forces with the aim of significantly minimising, and eventually halting altogether, the threat to biological diversity in Germany, the ultimate aim being to reverse the trend in favour of an increase in biological diversity, including its typical regional peculiarities. A further aim is that Germany should take greater responsibility for global sustainable development.

The strategy formulates a concrete vision for the future, and specifies quality targets and action objectives for all biodiversity-related topics. The target deadlines are objectively achievable, and range from the immediate term through to the year 2050. The action objectives listed under the various sub-headings have been concretised in terms of specific measures by government and non-government players. In the overall strategy, equal consideration is given to ecological, economic and social aspects, in keeping with the guiding principle of sustainability. Overall, careful consideration has also been given to gender-specific aspects in the formulation process.

Government cannot simply dictate sustainable development. The players in industry and society must make this topic their own if the strategy is to be successfully implemented, and its targets met. With this in mind, experts were consulted at a very early stage in the process.

Once the National Biodiversity Strategy has been adopted, the German Government will involve all players in the implementation process.

Implementation of the National Biodiversity Strategy will invariably entail some conflicts with other social interests. The strategy has made allowance for such conflicts of interest, and may therefore be considered a programme for society as a whole.

In terms of structure, the national strategy on biological diversity is based on the European Union's biodiversity strategy, with links to a number of related national sector strategies (see Appendix). The national strategy on biological diversity is also anchored in the national sustainability strategy.

In terms of content, the national biodiversity strategy is sub-divided into the following chapters:



- The chapter on “The current situation” outlines the reasons for conserving biological diversity from an ecological, economic, social, cultural and ethical viewpoint, highlights the global and national dimensions of the threat to biological diversity, and describes the efforts undertaken to date and the areas where further action is needed.
- The chapter on “Concrete vision” formulates and elucidates the Government’s visions, quality targets and action targets for the future on the major national biodiversity-relevant topics. Some of these objectives still need to be reviewed.
- The chapter on “Action areas” translates the action targets into concrete measures and allocates these to the various government and social players.
- The chapter on “Innovation and employment” outlines the potential afforded by biological diversity in terms of economic development, innovation and jobs.
- The chapter on “Eradicating poverty and promoting justice” explains the correlations between biological diversity and implementation of the Millennium Development Goals.
- The chapter on “Implementation of the Millennium Ecosystem Assessment in Germany” outlines implementation of the Millennium Ecosystem Assessment for Germany as commissioned by the United Nations.
- The chapter on “Flagship projects” provides details of concrete projects which exemplify the conservation of biological diversity while giving equal consideration to ecological, economic and social aspects.
- The chapter on “Reporting, indicators and monitoring” outlines future regular reporting on target achievement.
- *Inter alia*, the “Appendix” lists the resolutions of the various Conferences of the Parties to the Convention on Biological Diversity and the content of the EU biodiversity strategy and the EU action plans and explains how these are allocated to the various sections of this National Strategy on Biological Diversity.

## **A The current situation**

### **A 1 Definitions and existential significance**

The Convention on Biological Diversity defines “biological diversity” as follows: “The variability among living organisms from all sources (...); this includes diversity within species, between species and of ecosystems”. Hence, biological diversity is not confined solely to the species of animals, higher plants, mosses, lichens, fungi and microorganisms. Many species are further sub-divided into sub-species and regional varieties, and are also divided into different genetic populations. For this reason, biological diversity also includes genetic diversity within a species, as well as the habitats of organisms and ecosystems. Ultimately, biological diversity, or biodiversity, encompasses everything which contributes to the diversity of living nature.

“Conserving biological diversity” includes both “protection” and “sustainable use”.

The Convention on Biological Diversity, and this National Strategy, are based on the premise that the protection and use of biodiversity should always be considered from both an ecological, economic and social viewpoint. Ecological supportability should be the yardstick of all economic and social decisions. Within the context of the Convention, this is referred to as the “ecosystem approach” (resolution V/6 of the CBD).

In general, it can be said that the objective of the Federal Nature Conservation Act is equally applicable to biological diversity: “By virtue of their intrinsic value and as a basis for mankind’s existence, and also as a responsibility to future generations, nature and landscapes both in populated and non-populated areas shall be conserved, preserved, developed and, where necessary, recreated, so as to permanently safeguard

- the efficiency and function of the balance of nature
- the regenerative power and sustainable usability of nature’s resources
- fauna and flora including their habitats

- the diversity, uniqueness and beauty of nature and landscapes, as well as their recreational value”.

### **Existential significance**

Biological diversity is the existential basis for human life: Plants, animals, fungi and microorganisms are the supporting pillars of the substance cycle – they purify water and air, ensure fertile soils and a pleasant climate, are used for human nutrition and health, and provide both the basis and impetus for pioneering innovations. Only an intact natural world will allow current and future generations to enjoy a high quality of life, i.e. with natural products, an appealing environment in which to live, and recreational landscapes which also give human beings a sense of regional identity.

We humans share the planet with many other living creatures. Take the following two examples:

- Just one handful of regular soil (1 dm<sup>3</sup>) contains almost as many organisms (approximately 5 billion, ranging from minute euglenophyta to the much larger earthworm) as there are people on earth.
- The world is home to around 10,000 trillion ants, which are members of 9,500 different ant species; together, they weigh approximately the same as the world's entire population of humans (approximately 6 billion).

### **A 2 Ecological reasons for preserving biological diversity**

The precautionary principle applies to biological diversity. In order to safeguard the development opportunities for future generations, all species, as far as possible, must be preserved in their genetic diversity and in the diversity of their habitats, even if their respective functions in the natural balance and their benefits to humans are not yet fully understood.

By global comparison, central Europe, with its moderate climate, is inhabited by significantly fewer species of fauna and flora; the areas of greatest species diversity

are predominantly found in the Tropics. A significant portion of the species and ecosystems naturally occurring in Central Europe, however, are specially adapted to the local environmental conditions, and are more prevalent here than anywhere else. The near-natural ecosystems found here provide the foundations of typical central European biodiversity, and are just as irreplaceable as tropical habitats.

Generally speaking, the greater the degree of genetic diversity, the more able a species is to adapt to changing environmental conditions. Given the current background of climate change, this is crucially important.

Genetic diversity and adaptability – an example:

Studies by the Max Planck Institute of Limnology in Plön and the Leibnitz Institute for Marine Sciences in Kiel indicate that genetic diversity can help biotic communities to become more resistant to global warming. Researchers found that in meadows experimentally planted with seagrass of varying genetic diversity, the most genetically diverse areas recovered far more quickly than areas of reduced genetic diversity.

It is thought that ecosystems with natural species diversity are better able to withstand disruptions (e.g. in the water, soil or air balance and in the nutrient cycle) than ecosystems where many species are already extinct.

Insurance hypothesis:

A high level of genetic variability between species increases the likelihood of at least parts of the population being able to adapt to changing environmental conditions. Additionally, as the number of species rises, there is an increased probability that at least some of these species will be capable of responding differently to external disturbances and changes in environmental conditions. Finally, a larger number of species makes it more likely that two species will perform overlapping functions in an ecosystem, so that if one species is lost, the other can take over its role.

In other spheres of human life, the correlation between diversity and a system's buffer capacity is a well-established fact. For example, fund managers hold a range of different equities in their investment portfolios so that the risks associated with individual stocks cancel one another out to a certain extent, and a stock market crash tends to hit funds comprised of a small number of one-sided investments the hardest, whereas funds based on a broader range of securities tend to be less susceptible.

Intact ecosystems are more able to withstand disasters, or at least minimise their impacts. Conversely, the destruction of and changes to nature can cause natural disasters: River straightening and the loss of riparian forests exacerbate the effects of flooding. Mountain forest clearance and overuse of the mountain ecosystems can lead to avalanches and mudflows. Erosion caused by non-sustainable soil use in agriculture leads to the loss of fertile arable land.

Occurrence of flooding:

When large rivers became separated from their water meadows by dykes, many natural flood retention areas are lost. Stream straightening and the practice of combining dendritic tributaries into one main stream leads to a significant shortening of watercourses. Whereas prior to 1955, i.e. before the Rhine was developed into its modern formation, a flood wave on the Rhine would take 68 hours to reach Karlsruhe from Basel, this period has now been reduced to around 25 hours. As a result, depending on the overall weather situation and the direction in which the area of low pressure is travelling, there is an increased risk of the flood waves from the tributaries coinciding with the wave in the main stream, thus creating record flood levels in the lower reaches of the river.

**A 3 Economic reasons for preserving biological diversity**

The need to preserve biodiversity as an integral component of our so-called natural capital is becoming ever more pressing. Whereas in neoclassical times, the view was that in principle, natural capital can be replaced by man-made capital (the concept of

“weak” sustainability), there is now a growing realisation that biodiversity is in fact an irreplaceable part of natural capital (concept of “strong” sustainability).

Of course, it is very difficult to comprehensively estimate the value of biodiversity, given its sheer complexity. The market value of products derived from genetic resources alone is estimated at between US \$ 500 and 800 billion per annum. A scientific study in 1997 estimated the annual benefit of the world’s combined ecosystems at between US \$ 16 and 64 trillion.

Nature provides us with a range of services which would otherwise need to be resolved by technical means, at great expense and with substantial effort. The more intact the self-purification capacity of our soils and waterbodies, the easier and more cost-effective it becomes to abstract drinking water. The greater the natural fertility of the soil, the less fertiliser needs to be applied. The more plants and trees we cultivate in our inner cities, the more dust and pollutants are filtered naturally from the air. One aspect which is currently impossible to replace by technical means is the pollination of crop plants by insects. Similarly, there is no equivalent artificial replacement for nature’s aesthetic values (beauty, landscape) and recreational value.

Numerous incomes and jobs depend either directly or indirectly on nature and landscapes. Agriculture and forestry utilise the genetic resources of our flora and fauna. Without adequate genetic diversity, breeding potential is restricted, which in turn reduces the future opportunities available to these sectors.

Old breeds of domestic animals under threat:

84 % of the cattle bred in Germany are members of just four breeds, even though there are 100 different breeds of cattle in Europe. Sheep, pigs, poultry and other livestock face a similar situation. In the Red List of endangered breeds of livestock, 19 breeds in Germany are classified as “seriously endangered”, and a further 64 breeds as “endangered”. If these breeds are allowed to die out, their genes will be lost for future breeding.<sup>1</sup>

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<sup>1</sup> Zentrale Dokumentation Tiergenetischer Ressourcen in Deutschland (as per July 2006)

The pharmaceutical industry likewise capitalises on biological diversity. In Germany, around 50 % of the drugs currently in use are based on medicinal plants or their constituents. Around 70 to 90 % of all dried plant matter is still collected from the wild. Within Europe, Germany is the largest importer of such substances. Global pharmaceutical sales of plant origin total approximately US \$ 20 billion per annum.

Tourism is reliant on an attractive, intact landscape and nature, but also reacts sensitively to environmental disasters and the destruction of nature. The tourism industry is among the fastest-growing economic sectors worldwide. The World Tourism Organization (UNWTO) is predicting annual growth rates of 4.3 % over the next ten years, and anticipates an increase in the number of international trips taken to 1.6 billion by the year 2020. Worldwide, some 255 million people, or one in nine workers, are employed in the tourism industry. In Europe, the European Commission, estimates that between 2.2 and 3.3 million additional jobs may be created in tourism by 2010. According to estimates by the *Deutsches Institut für Wirtschaftsforschung* (German Institute for Economic Research), just under three million people in Germany work in tourism-related fields.

#### **A 4 Social and cultural reasons for preserving biological diversity**

Experiencing nature is a key aspect of our personal development. Positive experiences of nature strengthen our sense of vitality, train our senses of perception and aesthetic sensitivity, help to reduce aggressiveness, encourage attentiveness, concentration and perceptiveness, and help to train motor skills.

In a process which has evolved over thousands of years, humans have learned to identify the natural world and sensorially adapt to it. We see this in children, for example, when they divert flows in a river bed or build camps from fallen branches. Unstructured, free nature satisfies this creative need more effectively than anything which man has been able to create artificially. Children appreciate “wild” spaces which they can experience both at a sensorial and an emotional level, and shape according to their own ideas.

Experiences of nature are equally indispensable for adults for their leisure and recreation value. For example, 42 % of Germans who take holidays in their own

country rate “experiencing nature” as particularly important. In everyday life, too, nature and landscape help to strengthen regional identity and forge a sense of homeland.

Proximity to nature is a key aspect of quality of life, and was ranked 4<sup>th</sup> in a survey commissioned by the German Environment Ministry (BMU), albeit with significant gender variations: Almost twice as many women (more than 65 %) cited this aspect as men (just under 35 %).

The value ascribed to nature, a person’s attitude towards the protection and sustainable use of biological diversity, and their personal conduct vary significantly, and are thought to depend on gender, age, lifestyle and social environment, among other factors. A representative survey on environmental awareness among the German general public in 2004, commissioned by the BMU, found that

- 49 % of respondents felt it was “very important” and 41 % “quite important” to prevent species of fauna and flora from becoming extinct. Only 10 % rated it as “not very important” or “unimportant”.
- 42 % felt it was “very important” and 48 % “quite important” to improve nature conservation. Only 10 % rated it as “not very important” or “unimportant”.

The cultivated and harmonious landscape which has evolved in Germany over the course of history, with its regional varieties of fruit and vegetable representing rural traditions and breeds of livestock which have adapted to the landscape, is also a cultural achievement. The fruit gene bank in Dresden-Pillnitz alone, which conserves the genetic resources of stone fruit, berries and wild fruit for the future, contains more than 3,000 specimens, including almost 1,000 types of apple. The Federal Registry of Fruit Varieties in fact contains 3,250 varieties of apple – which is both a reflection of regional diversity, and a cultural asset worth preserving.

Social aspects of biological diversity – a German example and an international example:

Families from 16 nations with a variety of faiths work closely together at the international gardens organisation *Internationale Gärten e. V.* ([www.internationale-](http://www.internationale-)



[gaerten.de](http://gaerten.de)) in Göttingen. This initiative brings families of different backgrounds together to grow organic vegetables, herbs, fruit and flowers for the households' own use (biological diversity of crop plants), while at the same time catering to cultural diversity: Refugee, migrant and German families are able to forge relationships and set a positive example for international understanding and integration through intercultural collaboration and creativity.

There are many private and government initiatives worldwide aimed at preserving biological diversity, eradicating poverty and preventing conflict. For example, the "Peace Parks" foundation ([www.peaceparks.org](http://www.peaceparks.org)) aspires to encourage the creation of transboundary conservation areas in southern Africa, thereby promoting sustainable regional economic development, the conservation of biodiversity, as well as regional peace and stability.

#### **A 5 Ethical reasons for preserving biological diversity**

In addition to the aforementioned ecological, economic, social and cultural reasons for preserving biological diversity, there are also sound ethical reasons. The ethical values represented will depend on the society in which they were developed, and of which they are characteristic. In legal terms, nature and landscape must also be preserved "for their inherent value". This aim likewise addresses the ethical reasons for conserving biological diversity.

Environmental ethics tackles the normative issue surrounding the "right" way to deal with nature and biodiversity. Views vary on whether nature, or parts of nature, has an inherent value, i.e. whether separate moral rights can be ascribed to nature which demand our respect, and if so, by what justification. A distinction is made here between anthropocentric and biocentric stances. The following three, fundamentally different, viewpoints prevail:

- **Resource ethics** refers to the conservation of species, genes and ecosystems, and is an anthropocentric, benefit-related ethical position. It also addresses our responsibility to conserve resources for future generations.

- **Animal ethics** advocates the inherent value of all creatures which are capable of feeling suffering, and is also known as pathocentric ethics.
- **Natural ethics** criticises both resource ethics and animal ethics for not being sufficiently far-reaching, and calls for recognition of the inherent value of nature. It is also known as biocentric ethics. The extent and range of obligations has provoked a considerable amount of controversy. For example, the various players cannot agree whether all living creatures should be given equal ranking with regard to their inherent value, or whether this should be graduated according to their level in the natural order.

The ethical approach to biological diversity may apply different eco-ethical arguments to various segments of biodiversity. Overall, ethically speaking, this culminates in an obligation to preserve the current overall level of biological diversity as far as possible, unless existential factors oppose this (e.g. in the case of viruses and pathogens).

#### **A 6 Global dimension of the threat to biological diversity**

No-one knows for sure the total number of species which live on our planet. Estimates of the global wealth of species range between three and thirty million species. These differences may be attributed to the different calculation methods used. A total of 14 million species is the general consensus. Worldwide, around 1.7 million species have classified to date. In the animal kingdom, the insect class accounts for the largest number of species, with around one million.

The current rate of extinction among species is 100 to 1000 times higher than the presumed natural rate, and is a direct consequence of human actions. By comparison, the rate at which new species develop over the course of biological evolution is very small.

Estimation of the loss rate:

If we assume a global species count of 10 million and an average survival period per species of one to ten million years, only 100 to 1,000 species (0.001 – 0.01 %)

should be lost per century as a result of natural processes. The current loss rate for birds and mammals of approximately 1 percent per century is therefore 100 to 1,000 times higher than the “natural” extinction rate.

Given the inaccurate estimates of global species diversity, the global threat situation can only be roughly approximated. According to the 2006 Red List published by the World Conservation Union (IUCN), between 20 and 23 % of mammals, 12 % of birds and 31 % of amphibians are at risk worldwide.

Numerous ecosystems worldwide are likewise under threat. 60 % of all ecosystems and the related ecosystem services which safeguard human survival have suffered severe damage in recent decades (Millennium Ecosystem Assessment 2005, see chapter F).

Worldwide, the genetic diversity within species is also declining at a rapid rate; there is talk of “genetic erosion”. There are considerable data gaps particularly regarding the genetic diversity of wild species. By contrast, a more comprehensive database exists on the genetic diversity of farmed agricultural species. Over the millennia, farmers have cultivated thousands of varieties of wheat, rice and maize from a few original species. These days, cultivation focuses on a few exceptionally high-yield varieties for a given location, as a result of which many regional varieties are no longer in use and must be preserved by gene banks and other suitable measures.

Added to this is the fact that over the past 30 years, we have seen a dramatic decline in the number of scientists worldwide with the relevant skills to identify species and inventorise species diversity. There has been very little investment in taxonomic projects, and current levels of expertise in taxonomy are very limited.

### **A 7 National dimension of the threat to biological diversity**

By virtue of its position in Central Europe, which was influenced by the ice age, Germany is home to far fewer species than, say, tropical countries. Around 9,500 species of plant, 14,400 species of fungi and 48,000 species of animal (around 4 % of the world population of known living fauna) occur in Germany. Some species

became extinct a long time ago, others more recently (in the case of mammals, for example, the elk (18<sup>th</sup> century), the brown bear (19<sup>th</sup> century) or the Savi's pipistrelle (mid-20<sup>th</sup> century)). In Germany, in particular, the threat (increased probability of extinction) to species and the impairment or destruction of habitats poses a major problem, and goes hand in hand with the impoverishment and levelling out of nature and the countryside.

Of the 3,000 or so endemic ferns and flowering plants in Germany, according to the Red List, 26.8 % are at risk of extinction (and 1.6 % are extinct or have disappeared). 36 % of Germany's endemic animal species are at risk of extinction (and 3 % are extinct, or there have been no further recorded sightings). 72.5 % of the habitats occurring in Germany are under threat. Germany has some of the highest threat levels in Europe.

There have been many studies to investigate the reasons behind the threat to species in Germany:

- Direct destruction and dissection of habitats (construction of human settlements, transport routes, excavations, farmland consolidation, drainage, backfilling of waterbodies, changes of use in agriculture and forestry). Between 2001 and 2004, 115 ha of new land was utilised each day for human settlement and transport purposes. Over this period, the amount of land used for human settlements and transport increased by a total of 1682 km<sup>2</sup>. Undissected, low-traffic areas at least 100 km<sup>2</sup> in size are now only found in 23 % of our national territory (North-Rhine Westphalia: 3 %, Mecklenburg-West Pomerania: 54 %). This means that the habitat for wild species has been significantly restricted.
- Intensive land use in agriculture (including plant protection measures, fertilisation, mowing several times a year, use of mowing equipment which poses a threat to small animals, drainage of wetland meadows and lowland moors, conversion of grassland into arable land, excessive cattle densities).
- The discontinued agricultural use of ecologically valuable marginal land (such as oligotrophic grassland, mountain meadows, heathland and wetland meadows).
- Local deficits in forest management (inadequate ageing and decay periods and insufficient proportions of tree hollows and dead wood, poorly structured stocks,

non-native tree species, a lack of modification in forestry techniques and wood harvesting methods).

- Hydraulic engineering (straightening of watercourses, technical flood protection, water level regulation and damming of watercourses and waterways, levelling of riverbed and bank structures via expansion, excavation and obstruction).
- Discharge of pollutants and nutrients (despite the emission reductions achieved, acid and nitrogen discharges from air pollution into the forest ecosystems continue to exceed the natural acid buffering capacity or nitrogen absorption capacity of most forest locations. The pollution limit for eutrophying substances is exceeded in around 90 % of forest land).
- Non-sustainable fishing practices (e.g. overfishing, non-selective or destructive fishing practices, stocking of waterbodies with non-native species).
- Leisure uses which have an adverse impact on nature (including nature-based sports if practised in a manner incompatible with nature conservation).
- Climate change (it is assumed that by 2100, average temperatures in Europe will increase by between 2 °C and 6.3 °C compared with 1990 levels. This would have far-reaching effects on biological diversity, such as distribution, migration and reproduction patterns).
- Invasive non-native species.

Germany has a particular responsibility to conserve

- Species which are endemic in Germany or Central Europe, i.e. which only occur here
- Species which are primarily concentrated in Germany or Central Europe
- Migrating species, significant numbers of which rest or spend the winter in Germany
- Native species in Germany and adjacent regions which are seriously endangered or under threat of extinction, and
- Habitats and ecosystems which occur primarily or predominantly in Germany.

## **A 8 Global efforts to preserve biological diversity**

Despite vigorous international efforts to protect and conserve biological diversity, the loss of biodiversity worldwide has continued to accelerate in recent years. At the World Summit on Sustainable Development in Johannesburg in 2002, this prompted heads of state and government to resolve to significantly reduce the current loss rate of biological diversity by the year 2010. At its European Sustainability Strategy Summit in Göteborg in 2001, the European Union went one step further, resolving to halt the loss of biological diversity by the year 2010.

On the basis of the EU diversity strategy adopted by the EU Commission in February 1998, with the support of the Council and the Parliament, in 2001 the Commission presented biodiversity action plans targeting the areas of “Protecting natural resources”, “Agriculture”, “Fishing” and “Development and economic cooperation”. In 2004 at the “Malahide Conference”, concrete steps to implement these plans were agreed with a large number of participants. The EU Commission has presented a further communication on implementation of the 2010 target at EU level (“Halting the loss of biodiversity by 2010 and beyond“ COM(2006) 216 of 22 May 2006)

Increasingly, conventions such as the Convention on Biological Diversity and other global biodiversity-related conventions are focussing their efforts on achievement of the so-called 2010 target. For example, the Parties to the CBD have resolved to concentrate primarily on implementing the existing plans, guidelines and work programmes.

There are CBD work programmes on the following themes:

- Forests (COP 6, 2002)
- Oceans and coastlines (COP 4, 1998)
- Agriculture (COP 3, 1996)
- Arid regions (COP 5, 2000)
- Inland waters (COP 7, 2004)
- Islands (COP 7, 2004)
- Mountains (COP 7, 2004)

At the 6<sup>th</sup> Conference of the Parties to the CBD, the so-called Strategic Plan for the Biodiversity Convention was adopted, obligating the Parties to significantly reduce the current rate of biodiversity loss by the year 2010 – both as a contribution to reducing poverty at a global, regional and national level, and to the benefit of all life on earth. This target was subsequently reinforced by the World Summit on Sustainable Development in Johannesburg in 2002.

The Global Strategy for Plant Conservation (GSPC) was likewise adopted at the 6<sup>th</sup> Conference of the Parties to the CBD. It sets out 16 concrete, result-oriented and measurable targets which it is hoped will jointly aid achievement of the 2010 target.

At the 7<sup>th</sup> Conference of the Parties to the CBD, the requisite framework was adopted to facilitate and communicate the assessment of progress vis-à-vis the 2010 target, promote coherence between the various different work programmes, and provide a flexible framework within which national and regional targets may be set and indicators identified. This framework contains 7 central areas: Protecting biological diversity; promoting sustainable usage; addressing the threats to biological diversity; preserving the assets and services of biological diversity to promote human well-being; protecting the fair and equitable distribution of benefits arising from the use of genetic resources; and ensuring adequate capacity for implementation of the Convention.

This framework defines the targets and sub-targets of the 7<sup>th</sup> Conference of the Parties, together with a set of indicators for evaluating progress. These targets and sub-targets are to be integrated into the work programmes of the CBD and provide a flexible framework. The Parties are invited to set their own targets and develop their own indicators at a regional and national level. Europe, a more ambitious 2010 target has been formulated (EU Summit on the European Sustainability Strategy in Göteborg in 2001 and Pan-European Conference of Environment and Agriculture Ministers in 2003 in Kiev) (see above).

The work programme adopted at the 7<sup>th</sup> Conference of the Parties to the CBD (Kuala Lumpur, February 2004) to create a global network of protected areas is of central importance for achieving the 2010 target. It implements the ideas of modern nature conservation, which incorporates the sustainable use of nature as well as the eradication of poverty as one of the causes and effects of man's destruction of the natural world. The global network of protected areas will encompass a range of existing protected areas (such as world natural heritage sites, national parks and biosphere reserves) which, together with the newly created protected areas, corridors and stepping-stones, will create a comprehensive, ecologically representative and effectively managed network on both land and water. In this context, it is also particularly important to improve the management of existing protected areas. Without secure long-term financing, the areas in developing countries cannot be maintained, and new protected areas cannot be created. For this reason, it is vital to give greater consideration to the conservation of biological diversity in protected areas as a remunerable global service.

The 8<sup>th</sup> Conference of the Parties in 2006 defined far-reaching resolutions with ambitious deadlines and concrete activities aimed at continuously reviewing implementation of the resolutions. A resolution was adopted to maintain a constant dialogue on financing issues, and the CBD Secretariat was asked to develop ideas on innovative funding mechanisms. A comprehensive raft of measures (tool kit) was adopted which it is hoped will give the Parties valuable support in the management and monitoring of protected areas. Supplementary to this, there are plans to hold regional "Capacity Building Workshops". The German Government's contribution in this respect will be made via the Federal Office for Nature Conservation, which



signed a Memorandum of Understanding together with a number of other scientific institutions at the 8<sup>th</sup> Conference of the Parties.

Protected areas on the high seas were another topic addressed at the 8<sup>th</sup> Conference of the Parties. It was resolved that an expert workshop would be held on the development of criteria for establishing a representative network of protected marine areas. The process to determine the statutory framework for conserving biological diversity on the high seas is to be initiated by the UN General Assembly.

The second objective of the CBD, the sustainable use of biological diversity, is likewise highly significant for the conservation of biological diversity worldwide, and was concretised by the “Addis Ababa Principles on Sustainable Use” adopted at the 7<sup>th</sup> Conference of the Parties.

Within the context of Germany’s development cooperation, implementation of the CBD and the Cartagena Protocol on Biosafety in Developing Countries plays a key role. As well as promoting a development-oriented approach to nature conservation, measures are also implemented aimed at the sustainable use of biological diversity and the equitable distribution of benefits resulting from the use of genetic resources are also implemented. Above and beyond this, the Parties also receive support with implementing the Cartagena Biosafety Protocol to limit the risks of modern biotechnology for biological diversity and human health.

Implementation of the third objective of the Biodiversity Convention – the equitable distribution of the benefits associated with the use of genetic resources – is another key issue. Activities in this area make a central contribution towards conserving biological diversity.

The 8<sup>th</sup> Conference of the Parties resolved to redouble its efforts towards creating an international regime on “Access and Benefit Sharing” (ABS), and to adopt this at the earliest possible date prior to 2010.

The “Global Taxonomy Initiative” (GTI) was set up in order to ascertain the demand for taxonomic capacity for implementation of the CBD, and promotes the training of young scientists and access to existing species data. The “Global Biodiversity Information Facility” (GBIF) is an international research cooperative which coordinates the digitisation and global availability of species information. It is hoped

that other global biodiversity-related conventions (such as the Bonn Convention on the Conservation of Migratory Species of Wild Animals (CMS), the Ramsar Convention on Wetlands of International Importance, and the African-Eurasian Migratory Waterbird Agreement (AEWA)) will likewise make a specific contribution in this respect.

**The Global Flyway Project:**

Within the context of the AEWA, the German Government supports the so-called Global Flyway Project, designed specifically to protect the routes of migratory bird species in Europe and Africa. The stork is likely to vanish from Mecklenburg-West Pomerania unless we are able to protect its breeding grounds and preserve rest and overwintering sites in Africa.

Germany will host the 9<sup>th</sup> Conference of the Parties to the CBD in 2008. Priority areas will include, in particular:

- Progress in access to genetic resources and the equitable sharing of benefits (Access to Benefit Sharing, ABS)
- Financing of global nature conservation from existing and additional new, innovative mechanisms
- Creation of a global network of protected areas on land and at sea, together with adequate financing
- Protection of forest biodiversity by forging better links between climate protection and biodiversity policy, and via the creation of networks of forest conservation areas.

**A 9 Efforts in Germany to preserve biological diversity**

Preserving biological diversity is a top priority for the German Government. Although this is the first time the German Government has presented a comprehensive biodiversity strategy, in the past it has already been extensively involved in fleshing

out the Convention at national level, and has transmitted a number of national and implementation reports to the United Nations regarding the Convention:

- Report by the German Government on Implementation of the Convention on Biological Diversity (1995, BT doc. 13/2707), outlining the political models and conceptual approaches for preserving biological diversity, the statutory foundations in national law, the national and supranational measures, international cooperation, and planned future development in all these areas.
- Report by the German Government under the Convention on Biological Diversity – National Report on Biological Diversity (1998), outlining the concept, structure and distribution of tasks for the protection and sustainable use of biological diversity and the strategic framework concept for combining activities.
- Report under Article 6 of the Convention on Biological Diversity (CBD) on the Strategies for Implementing the CBD in Germany (2002), outlining the implementation and advancement of the strategic framework concept of 1998 with reference to Germany's National Sustainability Strategy (NHS, 2002).

These reports are supplemented by two national reports in tabular form, which were transmitted to the Secretariat of the Convention on Biological Diversity in 2001 and 2005 respectively.

Implementation of the CBD in Germany is based on an extensive range of statutory, institutional and organisational instruments, responsibility for which is shared between a large number of government and non-government institutions and organisations. In this regard, consideration must be given to the distribution of competencies between the Federal Government and the *Länder*. Changes have arisen as a result of the federalism reform which became effective on 1 September 2006, not only in the field of nature conservation and landscape management, but also throughout the environmental sector as a whole. Nature conservation became the concurrent responsibility of the Federal Government, while the *Länder* were granted divergent rights for selected regulatory fields. As a result of these changes, the prerequisites have now been put into place for a uniform Environmental Code.

Implementation of the Habitats Directive and the creation of the coherent network of protected areas, Natura 2000, necessitates a particularly high level of input from the

*Länder*. Germany's contribution to the creation of Natura 2000 has since been submitted in full to the EU. Natura 2000 covers all designated areas under the Habitats and Birds Directives, which may overlap. Together, they cover approximately 13.5 % of Germany's terrestrial territory, and 41 % of its marine territory.

Starting with the EU agricultural reform in 1992, environment-related subsidies for agriculture have been systematically expanded and developed into the current agro-environmental measures as part of the policy for developing agriculture and rural areas. By promoting such measures, the necessary cooperation at a regional level between farmers, nature conservationists and government administration, particularly within the context of contract-based nature conservation, has been significantly improved .

In order to maintain agriculture in those areas which are disadvantaged by nature (such as areas with low-yield soils), for many years compensatory payments have been made to help sustain farming, thereby contributing to the conservation of the wild species linked to such habitats. At the same time, the requirements of good agricultural practice have been continually adapted in line with the increased demands of society for the conservation of nature and landscapes.

By converting the former production- and product-related subsidies for farmers in Germany into land-related subsidies and linking these payments to compliance with defined environmental protection, consumer health and animal conservation standards, as well as the obligation to maintain land in a good condition (cross compliance), incentives for the conservation and sustainable use of biological diversity have been significantly enhanced.

A national programme (1999) for the conservation and sustainable use of genetic resources for food, agriculture, forestry and fishing has also been developed, comprising a number of specialist programmes on the individual sub-aspects of genetic resources, together with a sectoral strategy on "Forestry and biological diversity" (2000), which was implemented and further developed with the involvement of affected parties. Since the mid-Nineties, agro-environmental measures have been promoted within the context of the GAK (Joint Task of Improving Agricultural Structures and Coastal Protection) and autonomous programmes by the *Länder*.

Germany already boasts a 100-year history of Government nature conservation, proving that efforts to conserve nature and landscape enjoy a long and successful tradition in Germany. Particularly since the mid-Eighties, nature conservation has constituted a central element of the German Government's environmental policy, and has been continuously advanced and developed since then. 1986 saw the founding of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), followed in 1993 by the creation of the Federal Office for Nature Conservation (BfN). Ecological research is also undertaken by the Federal Environmental Agency (UBA), founded in 1974, while research into the area of major watercourses is undertaken by the Federal Institute for Hydrology (BfG), which was founded in 1949 as a successor to the Prussian Hydrology Institute.

In Germany, specific achievements in the conservation of biological diversity include the following:

- Germany now boasts nationwide compliance with the European ecosystem protection limit of 20 micrograms of SO<sub>2</sub> /m<sup>3</sup>.
- The target formulated by the Working Group of the Federal States on Water Problems (LAWA) of water quality grade II as a minimum throughout all watercourses is now met by 2/3 of the watercourse system examined, covering some 30,000 km.
- Populations of fish species in watercourses such as the Rhine and the Elbe are on the increase again. These days, all pre-industrialisation species are now once again in evidence, apart from two exceptions.
- Stocks of various once-endangered plant and animal species are now on the increase again, such as the Western marsh orchid and lizard orchid, the round-leaved sundew (a carnivorous plant), the swallowtail butterfly, the beautiful demoiselle, the sea eagle, the crane, the migratory falcon, the black stork, the beaver, the otter and the lynx.

Notwithstanding these successes and the significant progress already achieved, and despite substantial efforts at all levels of government, by organisations and other private players regarding the use of nature and nature conservation, there is still a great deal to be done. For this reason, the protection and sustainable use of

biological diversity ranks high on the Government's agenda for the 16<sup>th</sup> legislative period (2005 to 2009). In this respect, the German Government takes its lead from the sustainable development model. It views environmental and nature conservation as a joint task for government, the general public and industry, and firmly believes that an ambitious environmental protection and nature conservation policy represents a central contribution towards the modernisation of society.

This forms the basis for the National Strategy on Biological Diversity as outlined in this report.

Protecting our natural heritage:

Preserving Germany's natural heritage ranks high on the Government's agenda for the 16<sup>th</sup> legislative period. The German Government has promised that selected tracts of state-owned nature conservation land which are representative of the country as a whole (including Green Belt land) totalling some 80,000 to 125,000 hectares will either be incorporated free of charge into a national foundation, or else transferred to the *Länder*, thus rendering it exempt from privatisation and placing it under permanent protection for nature conservation purposes.

The "Green Belt":

For decades, Germany's former border sector remained an inaccessible region. It is one of the great anomalies of Germany's division history that in a place where a hostile line had been drawn, nature was able to develop undisturbed over a period of several decades. Apart from the no man's land itself, this also applied to extensive tracts of adjacent land because they were so cut off. This "Green Belt" is characterised by an exceptional wealth of species and habitats, most of which are now endangered, representing a system of interlinked biotopes of national importance, which joins together or passes through valuable swathes of land and intensively farmed agricultural landscapes. The Federal Government, *Länder* and nature conservation organisations are joining forces to protect this "Green Belt" and

develop it into a valuable habitat for humans and nature. Something which once divided Germany is now a symbol of national unity!

Integrated coastal zone management (ICZM):

Germany's coastal and marine regions are under pressure from competing usage forms such as energy extraction, tourism, transport, fishing and nature conservation. Striking a good balance between the associated ecological, economic and social impacts is the central challenge faced by ICZM. ICZM aims to jointly and promptly identify development opportunities, conflict potential and conflict solutions. In this way, among other things, ICZM supports the many and varied measures to preserve biological diversity in the coastal and marine regions.

## **B Concrete vision**

In order to preserve biological diversity for current and future generations, a long-term approach is needed, setting out the future direction of development in Germany. Such an approach should give equal consideration to ecological, economic and social aspects, in keeping with the guiding principle of sustainability. The natural foundations of life, as a pre-requisite for life on earth, limit the opportunities for implementing the other objectives. As such, in the longer term, economic prosperity and social equality can only be achieved within the existing ecological limitations.

A concrete **vision** for the future of mankind and that of biological diversity makes allowance for these limitations, and incorporates all biodiversity-relevant topics. The visions provide a visual impression of our aspired future status and serve as ideals. Based on the existing threats to biological diversity, they define concrete future-oriented **quality targets** outlining our aspired long-term status as the basis for political and social action. Brief **justifications** are provided which explain the necessity for these objectives. Concrete future-oriented action targets indicate the steps which must be taken to **work towards** these quality targets. Some of these objectives still need to be reviewed.

In the interests of inter-generational justice, implementation of the targets outlined here will help to significantly improve Germany's future economic and social viability. It need not necessarily incur additional costs. In a great many cases, it will also produce economic advantages for the current generation, being linked to improved efficiency and new, innovative solutions.



## **B 1 Conserving biological diversity**

### **B 1.1 Biodiversity**

#### **B 1.1.1 Biodiversity as a whole**

**Our vision for the future:** Germany enjoys a diversity of natural and man-made landscapes, habitats and biotic communities which typify our country and which are greatly appreciated by the general public. The species belonging to these habitats exist in viable population numbers which are capable of adapting to changes in the long-term.

**Our aims:**

To halt the decline in biodiversity in Germany by 2010, in line with the EU's Göteborg target. Thereafter, we hope to reverse the downward trend.

**Reasons:** The persistent decline in all components of biological diversity is clearly verified by the current Red Lists. The following politically binding resolutions exist:

- Göteborg (2001): EU Summit: "Biodiversity decline should be halted with the aim of reaching this objective by 2010 as set out in the 6<sup>th</sup> Environmental Action Plan".
- The Hague (2002): Resolution VI. 26 of the 6th Conference of the Parties to the CBD: "To achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level".
- Johannesburg (2002): Plan of Implementation for the WSSD, § 44: "Achievement by 2010 of a significant reduction in the current rate of loss of biological diversity".

**We aspire to the following:**

- To implement the national strategy on biological diversity
- To improve the database regarding the status and development of biological diversity in Germany

### **B 1.1.2 Species diversity**

**Our vision for the future:** Germany is home to a natural, regional-typical species diversity which has evolved historically in individual habitats with typical characteristics. The populations of the relevant species enjoy a favourable conservation status in relation to their respective biogeographical region, live in permanently protected, interlinked habitats of adequate size for the species and habitats in question, and are available for humans to experience.

**Our aims:**

By 2010, the decline in the current diversity of wild species has been halted. Thereafter, we will see a trend reversal towards greater diversity of native species across our territory.

By the year 2010, the proportion of severely endangered species and those on the verge of extinction will have been reduced. By 2020, species for which Germany has a particular conservation responsibility will have achieved viable population sizes. By 2020, the threat situation will have improved by one level for most of the species on the Red List.

**Reasons:** Because of human activities (e.g. intensification of land use, usage changes, land sealing and dissection, material discharges), species diversity has been impaired in recent decades. Numerous species of fauna and flora are now endangered due to population decline, and a number of species are already extinct at a regional or national level. Germany is home to around 3,000 native species of ferns and flowering plants. Of these, 943 species, or 28.4 %, are classified as being endangered at various levels. 118 species, or 3.9 %, are on the verge of extinction. Around 48,000 species of animal have been recorded in Germany, 16,000 of which were assessed in the 1998 Red Lists with regard to their conservation status. Of these, around 40 % were classified as endangered and 3 % as extinct or no further sightings. Non-native species (neobiota) enter Germany primarily as a result of international transport and trade flows, which may endanger or displace native varieties. In addition to the adverse ecological impacts, invasive non-native species also have adverse economic impacts (e.g. on agriculture and plant protection) as well

as adverse health connotations (e.g. ragweed as a trigger for allergies and the giant hogweed as a trigger for phototoxic reactions). Invasive, non-native species fall under the scope of responsibility of the International Plant Protection Convention (IPPC) if they are classified as harmful organisms to plants, and are addressed within the context of an IPPC action programme. In 2002, the European Plant Protection Organisation (EPPO) created a work programme for protection from invasive non-native species. In Germany, the Plant Protection Act and the Plant Inspection Ordinance regulate protection against the entrainment and distribution of non-native organisms which could damage plants and their ecosystems.

**We aspire to the following:**

- To operationalise the national biodiversity strategy via concretisation of the targets and measures specified in the strategy at regional level by 2015
- To restore and protect the habitats of species for which Germany has a particular conservation responsibility by 2020
- To protect the populations of all currently endangered species and those for which Germany has particular responsibility
- To incorporate measures to address known invasive species into management plans by 2020
- In future, to continue to ensure that the release and use of genetically modified organisms is unlikely to pose any threat to wild species.
- To improve our knowledge of the existence and prevalence of native species of fauna, flora and fungi
- To ensure the long-term protection of education in and research into taxonomy at a phenotypical and molecular level.

**B 1.1.3 Diversity of habitats**

**Our vision for the future:** In Germany, an indigenous diversity of habitats is permanently protected. The habitats and their biotic communities are integrated into a functioning ecological network and enjoy a favourable conservation status.

**Our aims:**

By the year 2020, throughout 2 % of Germany's territory, Mother Nature is once again able to develop undisturbed in accordance with her own laws, and areas of wilderness are able to evolve<sup>2</sup>. By 2010, Germany has a representative and functional system of interlinked biotopes covering 10 % of its territory. This network lends itself to permanently protecting the habitats of wild species and is an integral component of a European system of interlinked biotopes.

By 2010, the decline in endangered habitat types has been halted. Thereafter, those biotope types which are under threat of complete destruction or severely endangered according to the Red Lists will increase again in terms of their area and number, degradations have been halted, and regeneration has begun.

By 2010, the development of the European network Natura 2000 is complete.

By 2020 a well-functioning management system for all large protected areas and Natura 2000 areas has been established.

By 2020, all stocks of habitat types (in accordance with Annex I of the Habitats Directive), protected (§ 30 of the Federal Nature Conservation Act (BnatSchG)) and endangered biotope types as well as those for which Germany has a particular responsibility, or which are particularly significant for migratory species, indicate a significant improvement in their conservation status compared with 2005, in those cases where a good conservation status has not yet been achieved.

**Reasons:** Ensuring the survival of our specialised native species must embrace the entire bandwidth of native habitat types. 72.5 % of all Germany's biotope types are endangered, with 14 % being at risk of complete destruction. 35% of biotope types have been classified as severely endangered and 24% as endangered<sup>3</sup>. In addition to direct land loss, many habitat types also face the threat of qualitative degradation (e.g. eutrophication, changes in the water balance) and increasing isolation. Biotope complexes are often more at risk than the individual biotope types from which they are compiled (e.g. river meadows as a whole compared with individual biotope types

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<sup>2</sup> See chapter B 1.3.1

<sup>3</sup> Rote Liste der gefährdeten Biotoptypen Deutschlands 2006 (currently being printed)

such as the waterbody itself or the riparian forests). Germany has a particular international responsibility for certain biotope types (e.g. biotopes of the Wadden Sea, beech woods), because these biotope types are most prevalent in our territory. Areas where Mother Nature is able to develop in accordance with her own laws, and areas within an interlinked system of biotopes, need not necessarily be classified as protected areas, but also include land outside of protected areas.

**We aspire to the following:**

- To realise an international, functionally oriented system of interlinked biotopes on at least 10 % of our national territory at all yardstick levels by the end of 2010
- To formulate a comprehensive concept to minimise dissection effects by 2010
- To avoid conflict with the transboundary system of interlinked biotopes in future plans and projects (such as human settlement development, transport routes, resource use)
- To minimise the principal risk factors associated with a degradation of habitats (such as non-sustainable usage forms, material discharges, impairments to the water and nutrient balance, non-material impairments such as light and noise, dissection)
- To ensure the regeneration and new development of endangered biotope types and biotope complexes
- To conserve and augment ecologically valuable, extensively used habitats (e.g. heathlands, hedges, orchard meadows, areas of grassland, vineyard slopes).

**B 1.1.4 Genetic diversity of wild and domesticated species**

**Our vision for the future:** Wild species (animals, plants, fungi, microorganisms) occur in Germany in their genetic diversity and their natural distribution. Area-typical populations are preserved in their genetic diversity.

The regional-typical genetic diversity of farm animal breeds and cultivated plant varieties is conserved, utilised sustainably, preserved as a basis for life and breeding, and enriches the landscape and the range of agricultural and horticultural products.

**Our aims:**

The survival, adaptability and evolutionary development processes of wild species in their respective regional-typical characteristics is ensured on the basis of population sizes, spatial distribution and the bandwidth of genetically determined features. The natural genetic diversity of wild populations is protected from potential impairments associated with invasive, non-native species and breeding forms. The loss of genetic diversity has been halted by 2010.

Regionally adapted cultivated plant varieties that are threatened with genetic erosion, known as single-farm cultivars and regional cultivars, as well as endangered breeds of livestock, are protected by in-situ, on-farm and ex-situ conservation measures. Genetic material held in gene banks and in-situ / on-farm for conservation purposes must remain permanently free from genetic mixing. Suitable breeding research and breeding activities promote the innovative and sustainable use of varieties and breeds.

**Reasons:** The genetic depletion of wild species may lead to the extinction of selected populations and species. Gene crossing with related species or other sub-populations may lead to the loss of species features and impair the ability to adapt to regional conditions.

The specialisation and rationalisation of agriculture prompted by economic framework conditions has led to a reduction in the number of cultivated plant varieties and traditional species, known as single-farm cultivars and regional cultivars, currently under cultivation. In the Red List of endangered livestock breeds, 19 breeds in Germany are classified as “severely endangered”, and a further 64 as “endangered”. The loss of diversity among crop plants and livestock breeds leads to the depletion of cultivated landscapes which have evolved over the course of history, culminating in the loss of an indispensable genetic potential for breeding purposes. Conservation may be practised in special collections (ex-situ) or – particularly in the case of wild breeds – under natural conditions (in-situ). Growing significance is also attached to on-farm conservation.

**We aspire to the following:**

- To conserve a diversity of regionally adapted populations

- To avoid adulteration of the genetic diversity of wild fauna and flora associated with the establishment and propagation of non-native species of plants and animals
- To safeguard the natural genetic exchange between wild species
- To preserve the rest sites and migration patterns of migratory species of animal
- To reduce artificial mutagenic influences (e.g. substances, radiation) on wild species
- Under valid genetic engineering legislation, to continue to prohibit the licensing of genetically modified organisms with cross-breeding, feral, establishment or propagation potential which could pose a threat to the natural biological diversity of wild plants, particularly in their centres of origin or diversity.
- To optimise ex-situ conservation via the permanent protection of and improved cooperation between the relevant institutions (e.g. gene banks, zoological and botanical gardens, museums)
- To expand the conservation and more widespread cultivation and use of endangered, regional-typical varieties of crops and livestock, *inter alia* via commercial cultivation and, where applicable, by eliminating administrative obstacles.

## **B 1.2 Habitats**

### **B 1.2.1 Forests**

**Our vision for the future:** The forests in Germany have a high level of natural diversity and momentum in terms of their structure and species composition, and people are fascinated by their beauty. The number of natural and near-natural forest communities has increased significantly. Forests are sustainably managed in line with their ecological and social functions. The raw material wood obtained sustainably from the forests is highly valued.

**Our aims:**

By the year 2020, the conditions for typical biotic communities in forests (diversity in structure and momentum) have been further improved. The trees and bushes of the natural forest community have been completely rejuvenated, primarily via natural means. Semi-natural management forms use natural processes to strengthen the ecological functions. Old and dead wood is available in sufficient quantity and quality.

By 2020, forests with natural forest development account for 5 % of the wooded area.

When establishing new forests, there is a growing trend in favour of using native tree species.

The proportion of non-native tree species is being continually reduced.

Historical forest usage forms such as coppice-with-standards forest, simple coppice forest and grazing-forest, with their high potential for nature conservation or recreation, will be continued and, where possible, expanded.

**Reasons:** Following centuries of use and as a result of pressures such as immissions, dissection and lowering of the groundwater level, the forests have changed radically in terms of their species composition and stock structure. The onset of industrialisation coincided with the restoration of forests which had suffered large-scale devastation, and silvicultural practices were established aimed primarily at sustainable wood production. This led to the growing popularity of the management form of high timber felling, and fir and pine species became more widespread. However, the early 19<sup>th</sup> century also saw the emergence of the Eternal Forest movement, based around “Plentewald” (selection forestry) management methods, which are still practised today in a modified form in the principles of near-natural silviculture. For many years, supported by the policies of the Federal and *Länder* Governments, the trend has been to convert single-species stands – particularly of fir and pine – into mixed stands. Germany’s forests are still largely comprised of non-native tree species. Firs (28 %) and pines (23 %) are the most common species, whereas these would only naturally occur in a few percent of total forest area in natural coniferous forest communities and a few mixed forest communities. Single-layer forests account for almost half of forest area, at 46 %, while two-layer forests account for 45 %. Only 9 % of forests are multi-layer. Ancient



woodland, which is particularly valuable from an ecological viewpoint (containing trees more than 180 years old), is now very rare, accounting for just 2 % or so of forest area. This situation means that the biological diversity typical of natural forests is under threat. Historical usage forms with conservation significance are minimal, accounting for less than 1 % of total forest area. Analysis of the Red List suggests that those animal, plant and fungi species which specialise in the typical structures of semi-natural forests are particularly at risk. Both protected areas (natural forest reserves etc.) and areas outside of protected areas contribute to the target proportion of woodland with natural forest development.

**We aspire to the following:**

- To conserve extensive, undissected forest areas
- To conserve and develop natural and near-natural forest communities
- To particularly conserve ancient woodlands, and to conserve and – where possible – augment forest areas with conservation-relevant traditional usage forms by 2020
- To promote contract-based nature conservation in 10 % of privately-owned forest land
- To develop a guideline strategy between the Federal and *Länder* Governments to incorporate biodiversity requirements into all publicly-owned forests by 2010, and to implement this strategy by 2020
- To formulate more clearly the legal principles of sustainable forest management by 2010
- To certify 80 % of woodland to high ecological standards by 2010
- To achieve a balanced ratio between forest rejuvenation and wildlife by 2020
- To adapt the forests to the challenges of climate change e.g. by cultivating mixed stands with the maximum possible diversity
- To uphold the Government's undertaking not to use genetically modified organisms or propagatable parts thereof which could pose a threat to forest ecosystems, with due regard for the particular conditions of forest ecosystems.

### **B 1.2.2 Coastlines and oceans**

**Our vision for the future:** Natural coastal and marine regions are fascinating natural landscapes. The interlinked natural and near-natural coastal and marine ecosystems, in their diversity and natural momentum, support the unthreatened existence of all typical species and habitats. They exhibit a favourable conservation status.

**Our aims:**

By 2015, a good ecological and chemical quality status has been achieved for all waters in the coastal region<sup>4</sup>. By 2021, marine waters have achieved a good environmental quality.

By 2010, the decline in species and the degradation of habitats has been halted. By 2020, a significant improvement in the conservation status for all species and habitats has been achieved. By 2015, the sturgeon and other marine species which had become extinct are once again found in Germany.

**Reasons:** Our coastlines are areas of particularly intensive use (for example, tourism, dyke construction, industrial and port structures). Many of their species, and around 90 % of biotope types, are considered endangered or under threat of destruction. The growing use of our oceans threatens the diversity of species and habitats, but may also adversely affect the basic necessities of human life. Some commercial fish stocks have been reduced, primarily as a result of overfishing but also due to climate effects, to the extent that if fishing practices persist unaltered, stocks will no longer be able to regenerate to sustainable reproduction capacities in the foreseeable future (examples include cod in the North Sea and Central Baltic Sea, as well as whiting, plaice and sole in the North Sea).

Through various international and regional cooperation arrangements, conventions and EU Directives (CBD, OSPAR, HELCOM, the Conference on the Protection of the North Sea, the Wadden Sea Cooperation, ASCOBANS, the Habitats and Birds Directives, the Water Framework Directive), Germany is committed to a wide range

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<sup>4</sup> "Good environmental quality" as defined in Annex 5 of the Water Framework Directive

of measures over specified periods to protect the coastal and marine environment as well as habitats, biotope types and species.

**We aspire to the following:**

- To apply the ecosystem approach (HELCOM, OSPAR) while preserving the precautionary and polluter-pays principles from 2010 at the latest
- To realise a joint OSPAR/HELCOM network of well-managed coastal and marine protected areas, including core zones of natural development, by 2010, and to ensure its integration into international networks
- To implement an integrated coastal zone management system based on the national Integrated Coastal Zone Management (ICZM) strategy of 22 March 2006
- To enforce sustainable and ecosystem-compatible fishing practices by 2010
- To protect semi-natural coastal and marine regions by means of species and biotope conservation measures
- To avoid the entrainment of intensive non-native species and continue the practice of only releasing and commercially using transgenic organisms considered safe for marine and coastal ecosystems, with due regard for the particular conditions of these ecosystems.

**B 1.2.3 Lakes, ponds, pools and lagoons**

**Our vision for the future:** Lakes, ponds and pools are the “eyes of the landscape” and are embedded in a near-natural environment. Together with riparian zones, they constitute functional habitats for indigenous species and biotic communities and are indicative of natural water quality. The species and habitats exhibit a favourable conservation status.

**Our aims:**

Lakes, ponds and pools, including their riparian and aggradation zones, continuously indicate a characteristic diversity, and fulfil their roles as habitats.

There is no further deterioration in the ecological quality of surface waters.

By 2015, as a minimum requirement, a good ecological and chemical status (Water Framework Directive) has been achieved, while in Natura 2000 areas the conservation status has been significantly improved.

Pollutant levels in fish (e.g. eels) and mussels have been reduced to such an extent that these are (once again) safe for human consumption.

**Reasons:** Still waters and their banks are often severely impaired by excessive nutrient inputs (eutrophication), obstruction of the banks, and recreational uses. For example, around 85 % of the lakes in those *Länder* with the highest proportion of lakes – Schleswig-Holstein, Mecklenburg-West Pomerania and Brandenburg – are heavily or excessively contaminated with nutrients, while large sections of bank have been destroyed on almost all major still waters, and at many lakes 80 – 90 % of the former reed stocks have disappeared. Inappropriate stocking practices impact the natural composition of fish stocks. The selective removal of fish may influence the age structure and composition of the stocks.

Still waters also play an important role as resting and breeding grounds for supra-regional bird migration. A good water quality and unobstructed banks are the key requirements for ensuring a biological diversity that is typical of the natural area.

The purity of the lakes is a key foundation for species and biotope conservation, fishing and recreation. Still waters, together with other attractive landscape components, are among the supporting pillars of tourism and nature-based experiences.

**We aspire to the following:**

- To prepare and coordinate management plans and programmes of measures incorporating the bank and aggradation zones with the conservation targets for Natura 2000 areas by 2009 (in accordance with the Water Framework Directive)
- To achieve a good ecological and chemical status by 2015 (in accordance with the WFD)
- To renature impaired still waters including their banks, and ensure ecological redevelopment of the catchment areas by 2015
- To extensively enforce good practices in freshwater fishing

- To create an ecological certification system for aquaculture products from freshwater fishing by 2010
- To promote nature-compatible recreational uses and visitor guidance in ecologically sensitive still water areas
- To avoid the entrainment of intensive non-native species and continue to only release and permit the commercial use of transgenic organisms which are thought safe for lakes, ponds, pools and lagoons, with due regard for the particular conditions of these ecosystems.

#### **B 1.2.4 Rivers and water meadows**

**Our vision for the future:** Watercourses and their water meadows once again form a unit, and are the life veins of our landscape. Their natural diversity and dynamics make them centres of biodiversity. The habitats and species typical of the various rivers enjoy a favourable conservation status. Rivers again have more space so that flooding can extend into areas where it will not cause damage. Bathing is once again possible in many rivers, and sustainable professional fishing practices are supported. Streams and semi-natural ditches are once again valued components of the landscape.

#### **Our aims:**

By 2020, watercourses and their water meadows will be protected in their role as habitats, and the typical diversity of the natural area in Germany will be guaranteed.

By 2015, in accordance with the requirements of the Water Framework Directive, a good ecological and chemical status or ecological potential of the rivers has been achieved; ecological passability has been restored.

By 2020, the majority of watercourses have more natural flood plains.

By 2020, good bathing water quality has been restored in many rivers.

Populations of fish fauna characteristic of the respective watercourse are permanently protected.

Populations of all species with fishing relevance are permanently protected. The pollutant levels of fish (e.g. eels) and mussels has been reduced to such an extent by 2015 that these are (again) safe for human consumption.

**Reasons:** Many watercourses and water meadows have undergone multiple changes as a result of usage forms such as shipping, technical flood protection, hydropower and agriculture. For example, 80 % of our watercourses have been significantly to completely transformed, only around 15 – 20 % of natural water meadows have been preserved, and 83 % of all biotope types in rivers and meadows are endangered. Some of these developments may be classified as irreversible.

The degree of flooding disasters and the decline in river fishing are consequences of these impairments. A natural waterbody structure, reconnecting the water meadows to the waterbodies, and ensuring a water balance typical of water meadows, are all key requirements for preventive flood protection and characteristic biological diversity. Key quality targets may be found in the Water Framework Directive, the Habitats Directive and the Birds Directive, the German Government's 2002 5-point programme to improve preventive flood protection, the planned EU Flood Protection Directive and the Flood Prevention Act (Act to Improve Preventive Flood Protection).

**We aspire to the following:**

- To achieve good ecological and chemical status or good ecological potential of watercourses by 2015
- To improve the status of watercourses of groundwater-dependent land ecosystems and water-dependent protected areas by 2015
- To coordinate management plans and programmes of measures for watercourses and their water meadows with the conservation targets for Natura 2000 areas by 2009 (in accordance with the Water Framework Directive)
- To permanently protect the HQ100 flood plains (i.e. areas which statistically flood at least once every 100 years) where damage from flooding is anticipated by 2012, and areas with a high damage potential by 2010
- To enlarge the retention areas of rivers by at least 10 % by 2020

- To record the ecological status of river meadows nationwide as part of a national river meadow programme by 2009
- To recreate, redynamise and create new natural riparian forests, or riparian forests that are utilised in a nature-compatible manner
- To modify agricultural use in river meadow areas at risk of erosion, and restrict the application of fertilisers and pesticides in the HQ100 zone in order to avoid substantial adverse effects on waterbodies by 2015
- To enforce good freshwater fishing practices
- To create an ecological certification system for freshwater fishing
- To recreate the ecological passability of watercourses (fish ladders, fish bypasses) by 2015
- To utilise hydropower in the modernisation or construction of new hydropower stations while retaining the typical characteristics of the watercourse, and at the same time ensuring ecological passability and improving or restoring function
- To promote nature-compatible recreational usage forms and visitor guidance in ecologically sensitive watercourse areas
- To avoid the entrainment of invasive non-native species and continue to only release and allow the commercial use of transgenic organisms which are thought safe for river ecosystems, with due regard for the particular conditions of these ecosystems.

### **B 1.2.5 Peatlands**

**Our vision for the future:** Germany once again has an increased number of natural upland moors, while its lowland moors indicate a near-natural water and nutrient balance. Moors enrich the landscape picture with their very specific and fascinating biotic communities, all of which exhibit a favourable conservation status.

**Our aims:**

All natural upland moors currently in existence enjoy protection by 2010 and are in a state of natural development.

The regeneration of moderately damaged upland moors has been initiated by 2010, with the aim of achieving intact hydrological conditions and typical oligotrophic nutrient levels. In regenerable lowland moors, the depletion of peat has been significantly reduced. Moors once again function as nutrient and CO<sub>2</sub> sinks.

By 2020, significant portions of the lowland moors which are currently subject to intensive use have been extensified and confined to grassland use. Typical biotic communities are able to develop once again.

**Reasons:** Peatlands are home to unique, highly specialised biotic communities. A number of indigenous species only occur in peatlands; almost all of them are now endangered or under threat of extinction.

What is more, peatlands provide fascinating archives of the earth's development history. As some peatlands have developed over a period of 1,000 years, their regeneration is particularly difficult, and protecting them is therefore a top priority.

To date, more than 95 % of intact highland moors have been lost as a result of human usage. A maximum of 10 % of the initial stock of highland moors is considered regenerable.

Intact moors act as CO<sub>2</sub> sinks. Among the lowland moors used for agricultural purposes, even in drained highland moors, peat bodies are also decomposing, as well as typical biotic communities being destroyed. As a result, nutrients are emitted to the water and air, and greenhouse gases (CO<sub>2</sub> and CH<sub>4</sub>) are released.

**We aspire to the following:**

- To draft peatland development concepts in all Federal *Länder* by 2010 and ensure their implementation by 2025
- To protect the water regime of intact peatlands and to permanently restore regenerable peatlands by 2020
- To continuously reduce nutrient discharges to below the critical load
- To ensure natural development throughout all highland moors and peatland forests; to significantly reduce peat harvesting from 2015 while increasing the use of peat substitutes in horticulture



- To create economic incentives for extensifying the use of lowland moors; to ensure natural development on 10 % of the lowland moors that are currently extensively used by 2010, and on a further 10 % by 2020
- To incorporate the peatlands into a transboundary system of interlinked biotopes.

### **B 1.2.6 Mountains**

**Our vision for the future:** The mountains are characterised by their awe-inspiring appearance, tranquillity, and sense of being close to nature. The landscape is permanently characterised by large unused areas at high altitudes and traditional, nature-compatible forms of use in agriculture and silviculture. The Alps and the upper reaches of the Central German Uplands (*Mittelgebirge*) boast a high level of diversity of natural and near-natural habitats with their original fauna and flora, which exhibit a favourable conservation status.

**Our aims:**

By the year 2020, the threat to most regenerable mountain range-specific habitat types and their endemic and typical species has been reduced by one category in the Red Lists.

From 2020, the brown bear, the lynx and the vulture are once again resident in the Bavarian Alps, the lynx also in the Central German Uplands.

From 2020, all intact and restorable mountain rivers and streams again exhibit a predominantly natural dynamic.

All impairments to the mountain landscape caused by further development measures and superfluous infrastructure are avoided.

**Reasons:** The Alps constitute one of the largest coherent nature areas in Europe. Our mountain ranges are typified by the diverse topography, the naturally high dynamic of the mountains, and the coexistence of extensive near-natural areas (such as mountain rivers, lakes, rocky regions, unused forests) alongside areas used for agriculture and forestry (such as upland and alpine pastures). Many species are only found here. Sustainable management, which is often based on tried-and-trusted

historical usage forms, preserves the rural and cultural uniqueness and also contributes to the huge diversity of locations and species.

The Alpine region, with its sensitive mountain regions, and the highlands of the Central German Uplands, are particularly sensitive to disruptions to the natural balance or excessive numbers of hoofed game. For example, around 54 % of the biotope types that are typical of the Alps are already endangered or under threat of complete destruction in Germany. Tourism, forestry and agricultural use, and infrastructure development must make particular allowance for this fact.

**We aspire to the following:**

- To create an international system of interlinked biotopes in the Alps and the upper reaches of the Central German Uplands by 2020, particularly via the designation of rest areas and wilderness areas.
- To develop an overall concept for the natural repopulation and re-establishment of large predators
- To widen acceptance of large predators such as the brown bear, wolf, lynx and vulture by 2015 by means of targeted, group-specific communication and information
- To create incentive systems aimed at stabilising traditional management methods, including the use of mountain-specific domestic animal breeds
- To reduce the use of new land in the Alps and in the higher altitudes of the Central German Uplands for transport, human settlement and tourism purposes
- To dismantle infrastructure facilities that are no longer required
- To preserve grazing in suitable forest locations
- To ensure natural development throughout all suitable, near-natural, government-owned mountain forests by 2015
- To reduce the volume of road traffic transiting the Alpine region by increasing the rail transportation of goods by 2025.

### **B 1.2.7 Groundwater ecosystems**

**Our vision for the future:** Groundwater is of a high quality and largely uncontaminated. It provides a habitat for unique biotic communities which are highly adapted to the peculiarities of the ecosystem. Groundwater permanently performs its system-linking role in the hydrological cycle and natural balance. It is available everywhere in adequate quantities as high-quality drinking water.

**Our aims:**

From 2015 at the latest, all groundwater-typical species and habitats are no longer endangered in their respective habitats or natural areas.

The thermal condition of the groundwater is protected from avoidable anthropogenic influences.

By 2020, area-wide anthropogenic diffuse discharges into groundwater have been significantly reduced in accordance with the targets of the Water Framework Directive and the Groundwater Directive.

Discharges from residual pollution are continuously reduced.

**Reasons:** Groundwater is one of the foundations of life for humans and nature. It serves as a drinking water reservoir and is also extremely important for many ecosystems. Groundwater itself is a habitat for many unique and highly specialised species and biotic communities which scientists have yet to adequately explore. The quality of groundwater is under threat from material discharges. The impacts of anthropogenic use on groundwater often only become apparent in the medium to long term. The consequences of harmful discharges are often wide-ranging, and are generally irreversible. A precautionary, area-wide approach to groundwater protection is therefore needed. The European Parliament and the Council have adopted a Directive on the protection of groundwater against pollution (Directive 2006/118/EC) setting out European-wide criteria for the assessment of good chemical and volume status of groundwater, and prescribing measures for reducing and limiting the discharge of pollutants into groundwater.

**We aspire to the following:**

- To develop ecological assessment criteria for groundwater habitats, groundwater-typical species and the ecological status of groundwater by 2010
- To achieve a good qualitative and quantitative status of groundwater nationwide by 2015 (in accordance with the WFD)
- To avoid further deterioration in bodies of groundwater, and improve the status of groundwater-dependent land ecosystems
- In addition to the existing consideration of groundwater habitats in intervention regulations, to also incorporate it more widely into biotope and species conservation measures by 2015
- To improve the recharge rate of groundwater
- To permanently protect and regenerate source sites
- To incorporate the landscape water balance into farmland consolidation legislation by 2010.

**B 1. 3 Landscapes**

**B 1.3.1 Areas of wilderness**

**Our vision for the future:** Germany again boasts fascinating areas of wilderness (e.g. in national parks) which are left to develop naturally and undisturbed.

**Our aims:**

By the year 2020, Mother Nature is again able to develop according to her own laws throughout at least 2 % of Germany's national territory, for example in post-mining landscapes, in former military exercise zones, on watercourses, along coastlines, in peatlands and in the high altitude mountains.

A large proportion of wilderness areas are extensive regions.

The topic of wilderness plays an increasingly important role in environmental education.

**Reasons:** At the time of writing, there is almost no wilderness left in Germany. Wilderness areas account for significantly less than 1 % of our national territory. Over the past centuries, attempts have been made to largely suppress the natural dynamic that is typical of wilderness areas. Among other things, this has led to the virtual disappearance of wilderness-dependent habitats (pioneer biotopes, intact riparian forests etc.) from the landscape. In order to reactivate the natural processes of habitat momentum, a certain proportion of Germany's territory must be exempted from human influence. In particular, this concerns the remaining residues of natural ecosystems, but may also include areas where human use has been discontinued and which are able to develop into a "new wilderness" in future. Such wilderness areas may also help us to understand and experience nature.

**We aspire to the following:**

- To create adequately sized areas of natural development for specific habitats by 2020
- To create withdrawal zones and stepping stones for endangered species
- To integrate wilderness regions into the transboundary system of interlinked biotopes

**B 1.3.2 Cultivated landscapes**

**Our vision for the future:** Thanks to a diversity of natural conditions and sustainable agricultural and silvicultural practices, Germany's cultivated landscapes demonstrate a high level of species and habitat diversity. The cultivated landscapes are highly valued for their diversity, beauty and regional-typical uniqueness which reflect their cultural-historical development. They make a particular contribution to the quality of life of the general public, and to regional identity and value-added.

**Our aims:**

Through sustainable use, with due regard for the requirements of nature conservation and landscape management, the biological diversity of cultivated landscapes will be increased by 2020, and their variety, beauty and regional-typical uniqueness preserved.

Those German landscapes which are deemed to be particularly worthy of preservation from a nature conservation viewpoint will be maintained in perpetuity. The proportion of cultivated landscapes deemed particularly worthy of preservation will continue to increase.

**Reasons:** Germany's cultivated landscapes are variously structured landscapes with a specific, regional-typical uniqueness and dynamic, and are often still characterised by traditional usage forms. Many of them are of outstanding importance for human recreation and for the conservation of biological diversity. A cultivated landscape is not a static structure; it is constantly evolving, and is shaped by social development (cultivated landscape in the interplay between man and nature).

In order to preserve valuable cultivated landscapes, as well as implementing statutory provisions, it is also important to create the economic requirements to allow regional-typical management forms which contribute to their conservation to be practised in a cost-efficient manner.

**We aspire to the following:**

- To support regional-typical management forms which contribute to the conservation and development of cultivated landscapes and their elements (2<sup>nd</sup> pillar of the EU agricultural subsidy) so that they can also be preserved, both from a financial viewpoint and with due regard for regional-specific peculiarities and functions
- To conserve and recreate endangered semi-natural habitats (grasslands, heaths, hedges, orchard meadows, the cultivation of vines on slopes with drystone walls etc.) by means of adequate management, *inter alia* via the use of government incentives
- To define a minimum density, based on the natural area, of the linear and punctiform elements needed in order to link biotopes (e.g. fringe structures, hedges, field boundaries, stepping-stone biotopes) by 2010 and to eliminate existing shortfalls
- To avoid impairments to the landscape

- To make allowance for the uniqueness of landscapes when implementing compensation measures within the framework of intervention regulations.

### **B 1.3.3 Urban landscapes**

**Our vision for the future:** Our towns provide their residents with a high quality of life, as well as providing a habitat for many species of flora and fauna, including rare and endangered species. A diverse range of plants improves the air quality and urban climate. Towns offer a wide range of recreational, play and nature experience opportunities for young and old alike.

**Our aims:**

By the year 2020, the greening of human habitations, including the green spaces close to residential environments (such as courtyard plantings, small areas of lawn, roof and facade planting) will have been significantly increased. Publicly accessible green spaces with varying qualities and functions are available within walking distance of most homes.

Habitats for urban-typical endangered species (such as bats, chicory, wall ferns) are conserved and extended, in a way which continues to facilitate the active brownfield development of towns and communities as well as the comprehensive restoration of buildings to improve energy efficiency.

**Reasons:** In an urban situation, different people place different demands on nature. Children need areas in which to experience nature to enable healthy psychological and physical development. People who live alone are the most common users of public parks. We urgently need to expand nature areas in inner cities, while making allowance for the varying demands of the different population groups. In many urban areas, there are insufficient green spaces which lend themselves to human use while also serving as a habitat for species.

Countless studies indicate that many towns and cities today are significantly richer in species than the countryside which surrounds them. They provide a substitute habitat for native species as well as heat-loving imported species.

A lack of vegetation, coupled with soil sealing, impair the urban climate and air quality, and have an adverse effect on the water regime. Open spaces in inner-city areas can help to improve the urban climate in many different ways. The more extensive a green space is, the greater its climatological range. For example, the *Grosser Tiergarten* zoo in Berlin has been found to reduce temperatures as far as 1.5 km into the built-up area.

Good accessibility and the linking of green spaces are crucial for ensuring usability, and also enhance the attractiveness of our inner cities, which in turn helps to halt the land-intensive migration into the surrounding countryside and reduce the volume of traffic.

**We aspire to the following:**

- To utilise the existing mechanisms of landscape planning, parkland planning and urban development in order to develop urban green spaces and interlink biotopes
- To give greater consideration to waste ground and gaps between buildings when increasing the density of or ecologically upgrading residential areas.
- To maximise existing opportunities to improve the immediate environment of residential buildings, e.g. by means of desealing, courtyard and building plantings, renaturation and traffic calming.

<b>B 2 The sustainable use of biological diversity</b>
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**B. 2.1 Nature-compatible management**

**Our vision for the future:** Economic activities in Germany are practised in harmony with the conservation of biological diversity. The costs and benefits associated with the use of biological diversity are appropriately distributed.

**Our aims:**

The general public has a growing awareness of products and services which adversely affect biodiversity, as well as of economic activities which promote biodiversity.



The demand for eco-friendly products and services continues to rise, while the range available is improving significantly.

A growing number of economic activities contribute to the conservation of biological diversity.

Pressures on biodiversity associated with production are constantly diminishing.

By 2020, biodiversity aspects are comprehensively integrated into the world trade system.

**Reasons:** Biological diversity is a predominantly public asset. As a result, the market fails to satisfactorily “penalise” or reward the impairment or promotion of biological diversity by human activities in the form of lower or higher prices. In order to achieve eco-friendly production, we need to mobilise market forces aimed at the conservation of biological diversity by employing suitable tools (e.g. economic incentives, information and education, research, labelling). There is still an inadequate understanding of the correlations between economic activities and their effects on biological diversity, and research into this field should therefore be promoted. Women play a decisive role in determining the demand for eco-friendly products, by virtue of their health and environmental awareness.

**We aspire to the following:**

- To improve target group-specific consumer education and raise awareness of eco-friendly, sustainable consumption.
- To give greater consideration to biological diversity in eco-management and certification systems and communicate these more effectively
- To adapt the legal and institutional framework for economic action in line with the requirements of preserving biodiversity
- To tailor taxation and subsidy policies more closely to the conservation of biological diversity
- To increasingly abolish ecologically counter-productive transfer payments
- To develop and expand a system of success-based rewards for ecological achievements

- To give greater consideration to biological diversity aspects in application-oriented research.

## **B 2.2 The government as role model**

**Our vision for the future:** Public institutions at all levels in Germany (Federal, *Länder*, local authorities) are transparently committed to the concrete conservation and sustainable use of biological diversity, and act as role models in every facet of their conduct. This also serves to streamline bureaucracy.

### **Our aims:**

When drafting and amending statutory regulations, proper consideration is given to the conservation of biological diversity.

Suitable areas of public land permanently exhibit a high diversity of near-natural habitats and species which are typical of the region.

The Federal Government's property policy is aimed at reducing land use to 30 ha per day by the year 2020. In the long term, Federal Government should manage to largely replace the actual use of new land by reusing existing areas.

By the year 2020, we aspire towards an exemplary procurement and construction system based on high biodiversity-conserving standards with regard to nature and environmental friendliness. To this end, the existing environmental quality seals will be further developed, while valid procurement principles will be reviewed and, where necessary, further developed.

**Reasons:** The Government is one of the largest land owners in Germany. 1.7 % of Germany's natural territory alone (excluding land used for human settlements) is owned by the Federal Government. 53 % of Germany's forests are publicly owned (Federal Government: 4 %, *Länder*: 29 %, local authorities: 20 %, trusteeships: 4 %).

According to estimates by the *Städte- und Gemeindebund* (German Association of Towns and Municipalities), public institutions place orders worth € 256 billion per annum. By tailoring their procurement systems accordingly, they could support the conservation of biological diversity by giving priority to sustainably sourced products.

Experiences in other areas have shown that competitions are an effective tool for motivating players to ambitious achievements.

**We aspire to the following:**

- To tailor taxation and subsidy policies more closely to the conservation of biological diversity
- To develop a strategy for the exemplary consideration of biodiversity requirements for all publicly-owned land by 2010
- To ensure that the Federal Government makes an exemplary contribution towards achieving the aim of reducing land use to 30 ha per day by 2020 in the form of a continuous reduction in new land use
- To ensure natural development on 10 % of publicly-owned forest land by 2020.

**B 2.3 Effects of German activities on biological diversity worldwide**

**Our vision for the future:** Germany gives careful consideration to the impacts of all its activities, including those which extend beyond its national borders, and accepts greater responsibility for the global conservation of biological diversity.

**Our aims:**

In the year 2020, 25 % of imported natural materials and products (such as agricultural, forestry, fishing products, medicinal, aromatic and collector's plants, collector's breeds of animal) originate from environmentally and socially compatible sources.

Foreign investments by German companies are based on the international environmental standards of the World Bank and the OECD guidelines for multinational companies, with due regard for German environmental standards and minimum social standards.

German banks also give ever greater weighting to positive scores in environmental impact assessments when granting foreign investment loans within the context of their business practices.

The proportion of tourist offerings which observe the CBD guidelines on biological diversity and tourism development will increase continuously.

By 2020, eco-balance sheets prepared by German industry will list all environmental impacts, from the use of raw materials through to waste management. A product's impacts on biodiversity abroad will also be outlined.

The German Government will continue to pursue its target of spending 0.51 % of gross national income on public development cooperation by 2010, and meeting the UN target of 0.7 % by 2015. To this end, as well as earmarking budget funds and providing further debt relief, a role will also be played by innovative financing mechanisms. German development cooperation gives due regard to the protection and conservation of biological diversity in all relevant areas.

**Reasons:** Worldwide, on average, the people in industrialised countries use four times as many natural resources as people in developing countries. Responsible conduct by German industry and consumers can make a significant contribution towards conserving biological diversity worldwide, and thus counteracting the risks associated with globalisation for biodiversity worldwide. In the countries of origin of key natural materials and products, knowledge of the effects of plants and the conservation of biodiversity is often held by women. For this reason, a special effort must be made to involve women in the development of utilisation concepts.

**We aspire to the following:**

- To develop an EU action programme to increase the proportion of imported products that are certified according to ecological criteria by the year 2010, and to implement this program by 2020
- To support the five principal countries of origin of the five most important natural materials and products (agricultural, forestry, fishing products, medicinal and collector's plants, collector's breeds of animal) when establishing and reviewing best practice mechanisms for sustainable use, which will have been established by 2015 at the latest
- To prohibit the import of illegally felled wood, or timber products made from such wood, to Germany, with due regard for WTO requirements, from 2010 at the latest

- To give greater consideration to environmental concerns and social standards in the WTO regulations
- To make allowance for the requirements of biological diversity in the investment strategies of private investors
- To review the European Commission's proposed directive to include international air traffic in EU emissions trading, which is currently excluded from climate protection policy, with due regard for competitive effects
- To incorporate biodiversity aspects, particularly in the countries of origin, into national and international standardisation policies
- To achieve a 50 % increase in the proportion of funding from Germany's total development aid which is earmarked for development projects aimed at the protection and sustainable use of biological diversity and the equitable distribution of benefits by 2015.

## **B 2.4 Agriculture**

**Our vision for the future:** Germany's agricultural land is characterised by the diversity of agricultural ecosystems with their site-typical structures. There is close cooperation between agriculture and nature conservation. Together with sustainable land use, this provides a suitable basis for the survival of large numbers of typical animal and plant species.

### **Our aims:**

By 2020, biodiversity in agricultural ecosystems has increased significantly. By 2015, the populations of most species (particularly wild species) typical of agriculturally cultivated landscapes have been protected and are able to increase once again.

By 2015, the proportion of land used for valuable conservationist agro-biotopes (high-grade grassland, orchard meadows) has increased by at least 10 % compared with 2005. In 2010, semi-natural landscape elements (such as hedges, borders, field shrubbery and small bodies of water) account for at least 5 % of agricultural areas.

In future, genetically modified organisms will continue to pose no threat to biological diversity, particularly in protected areas.

**Reasons:** Up until the middle of the last century, agricultural land provided valuable habitats for a large number of fauna and flora species which reside in open country. This land represented an important substitute habitat for many types of dynamic natural habitats such as river meadows. These days, agriculture has created many biotope types and structures worthy of protection, which have helped to shape the landscape and provided a habitat for many species. As a result of the intensification of agriculture and the discontinued use of marginal land, in particular, extensively used agro-ecosystems, and the fauna and flora species which have adapted to them, are disappearing. Scientific studies suggest that significant portions of the typical diversity existing in 1950 can be regenerated at local level by means of more extensive management and structural enrichment. Preserving agro-biodiversity is one of the key aims of the Convention on Biological Diversity.

**We aspire to the following:**

- To incorporate more biodiversity-related provisions into planned agro-policy legislation
- To review and, where applicable, concretise the principles of good agricultural practice as minimum standards by 2008, mindful of the fact that all land contributes to the conservation of biodiversity
- To adopt a statutory ordinance on the sustainable cultivation and use of biofuels (sustainability ordinance) as a prerequisite for offsetting against quotas and tax concessions
- To formulate an integrative strategy to increase agro-biodiversity by 2010 and establish suitable advisory, funding and monitoring instruments by 2015
- To continue the programme to reduce the use of chemical pesticides, with the aim of further reducing the potential risks associated with the use of chemical pesticides
- To reduce the surplus nitrogen in the overall balance sheet to 80 kg/ha by 2010, with a view to a further reduction by 2015

- To continue to make consistent allowance for biodiversity aspects in the licensing of genetically modified organisms in agro-genetic engineering
- To define a minimum density, based on the natural area, of the linear and punctiform elements needed in order to link biotopes (e.g. fringe structures, hedges, field boundaries, dry-stone walls, stepping-stone biotopes) by 2010 and to eliminate any existing shortfalls
- To retain appropriate support for organic farming. The Federal Government's sustainability strategy is based around a 20 % target for organic farming by 2010.
- To continuously increase the funding available for contract-based nature conservation
- To safeguard the coexistence of different forms of agriculture via the introduction of expedient coexistence regulations
- To preserve our traditional knowledge of wild and medicinal plants, herbs and spices.

## **B 2.5 Soil use**

**Our vision for the future:** Germany possesses a natural diversity of soils which have evolved over the course of history, are typical of the region, and fulfil a range of functions for man and nature. They offer favourable living conditions for the location-typical species and biotic communities which live in, on and from the soils.

### **Our aims:**

By supporting the natural functions, the correct functioning of soils is maintained in the long term. Good soil use practices make allowance for this fact.

Residual contamination has been largely remediated by 2050.

**Reasons:** The following soil functions must be protected:

- The natural function of soil as one of the foundations of life for humans, animals, plants and soil organisms, as a component of the natural balance, and as a degradation, equalisation and reconstruction medium for material influences by virtue of its filtering, buffering and substance conversion properties

- The function of soil as an archive of natural and cultural history
- Soil's utilisation function as a prerequisite for a variety of human activities.

**We aspire to the following:**

- To continuously reduce soil erosion by 2020
- To continuously reduce discharges of pollutants and materials so as to preclude long-term impairments to soil functions
- To review and, where applicable, concretise and efficiently implement good working practices in accordance with § 17 of the Federal Soil Conservation Act (BBodSchG) and § 5 of the Federal Nature Conservation Act (BNatSchG) in order to ensure site-adapted soil use. In order to minimise harmful soil changes associated with erosion, agricultural land is classified according to its erosion risk within the context of agricultural legislation (cross-compliance), and erosion-minimising measures are prescribed.
- To continue to prohibit all discharges of transgenic microorganisms which could pose a threat to the diversity of soil organisms
- To minimise further soil use by means of effective land recycling and by promoting desealing measures, both internally and externally

## **2.6 Mining of raw materials and energy extraction**

**Our vision for the future:** Raw materials and fuels are extracted and used in the most economical, eco-friendly manner possible, to ensure that they are still available for future generations. Renewable raw materials and regenerative energies are extracted and utilised in harmony with the conservation of biological diversity.

**Our aims:**

The use of finite resources is reduced to a bare minimum. The impairments to groundwater and surface water, and the loss of vegetated soil, are likewise minimised as far as possible. Many former mine sites represent valuable secondary biotopes for biological diversity.



By 2010, renewable energies account for at least 4.2 % of total energy consumption, and at least 10 % by 2020 (in relation to the year 2000). Thereafter this rate will rise continuously, in line with the national sustainability strategy. The proportion of electricity derived from renewable energies should rise to at least 12.5 % by 2010, and at least 20 % by 2020, while in the case of fuel, renewable energies should account for at least 6.75 % by 2010.

The generation and use of renewable energies does not occur at the expense of biological diversity.

**Reasons:** The extraction of raw materials and fossil fuels may cause considerable impairments to biological diversity, such as loss of habitats for species and species communities, loss of vegetated soil structures, and impairments to groundwater. The habitats left behind have been permanently transformed (so-called secondary habitats). In order to sustainably safeguard our raw materials and energy supply, we must practice the sparing abstraction and use of raw materials, achieve high recycling rates and energy savings, and substitute renewable raw materials more widely. The extraction of renewable energies can also adversely influence biological diversity (examples include monocultures, bird strikes, interruptions to fish migratory patterns) which must be avoided wherever possible.

**We aspire to the following:**

- To optimise the mining and extraction of raw materials and fossil fuels with a view to the sparing use of land
- To draw up cooperative concepts and strategies for the avoidance and minimisation of conflict between the various space demands in the extraction of renewable energies and renewable raw materials (competing uses) by 2010, and ensure that these are implemented by 2015
- To increase recycling rates
- To ensure the more widespread use of renewable raw materials which lend themselves to sustainable cultivation and use
- To support the use of synergy effects between the conservation of biological diversity and the expansion of renewable energies

- To give particular consideration to biological diversity aspects during recultivation and renaturation measures
- To optimise incentive mechanisms for saving energy and raw materials
- To formulate a concept for a system of cross-plant remuneration in the Renewable Energies Act, aimed at the targeted ecological modernisation of multiple hydropower plants on the same section of river, with the aim of maximising efficiency
- To review and, where applicable, develop good practices which may also be applied to fast-growing plantations on agricultural land
- To draft a regional development plan for the German Exclusive Economic Zone outlining specifications on the control of offshore wind farms, for example
- To improve the data situation regarding the ecological and economic effects of increasing the use of renewable energies.

### **B 2.7 Land use for human settlement and transport**

**Our vision for the future:** Our quality of life improves without needing to utilise additional land for human settlement and transport.

**Our aims:**

By the year 2020, the additional land used for human settlement and transport will be no more than 30 ha per day. Ideally, in the long term, the actual use of new land should be largely replaced by the reuse of existing land.

By 2015, area- and regional-specific reduction targets have also been formulated.

**Reasons:** Between 2001 and 2004, the amount of land used for human settlements and transport increased by around 115 ha per day. This led to a shortage and isolation of habitats for fauna and flora, as well as of recreational areas for humans.

**We aspire to the following:**

- The 30 ha target remains one of the German Government's key principles. During the course of developing the national sustainability strategy, there is a need to discuss additional aspects and, where applicable, targets.
- To guide land use in favour of restoring usability, increasing the density of use, and other brownfield development measures by adopting an overall ratio of 3:1 brownfield development to greenfield development
- To transform the economic and fiscal framework conditions to encourage the sparing use of land and the activation of derelict and contaminated sites.
- To consistently apply the existing planning mechanisms to minimise land use and, where applicable, to update the relevant planning instruments
- To formulate a comprehensive model for a "compact town" by 2010, and to implement this model by 2020
- To intensify inter-community cooperation in the designation of sites for residential and commercial areas on the basis of existing pilot projects, with immediate effect.

## **B 2.8 Mobility**

**Our vision for the future:** The mobility needs of industry and society are met with the minimum possible transport intensity. The adverse impacts on environment, nature and human health associated with traffic will continue to be reduced.

### **Our aims:**

Impairments caused by traffic, e.g. as a result of pollutants, noise and light, will be continuously reduced (in relation to immissions in 2005).

New land transport routes (primarily road, waterways and rail) indicate adequate levels of ecological passability (e.g. fish ladders in watercourses, "green bridges" (wildlife crossings) on land transport routes).

By 2020, as a general rule, the existing transport routes will no longer cause any significant impairments to the system of interlinked biotopes. Ecological passability of dissected areas has been achieved.

The current proportion of undissected, low-traffic areas of  $\geq 100$  km<sup>2</sup> will be retained.

**Reasons:** Transport routes cause considerable pressures on regions and resources. With regard to major roads, the investment priorities are expansion and maintenance, rather than new construction. A reduction in biological diversity is associated with the loss and dissection of habitats, increase in noise levels, and light and pollutant emissions. Undissected, low-traffic areas of  $\geq 100$  km<sup>2</sup> currently cover approximately 23 % of Germany's national territory, whereby the number and location of such areas varies considerably. In many areas, the landscape no longer supports passability for biological diversity.

**We aspire to the following:**

- To formulate a comprehensive concept for minimising dissection effects by 2010
- To design national traffic route plans and transport route concepts in such a way that all significant impairments to biological diversity are avoided
- To incorporate the needs and limitations of sensitive population groups (children, the sick, the elderly), as well as gender-specific aspects, into the design of transport route concepts
- To develop a nationwide concept to safeguard undissected low-traffic areas by 2010
- To continue efforts to ensure the inclusion of nature conservation aspects in European transport route planning (particularly trans-European networks (TEN), COST Programmes (Infra Eco Network Europe, IENE))
- To promote eco-friendly modes of transport

**B 2.9 Nature-based recreation and tourism**

**Our vision for the future:** The diversity and beauty of nature and the countryside support sport, recreation and the experience and discovery of nature, as well as helping to shape regional identity. Tourism, sport and recreation do not significantly impair nature and landscape. Together with nature conservation, they are committed to the conservation of cultivated and natural landscapes.

**Our aims:**

In 2020, Germany has an adequate number of high-quality, barrierless (i.e. disabled-accessible) recreation areas close to human settlements, with good local transport links and visitor guidance concepts.

In 2020, 30 % of Germany's national territory is comprised of nature parks. By 2010, 80 % of nature parks meet tourism and recreational quality criteria. All national parks allow people to experience nature in suitable areas.

By 2020, the number of regional parks and linked open spaces in the vicinity of large towns and cities has been significantly increased.

Recreation and tourism offerings and infrastructures in Germany are based on eco-friendly, nature-compatible models. By 2020, at least 10 % of tourism providers meet ecological criteria (e.g. Viabono).

By 2010, "*Nationale Naturlandschaften*" (national nature landscapes), as the umbrella brand of Germany's large protected areas, are recognised as a high-quality trademark of nature-based recreation and quality tourism in nature.

**Reasons:** Recreation in nature and the countryside is an important prerequisite for our physical and emotional health and wellbeing. There is currently an insufficient number of attractive recreational and sport facilities, particularly in human settlements and the immediate vicinity. National parks, nature parks and biosphere reserves, regional parks in the vicinity of large cities and regional-typical cultivated landscapes represent attractive destinations for tourism, and a significant economic factor for the region. They can help to comprehensively strengthen a region's cultivated landscape, as well as its quality of life and economic power. They offer an opportunity to bring recreation and tourism into harmony with the conservation of biological diversity. Many forms of sport and tourism, however, may adversely impact nature. For this reason, tourism offerings must be more closely aligned with ecological criteria.

**We aspire to the following:**

- To reduce adverse impacts from tourism on ecologically sensitive areas

- To augment and improve the quality of recreational areas by means of nature conservation measures (e.g. hedge planting, maintenance of grassland, design of waysides) and to avoid and eliminate impairments
- To significantly boost the appreciation of nature and landscape among recreational users, sportsmen and women, and tourists, and thereby promote eco- and nature-friendly conduct
- To develop concepts for nature-compatible, attractive leisure use in protected areas and ensure their implementation by 2012
- To ensure the more widespread application of the "European Charter for Sustainable Tourism in Protected Areas"
- To develop more nature-compatible offerings and integrate nature experiences into other tourist offerings
- To significantly increase the number of environmentally oriented tourism providers and offerings.

### **B 3 Environmental influences on biological diversity**

#### **B 3.1 Area-wide diffuse substance discharges**

**Our vision for the future:** Air, water and soil are of a high quality. They ensure a functioning ecological balance, biological diversity typical of the natural area, and are an important prerequisite of human health.

**Our aims:**

By the year 2020, the critical loads and levels for acidification, heavy metal and nutrient discharges (eutrophication) and for ozone will be met, so that even sensitive ecosystems will enjoy lasting protection.

Persistent organic pollutants – POPs – will be eliminated from trade and use as far as possible, and replaced with less persistent, less bio-accumulating and less toxic substances.

By 2015, the rivers, lakes, transitional and coastal waters indicate a good chemical and ecological status. Where waterbodies have already achieved a good status, this will be upheld.

From 2020, cultivation-related substance discharges into agricultural and silvicultural soils will be reduced e.g. by a further tightening up of the limits in fertilisers legislation.

**Reasons:** Many species of flora and fauna in Germany are at risk from the discharge of long-range air pollutants (nitrogen compounds, sulphur oxides, heavy metals, POPs etc.). In order to protect sensitive ecosystems, the UNECE air pollution control protocols set out national maximum emission levels and emission reduction measures for air pollutants which are based on ecosystem-specific, effect-based heavy metal levels (critical loads and critical levels). In addition, Directive 2001/81/EC (NEC Directive) and the 33<sup>rd</sup> Ordinance on the Implementation of the Federal Immission Control Act (BImSchV) stipulate maximum emission limits for four “classic” air pollutants. In order to preserve the biological diversity of surface waters, the EC Water Framework Directive stipulates a “good chemical and good ecological status”, while for groundwater it stipulates a “good chemical and quantitative status”. Strategies on hazardous substances in oceans have also been formulated, together with targets on eutrophication, within the context of HELCOM and OSPAR. Certain industrial plants are likewise subject to emission and discharge limits. The Conferences on the Protection of the North Sea adopted reduction targets of 50 % (and in some cases 70 %) for discharges of hazardous substances and nutrients into the North Sea, based on 1985 levels. Comparable resolutions were also made by OSPAR for the North-East Atlantic and HELCOM for the Baltic Sea. Regulations on the avoidance and reduction of POPs are included in the Stockholm POP Convention and in the UNECE POP Protocol.

Under German fertilisers legislation, fertilisers may only be licensed and used subject to the proviso that, if used correctly, they do not damage the fertility of the soil or the health of humans and domestic animals, and do not pose a threat to the ecological balance.

The accumulation of pollutants in the soil has a negative effect on soil organisms, soil fertility, fauna and flora, and possibly (via the food chain) on humans as well. In

humans, pollutants accumulate to varying degrees. Measures to limit and minimise pollutants are currently under debate as part of the European soil conservation strategy.

**We aspire to the following:**

- To continue to develop international conventions and EU regulations (such as the EC Water Framework Directive, and the UNECE Long-Range Transboundary Air Pollution (LRTAP) air pollution control protocols).
- To specify ecosystem-related effect thresholds for pollutants, outlining their effects on biological diversity, by 2015
- To reduce pollutant discharges into the marine environment by 2020 to the level of natural background concentrations, and in the case of synthetic substances, to almost zero (HELCOM, OSPAR)
- To develop assessment methods and quality targets for incorporating groundwater ecology into good groundwater status by 2020
- To significantly reduce the discharge of pesticides into soils and waterbodies by 2015
- To reduce excess nitrogen in the overall balance sheet to 80 kg/ha by 2010, with the aim of achieving a further reduction by 2015
- To reduce the environmental discharge of pharmaceuticals, hormonally active substances and other xenobiotics
- To reduce pollutant discharges into soils across all discharge paths to levels low enough to prevent any additional accumulation of pollutants in soils.

**B 3.2 Climate change**

**Our vision for the future:** The increase in average global warming is limited to a maximum of 2 degrees Celsius compared with preindustrial levels. The effects of climate change on biological diversity in Germany (e.g. shift in the vegetation zones, changes in bird migration patterns, the threat to cold-loving species) have been



ameliorated or minimised. Sensitive species and biotic communities are able to respond to climate-induced changes by means of geographical migration.

**Our aims:**

Assuming that the EU, within the context of international climate protection negotiations, undertakes to reduce its greenhouse gas emissions by 30 percent by 2020 compared with 1990 levels, Germany will aim to reduce its emissions to an even greater extent. In the long term, the increase in the average global temperature is limited to 2 degrees Celsius compared with preindustrial levels.

Sensitive species and biotic communities are able to respond to climate-induced changes by means of geographical migration within a network of spatially or functionally linked biotopes that will have been created by 2020.

By 2020, the natural storage capacity of land habitats for CO<sub>2</sub> (e.g. as a result of the rewatering and renaturation of peatlands and the increase in semi-natural forests) has increased by 10 %.

**Reasons:** Climate change influences the distribution of species, their genetic features, and the structure of ecosystems. The current isolation of habitats means that many sensitive species are unable to escape climate-induced changes. Certain forms of ecosystem intervention may adversely affect the climate (such as the release of climate-relevant gases during peatland dehydration). As heat stress and periods of drought adversely affect the hydrological balance of watercourses, still waters and peatlands, water management plans must make allowance for climate change, with due consideration for biodiversity aspects. Many of the measures to conserve biological diversity (such as the establishment of new forests, renaturation of peatlands) contribute to climate protection. Under the Kyoto Protocol, and within the context of EU burden sharing, Germany has undertaken to produce a total of 21 % fewer climate-acting gases by 2008 – 2012 compared with 1990 levels. In the spring of 2007, the EU adopted ambitious climate protection targets for the period up to 2020, and resolved to commence negotiations for a climate protection convention. The EU is willing to cut its emissions of greenhouse gases by 30 % by 2020 compared with 1990 levels, and thereby contribute to a global and comprehensive agreement for the post-2012 period, provided other developed countries commit to

similar emission reductions and less developed countries make contributions commensurate with their responsibilities and abilities. Under this prerequisite, Germany is prepared to commit to a reduction of significantly more than 30 %. Independently of international agreements, the EU has already undertaken to cut its greenhouse gases by at least 20 % by 2020 (compared with 1990 levels). Thanks to these resolutions, the EU has assumed a leading role in climate protection.

**We aspire to the following:**

- To achieve an international system of interlinked biotopes
- To continuously increase CO<sub>2</sub> sink capacity by creating new forest areas in suitable locations
- To promote natural development throughout all upland moors and peatland forests; to significantly reduce peat harvesting from 2015 coupled with an increase in the use of peat substitutes in horticulture; to rewet dehydrated sites
- To give increased consideration to the interactions between biodiversity and climate change throughout all areas of social action
- To more widely integrate biodiversity protection into the German Government's climate protection programme
- To promote greater cooperation between all national and international players in the updating and implementation of the Convention on Biological Diversity, the Framework Convention on Climate Change and the Kyoto Protocol, as well as the Convention to Combat Desertification.
- To formulate a concept on "nature conservation and climate change" by July 2008
- To formulate and establish a system of indicators for assessing the impacts of climate change on biological diversity by 2015.

<b>B 4 Genetic resources</b>
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**B 4.1 Access to genetic resources and equitable sharing of benefits**

**Our vision for the future:** Users of genetic resources observe the access rules outlined in the Convention on Biological Diversity or the International Treaty on Plant

Genetic Resources for Food and Agriculture (ITPGRFA). The countries of origin and the indigenous and local communities benefit equally from the advantages associated with the sustainable use of genetic resources. The same applies to the use of traditional knowledge associated with genetic resources.

**Our aims:**

The users and providers of genetic resources (collection institutions, industry, science, trade, breeders and private individuals) are familiar with and observe the “Bonn Guidelines” of the Convention on Biological Diversity, or apply the standard rules of the International Treaty on Plant Genetic Resources for Food and Agriculture. Particular consideration is given to the rights of indigenous and local communities.

Access to genetic resources with an equitable sharing of benefits is guaranteed.

**Reasons:** A large proportion of biological diversity and genetic resources is found in developing countries, while the technologies for using them tend to be concentrated mainly in industrial countries. To date, the provisions of the CBD and the Bonn Guidelines have not always been adequately observed. Under the “Bonn Guidelines”, access should only be granted subject to an adequate knowledge of the situation (prior informed consent, PIC), the agreement of mutual terms (mutually agreed terms, MAT), for sustainable usage forms, and with the balanced and equitable sharing of the benefits derived from the use of genetic resources. Genetic resources represent a significant economic factor, and are also used in many fields in Germany, for example in agriculture (plant breeding) and in pharmaceutical research. Particularly in developing countries which are rich in resources, the equitable distribution of benefits associated with the use of genetic resources may help to eradicate poverty.

The international regulations governing access to and distribution of genetic resources are outlined in Article 15 of the Biodiversity Convention. *Inter alia*, this states that access to genetic resources must be ensured, and that there must be a balanced and equitable distribution of benefits associated with the use of genetic resources.

It calls on the Parties, where applicable, to create suitable statutory framework conditions by adopting or modifying existing legislation. One important step in this

regard was the adoption of the Bonn Guidelines on Access to Genetic Resources Fair and Equitable Sharing of the Benefits (Bonn Guidelines on ABS) at the 6<sup>th</sup> Conference of the Parties in The Hague, 2002.

The Guidelines set minimum standards governing the access to and distribution of benefits. Particular emphasis is also placed on the rights of indigenous and local communities.

**We aspire to the following:**

- To adopt an international regime on access to genetic resources and the equitable sharing of benefits (and to conclude the negotiations at the earliest possible date prior to 2010)
- To continue the national dialogue to implement the Bonn Guidelines, particularly in respect of Article 16 d
- To comprehensively apply the standard rules of the International Treaty on Plant Genetic Resources for Food and Agriculture.

**B 4.2 Conservation and sustainable use of genetic resources (in situ, ex situ, on farm)**

**Our vision for the future:** The greatest possible diversity of genetic resources is actively and sustainably used. The diversity of native and related wild varieties of crops and livestock is ensured by means of nature conservation measures within and outside of protected areas (in situ); traditional crop varieties and livestock breeds adapted to particular regional conditions are cultivated or farmed in adequate numbers (on farm). This is effectively supported by the ex situ conservation (including zoos and botanical gardens, gene banks, cryoreserves and other public and private collections) of genetic resources. The geographical origin and taxonomical classification of wild and domesticated genetic resources conserved and bred in Germany are known, and the usage potential has been comprehensively ascertained by means of systematic evaluation. The collections are well characterised and documented, the information is readily accessible, and access is clearly regulated in accordance with the statutory provisions.

**Our aims:**

The priority organisms to be made available for ex situ measures due to risk or usage requirements are permanently available in the appropriate quantities and qualities, in high-calibre collections. Traditional species, populations, varieties, breeds, sources and stocks, and those which have been adapted to regional conditions, have been documented, together with the in situ occurrences of wild forms and related wild species of useful organisms.

The ex situ collections of genetic resources are documented by national inventories and enjoy permanent protection. The requisite requirements (primarily financial, spatial and personnel resources) are available.

From 2020 at the latest, all collections or occurrences of genetic resources have been incorporated into a conservation and information network; the players involved in this network actively cooperate with the users of genetic resources vis-à-vis the long-term protection of genetic diversity and the sustainable use of materials for research, innovation and innovative techniques and products, as well as sustainable agricultural cultivation.

Traditional species, populations, varieties, breeds, sources and stocks, and those adapted to the particular regional conditions, are increasingly appreciated by consumers.

**Reasons:** Ensuring the active and sustainable use of the greatest possible diversity of genetic resources is generally the best way of securing their long-term conservation. In order to protect or recreate diversity and restore the usability of certain aspects of biological diversity, however, it may also be necessary to make provision for the ex situ conservation and breeding of organisms. However, we do not currently have an adequate supply of the necessary requirements (e.g. lack of capacity and inadequate genetic authenticity), and national coordination efforts are needed. Regarding adaptation to changing environmental conditions, moreover, growing significance is also attached to the in situ conservation of wild forms and related wild species of useful organisms, as well as the on farm conservation of traditional varieties and breeds which have adapted to particular regional conditions. Adequate population sizes are also important from a genetic viewpoint. To date, such

activities have been coordinated via the specialist national programmes for the conservation and sustainable use of genetic resources for food, agriculture, forestry and fishing. However, implementation of these specialist programmes is reliant upon an efficient infrastructure. To date, coordination has only existed within the context of individual projects by zoos and botanical gardens, and in the area of breeding. Greater efforts are therefore needed to expand the existing information and conservation networks and to involve all users of genetic resources (at a species and sub-species level) as well as interested members of the general public on a voluntary basis, including consumers. The collection materials must be comprehensively and systematically catalogued, and the information must be made as readily accessible to user groups and other interested parties as possible.

**We aspire to the following:**

- To create and expand the national inventories of genetic resources and to increase information and conservation networks by 2010. These may be organised on a decentralised level but centrally coordinated, using the coordination structures of the specialist national programmes for the conservation and sustainable use of genetic resources for food, agriculture, forestry and fishing and with the involvement of interested members of the general public
- To create and improve the necessary infrastructure, organisational and information requirements for ex situ, in situ and on-farm conservation.
- To utilise the existing EU cofinancing opportunities available from 2007 under the new ELER Regulation (Regulation(EU)1698/2005), *inter alia* for targeted ex situ measures, conservation breeding programmes, and conservation measures for endangered species and varieties of cultivated plants and livestock breeds
- To improve in situ and ex situ measures via the mediation of qualified contact persons, farming capacity and adequate genetic material
- To expand the national Genetic Resources information system (GENRES) as part of Germany's clearing house mechanism under the CBD
- To expand the information and coordination centre for biological diversity (IBV) of the Federal Institute for Agriculture and Food (BLE) as the German Government's

central information and coordination office in the field of agrobiodiversity and genetic resources for food, agriculture and forestry

- To draw up a list of the species requiring urgent protection at national level via ex situ measures by 2008; to unveil a species-specific programme which has been coordinated with the *Länder* and implemented for 25 % of species by 2010.

## **B 5 Social awareness**

**Our vision for the future:** Biological diversity in Germany is widely recognised as an essential component of quality of life, and is essential for a healthy and fulfilled life. This is expressed in everyday, autonomous behaviour.

### **Our aims:**

In the year 2015, at least 75 % of the population will rate the conservation of biological diversity as one of the top priorities for society.

The significance of biological diversity is firmly anchored in the social consciousness. Human activity is increasingly tailored to this realisation, leading to a significant decline in the pressures on biological diversity.

**Reasons:** Activities to conserve biological diversity need the support of society. To this end, action-oriented learning is needed, both in the educational sector and in all other spheres of life.

According to recent surveys commissioned by the German Environment Ministry (BMU), 93 % of respondents want reassurance that the protection of Germany's natural beauty and uniqueness is guaranteed. 93 % of respondents also felt it was important to ensure an effective environmental and nature conservation regime. Nevertheless, the threat to biological diversity remains very high.

### **We aspire to the following:**

- To audit the available information, campaigns, links within the educational system, available networks (of expertise) at local government, *Land* and national level among government, industry and civil players relating to biological diversity in order to assess the action needed by 2008

- To forge strategic communication alliances on the topic of biological diversity, e.g. in the education system (various key skills for pupils of various grades and school types are readily taught via the vehicle of biological diversity, with due regard for gender-specific access to the topic and learning methods)
- To continuously appraise awareness and knowledge levels vis-à-vis biological diversity
- To increase the number of places in kindergartens focussing on the experience of nature to 25 % by 2015
- To further develop environmental education and forest education provided by the public and private forest administrations with an emphasis on biological diversity
- To improve the framework conditions for educational courses and experiences focussing on the conservation of biological diversity, e.g. by relevant administrations, academies, information centres in protected areas, zoos and botanical gardens, museums, nature conservation, youth and sports associations, forestry, hunting and fishing clubs, churches, adult education, homeland clubs, rural women's clubs
- To further develop target group-specific educational courses in nature conservation with an emphasis on sustainable development
- To promote the appropriate participation and involvement of migrants in innovations, knowledge and dialogue on the conservation of biological diversity
- To intensify and professionalize the marketing surrounding the conservation of biological diversity, with the appropriate involvement of role models and sympathisers.



## C Action areas

The previous chapter on “Concrete vision” highlighted the future direction for the protection and sustainable use of biological diversity in the medium to long term. In order for this vision to become a reality, it needs to be fleshed out with concrete measures.

The Convention on Biological Diversity addresses almost the entire range of topics in the sustainability debate. Given the complexity, breadth and variety of topics, a national strategy on biological diversity cannot incorporate every individual aspect, but must instead identify and address priority action areas. Our action areas have been selected based on the EU biodiversity strategy. They make allowance for the various political action areas, protected commodities, load factors and their causes, usage areas, and the specific concerns of the Convention on Biological Diversity, such as the equitable sharing of benefits.

The measures listed under these action areas do not claim to be exhaustive, but instead merely offer a representative selection of the various aspects. The chosen measures are capable of being implemented in the near future, and as such are inevitably insufficient to meet our goals in full. They will be amended as the national strategy is updated at regular intervals, and supplemented with new measures.

The action areas must likewise be continuously developed and supplemented where necessary if we are to realise our long-term targets.

The national strategy on biological diversity addresses society as a whole. For this reason, the measures outlined in the action areas are not confined to the government, but are also aimed at players in civil society. Although reference is only made to selected players, other players not listed here are likewise urged to make their own contribution towards conserving biological diversity and achieving the aims of this strategy.

## C 1 System of interlinked biotopes and networks of protected areas

Designating protected areas of a sufficiently large size and linking them into functionally coherent systems of interlinked biotopes is of central importance for the conservation of biological diversity. The European network of protected areas, Natura 2000, is currently being developed on the basis of the EC Birds Directive and the Habitats Directive.

Germany has notified around 14 % of its total territory to the European Commission for the Natura 2000 network. With around 31 % of Germany's Exclusive Economic Zone (EEZ) designated as Natura 2000 areas in 2004, two years ago the network of protected areas was extended to include coastal-remote areas of the North and Baltic Seas.

Under German Federal law, the *Länder* are required to create a system of interlinked biotopes covering at least 10 % of Germany's territory. Unlike Natura 2000, this system of interlinked biotopes is not confined to specially designated habitat types and species, but instead incorporates all native species of fauna and flora and their habitats. Linking the habitats is a top priority, even outside of protected areas.

The aforementioned networks of protected areas also constitute Germany's contribution to the global network of protected areas, which the CBD resolved to achieve on land by 2010, and at sea including the high seas by 2012.

Measures to implement the action targets outlined in the chapter on "Concrete vision"



### EU/Federal Government

- Protection of Natura 2000 areas in the EEZ
- Formulation of maintenance and development plans for the protected areas in the EEZ
- Establishment of a monitoring system in the EEZ

- Compliance with Natura 2000 reporting obligations to the EU Commission in accordance with Articles 11 and 17 of the Habitats Directive
- Involvement in the creation of a global network of protected areas on land by 2010 and at sea (including the high seas) by 2012 (CBD resolution)
- Notification of the marine Natura 2000 areas as a contribution to the network of protected marine areas in the North-East Atlantic and in the Baltic Sea (OSPAR/HELCOM).
- Implementation of an integrated coastal zone management system in accordance with the Cabinet resolution of 22 March 2006
- Formulation and implementation of a European and national marine strategy
- Incorporation of the former east/west German border strip into a European Green Belt
- Assurance of cofinancing opportunities for the successful implementation of Natura 2000 and ICZM projects via EU funding mechanisms: Rural development fund, structural fund, fisheries fund (EFF), LIFE+
- Promotion of large-scale nature conservation projects to protect key core areas of a national system of interlinked biotopes
- Protection of suitable former military exercise grounds for nature conservation purposes
- Protection of suitable post-mining landscapes for nature conservation purposes
- Promotion of integrated research projects which contribute to an understanding of how fragmentation impacts ecosystems and species diversity across various spatial and time scales, and how interlinked systems of biotopes and networks of protected areas impact the conservation of biological diversity.

### **Länder/local government**

- Permanent protection of Natura 2000 areas (official protection, contract-based nature conservation etc.), including provision of the necessary financing
- Drafting of maintenance and development plans and management plans for Natura 2000 areas
- Establishment of a monitoring system for Natura 2000 areas
- Compliance with the Natura 2000 reporting obligations (Articles 11 and 17 of the Habitats Directive)
- Permanent protection of the national system of interlinked biotopes
- Designation of connecting areas and connecting elements in an international system of interlinked biotopes
- Designation of new national parks and biosphere reserves
- Designation of areas of land in wilderness regions in national parks according to the IUCN standard of at least 75 %
- Protection of the "Green Belt" in Germany
- Long-term protection of nature conservation projects
- Nomination of outstanding German natural assets as UNESCO world heritage sites
- Protection of suitable post-mining landscapes for nature conservation purposes
- Preparation of binding management plans for the national natural heritage by land owners

### **Other players**

- Involvement in maintenance and development measures, monitoring, PR work / communication (NGOs/volunteers)
- Provision of land and funding, discontinuation or extensification of land use, involvement in area management, project-based support of private nature conservation initiatives/NGOs (users/owners/industry)
- Preparation of binding management plans by land owners for our national natural heritage

## C 2 Species conservation and genetic diversity

Even though efforts to conserve species diversity in Germany have had some notable successes, the threat to many species of fauna and flora persists.

One of the main ways of conserving species diversity and genetic diversity of wild fauna and flora varieties is by protecting their habitats. The system of interlinked biotopes and networks of protected areas play a central role in conserving reproduction-viable populations. Concurrently to this, however, direct species conservation remains an important task. Of particular importance in this respect are the Washington Convention on International Trade in Endangered Species of Wild Flora and Fauna (**WC**), the Federal Nature Conservation Act (Section Five), the Global Strategy for Plant Conservation (**GSPC**), species conservation programmes (**SpecConsPr**) and the Taxonomy Initiative (**GTI**).

Measures to implement the action targets outlined in the chapter on "Concrete vision"



### **EU/Federal Government**

#### **SpecConsPr:**

- Promotion of accompanying studies and cooperation relating to the species conservation programmes of the *Länder*

#### **WC:**

- Wider anchoring of the precautionary principle within the context of amending Regulation (EC) No. 338/97
- Development of operational sustainability criteria for the removal of species from the wild

- Updating of the Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora, particularly with regard to commercial fish species
- Evaluation and support of utilisation systems which offer incentives to the countries of origin to conserve species in their natural habitats.

**GSPC:**

- Permanent establishment of a National Focal Point
- Pooling and linking of players involved in botanical species conservation (*Länder*, universities, botanical gardens, clubs etc.)
- Pooling and linking of players involved in the conservation of plant-genetic resources in cooperation with the Information and Coordination Centre for Biological Diversity (IBV) of the Federal Agency for Agriculture and Food (BLE)
- Strengthening of cooperation and creation of synergies
- Formulation of a joint framework (general targets, guidelines, manuals etc.)

**GTI:**

- Pooling and linking of taxonomy players (at a national and international level)
- (Further) development of national taxonomical databases

***Länder*/local government**

**SpecConsPr:**

- Formulation and implementation of species conservation programmes to conserve and rehabilitate specific species and species groups
- Development and trialling of quality criteria for reintroduction projects and species conservation measures, both in situ and ex situ
- Development of suitable ex situ strategies
- Support of zoos and botanical gardens, as well as other players involved in zoological and botanical nature conservation, and the conservation of genetic resources during the implementation of ex situ measures
- Target group-oriented communication and information of the general public on reintroduction projects and species conservation measures
- Provision of Web-based data on the occurrence of habitats

**WC:**

- Tightening of trade monitoring

**GSPC:**

- Concretisation of global targets at *Länder* level
- Formulation of strategies to implement the targets, and their incorporation into on-going activities
- Support of botanical gardens and other ex situ collections
- Development of a national information system, including characterisation and evaluation data, and a central coordination office for plant-genetic resources for food and agriculture, with the involvement of the *Bundesanstalt für Züchtungsforschung* (Federal Institute for Breeding Research) and the Information and Coordination Centre for Biological Diversity (IBV) of the *Bundesanstalt für Ernährung und Landwirtschaft* (Federal Agency for Agriculture and Food, BVE)

**GTI:**

- Promotion of taxonomical surveys and databases

**StratGIA:**

- Early detection: Monitoring of fauna and flora for the early detection of invasive species
- Prevention of invasive species by applying the relevant nature conservation legislation (protection against the adulteration of wild fauna and flora species) and plant conservation legislation, including the EPPO early warning system

**Other players**

**SpecConsPr:**

- Performance of reintroduction programmes (associations)
- Conservation of animal species within the context of European conservation breeding programmes (EEPs), including suitable reintroduction projects (zoos)
- Conservation of species in ex situ stocks (botanical gardens)

**WC:**

- Development of sustainability labelling for unprotected wild species (trade, companies)

**GSPC:**

- Strengthening of botanical research and awareness-raising/environmental education regarding the importance of biological diversity (universities, academies, schools/adult education courses, associations etc.)
- Greater consideration of botanical diversity in agricultural/silvicultural practice (agricultural/silvicultural institutes, farmers, silviculturalists, associations)

**GTI:**

- Drafting of guidelines for the protection and expansion of ex situ conservation (botanical gardens and zoos, collections)
- Strengthening of taxonomical research and environmental education (universities, academies, schools/adult education courses, associations etc.)

**StratGIA:**

- Drafting of technical guidelines to protect against the adulteration of fauna and flora (working party on alien species)

### **C 3 Biosafety and preventing the adulteration of fauna and flora**

Worldwide, the amount of land cultivated with genetically modified plants has increased sharply since 1997. Genetically modified organisms may reproduce in the environment and are capable of spreading over long distances. This could impact biological diversity. For this reason, the release and circulation of genetically modified organisms is subject to strict licensing procedures, designed to eliminate any risk to man or the environment.

The CBD Cartagena Protocol, which entered into force in 2003, aims to limit the risks of modern biotechnology for biodiversity and human health. The transboundary traffic in genetically modified organisms is the principal focus of this agreement.

Under EU genetic engineering legislation, exhaustive consideration must be given to environmental and nature conservation aspects within the context of environmental impact assessments in EU-wide licensing procedures for genetically modified organisms. In Natura 2000 areas, moreover, an impact assessment may also need to be carried out in respect of the relevant conservation targets. The adulteration of fauna and flora may also impact non-native species. If and when a strategy against invasive non-native species is developed, the key principles of nature conservation and plant protection law should be taken into account. Nature conservation law envisages the need for licensing for the reintroduction of non-native species into the wild. Plant conservation law prohibits the entrainment / import and propagation of certain species liable to damage plants and their ecosystems.

Measures to implement the action targets outlined in the chapter on "Concrete vision"



#### **EU/Federal Government**

- The EIA, the admissibility of collateral provisions on the conservation of nature and the environment, and the requirement for licensees to monitor post-licensing impacts in the individual licences for genetically modified organisms are anchored in the EU Directive on the deliberate release into the environment of genetically modified organisms and in the Regulation on genetically modified feedstuffs and foods
- The continued consideration of ecological expertise when licensing genetically modified organisms

- Adequate standards and assessment criteria for EIA (under the EU Directive on the deliberate release into the environment of genetically modified organisms) when licensing genetically modified organisms
- Formulation of specific application conditions for the conservation of particular ecosystems or environmental situations in the individual licences for genetically modified organisms, where necessary
- Harmonisation of the monitoring conditions and procedures for genetically modified organisms at EU level
- Examination of opportunities by the competent local authorities aimed at the preventive protection of nature conservation areas within the required framework, in accordance with the particular requirements of the protected area
- Assurance of the requirements of the Habitats Directive in emission permits, based on the protection purpose or conservation objective of the respective Natura 2000 area
- Consideration of the protection of biological diversity in genetic engineering legislation
- Concretisation and implementation of the provisions of the Cartagena Protocol to protect biological diversity from internationally traded GMOs
- Support of OECD activities relating to the development and harmonisation of procedures for the risk assessment of genetically modified plants, animals and microorganisms
- Creation of a regulation at EU level on the marketing of seeds and plants of native origin for species which fall under the seed variety directory
- Formulation of a national strategy for protection from invasive species
- Avoidance of the entrainment and release of non-native species in the wild

### **Länder/local government**

- Performance of impact assessment in Natura 2000 areas
- Continued effective application of the provisions of the Genetic Engineering Act and associated controls, also for the protection of the environment and nature
- Maximisation of the existing statutory opportunities to avoid significant impairments to ecologically sensitive areas
- Prevention of invasive species via the application of the relevant provisions under nature conservation law (protection of wild species of fauna and flora from adulteration)
- Avoidance of the entrainment and release of non-native species in the wild

### **Other players**

- Drafting of technical guidelines for protection against the adulteration of fauna and flora (working party on alien species)
- Development of recommendations on the handling of non-native invasive species for gardeners, users, and garden and landscape planners (*Zentralverband Gartenbau* (Central Horticultural Association))



#### **C 4 Water protection and flood prevention**

Thanks to the considerable efforts made in local authority and industrial sewage disposal, in recent years the material pollution of waterbodies has been significantly reduced. Nevertheless, many waterbodies are still polluted with nutrients, and also with large numbers of industrial chemicals, pesticides and pharmaceuticals. As a result of excessive use and damming in headwaters, moreover, the risk of flooding with its multiple implications has increased. These deficits, alongside the structural impairments which became apparent in many waterbodies during the course of inventoring under the Water Framework Directive, which have been caused by usage forms such as shipping, hydropower and technical flood prevention, need to be eliminated, or at the very least, their impacts on biocoenosis significantly reduced. Measures to reduce material pollution need to be stepped up, and waterbodies need to be given more opportunities to develop.

Unadapted usage forms in flood plains, including in particular the water meadows, not only damage biological diversity, but also impair the value of the watercourse systems for flood protection. This was clearly demonstrated by the severe flooding in 2002. In September 2002, the German Government presented a 5-point flood prevention programme. More space was to be given to rivers, including their river meadows. In particular, water meadows and riparian forests play a key role in preventive, eco-friendly flood protection. The water storage capacity of soils helps to minimise the risk of flooding. For this reason, it is important to ensure the protection of soils which perform important regulatory functions in the water regime. It is hoped that an integral coastal zone management system will lead to a pooling of the various perspectives and achieve consensus on priorities, targets and interactions. This is one of the basic requirements for successful decision-making processes by all coastal players.

Measures to implement the action targets outlined in the chapter on "Concrete vision"



### **EU/Federal Government**

- Specification of quality targets and reduction measures for priority substances, including the “phasing out” of priority hazardous substances
- Updating the state of the art in sewage avoidance, removal and treatment
- Implementation of integrated, cross-media best available technology (BAT) in accordance with the IPPC Directive
- Nationwide provisions for the handling of precipitation water
- Consideration of ecological requirements in the maintenance of federal waterways
- Declassification of all federal waterways which are no longer relevant for goods transportation
- Provision of retention areas and the semi-natural management thereof, coupled with support for possible dyke relocation and riparian forest areas via large-scale nature conservation projects and riparian buffer strip programmes by the German Government and within the context of the EU LIFE programme
- Implementation of an integrated coastal zone management system in accordance with the Cabinet resolution of 22 March 2006
- Expansion of species conservation legislation to include the Exclusive Economic Zone (EEZ)
- Derivation of quality targets with due regard for ecotoxicological criteria for groundwater, in accordance with the provisions of the EU daughter directive on groundwater

### **Länder/local government**

- Consistent implementation of the Water Framework Directive
- Drafting of programmes for the naturalistic development of waterbodies
- Renaturation of waterbodies
- Designation of flood plains and areas at risk of flooding
- Creation of additional flood plains on a voluntary basis
- Local seepage of precipitation water
- Remediation of all residual pollution posing a threat to waterbodies
- Measures to improve water retention in flood areas (e.g. by means of afforestation)
- Measures to improve groundwater quality by means of modified land use

### **Other players**

- Development and application of eco-friendly production methods
- Improvement of our knowledge of the environmental impacts of chemicals and pharmaceuticals
- Improvement of our knowledge of the impacts of climate change on aquatic ecosystems, including consideration of the food webs (*Deutsche Forschungsgemeinschaft* (German Research Association), AQUASHIFT)
- Cooperative projects between water and soil associations, agriculture and watersports, and inland navigation and nature conservation associations

- Individual preventive measures to protect against flooding risks and minimise the potential damage (residents)

### **C 5 Access to genetic resources and equitable sharing of benefits**

One of the aims of the Convention on Biological Diversity (CBD) is to ensure the equitable sharing of benefits associated with the use of genetic resources, particularly via suitable access to genetic resources and adequate sharing of the relevant technologies. According to Article 15 of the CBD, the rights of disposition over genetic resources lie with the national countries. Access must be granted with the approval of the countries of origin and under mutually agreed conditions.

The voluntary Bonn Guidelines adopted at the 6<sup>th</sup> Conference of the Parties to the CBD represent a concretisation of the provisions on access to genetic resources and the equitable sharing of benefits (ABS), and may aid the development and formulation of legislative, administrative or political measures as well as contracts and other agreements.

At international level, over the next few years attention will focus on the negotiations for an international ABS regime. A concrete timescale was agreed at the 8<sup>th</sup> Conference of the Parties to the CBD: The ABS working party should have completed its work on the formulation of a regime at the earliest possible date prior to 2010. A group of experts was appointed to clarify the feasibility of an international certificate (origin / source / legal acquisition).

The International Treaty on Plant Genetic Resources for Food and Agriculture established a multilateral system of access to the relevant genetic resources and the distribution of benefits, with due regard for the particular conditions.

Measures to implement the action targets outlined in the chapter on "Concrete vision"



### **EU/Federal Government**

- Creation and further development of an ABS website under the clearing-house mechanism (CHM) to support the national ABS office and to provide information to German users
- Involvement in the EU's ABS portal
- Active campaigning for agreement on elements of an international ABS regime, for example, regarding a certification system on the origin of genetic resources, so that by 2010, the work on this regime can be completed
- Development and support of the multilateral system within the framework of the International Treaty on Plant Genetic Resources for Food and Agriculture at national and EU level
- Implementation of the corresponding aspects of the EU action plan to conserve biological diversity within the context of economic and development cooperation
- Implementation of the relevant actions of the EU action plan to achieve the 2010 target (EU Communication COM(2006)216)
- Review of the implementation of the Bonn Guidelines in Germany (particularly with regard to compliance with the regulations on the use of genetic resources and continuation of the national dialogue to implement the Bonn Guidelines, particularly in respect of Article 16 d)
- Introduction of information and awareness-raising measures for implementation of the Bonn Guidelines, both within Germany and internationally, e.g.
  - Handbooks for small and medium-sized enterprises (SMEs)
  - Staging of information events
  - Information campaigns
- Strengthening of research into the concrete implementation of ABS regulations
- Incorporation of the requirements of fundamental and sustainability research into ABS negotiations at international level
- Adoption of a statutory ordinance on the sustainable cultivation and use of biofuels (sustainability ordinance) as a prerequisite for offsetting against quotas and tax reductions
- Audit and assessment of genetic resources from conservation collections

### **Other players**

- Recognition and implementation of the voluntary Bonn Guidelines (providers and users of genetic resources)
- Provision of information (case studies e.g. for material transfer practices) for the ABS website (customers and users of genetic resources)
- Active involvement in national and international events to strengthen awareness of ABS issues (potential users)
- Inclusion of ABS topics in environmental reports (companies)
- Expansion of the international plant exchange network IPEN (botanical gardens)
- Establishment of the international plant exchange network among botanical gardens (IPEN) as a model for voluntary commitment by other players and interested parties

## C 6 Agriculture and silviculture

Around 54 % of Germany's total territory is used agriculturally, and 30 % of the total area is covered by forest. For this reason, agriculture and silviculture have a particular significance and responsibility for the conservation of biological diversity.

The agricultural reform initiated in 2001 brought about a comprehensive ecological reorientation of agricultural policy. The Luxembourg resolutions of July 2003 heralded a fundamental reform of EU agricultural policy; the severing of the links between direct payments and production, and the linking of direct payments to environmental and nature conservation requirements, have created scope for more sustainable agriculture across the EU. Germany has chosen an implementation model that equates grassland and landscape elements with arable land, and which therefore makes particular allowance for the requirements of biodiversity.

In forestry, the German Government is calling for semi-natural forest management throughout all land used for silviculture purposes, as far as possible. At international level, protecting the last remaining virgin forests and promoting sustainable forest management are top priorities.

Measures to implement the action targets outlined in the chapter on "Concrete vision"



### EU/Federal Government

- Approximation of the payments for arable land and grassland
- Conversion of direct payments into uniform land premiums
- Investigation of additional modulation – as announced by the Commission – within the context of the CAP "health check" in 2008 / 2009
- Review of agricultural and environmental policy measures with a view to sustainability and financially viable opportunities to further improve nature compatibility within the context of EU agricultural support and national / European agricultural and environmental policy
- Amendment to the Federal Forest Act, with clear definition of the contents of sustainable forest management in the law

- Use of the existing EU cofinancing opportunities available from 2007 under the ELER Regulation (Regulation(EU)1698/2005), inter alia for targeted ex situ measures as well as conservation breeding programmes and conservation measures for endangered species and varieties of cultivated plants and livestock breeds
- Public canteens to offer a wider range of dishes from organic and/or regional, eco-friendly produce

### **Länder/local government**

- The review and, where applicable, further development and concretisation of good agricultural and silvicultural practices from a nature conservation viewpoint
- Concretisation of regional-specific minimum densities of link elements (fringe structures and stepping-stone biotopes, such as hedges and field boundaries)
- More widespread promotion of traditional and eco- and nature-friendly forms of agriculture and forestry
- More widespread promotion of heritage crop varieties and old breeds of domestic animal
- Promotion of breeding research and breeding activities for innovative sustainable use of varieties and breeds
- Promotion of rare tree and bush varieties such as the True Service tree (*Sorbus domestica*), the Wild Service tree (*Sorbus torminalis*), the yew (*Taxus baccata*) etc. in their original native regions and within the context of semi-natural forest management
- Greater education and advice for land users regarding the opportunities, potential and objectives of conserving biological diversity
- Public canteens to offer a wider range of dishes from organic and/or regional, eco-friendly produce

### **Other players**

- Platform for the CAP health check in 2009 (environmental and nature conservation organisations)
- The German Association of Farmers (DBV) is to ensure that the severing of the links between direct payments and production in fact leads to the realisation of nature conservation needs.
- When making their purchase decisions, consumers are mindful of the impacts of production on biological diversity
- Wholesale customers undertake to buy products from organic or regional, eco-friendly production.
- Forest owners, forest associations and wood associations follow the principles of sustainable and near-natural forest management
- Public canteens to offer a wider range of dishes from organic and/or regional, eco-friendly produce.

## C 7 Hunting and fishing

Hunting and fishing are the two principal areas where wild animal species are used. Hunting comprises the protection and sustainable use of wild animal species. It is necessary in cultivated landscapes as a means of avoiding significant economic and ecological damage. It is admissible, provided the conservation status of wild animals is such that it supports sustainable use. Fishing adversely affects the marine environment if it is not performed in a sustainable, ecosystem-friendly manner. Not only is the reproductive capacity of commercial fish stocks severely impaired; non-commercial species such as species of ray and shark, marine mammals, seabirds and sensitive biotic soil communities are likewise endangered by ecosystem-unfriendly fishing practices.

The German Government is calling for sustainable hunting practices, and for such practices to be anchored in law. Land owners and hunters contribute to the conservation of habitats and species, as well as to the improvement of their status. Hunting practices must be tailored even more closely to semi-natural silviculture and to species and animal conservation. The reform of EU fisheries policy in 2002 brought with it a comprehensive reorientation of fishing. For the German Government, ecosystem-compatible management of the world's fishing stocks is a top priority. Within the EU's common fisheries policy (CFP), it is emphatically calling for the application of the precautionary approach and the improved integration of the ecosystem approach into fisheries management. The amendment to the Federal Nature Conservation Act in 2002 introduced good fishing practices for freshwater fishing.

Measures to implement the action targets outlined in the chapter on "Concrete vision"



### **EU/Federal Government**

- Creation of an effective network of marine protected areas (MPAs) in the German EEZ

- Further development of an environmentally friendly, ecosystem-compatible system of fisheries management in marine protected areas: Examination of the need for fishing restrictions in marine protected areas in order to achieve the protection targets
- Initiatives/resolutions within the framework of CBD, CITES and the Bonn and Berne Conventions (e.g. spiny dogfish, porbeagle and sturgeon)
- Examination and, where applicable, further development of the European fishing fund with funding opportunities for nature conservation measures such as reintroduction programmes and compensation options in marine Natura 2000 areas
- Development of stock recovery plans for the porpoises of the North and Baltic Seas within the framework of ASCOBANS
- Development and promotion of eco-friendly, selective catch methods
- Reduction of high discard rates via the introduction of at least a partial discard ban
- Promotion of the introduction of ecolabelling for fisheries and fishery products
- Integration of the resolutions of regional marine protection conventions, such as OSPAR and HELCOM, as well as of the Conferences on the Protection of the North Sea, with regard to the impacts of fishing on the marine environment
- Support of wild biological research, particularly regarding the impacts of hunting on biological diversity

### **Länder/local government**

- Adaptation of *Land* hunting legislation (biogeography and regionality)
- Improved species monitoring, optimisation of hunting statistics, and target group-oriented communication of the evaluations
- Initiatives to impose fishing restrictions in order to achieve the protection purpose in protected areas within the 12 nautical mile zone (in collaboration with the CFP)
- Implementation of good fishing practices in freshwater fishing, e.g. by means of modified stocking measures
- Increased promotion of nature-friendly forms of aquaculture

### **Other players**

#### **Hunting and nature conservation associations:**

- Accompanying PR work
- Introduction of ecolabelling in fishing, e.g. Marine Stewardship Council (MSC) and Naturland
- Involvement of interest groups by means of “regional advisory committees”, voluntary agreements with fishermen and anglers
- Expansion and further development of the monitoring system to document populations of wild animals (WILD) as a comprehensive wild animal information system (DJV (German Hunting Federation) and hunting groups)



## C 8 Mining of raw materials and energy generation

The mining of fossil raw materials and the erection of plants for the extraction of energy may represent an encroachment into nature and the landscape. The conservation of biological diversity requires that such encroachments associated with the erection and operation of mines and plants must be limited to nature-compatible dimensions. Increasing the energy efficiency of buildings, appliances, vehicles, power plants and industrial plant harbours an enormous potential for financial savings and for protecting the natural equilibrium. The German Government aims to consistently increase the energy efficiency of the economy, ultimately achieving a doubling in energy productivity compared with 1990 levels by the year 2020.

The German Government has set itself the target of increasing the proportion of renewable energies in electricity supply from around 6.7 percent in the year 2000 to at least 12.5 percent in the year 2010 and at least 20 percent in the year 2020. At the present time (mid-2007), it has already achieved around 13 %, and the 2010 target has therefore already been exceeded. The German Government has also set itself the target of increasing the proportion of renewable energies in the electricity sector to between 25 and 30 % by the year 2020.

The aim of sustainable raw materials mining is to conserve resources as far as possible via economical and efficient usage, the more widespread use of recycled products and renewable raw materials, and the use of nature-compatible mining techniques.

Measures to implement the action targets outlined in the chapter on "Concrete vision"



### EU/Federal Government

- Development of sustainability standards in the use of raw materials
- Amendment of the Renewable Energies Act (EEG), *inter alia* while upholding ecological standards to minimise environmental impacts, particularly in the biomass sector (e.g. palm oil), and the development of standards to review biodiversity criteria in the generation and use of renewable raw materials (at both national and international level)
- Target group-specific education of the general public with regard to savings potential with finite

raw materials / fossil fuels and the opportunities to substitute with renewable raw materials

- Expansion of regional planning to include the EEZ: Regional planning control via the designation of priority and reserved areas, and insertion of a regional planning clause into the Offshore Installations Ordinance
- Application of the intervention ruling in the EEZ
- Examination of plans and projects with regard to their compatibility with Natura 2000 areas
- Introduction of nature conservation standards in investment aid programmes for plant structures
- Improvement in material use via subsidy measures and the setting of standards
- Promotion of CO<sub>2</sub> building renovation with a total of around 5.6 billion Euros over the period 2006 – 2009
- In the area of biofuels generation, development of requirements for the sustainable management of agricultural land to protect natural habitats, and evidence that energy generation indicates a certain CO<sub>2</sub> reduction potential
- Innovation campaign “Energy for Germany” with the gradual strengthening of energy research in the fields of renewable energies and biomass, demand-based efficiency technologies, centralised and decentralised efficiency technologies relating to energy generation, and a national innovations programme on hydrogen technologies (including fuel cells)
- Implementation of Directive 2001/77/EC of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market
- Experience report 2007 on the Renewable Energies Act (EEG), and where necessary, amendment of the EEG
- Stepping up accompanying ecological research into renewable energies
- Implementation of the German Government’s Strategy to expand offshore hydropower use
- Promotion and support of synergy effects between the expansion targets for renewable energies and the conservation of biological diversity, for example within the context of landscape maintenance programmes
- Further development of specialist nature conservation concepts for the integration of renewable energies into spatial planning
- Coordination of existing subsidy programmes and, where applicable, the development of new nature conservation-motivated subsidy programmes for the conservation of biological diversity in the generation of renewable raw materials

### **Länder/local government**

- Development of regional value-added concepts e.g. via the cultivation of biomass and its use in the generation of energy (linking up the relevant players)
- Target group-specific education of the general public with regard to savings potential with finite raw materials / fossil fuels and the opportunities for substitution with renewable raw materials
- More widespread use of residual and waste materials in local authorities and companies
- Intensification of user advice

### **Other players**

- Development of concepts for the renaturation of former mining sites (operators)
- Ensuring follow-on use for “nature conservation” purposes in 15 % of newly approved raw

materials mining projects

- Voluntary commitment to apply the “best available technology (BAT)” and “Best Environmental Practice (BEP)” when locating and extracting raw materials and when constructing plant (users of the EEZ (petroleum and natural gas industry, mining, offshore windpower))
- Effective publicity regarding the economic opportunities for the use of biogenic raw materials (the media, clubs and associations, as well as commercial companies)
- Education of the general public about potential savings with finite raw materials / fossil fuels and the opportunities to substitute with renewable raw materials (all relevant players)
- The involvement of associations and companies in the setting of standards for eco-friendly raw materials mining and eco-friendly generation of renewable energies
- Drafting of a "Manual on Reducing the Use of Peat in Gardening" with links to the gardening information system "Hortigate" (gardening associations)

## C 9 Human settlement and transport

Over the period from 2001 to 2005, the amount of land used for human settlements and transport increased by approximately 114 ha per day. Of the designated settlement and transport land, approximately half is built on or sealed in some other way, and has therefore been lost as a habitat for fauna and flora. The landscape and the habitats of flora and fauna are being dissected to an ever greater degree by transport routes.

In its National Sustainability Strategy, the German Government has set itself the target of reducing the use of new land for human settlements and transport to a maximum of 30 ha per day by 2020. In implementing this target, in addition to the volume reduction, construction activity must also be tailored more closely to the existing housing stock and the upgrading of the urban living environment (qualified brownfield development), as well as pooling the transport infrastructure. A coordinated approach between the Federal Government, *Länder* and local authorities is needed.

Measures to implement the action targets outlined in the chapter on "Concrete vision"



### EU/Federal Government

- Support of the development and distribution of usable methods and models at local government level to ascertain the actual economic and financial impacts of land use, with due regard for the new framework conditions of population and economic structural developments.
- Continued development of economic framework conditions, also with a view to the improved activation of fallow land and residual pollution sites
- Consistent application of the existing planning mechanisms to minimise land use and, where applicable, the further development of planning instruments
- Tailoring subsidy policy more closely to the promotion of existing housing stock and brownfield development (e.g. financial compensation at local authority level, Community tasks), and the continued phasing-out of counterproductive subsidies (e.g. commuting allowance)
- Further development of quantitative and qualitative indicators for the precise determination of land use
- Development of best practice examples for qualified brownfield development
- Model projects for brownfield development and for sustainable land management and land recycling

- Involvement of German nature conservation players in the COST programme (European Cooperation in the field of Scientific and Technical Research) and in IENE (Infra Eco Network Europe)
- Conservation/restoration of link corridors to reduce the effects of dissection and to strengthen connections
- The review and, where applicable, further development of landscape planning and intervention rules
- Continued development of the indicator “undissected low-traffic areas” with due regard for European developments and regular documentation every 5 years
- Development of a nationwide concept to protect and restore undissected low-traffic areas
- Anchoring of the concepts “undissected low-traffic areas” and “habitat corridors” together with noise abatement in strategic environmental assessment for traffic route plans
- Development of nature conservation standards to assess considerable impairments to biodiversity via effect factors, particularly transport route planning
- The consideration of interlinked biotope axes in national transport route planning projects
- Development of a nationwide programme of measures on the topic of “dissection linking”
- PR work and awareness-raising on "eco-friendly mobility" and on the problem of "land consumption"

### **Länder/local government**

- Drafting of action guidelines on soil and open space conservation at regional and local authority level (best practice)
- Drafting of best practices for the development of specified target species (e.g. species which are specific to the city or the surrounding landscape) when applying the valid principles of town and country planning
- Specification of targets to limit the growth of human settlement land in regional planning by the *Länder*
- Land management at local authority level and between local authorities
- Improved identification and reactivation of fallow land
- Consideration of interlinked biotope axes in the construction and expansion of transport routes
- Target group-specific PR work and public awareness on the problem of “land consumption”
- Support of eco-friendly mobility campaigns such as “Cycle to Work” (“*Mit dem Rad zur Arbeit*”)
- The creation of nature experience sites in the countryside, preferably in areas accessible on foot, in order to encourage children’s understanding of nature

### **Other players**

- PR work and awareness-raising of “eco-friendly mobility”, “problematic transport projects” and on the problem of “land consumption” (environmental and nature conservation organisations, automobile and bicycle clubs, traffic and transport associations)
- Cooperation to reduce land use (nature and environmental conservation associations, agriculture, silviculture and water industry associations)
- Intensive involvement in the development of new concepts for urban development in cities and the

protection of open spaces (associations)

- Intensive accompaniment of infrastructure projects by nature conservation specialists (associations)

## C 10 Acidification and eutrophication

Material discharges have significant effects on biological diversity because they alter the living and site conditions.

Over the past 25 years, material contamination of waterbodies in Germany has decreased significantly, but the reductions achieved are still insufficient in the case of nitrogen. Soils are likewise contaminated by the discharge of nitrogen with its eutrophying and acidifying effects. More than half of vascular plants are only viable under low-nutrient conditions, and their stocks are therefore at risk from excessively high nitrogen discharge rates.

Measures to implement the action targets outlined in the chapter on "Concrete vision"



### EU/Federal Government

- Minimisation of material discharges and substance accumulation via amendment of the relevant laws and ordinances
- Consistent substance bans and restrictions on substance usage for those substances which cannot be adequately retained at the source
- Support of a chemicals management system based on the precautionary principle at international level (e.g. REACH, POP Convention, Geneva Convention on Long-Range Transboundary Air Pollution within the context of the UNECE)
- Harmonisation of statutory provisions at EU level with a view to protected commodities and precautions (including legislation on waste, construction products, fertilisers and air pollution control)
- Implementation of the German Government's ammonia reduction programme, the EU NEC (national Emission Ceilings) Directive and the UNECE Multi-Component Protocol, including protection from summer smog, acidification and eutrophication
- National programme under the EU NEC Directive outlining the measures which need to be taken by 2010 in order to comply with the maximum air pollutant levels specified in the Directive
- Revision of the industry-specific requirements for adaptation in line with the EU's water legislation
- Adoption of environmental requirements into product legislation

### Länder/local government

- Use of agro-environmental and contract-based nature conservation measures or of compensation measures and the setting aside of land in order to establish riparian buffer strips

### **Other players**

- Technical and user-oriented improvements in the use of pesticides in agriculture; consistent compliance with usage provisions and distance regulations
- Minimisation of pesticide discharges into surface waters via the proper cleaning of pesticide equipment
- Further improvement in agricultural soil conservation, particularly in the avoidance of soil erosion and compaction
- Legal requirements governing construction products to minimise heavy metal discharges from construction materials
- Further development of agro-environmental programmes
- Active commitment to implementation of the Water Framework Directive (WFD) by the various players in river basin units (local groups)
- Substitution of hazardous substances with less hazardous, more eco-friendly alternatives in applications and products (companies)



## C 11 Biodiversity and climate change

Climate change and associated global warming not only affects the seasonal living patterns of animals and plants, their occurrence and growth rates, and causes changes in animal behaviour. It is also a key factor in the loss of biological diversity. For example, habitats are modified or even destroyed by rising sea levels and the shifts in vegetation zones. The range of many species of fauna and flora is limited by climate parameters. Dynamic vegetation models suggest that under the given climate change scenarios, entire vegetation strips will be shifted northwards or to higher altitudes. It is doubtful that all species have an equal ability to keep pace with such changes in view of the natural limitations to habitat relocations (such as the finite height of mountain ranges) and the partially limited potential range of many species, coupled with the growing dissection of the landscape. The effects of climate change on biological diversity do not recognise national borders. This places new requirements on regional and species conservation, as well as on efforts within the context of various international agreements.

Climate change could potentially cast doubt on established nature conservation policy and the nature conservation concepts and strategies currently under development. At the same time, the topic of climate change must be integrated into other areas and considered in the strategies and concepts of other sectors (such as transport policy, energy policy), as a vital pre-requisite for the conservation of biological diversity.

Measures to implement the action targets outlined in the chapter on "Concrete vision"



### EU/Federal Government

- Implementation of the German Government's climate protection programme
- Increasing energy efficiency
- Innovation campaign "Energy for Germany"
- Eco-friendly expansion of renewable energies
- Formulation of a "nature conservation concept for climate change"

- Commitment to further development of the international climate protection regime for the post-2012 period
- Commitment to far-reaching climate protection measures by the G8 countries and the so-called O5 countries (China, India, Mexico, Brazil, South Africa)
- Compliance with Germany's emission reduction obligations under the Kyoto Protocol
- Promotion of research into the impacts of climate change on species diversity and on ecosystems; development of mitigation strategies, promotion of research into the potential of species-rich ecosystems to store carbon
- Preparation and interpretation of regional climate projections from the aspects of biodiversity, climate sensitivity of the model, and range of potential changes
- Long-term forecasting of biodiversity development in ecosystems using dynamic models

### **Länder/local government**

- Support of local Agenda 21 processes with climate protection and nature conservation measures
- Reorientation of the protected area regime with a focus on climate change (land protection, flexible management)
- Creation or modification of the existing monitoring system to optimise nature conservation management of species and area protection programmes, with due regard for the requirements of climate change
- Creation of databases as the basis for public planning, information and academic work
- Development of forecasting models and early warning systems, as well as emergency plans for extreme events
- Establishment of systems of interlinked biotopes for the dispersion and/or migration of species affected by climate change
- Development of concepts for the conservation of species for whom the system of interlinked biotopes does not offer sufficient adaptation opportunities (particularly endemic species)
- Preparation and interpretation of regional climate projections from the aspects of biodiversity, climate sensitivity of the model, and range of potential changes

### **Other players**

- Support of the German Government's climate protection programme by companies
- Reconceptualisation of the work of environmental and nature conservation groups with a view to the challenges of climate change
- Greater cooperation between climate protection and biodiversity protection players at all levels, so as to maximise synergies and avoid the duplication of work and potential limitations
- Target group-oriented communication and information regarding the correlations between climate protection and nature conservation
- Measures to boost biodiversity in forests to make species more adaptable to climate change
- Target group-specific communication to promote domestic tourism

## C 12 Rural areas and regional development

The protection and sustainable use of biological diversity constitutes one of the principal foundations for the sustainable development of rural regions. The value of experiencing nature and landscapes is one of the key strengths of rural regions; biological diversity needs rural regions, and rural regions need biological diversity.

For example, well-managed large protected areas can lend important impetus to regional development. In such regions, there are impressive examples of sustainable production methods and lifestyles which make an important contribution towards protecting biological diversity. Nature conservation and education measures, as well as model projects for sustainable use, also improve the quality of life and incomes of local people, and influence the social and economic development of the surrounding area.

In the vicinity of large towns and cities, regional parks enjoy a growing significance for regional and site development. The aims of such parks include the sustainable development of the cultivated landscape and the protection of open spaces.

Structural policy, particularly EU support for rural development, provides key framework conditions for the integrated development of rural regions. These EU plans are concretised in the joint Community task of improving agricultural structures and coastal protection (GAK), together with various national programmes.

Measures to implement the action targets outlined in the chapter on "Concrete vision"



### EU/Federal Government

- EU Regulation for the rural region:
  - Adoption of an ambitious national strategy for the rural region
  - Introduction of a monitoring system with environmental and nature conservation indicators
  - Promotion of integrated concepts such as LEADER, with nature conservation as an integral component
- Investigation of additional modulation – as announced by the Commission – within the context of

the CAP "health check" in 2008 / 2009

- Review of agricultural and environmental policy measures with a view to sustainability and economically viable opportunities to further improve nature compatibility within the context of EU agricultural support and national and European agricultural and environmental policy
- Review of national funding for rural and regional development vis-à-vis its impacts on biological diversity
- Simplification of planning tools for the rural region and integration of regional management concepts
- Promoting the development of model regions by means of model projects by the German Government in large protected areas

### **Länder/local government**

- Creation of basic financial protection for all large protected areas
- Improving the quality of administration for large protected areas with regard to socio-economic issues
- Designation of all large protected areas as being in the public interest
- Support and foundation of regional parks and linked open spaces in the vicinity of large towns and cities
- Promotion of regional management
- Promotion of regional marketing with an emphasis on sustainably produced goods and services
- Introduction of an on-going socio-economic monitoring system as the basis for controlling developments in the rural region
- Targeted use of agro-environmental measures to promote biodiversity
- Revision of agro-environmental measures which make only a minimal contribution to the environment and biological diversity
- Development and expansion of forest eco-measures
- Expansion of contract-based nature conservation
- Effective environmental and nature conservation monitoring at programme level
- Effective involvement of NGOs in the conception and implementation of relevant programmes at *Land*/local authority level
- Nationwide development of landscape maintenance associations and equivalent organisations in Germany where nature conservation, policy-making and agriculture cooperate in the interests of nature-compatible regional development
- Raising public awareness of the need to conserve regional-typical cultivated landscapes and their respective elements
- Raising awareness of the correlations between the conservation of biological diversity and sustainable regional development in rural regions
- Conservation of historical utilisation-related relics (e.g. flax pits, irrigation meadows, copses)
- Stepping up regional marketing as the foundation for sustainable tourism development, particularly in UNESCO biosphere reserves and nature parks

### **Other players**

- Involvement of all rural development-related groups in participatory projects based on the

LEADER approach

- Training members of nature conservation and nature use associations, as well as interested companies, to become involved in the conception, implementation, accompaniment and assessment of programmes to promote rural development, and the active involvement of associations in such processes
- Nationwide development of landscape maintenance associations and equivalent organisations in Germany where nature conservation, policy-makers and agriculture work cooperate in the interests of nature-compatible regional development
- More intensive cataloguing, conservation and mediation of rural cultivated landscapes (heritage clubs and associations, *Bund Heimat und Umwelt in Deutschland* (German Heritage and Environmental Foundation (BHU))

### C 13 Tourism and nature-based recreation

Biological diversity has a decisive effect on how we experience nature and the countryside. For 42 % of holidaymakers, “experiencing nature” is one of the principal motives for going on holiday, and this figure rises to 74 % for holiday destinations within Germany. 71 % of German citizens would prefer to spend their holidays in a location where a national park has been created to conserve nature. Consequently, tourism is more reliant on an intact environment and nature than almost any other sector of industry. On the other hand, the impacts of tourism on biological diversity may represent a major problem, both at local level and worldwide. For this reason, tourism as an economic factor can only sustain itself in the long term if its development is geared towards sustainability.

Areas close to or in populated regions must also be protected for nature-based recreation.

Through a series of model projects, the German Government has supported the development of sustainable tourism models. It also promotes the establishment of an umbrella environmental brand for tourism products (Viabono) and the marketing and development of nature-related domestic offerings. The new umbrella brand “*Nationale Naturlandschaften*” (National Natural Landscapes) for large protected areas may also enhance the attractiveness of domestic tourism.

Measures to implement the action targets outlined in the chapter on “Concrete vision”



#### EU/Federal Government

- Development of indicators for the planning of sustainable tourism infrastructures
- Promotion of the supra-regional planning of leisure infrastructures, particularly cycle and walking paths
- Further development of information systems to avoid conflicts of use
- Development of strategies to sensitise holidaymakers to the protection of nature
- Development of a monitoring programme for the recreational use of large protected areas

- Implementation of model projects aimed at the following:
  - European charter for sustainable tourism in protected areas
  - National application of the CBD guidelines on biological diversity and tourism development
  - Tourism along the “green belt”
  - Introduction of the ski regions audit

### **Länder/local government**

- Application of the CBD guidelines on biological diversity and tourism development
- Large-scale usage and protected area concepts, including those which traverse *Länder* borders
- Coordination of tourist offerings with regional land potential
- Support and application of the umbrella brand “*Nationale Naturlandschaften*” (“national natural landscapes”)
- Zoning of the landscape into areas permitting varying levels of use intensity (coordination of plans according to local, regional and supra-regional aspects)
- Adaptation of development planning in line with natural and climatic boundaries (e.g. not building a ski infrastructure in regions which rely mainly on artificial snow)
- Protection and designation of areas for tourism, recreation and sport close to human settlements
- Development of areas for experiencing nature, with greater involvement of nature conservation in towns and cities
- Promotion of the process to adopt a “European Charter for Sustainable Tourism in Protected Areas” process
- Use of fallow land and post-mining areas for tourism, recreation and sport
- Retention of the staggering of school holidays
- Increased promotion of soft forms of tourism as an alternative to more facility-intensive forms
- Joint external depiction and marketing of large cross-border protected areas with the respective neighbouring countries
- Promotion of networks and cooperation arrangements for nature experiences
- Increased development of nature-compatible offerings and integration of nature experiences into other tourist offerings
- Quality checks according to defined standards for national parks, biosphere reserves and nature parks
- Visitor guidance concepts for rocks (mountaineers) particularly in the upper Central German Uplands (*Mittelgebirge*)

### **Other players**

- Development and marketing of nature experience products (tourism industry, associations)
- Compliance with Viabono criteria by tourism providers
- Use of eco-management systems (EMAS, ski regions audit etc.) by tourism suppliers
- Voluntary commitment by tourism providers and the sports equipment industry to refrain from the depiction of usage forms which are harmful to nature in their advertising

- Incorporation of nature protection targets into the planning of tourist and sports facilities (e.g. golf courses, glider sites)
- Cooperation between the tourism sector and relevant specialist associations with the administrations of protected areas
- Development of certified partnerships with tourism providers
- Combination of sports and environmental education offerings by associations and clubs
- Development of concepts for eco-friendly sporting practices in collaboration between sports clubs and nature conservation groups
- Establishment of a graduated overall public transport system by linking long-distance rail transport to local rail transport and the public local transport system



## **C 14 Education and information**

The action plan adopted in 2002 at the World Summit on Sustainable Development in Johannesburg highlights education as a key catalyst for social change.

With the UN Decade of “Education for Sustainable Development” from 2005 to 2014, the international community has created an international tool to focus educational activities on the requirements of sustainable development, both at national level and by way of international exchange. Education for Sustainable Development aims to create creative competence, i.e. acquisition of the skills needed to help shape the future of society within one’s personal sphere of influence with regard to economically sound, and socially and ecologically just, conditions. Education for Sustainable Development offers particular opportunities for communicating biodiversity issues. For some time now, Germany has undertaken intensive and well-founded efforts in the field of environmental education and global learning, at all learning levels, both in and out of school, in youth care, in the preschool and academic sectors, and in the field of vocational and advanced training.

Measures to implement the action targets outlined in the chapter on “Concrete vision”



### **EU/Federal Government**

- Model projects for extra-curricular education, competitions
- Model projects for education, effect and transfer research (consolidation of what has been learnt, and converting it into actions)
- Model projects for the integration of biodiversity aspects into other areas of nature-related training (hunting examinations, driving tests, boat driving tests, riding tests etc.)
- Regular survey to gauge opinions on biological diversity, and evaluation of the levels of knowledge and awareness of various population groups
- Intensification of media presence: Television shows, poster ads, campaigns, "get involved"

campaigns, with due regard for the aspects of age, gender and nationality

- Further development of the clearing-house mechanism (CHM) as an exemplary information platform on biodiversity topics
- Further development of the Biodets/NatDets (Biodiversity Detectives/Nature Detectives) scheme as international educational offerings
- Development and execution of Federal Academy of Public Administration (BAKÖV) courses
- Development and distribution of work tools for classroom instruction and youth care on the topics of biodiversity, sustainable development, and biodiversity and sustainability policy (*Bundeszentrale für politische Bildung* / Federal Centre for Political Education)
- Expansion of the BMU education server into an exchange platform

### **Länder/local government**

- Publication of teaching materials for all school types and levels to give greater consideration to the topic of “biological diversity” in the curriculum; model projects to create curricular links; consideration of “biological diversity” in school field trips
- Intensification of the on-going education of students with regard to biological diversity
- Creation of centralised and decentralised information centres (with due regard from the findings from BMU and DBU funding of such centres)
- Intensification of extra-curricular work with children and young people, also with regard to the government subsidising of institutionalised activities on biological diversity
- Expansion of biosphere reserves as models for sustainable development education, linking of biosphere reserves with education centres
- Establishment of more “forest kindergartens”
- Creation of more nature discovery trails in towns and cities, and more references to biological diversity in urban parks and cemeteries
- Creation and use of school gardens, particularly central school gardens, in Cologne, Hannover, Braunschweig, Hamburg etc.
- Creation of nature experience areas, particularly in the vicinity of urban areas
- Improved information content and more attractive design of the notices and prohibition signs in protected areas
- Publication of adult education materials on biological diversity and sustainability
- Expansion of agricultural education and of the range of consultancy services available on the topic of “biological diversity” and “the ecological balance and agriculture”
- Accompaniment of government measures and courses (protected areas, financial support etc.) by means of target group-oriented PR work and education
- Development of parent-and-child courses on the topic of “biological diversity”

### **Other players**

- Educational programmes for employees on the topics of “sustainable usage” and “protecting biological diversity” / recognised educational holidays (trade unions and other institutions)
- Expansion of excursion programmes with a view to mediating the value of biological diversity both at home and abroad (travel companies / tourism providers)
- Development of youth leisure programmes on the topic of “biological diversity” (youth groups /

sports clubs)

- Continuation of project support for exemplary educational products in the school and extra-curricular sectors (the German environmental organisation *Deutsche Bundesstiftung Umwelt*)
- Upgrading of botanical and zoological gardens into focal points of biodiversity education (botanical gardens / zoological gardens)
- Expansion of open-air museums and homeland museums as environmental education sites on the topics of "sustainable use / historical forms of nature use / heritage varieties of cultivated plants / heritage livestock breeds / landscape development" (open-air museums)
- 2008 or 2010 didacta Cologne education exhibition with "Education for Sustainable Development" as its main theme (Messe AG Cologne)
- Reinforcement of educational and training courses on the topic of "Protection and sustainable use of biological diversity" for various target and age groups (nature protection associations etc.)
- Development of specimen corporate models which incorporate biodiversity aspects into company management (companies, industry associations)
- Linking of the players involved in the field of environmental and nature conservation, and creation of a shared information pool
- Creation of a series of educational materials on rotating annual biodiversity themes for primary and secondary schools

### **C 15 Research and technology transfer**

Targeted research into biological diversity provides the central basis for the protection and sustainable use of biological diversity.

Research into biological diversity enjoys a long tradition in Germany. It concerns both taxonomical/systematic research with outstanding research institutes and collections of international importance, as well as ecological research into the species in their habitats, and in molecular biology with its molecular and phenotypical characterisation methods of biological diversity.

Germany also boasts a long tradition and high standards of research into the genetic resources for food, agriculture and forestry. Within the context of the German Government's innovation subsidy programme, one of the programme's aims is to breed cultivated plants at key positions in the value-added chain of agricultural production. Systematic research methods make due allowance for the growing importance of plant-genetic resources, and the conservation, research and sustainable use thereof, also with regard to improved adaptation to climate change, regional peculiarities and modified use concepts.

Efficient conservation measures in biological diversity presuppose an adequate knowledge of diversity, and require the mediation of expertise regarding the sustainable management of natural resources. The aim of research and technology transfer, particularly in developing countries, is to build "sustainable partnerships" with these countries in the field of nature conservation and biological diversity, in line with the objectives of the CBD, and thereby produce long-lasting effects. To this end, in particular, the research structures in the partner countries need to be strengthened within the context of capacity building.

At the 8<sup>th</sup> Conference of the Parties to the Convention on Biological Diversity in 2006, a group of experts was appointed to inventorise the existing technology transfer mechanisms with reference to the CBD, with a view to drafting proposals for practical implementation.

Measures to implement the action targets outlined in the chapter on “Concrete vision”



### **EU/Federal Government**

- The German Government’s focal research areas:
  - Sustainable usage concepts for endangered regions
  - Concepts for biodiversity monitoring
  - Economic assessments for biodiversity
  - Cooperative strategies and management structures for the sustainable use of biological diversity
  - Capacity building for these areas
  - Understanding the various components of system earth and their interactions
- Strengthening biodiversity research within the context of the European Community’s 7<sup>th</sup> framework programme for research, technological development and demonstration
- Continuation and intensification of the ex situ provision of fungi and micro-organisms, and taxonomical and ecological research activities
- Continuation of the Federal Ministry of Education and Research’s (BMBF) BIOLOG programme (biodiversity and global change)
- Research programme of the Federal Ministry of Education and Research (BMBF) on the topic of “sustainable landscape development / land use”
- Contributions by the Biodiversity Institute (in the future Federal Ministry of Food, Agriculture and Consumer Protection (BMELV) – Federal Institute for Rural Spaces)
- Comprehensive sampling of plant-genetic resources at a phenotypical and molecular level, using key cultivated plants as examples
- Expansion of genome and systematic biological research, and combining this with conventional ecological research
- Continuation of the global taxonomy initiative
- Support of the training of young scientists in the field of taxonomy (identification and description of species)
- Promotion of the provision of species-specific data (identification, dispersion, status)
- Intensification of research into the planning opportunities to promote biological diversity and the framework conditions in cities and cultivated landscapes
- Wider interlinking of German biodiversity research with the following aims:
  - To create research networks and improve scientific dialogue
  - To improve the transfer of scientific findings into practice (including politics and administration), and conversely, of practical issues into scientific research
  - To promote dialogue with the general public, *inter alia* via the media and educational

institutions.

- To further develop the Global Register of Migratory Species (GROMS)
- Further development of technical biology and bionics
- Transfer of bionics as a model for small and medium-sized enterprises (SMEs) in developing countries
- Expansion of the CBD clearing house mechanism into a mechanism for the transfer of research and know-how
- Award of prizes to cooperative research projects, also in the form of "benefit sharing"
- Active accompaniment of the expert workshops on technology transfer, possibly with a focus on Germany
- Strengthening of applied agricultural research into competitive management methods and production techniques which ensure the conservation of biological diversity and protection of the natural balance
- Strengthening of model projects on endangered species of crop plants and domestic animal breeds

### **Länder/local government**

- Strengthening of research into and teaching of biological diversity at universities and non-university research institutions, as well as by scientific groups
- Intensification of research into the planning opportunities for promoting biological diversity and the framework conditions in cities and cultivated landscapes
- The continuation of taxonomic research and academic institutions
- Incorporation of the taxonomic research institutions into the global taxonomy initiative
- Preservation of taxonomic collections
- Development of a national network of nature collections, continued support of the Global Biodiversity Information Facility (GBIF) initiative

### **Other players**

- Greater incorporation of biodiversity aspects into industrial research
- Support of biodiversity projects (including *Deutsche Bundesstiftung Umwelt*)
- *Deutsche Forschungsgemeinschaft* (German Research Foundation, DFG): Financing of fundamental research projects on all biodiversity-related issues at a broad-based level, including:
  - Creation and maintenance of three biodiversity exploratories to investigate the functional aspects of biodiversity
  - Jena experiment to investigate the interaction between plant biodiversity and ecosystem processes
  - Research group "biogeochemistry of tidal flats" to investigate the processes occurring in a tidal flats (watt) system
  - "Tsunami" application package, including an analysis of the biology of coral reefs with regard to disruptions
  - Research group to investigate functionality in a tropical mountain rainforest in southern Ecuador, with particular consideration of reforestation problems
  - Special research area devoted to the stability of peripheral tropical rainforest zones in

Indonesia

- Introduction of GROMS as a standard mechanism (Secretary of the Convention on Migratory Species)
- Regular performance of workshops on the transfer of technology and knowledge on selected CBD topics, each in conjunction with a selected developing country or region, with partner matching of providers and requesters (companies, NGOs)
- Public/private partnerships (PPPs) in priority research fields with concrete model projects
- Greater coordination of the national research programmes and initiatives with the internationally formulated research strategies (particularly DIVERSITAS)

## **C 16 The eradication of poverty and development cooperation**

The eradication of poverty and the dramatic destruction of our natural resources are some of the biggest challenges facing us in the 21st century. Rural and impoverished sections of the world's population are particularly dependent upon an intact nature for their supplies of drinking water, food, energy and fertile soil. Poverty is permanently exacerbated by the destruction of biological diversity and other natural resources. This correlation has been recognised by the international community, as set out in the Millennium Development Goals (MDGs) and the resolutions of the 2002 World Summit on Sustainable Development in Johannesburg (WSSD). The aim is to halve poverty and hunger by 2015, and to significantly reduce the decline in biological diversity by 2010.

Measures to implement the action targets outlined in the chapter on "Concrete vision"



### **EU/Federal Government**

- Greater integration of the protection and sustainable use of biodiversity into bilateral and multilateral cooperation
- Persuading other nations to accede to the CBD in order to strengthen the Convention
- Raising awareness of the integration of biodiversity issues into the strategies of developing countries for tackling poverty
- Agreement of biodiversity projects in debt conversions ("debt for nature swaps")
- Rapid progress with the upgrading of UNEPs to a UN special organisation, so as to strengthen environmental issues in general
- Calling for greater coordination and use of synergies between the UN environment conventions
- Implementation of the Paris Declaration
- Further development of alternative financing concepts such as fees for usage waiver declarations and trust funds for the sustainable financing and protection of protected areas within the context of available budget funds and on the basis of the Guidelines on Technical and Financial Cooperation
- Implementation and further development of the relevant aspects of the EC action plan to conserve biological diversity within the context of economic and development cooperation and the relevant parts of the EU action plan in order to achieve the 2010 target (EU Communication



COM(2006)216)

- Implementation and further development of the EU FLEGT action plan to combat illegal wood felling and the associated threat to forest biodiversity
- Implementation of the International Treaty on Plant Genetic Resources for Food and Agriculture at international level, particularly vis-à-vis its financing strategy, and an appropriate contribution from Germany to the Global Crop Diversity Trust, as an element of the financing strategy in the field of ex situ conservation

### **Länder/local government**

- Tailoring bilateral cooperation more closely to the protection and sustainable use of biological diversity with partner regions/cities

### **Other players**

- Participation and involvement of the local and indigenous population in local projects (local German economic players, such as the tourism industry)
- Mobilisation of private capital for the protection and sustainable use of nature in developing countries
- Public awareness / PR work on the correlations between resource conservation and the eradication of poverty; tailoring development cooperation projects more closely to this correlation (non-government organisations and associations)
- Research projects into the correlations between the conservation of biological diversity and combating poverty (research institutions)

## **D Innovation and employment**

Over several million years of development, Mother Nature has devised optimum solutions to a wide range of problems which may serve as role models for innovations as well as technical and organisational developments. Our knowledge and sustainable use of biological diversity is and remains the key to modern, future-viable social development.

Biological diversity is also an important factor of economic development. Many incomes and jobs depend either directly or indirectly on nature and the countryside. Particularly in today's burgeoning knowledge and service society, this offers great potential for new employment opportunities. It is also important to minimise the dependency of these employment opportunities on transfer payments as far as possible.

### **Biological diversity and its innovation potential**

Biological diversity provides an important basis for research, development and technical innovation. Various species are irreplaceable for fundamental and medical research (e.g. research into resistance to radiation in reptiles, research into human cardio-vascular disease using animal models such as elephants, leprosy research in armadillos, which are the only animals apart from man which suffer from this disease).

Man has been selectively using biological diversity for thousands of years. In addition to their role as producers of food, plants also support the synthesis and extraction of various organic chemicals and polymers which represent important starting materials for industry. New special usage concepts need to be developed to resolve competing land use interests between the cultivation of food, raw materials and energy plants.

Biological diversity is vital for enabling us to respond to future challenges such as climate change, energy demand, sustainably produced industrial raw materials, and healthy and safe food sources. Global biological diversity faces a growing threat from population growth, changing dietary habits, and non-sustainable, intensive and – in

some cases – one-sided land management. This risk of uniformity must be counteracted in a benefit-oriented way. Of the known 30,000 or more edible plants, only around 150 are used for human nutrition and cultivated in fields. Gene banks such as those found at the *Institut für Pflanzengenetik und Kulturpflanzenforschung* (Institute of Plant Genetics and Cultivated Plant Research, IPK) in Gatersleben and in botanical gardens assume an increasingly important role in the conservation, research and usability of natural diversity.

Modern biosciences and biotechnology explore and utilise biological diversity, providing an important tool in the fight against hunger and malnutrition. One of their tasks is to find solutions to feed the world's ever-expanding population while the amount of usable land remains the same or diminishes, while at the same time reducing environmental impacts. Biotechnology also offers the opportunity to improve the use of cultivated plants for purposes other than food, for example as raw materials for industry or as new materials, such as biodegradable plastics. Plant-based raw materials may supply molecular building-blocks and complex molecules for the manufacturing industry, the energy sector and the pharmaceuticals industry. Moreover, biomass may contribute to an alternative energy supply with solid and liquid fuels such as biodiesel and bioethanol, and via processes such as biodesulphurisation.

Bionics offers another starting point for the use of biological diversity. Its aim is to systematically convert biological constructs and techniques into a technical application. Many of Mother Nature's solutions are quite simply ingenious. They achieve very high energy efficiency levels and are fully recyclable. We are only just beginning to understand these solutions and implement them in technical-scale applications. For example, glow-worms achieve 99 percent energy efficiency for light production. No-one has yet succeeded in reproducing this "cold" light by technical means.

In other cases, following the role model of Mother Nature has already prompted some innovative technical solutions.

Role model from nature		Innovative technical development		Positive effect
Sequoia	Fire and flame-proof effect from tannins	Fire protection materials	Bio-compatible composite materials with a high level of flame protection and minimal noxious smoke development	Improvement in fire and flame protection Reduction in the noxiousness of smoke gases
Galapagos shark	Flow resistance on the skin	Aircraft	Riblet foil to reduce flow resistance	Fuel saving Reduction of climate-active gases released into the atmosphere Weight reduction Greater exploitation of the load volume
Lotus flower	Self-cleaning surfaces	Surface coating	Self-cleaning effect of paints, sprays, surfaces Sales worth millions of Euros per year are generated with lotus effect products	Reduction in the use of detergents Reduction in the contamination of waste water
Cowfish	Shape with minimal flow resistance	Car	Very low flow resistance coefficient	Fuel saving Reduction in atmospheric contamination with exhaust fumes
Penguins	Fin flap	Ships	Ship's drives with 17 % more power than comparable propeller drives	Reduction in the long braking distances of large ships Improved manoeuvrability Fuel saving
Lizard	Adhesion mechanisms on the feet	Adhesive tape	Reusability, retains functionality even after 1,000 adhesion cycles	Saving of materials Avoidance of waste
Spider's webs (especially the money spider)	Nets	Roof construction	Olympic stadium in Munich, 1972	Saving of materials Brand new roof design
Jewel beetles	Infrared sensors to detect forest fires at a range of	Heat sensors	Uncooled, very powerful fire sensors	Cooling savings High level of

	80 km			precision Easy to use
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Technological developments which follow the lead of nature are a growth market of the future. Utilising these opportunities is primarily the task of German companies. By improving the framework conditions and promoting research and development, the German Government plays a supporting role. To this end, the German Ministry for Education and Research has presented a subsidy concept which is designed to mobilise growth forces from science and industry to develop new bionic approaches through competition.

Alongside knowledge-intensive services, leading technologies offer the greatest growth perspectives for productivity and value-added.

The German Government aims to increase the share of research and development work to three percent of gross domestic product. The Government's contribution towards meeting the three percent target has been the creation of a six billion Euro programme for research and development entitled "Fresh impetuses for innovation and growth". It expects industry and the *Länder* to increase their expenditure on research and development by a comparable amount. If industry and the *Länder* are able to increase their own research and development investments in proportion to the six billion Euro programme, the three percent target is achievable.

The German Government will utilise the additional funding from the six billion Euro programme for projects promising a powerful mobilisation effect for innovations and the markets of the future. The German Government will focus on strengthening leading and cross-sectional technologies, such as research into the environment and quality of life.

The German Government has promised to substantially improve the conditions for private investments in innovations. For this reason, in summer 2006 it combined its initiatives into a high-tech strategy aimed at tapping into future markets, combining research subsidies with innovation-friendly framework conditions.

One element of this high-tech strategy is the more widespread promotion of bionics. In the past, similar attempts have failed due to rigid disciplinarian thinking on the part

of the various scientific disciplines, plus the lack of an effective technology transfer between research and industrial application. Mindful of this fact, the German Ministry for Education and Research has presented a subsidy concept for bionics which is designed to mobilise growth forces from science and industry to develop new bionic approaches through competition. For example, the bionics network BIONICS has been set up, and support given to research approaches within the context of the ideas competition "BIONICS – Innovations from nature". It is hoped that the bionics network BIONICS will aid the formation of cross-disciplinary networks between companies and public research institutions. The competition "BIONICS – Innovations from nature" is designed to encourage commercial companies, universities and research institutions to submit ideas for fresh approaches in bionics, and to test them in feasibility trials.

Another major source of natural capital is found in the cultivated plants and livestock developed over the course of centuries from wild species by farmers and breeders, as well as the microorganisms and other small creatures used primarily in food technology but also, for example, as biological pesticides. Conserving these genetic resources is a basic pre-requisite for further breeding success and future innovations with regard to modified product requirements, new utilisation forms for products, e.g. as renewable raw materials, and also with regard to more sustainable usage systems. Conserving and promoting the living creatures and ecosystem functions associated with agricultural production, such as the soil organisms which are important for soil fertility and the pollinating function of insects, likewise have major significance for agricultural production capacity. In order to tap into the potential benefits of genetic resources for food and agriculture, we first need to ascertain their value properties, functions and usage requirements, and make these available for breeding purposes.

### **Employment potential of biological diversity**

The sustainable use of biological diversity offers employment opportunities in a wide range of sectors and fields, especially nature conservation, landscape maintenance and planning, agriculture and silviculture, tourism, sport, recreation, fishing,

pharmaceuticals industry, biotechnology, energy industry, construction industry, trade, research and education:

- In Germany, at least 20,000 people are employed in landscape management, while a further 12,000 are employed in the field of nature conservation.
- Agro-environmental measures are performed on around 25 % of all agricultural land, with a growing significance for safeguarding agricultural livelihoods, particularly in structurally weaker regions. Without agro-environmental measures, farms in marginal yield locations with a high nature conservation value are particularly at risk.
- There are around 30,000 people employed in organic farming in Germany. Overall, the number of jobs in organic cultivation, processing and trade has risen to around 150,000, and has almost doubled since 1995. The construction workers' union IG BAU and the environmental organisation DNR anticipate predict a rise in organic farming to 20 percent by the year 2010 (the target of the national sustainability strategy), with 160,000 new jobs in the organic food industry as a whole.
- The marketing of naturally produced regional products and services is still a small but dynamically expanding sector involving premium products with a high level of regional value-added. A high product quality, special production guidelines and close links to nature and landscape in the region ensure unique features which set them apart from their global competitors. According to figures supplied by the *Deutscher Verband für Landschaftspflege* (German Association for Landcare), the number of regional marketing projects and initiatives increased from 102 to approximately 450 between 1996 and 2004.
- In 2005, tourism represented an economic factor of € 220 billion in Germany, and employed 2.8 million people. The diverse nature and landscape in Germany and the tourism offerings from nature conservation players are an important draw for domestic tourism. Around 290 million people visit the 97 nature parks, 14 national parks and 14 biosphere reserves in Germany each year. According to forecasts by the *Ökoinstitut* (Eco-Institute), each percentage of foreign travel that is

replaced by holidays within Germany could create some 10,000 to 15,000 new jobs.

- Tapping into the employment and value-added potential of breeding research for crops offers a further starting point. Particular innovation potential is found in the evaluation and use of genetic resources, broadening the spectrum of cultivated species, and improving the properties of cultivated plants (e.g. resistance breeding). In Germany, some 12,000 jobs in the plant breeding and seed production sector are reliant upon innovative and competitive products, and so too are more than half a million jobs in agriculture and 4-5 million jobs in upstream and downstream sectors. Our aim must be to safeguard and expand these jobs, which affect the entire value-added chain of agricultural production, from breeding and propagation through to the processing of high-quality agricultural products.

**Regional economic effects of large protected areas:**

Müritz National Park A gross turnover of around € 13.4 million per annum, corresponding to around 630 jobs.

Altmühltal Nature Park: A gross turnover of around € 20.7 million per annum, corresponding to around 483 jobs.

Hoher Fläming Nature Park: A gross turnover of around € 6.2 million per annum, corresponding to around 211 jobs.

Schleswig-Holsteinisches Wattenmeer (Wadden Sea) National Park Region Gross turnover of between € 101 and 117 million, corresponding to around 4,000 to 5,200 full-time employment equivalents.

**Cycle tourism:**

In 2004, 2.5 million Germans took a vacation with their bicycles (increase of 9 % compared with 2003). 37 % of them, i.e. just under one million Germans, spent this holiday in Germany. Eco-friendly cycle tourism is estimated to contribute some € 5 billion to tourism turnover in Germany.



- Nature-based sports such as climbing, hiking, canoeing, diving or fishing are reliant on an intact natural world as the basis for their experience value, and produce economic value-added. In 2002, turnover in the German water sports market totalled € 1.67 billion. The 3.5 million active sports fishermen in Germany spend more than € 3 billion per annum on their hobby, thereby safeguarding 52,000 jobs.
- In Germany, some 45,000 jobs in industry, trade and gastronomy are dependent on the fishing industry, and a further 4,300 jobs in sea fishing in the North and Baltic Seas.
- The silviculture and wood industry sector, which in addition to forestry with its 2 million or so forest owners also includes the wood processing industry, wood craft, paper industry, publishing and printing trade, wood trade and wood transport, numbers more than 185,000 businesses in Germany, with over 1.3 million employees and an annual turnover of around € 181 billion.
- Many jobs in the pharmaceutical industry and medicinal plants trade are also dependent on the conservation of biological diversity at both a national and global level. Medicines derived solely from plants have an annual sales volume of around € 5 billion in Europe, 40 percent of which is attributable to Germany alone. Over 70 percent of Germans use herbal medicines, and expenditure on phytopharmaceuticals in 2003 was around € 2 billion.
- In the growth market of renewable energies, the biomass sector plays a particular role in the sustainable use of biological diversity. Some 57,000 people currently work in the bioenergy sector, and the trend is rising. The energetic use of organic materials from organically managed or farmed land within and outside of protected areas makes economic sense, and helps to safeguard the ecological potential of these areas. In expanding bioenergy use, allowance is made for the competing uses of biomass (energetic and material use).

Nature conservation offers enormous potential for sustainable development of the rural regions, and vice versa. The conservation and sustainable use of a regional-typical cultivated and natural landscape makes a vital contribution towards local value-added, for example, via nature-compatible tourism, by marketing naturally

produced, regional products, or by attracting commerce and trade with high environmental standards. At the same time, sustainable production methods directly or indirectly support local nature conservation.

The above figures indicate that the protection and sustainable use of biological diversity produces extraordinary economic effects with very positive benefits on the labour market. The protection and sustainable use of biodiversity therefore represents a hard factor for Germany's attractiveness as a location. At the same time, nature and landscape are also significant as a soft location factor. For example, "green" residential areas, as well as spaces close to residential areas where nature can be experienced and attractive local recreational spaces, are particularly highly valued, and may be decisive for families or companies when choosing to locate to a specific region.

Employment-relevant targets and measures may be found primarily in the chapters on "concrete vision" and "action areas" of this strategy. If this biodiversity strategy is consistently implemented by all the players addressed, a significant contribution can also be made towards improving site conditions and protecting and creating jobs in Germany.

## **E Eradicating poverty and promoting justice**

### **Biodiversity and the eradication of poverty**

Scientific estimates suggest that 80 % of the genetic and biological resources occurring naturally worldwide are found in developing countries. For the people who live there, this biological diversity represents a basic foundation of life with regard to fertile soils, the supply of drinking water, food, medicine and energy, and as a source of income. The escalating loss of biological diversity therefore poses a growing threat to the basic economic, social and cultural necessities of life for some of the world's poorest people. For example, living in poverty often forces people to overexploit natural resources, leading to the destruction of the biodiversity around them. The Millennium Ecosystem Assessment has concluded that land conversion, the overuse of raw materials, contamination, invasive species and – to an increasing extent – climate change are the principal causes of the degradation of ecosystems and the loss of biological diversity. Indirectly, these developments are also reinforced by non-sustainable consumption patterns and a growing world population. This often produces a vicious circle at the local level, since poverty leads to the overexploitation of natural resources, which in turn threatens the loss of biological diversity. Impoverished people are perfectly capable of utilising the resources at their disposal sustainably, provided they are given responsibility and control. The increasing loss of biodiversity therefore threatens the development potential of current and future generations, both in developing countries and in industrialised countries.

The conservation and sustainable use of biological diversity therefore plays an important role in the eradication of poverty. Mindful of this fact, the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992 adopted the Convention on Biodiversity (CBD), in which the industrialised nations not only undertake to conserve biodiversity in their own countries, but also to support developing countries in conserving their own biological diversity. This includes measures for the conservation of biological diversity, for the sustainable use of its components, and for the balanced and equitable sharing of benefits associated with

the use of genetic resources. This principle was re-asserted at the World Summit on Sustainable Development in Johannesburg (WSSD) in 2002, with a series of binding resolutions on the conservation and sustainable use of biological diversity.<sup>5</sup> Other international environmental conventions such as CITES and RAMSAR are likewise attaching increasing importance to the correlation between biodiversity and tackling poverty.

The German Government views the protection and sustainable use of biodiversity as an integral part of any economically, socially and ecologically sustainable development policy and a way of implementing the UN Millennium Declaration adopted by the heads of state and government at the UN Millennium Summit in 2000 and meeting the related Millennium Development Goals (MDGs). The MDGs are designed to help eradicate poverty, hunger, sickness, illiteracy, discrimination against women and degradation of the natural resources over a 15-20 year period.

- Goal 1. Eradicate extreme poverty and hunger
- Goal 2. Achieve universal primary education
- Goal 3. Promote gender equality and empower women
- Goal 4. Reduce child mortality
- Goal 5. Improve maternal health
- Goal 6. Combat HIV/AIDS, malaria and other diseases
- Goal 7. Ensure environmental sustainability
- Goal 8. Develop a global partnership for development.

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<sup>5</sup> Art. 44 of the *Johannesburg Plan of Implementation* contains a number of biodiversity-related resolutions, such as the mandate to negotiate an international regime on access to genetic resources and the equitable sharing of benefits under the CBD, the creation of national and regional networks of protected areas, and the provision of additional financial and technical resources to developing countries.

Given the many benefits of natural resources, the significance of biological diversity clearly extends beyond the action area of "Protecting our common environment" in the Millennium Declaration and MDG 7 - Ensuring environmental sustainability. More than this, the conservation and sustainable use of biological diversity is a basic requirement for achieving the paramount objective of the Millennium Declaration – securing our global future – and the other MDGs.

Protecting biodiversity plays a particularly decisive role in the aim of halving the number of people living in extreme poverty and eradicating hunger by the year 2015 (**MDG 1**). For example, biodiversity indicates considerable potential for protecting the food resources of a growing world population and therefore contributes towards eradicating hunger and implementing the human right to food: For hundreds of millions of people – particularly in developing countries – natural species diversity is essential, both as a direct source of nutrition, and as a way of earning a living. Also crucial in this connection is the conservation of our remaining diversity of agricultural plant species and varieties, as well as animal breeds – so-called agro-biodiversity. For example, the diversity of agriculturally used plant varieties over the past 100 years has declined by approximately 75 %. Biological diversity supplies the basis for plant- and animal-genetic resources, the majority of which are the result of a long breeding development, whereby a significant contribution is made by farmers in developing countries. Genetic resources are essential for locally adapted, appropriate agricultural production methods. In future, we cannot ensure the production of adequate quantities of foodstuffs unless the diversity of the species, varieties and breeds of cultivated plants and livestock used can guarantee a high level of adaptability to altered climatic environmental conditions, the threat of pest infestation, and changing utilisation conditions. This is reliant upon a sufficiently large gene pool available for use by agriculture – in other words, upon maximising agro-biodiversity.

Men and women often use different resources, or else use the same resources in different ways, and therefore have differing knowledge of biodiversity management. This also produces differing traditional usage rights. For this reason, women and girls play a special and important role in the conservation and sustainable use of biological diversity. They are particularly affected by the current loss of biological diversity: On the one hand, they are losing access to resources originally at their autonomous

disposal. On the other, their traditional tasks such as supplying the family with food and water and collecting firewood are taking up more and more time. This means that it is often just as impossible for girls to attend school as it is for their mothers to pursue a career. Hence, conserving biodiversity also aids gender equality and the empowerment of women (**MDG 3**).

Biodiversity is of central importance for the supply of medicines to people in both industrialised and developing countries. It offers an enormous reservoir for the development of active ingredients against known diseases and those which might arise in the future. The loss of any individual species therefore further restricts our potential available for developing new medicines, which is relevant for achieving the health-related development goals (**MDG 4, 5 and 6**). Medicinal plants are often the only available and affordable means of treating illness, especially for poor people. However, biological diversity also plays an important role with regard to preventive healthcare: Stable and intact ecosystems prevent environment-related diseases. This is particularly important for poor segments of the population in developing countries, firstly because they are particularly susceptible to environment-related diseases, and secondly because they have very limited means at their disposal for treating any diseases.

Measures aimed at achieving environmental sustainability (**MDG 7**) may also contribute directly towards eradicating poverty. For example, a central section of the work programme on protected areas in the CBD is dedicated to the local population. This states that protected areas should be created and managed with the involvement, and to the benefit, of the local population. The aspired global network of protected areas should be comprised of zones of varying usage intensity, and in many areas will facilitate and promote eco-friendly management by the local communities. In this way, the programme may be used as a tool for protecting the basic necessities of life of the local population and eradicating poverty.

Finally, supporting developing countries in the implementation of the CBD will also contribute to MDG 8 of forging global partnerships and supporting developing countries to meet shared targets.

The conservation and sustainable use of biological diversity is also important for many reasons other than achieving the MDGs. Many of the German Government's

concerns within the context of German development cooperation can only be achieved on the basis of functioning ecosystems, which for their part contribute to the eradication of poverty – such as sustainable economic development, maintaining peace, and preventing crises. The progressing degradation of our natural resources can often contribute to, or even cause, migratory flows and conflicts (of use). On the other hand, in crisis situations, natural resources in the form of forests or protected areas are often the only means of survival for refugees.

By virtue of their knowledge and traditional ways of life, indigenous communities play a very important role in preserving biological diversity and eradicating poverty. Populated areas of indigenous societies are often located in areas with a high level of biological diversity. These areas boast a particular concentration of valuable genetic resources. The local community's knowledge of these resources is often used by third parties without sharing the benefits. The CBD has recognised the particular role of the indigenous communities and obligates the international community to observe and promote their knowledge, innovations and customs, and to facilitate their active involvement in favour of sustainable development.

### **Biodiversity and justice**

The debate over the eradication of poverty and the promotion of justice centres around the conservation and sustainable use of biological diversity and access to the benefits associated with the use of genetic resources. There is a need for action at various different levels:

Equitable distribution at international level: During the course of developments in the field of biotechnology and genetic engineering, a number of new options have arisen for accessing biological diversity and genetic resources. While the majority of naturally occurring genetic and biological resources are located in developing and newly industrialising countries, the capacity for their commercial use tends to be concentrated primarily in the industrialised countries. The CBD has confirmed that the countries of origin have sovereignty over the genetic resources found in their territory. This means that the countries of origin have the right to a fair and balanced share of the benefits (access and benefit sharing – ABS), giving them and the local

people a vested interest in preserving their biodiversity. In this way, ABS can contribute towards the eradication of poverty in developing countries. In the area of plant-genetic resources, the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), which has been ratified by Germany, provides for a multilateral system for key food and animal feed plants which is designed to facilitate access to these resources, and regulate the balanced and equitable distribution of the benefits associated their use. The intention is that benefits from the Multilateral System should primarily benefit farmers who work to conserve plant genetic diversity in agriculture – primarily in developing and newly industrialising countries – regardless of whether their particular genetic resources are used in commercial plant varieties.

Equitable distribution at national level: One major obstacle in the conservation and sustainable use of natural resources to eradicate poverty is the inequitable distribution of land and utilisation rights. Rights of this kind are a key pre-requisite for safeguarding the interests of population groups which are dependent on biological resources in the sustainable long-term use of those same resources, and provide the basis for claiming their share of the benefits enjoyed by external or government players. Conversely, a lack of clarity over utilisation rights and inequitable ownership situations only serve to increase the pressure on resources. Often, the destitute are forced to move into ecologically sensitive areas, while productive land is concentrated in the hands of just a few individuals. As such, if we want to permanently reduce poverty and conserve natural resources, access and ownership rights must be clarified and the environment must be in a suitable state to allow all population groups to lead dignified lives.

Non-sustainable production and consumption patterns in industrialised countries are among the main culprits for the worldwide loss of biological diversity. The industrialised countries are urged to rethink their own consumption patterns, to further increase the efficiency of resource consumption, and to promote the more widespread use of renewable raw materials, as well as supporting the developing countries – with due regard for their autonomy and national sovereignty – in the sustainable use of biological diversity.



## **The contribution of the German Government**

Mindful of the fact that it is the very poorest people in developing countries who are dependent on the use of this diversity of natural resources in order to secure their own survival and income, the German Government is keen to support developing countries in the conservation and introduction of sustainable usage systems within the framework of its development cooperation efforts. Germany has underscored its commitment to this objective by ratifying the CBD and the Cartagena Protocol on Biosafety. The key is to harmonise interests in the conservation of biodiversity with usage interests in the partner countries, i.e. to ensure the conservation of natural resources with due regard for the economic and social development associated with sustainable use. It is only by promoting the protection and sustainable use of biological diversity in an equitable and integrated fashion and by ensuring that developing countries enjoy a fair share of the benefits which others derive from the use of their genetic resources that the living conditions of the population who are dependent on biological diversity can be improved, thereby making a concrete contribution towards the eradication of poverty. The German Government is committed to the model of global sustainable development. When attempting to eradicate poverty, it is important not only to concentrate on improving the economic situation of the poor by focussing on the economic dimension of sustainability, but also to give equal weighting to aspects of the social compatibility and ecological viability of sustainability. The current generation must be given sufficient opportunities to develop without restricting the opportunities of future generations. Sustainable development is only possible if the proper functioning, performance and regenerability of natural resources can be safeguarded in the long term, thereby keeping as many options as possible open for economic and social development. In its 2015 action programme “Eradicating poverty is a global task – the German Government’s contribution towards halving global poverty”, the German Government outlined its contribution to the Millennium Declaration and achievement of the MDGs, particularly the goal of halving extreme human poverty by the year 2015. The action programme also consistently incorporates measures in the field of biodiversity.<sup>6</sup>

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<sup>6</sup> Cf. point 3.2 Realising the right to food and executing agricultural reforms, and point 3.6 Safeguarding access to vital resources – Promoting an intact environment.

For many years, high importance has been attached to the protection and sustainable use of biological diversity in Germany's bilateral development cooperation work. Since 1985 some 450 projects have been carried out aimed either directly or indirectly at the protection and sustainable use of biodiversity. At the present time (2006), the German Government is involved in the support of around 150 such projects in partner countries. At a multilateral level, the German Government is actively involved in the international process to update and implement the CBD and the Cartagena Protocol, and is also the third largest donor to the Global Environment Facility (GEF), the financing mechanism of the CBD and other agreements.

All projects at differing levels within the context of Germany's development cooperation contribute towards the transfer of technologies and knowledge which are relevant for conserving biological diversity. This includes cooperation in the field of technical and financial cooperation, the formulation of international negotiating processes, as well as joint projects with players from civil society or private industry.

Promoting the expertise of decision-makers, experts and multipliers is pivotal to the transfer of information and technology, and transcends many different fields. This allows the available methods and instruments of development cooperation to be utilised in full, and may include national, regional and international workshops or seminars on specific topics, as well as the development of specific education and training courses on German development cooperation.

With reference to agro-biodiversity, Germany also supports Bioversity International (formerly the *Internationales Institut für Pflanzengenetische Ressourcen* (International Institute for Plant Genetic Resources, IPGRI)) and the international agricultural research centres (IARC) that make up the Consultative Group on International Agricultural Research (CGIAR), including their gene banks. It furthermore contributes to the Global Crop Diversity Trust (GCDT) and supports various initiatives for the formulation and implementation of farmers' rights in respect of plant genetic resources. These rights recognise the enormous contribution made

by farmers to the development of plant genetic diversity in agriculture, and are the pre-requisite for their continuing preservation.

Within the framework of bilateral and multilateral cooperation, almost € 95 million is currently set aside each year for direct measures to implement the CBD in partner countries. Various other projects in the field of rural development and resource management likewise help to implement the aims of the Convention and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). The German Government will also continue to pursue its target of spending 0.51 % of gross national income on public development cooperation by 2010, and meeting the UN target of 0.7 % by 2015. As well as setting aside budget funds and providing further debt relief, innovative financing mechanisms are also needed if it is to meet this target.

The concrete targets for "Eradicating poverty and promoting justice" may be found in the following chapters of this Strategy: B.2 (Effects of German activities on biological diversity worldwide) and B 4.1 (Access to genetic resources and the equitable sharing of benefits). Concrete measures are outlined in chapters C 5 (Access to genetic resources and equitable sharing of benefits), C 15 (Research and technology transfer) and C 16 (The eradication of poverty and development cooperation).

## **F Implementation of the Millennium Ecosystem Assessment in Germany**

The results of the Millennium Ecosystem Assessment (MEA) published in 2005/2006 during the strategy formulation process have pivotal significance for the national strategy on biological diversity.

The Millennium Ecosystem Assessment is a four-year scientific work programme funded, *inter alia*, by UNEP and the World Bank and supported by the United Nations General Assembly. It aims to document the status of our ecosystems and forecast their future development worldwide, and the associated consequences for the wellbeing of mankind.

The MEA was created between 2001 and 2005 by more than 1300 experts from 95 countries using scientific literature, data and models. It also incorporates knowledge from the private sector, practitioners, as well as local and traditional knowledge. Its approach makes allowance for both the indirect and direct social forces of ecosystem changes, and centres around the concept of ecosystem services.

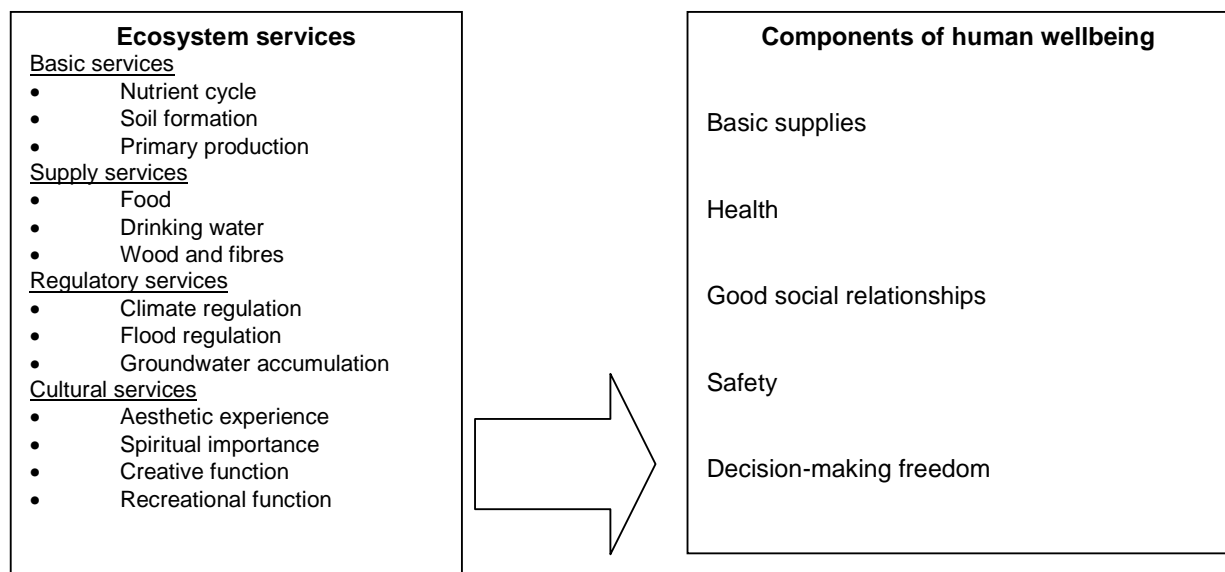


Figure F 1: The above illustration shows the breadth of the spectrum of ecosystem services and the components of human wellbeing, as addressed in the MEA. This affects all areas of society, and also links together a range issues from the natural and social sciences.

The results of the MEA were published in 2005/2006 in a series of topic- and target group-specific reports. Based on a number of different scenarios, the MEA assesses potential development directions and highlights the opportunities for political action. This has a direct significance for German environmental policy and other biodiversity-relevant areas of politics with both a short, medium and long-term perspective.

The German Government has analysed the MEA in terms of its relevance for Germany. The targets and measures resulting from this analysis may be found primarily in the chapters of this Strategy on “concrete vision” and “action areas”. Germany has also presented a comprehensive concept for the national implementation of the MEA’s recommendations.

### **Core statements of the MEA**

In the past 50 years, man has transformed ecosystems more rapidly and more extensively than ever before during comparable periods of human history, primarily in order to meet the rapidly expanding demands for food, water and raw materials for material and energetic use. This has led to a substantial and largely irreversible loss of biological diversity on earth.

The ecosystem changes have contributed to a considerable improvement in human wellbeing and economic development, but this has increasingly been achieved at the expense of the devaluation of many ecosystem services, escalating risks of (largely) unpredictable changes, and worsening poverty for sections of the world's population. Unless these problems are tackled and solutions found, the benefits from ecosystems which are available to future generations will be significantly reduced.

In other words, the degradation of ecosystem services could deteriorate significantly in the first half of this century, making achievement of the millennium development goals more difficult or even impossible. These development goals were presented in the United Nations Millennium Declaration in the year 2000. *Inter alia*, they include the eradication of extreme poverty and hunger, world peace, and the equitable and sustainable shaping of globalisation, which also entails incorporating ecological sustainability into development policy.

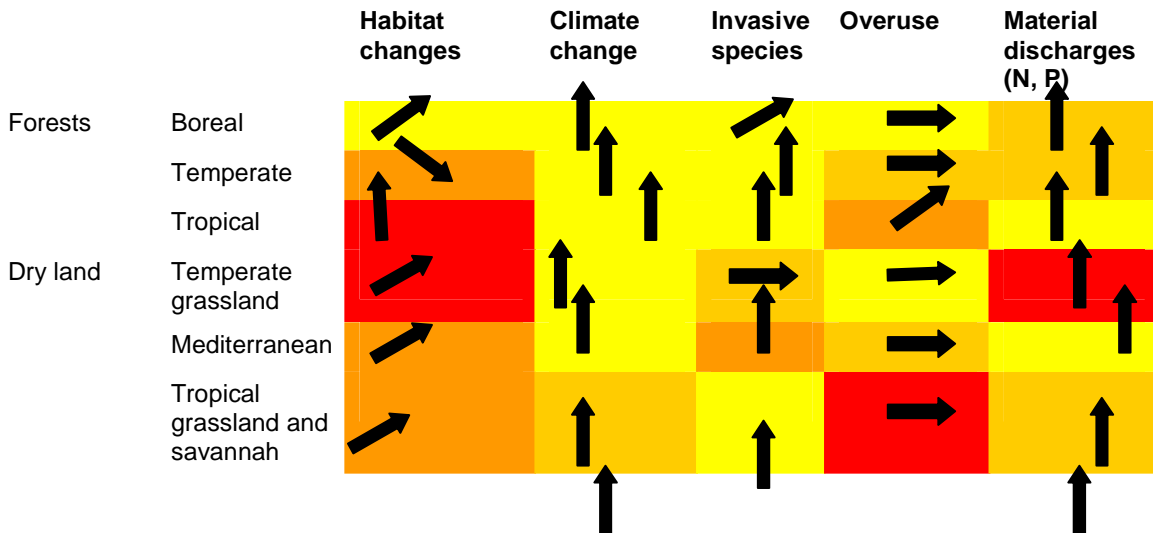
### Driving forces behind the transformation of biodiversity and ecosystems

According to the MEA definition, driving forces are natural and anthropogenic factors which cause a direct or indirect change in an ecosystem:

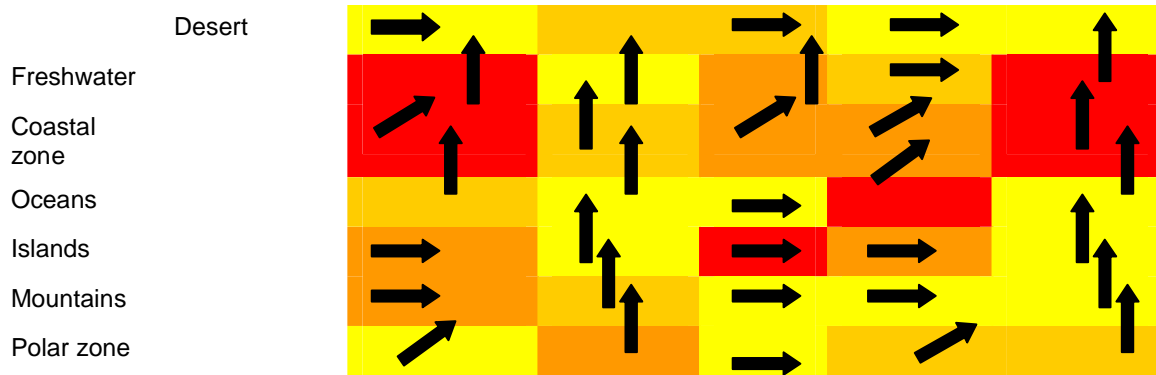
- The principal **direct** driving forces are habitat change, climate change, invasive species, overuse and contamination.
- The principal **indirect** driving forces are demographic change, changes in economic activities, socio-political factors, cultural factors, and technological change.

Trends in the principal direct driving forces behind the transformation of biodiversity and ecosystems are illustrated in **Figure F 2**:

- This clearly shows that for **all** ecosystems under consideration, forecasters are predicting a sharp increase in the influence of material discharges of phosphorous and nitrogen, and of climate change
- Habitat changes are also expected to have an escalating influence on the limnic and marine ecosystems, as well as the tropical forests.
- The influence of invasive species on temperate and boreal forests, tropical grassland and savannah, and freshwater ecosystems will likewise escalate rapidly.







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**Key to Figure F 2:**

**Current trend in driving force:**

-  Rapidly escalating influence
-  Growing influence
-  Steady influence
-  Declining influence

### Influence of the driving force on biodiversity over the past century:

Yellow	Low
Light orange	Moderate
Dark orange	High
Red	Very high

### **Priority action areas for Germany**

Evaluation of the MEA indicates that the following action areas are becoming increasingly pressing for Germany:

- Measures to counteract the persistent and growing area-wide nutrient contamination of all ecosystems (in the short to medium-term) (cf. Concrete vision B 3.1: Area-wide diffuse material discharges, action area C 10: Acidification and eutrophication)
- Stepping up measures to counteract climate change which tackle both the root causes (avoidance) and the consequences (adaptation), since climate change influences the status of numerous ecosystem services. This entails reducing climate-relevant gases (in the short to medium-term) and developing measures for adapting to the anticipated climate changes (in the medium to long term) (cf. Concrete vision B 3.2: Climate change, action field C 11: Biodiversity and climate change).
- Limiting the further conversion and degradation of semi-natural ecosystems, particularly of wetland areas and watercourses in the numerous interconnected ecosystem services (cf. Concrete vision B 1.2.3: Lakes, ponds and pools, Concrete vision B 1.2.4: Rivers and water meadows, Concrete vision B 1.2.5: Peatlands, action field C 4: Water protection and flood prevention)
- Protecting biodiversity as a cross-sectional task (in the short to medium term) (cf. Concrete vision B 1.1.1: Biodiversity as a whole, Concrete vision B 5: Social awareness, Action fields C 1 – C 16)
- Greater political and social consideration of the effects of Germany's activities on the threat to and degradation of ecosystem services in other parts of the world (in the short to medium term) (cf. Concrete vision B 2.3: Effects of German activities



on biological diversity worldwide, Concrete vision B 4.1: Access to genetic resources and equitable distribution of benefits, Concrete vision B 5: Social awareness, Action fields C 15 and C 16)

- Greater recognition and inclusion of cultural ecosystem services (cf. Concrete vision B 1.3.2: Cultivated landscapes, Concrete vision 1.3.3: Urban landscapes, Concrete vision 2.1: Eco-friendly production, Concrete vision 2.4: Agriculture, Concrete vision B 2.9: Nature-based recreation and tourism, Concrete vision B 5: Social awareness, Action fields C 12 – C 14).

These action areas do not only target the direct driving forces, because indirect driving forces such as attitudes, values and consumption are also gaining in significance worldwide for the preservation of functioning ecosystems and ecosystem services, and for Germany's effects on biodiversity. Many direct driving forces have underlying indirect driving forces (habitat change, nutrient contamination and climate change) which are linked to economic, technological and socio-political developments, the control of which is distributed among various policy-making sectors. Agriculture is particularly significant in this context, due to usage-related changes in site properties and their interactions with other ecosystem services. The areas of industry, transport, energy and infrastructure development likewise play a key role. Emissions of climate-relevant gases from the above areas cause adverse pressures on the ecosystem, and it is important to utilise the existing potential for minimisation. It is increasingly apparent that the conservation of ecosystem services for human wellbeing is reliant upon the inclusion of all areas of society.

## G Flagship projects

Implementation of the national strategy on biological diversity must be allowed to progress beyond theoretical discussions about principles. The measures outlined in the action fields necessitate a large number of individual projects by different players and at all levels. Collectively, these projects help to breathe life into our strategy.

This chapter outlines selected so-called flagship projects with the German Government's involvement. They are aimed at conserving biological diversity, and make exemplary allowance for the ecological, economic and social aspects in equal measure.

### **Development and implementation of an international standard for the sustainable collection from the wild of medicinal and aromatic plants**

*Project term: Until 2008*

*Project partners: BMU, BfN, WWF Deutschland, IUCN-SSC*

As the world's fourth-largest importer and exporter of medicinal and aromatic plants, Germany has a particular responsibility for their sustainable usage. Studies to date indicate that the majority of plants used and traded will continue to originate from collection in the wild for the foreseeable future. The principal task of any forward-thinking species conservation must therefore be to ensure that such usage is sustainable. Consideration must also be given to social aspects (such as gender equality). As the use of and trade in such resources is already interlinked worldwide, such measures must be placed in an international context. This can only be achieved through cooperation with trade and industry.

Guidelines and criteria for the sustainable use of wild plants are aspired to by international organisations (such as the WHO, EMEA), called for by conventions (such as the CBD, CITES), desired by industry as a means of protecting itself in auditing procedures, and also welcomed by nature conservation associations.

The aforementioned project partners are currently in the process of drafting an International Standard of the Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP).

The national process will analyse as many existing initiatives as possible, and aim to learn from their experiences. Existing guidelines for the sustainable collection of non-wood forest products within the FSC may serve as a model in this respect. Within the International Federation of Organic Agricultural Movements (IFOAM) and the Fairtrade Labelling Organizations International (FLO), ideas are being mooted to expand the relevant guidelines to include criteria for sustainable collection from the wild.

The standard drawn up by 2006 will subsequently be used in a different way (as a basis for certification systems, as a basis for action with the procurement of raw materials by industry, as a technical basis for existing statutory instruments, and as a standard for international support organisations (such as the GTZ, World Bank, GEF).

### **Conservation and protection of the “Green Belt” along the former Iron Curtain as part of our natural heritage and also as a historical monument**

*Project term: by 2015*

*Project partners: BMU, BfN, Länder, Federal Government and other nature conservation associations*

The main aim of the “Green Belt” project is to conserve and develop the former east/west German border strip as a unique national system of interlinked biotopes spanning nine German *Länder* over a length of approximately 1,400 km. To this end, the Federal Government is promoting a number of activities.

In addition to the drafting of nature conservation models and measures, by devising suitable sustainable usage forms such as nature tourism (cycle and hiking tourism) in selected areas and in the vicinity of the “Green Belt”, the Government also hopes to increase the acceptance and implementation of this system of interlinked biotopes in the participating regions and *Länder*. Through extensive use of the surrounding area, the aim is to create generous buffer zones around the “Green Belt” which will promote the habitat function of the system of interlinked biotopes and guard against

adverse influences. It is crucial that development of the “Green Belt” should also be linked to suitable concepts for sustainable (economic) tourism development and for mediation of the historical facts. This should produce a broad, cross-sectional approach allowing the Green Belt to be integrated into the local population in regions along the “Green Belt” and enhance its acceptance, both as a nature conservation project and as a social project.

Overall, the “Green Belt” project may be considered exemplary for the protection of biological diversity. It combines nature conservation aspects (species, biotope and landscape conservation) with economic / social aspects (nature tourism, regional development) as well as historical aspects (“Green Belt” as historical monument). Because nine German *Länder* are affected by the “Green Belt” it is one of the few concrete projects to protect biological diversity with a national dimension.

This project also represents an important component of the activities initiated under the umbrella of the IUCN to conserve the “Green Belt Europe”.

### **IPEN – An international network for botanical gardens to regulate plant exchange for non-commercial use in accordance with CBD guidelines**

*Project term: Unlimited*

*Project partners: BMU, BfN, Verband Botanischer Gärten e.V.*

Through their research and teaching, species and nature conservation measures and PR work, botanical gardens and botanical research institutions make an important contribution towards conserving biological diversity. An important prerequisite in this connection is the voluntary exchange of plant genetic resources. Thanks to the principle anchored in the CBD of the sovereign rights of national states to the flora and fauna living in their territory, the legal situation now is clearly different to that prior to 1992. Although Article 15 of the CBD calls for easier access to genetic resources, in practice, at present, undifferentiated legal implementation renders access more difficult. Generally speaking, such access regulations are aimed at commercial users, and do not give special treatment to non-commercial interested parties.

As the botanical gardens with their diverse collections represent an important research basis, the *Verband Botanischer Gärten e.V.* (Botanical Gardens

Association) has set up a CBD working party. It was responsible for developing the “International Plant Exchange Network” (IPEN) as a mechanism which transparently documents the receipt and forwarding of plant material, and ensures that the requirements of the CBD are met.

The IPEN is only applicable to botanical gardens, and does not support commercial use. A joint code of conduct means that the bureaucracy involved in exchanging plant material between IPEN-registered botanical gardens is reduced to a minimum. Plants are given a unique IPEN number which they retain each time they are forwarded, thus ensuring that the origin of the material can be ascertained within the IPEN at any time. When material leaves the IPEN, it is necessary to ensure, by means of a standardised forwarding agreement, that the claims of the country of origin are still guaranteed.

The IPEN aims to demonstrate that botanical gardens are acting in accordance with the requirements of the CBD by encouraging complete transparency. In the long term, it is hoped that this will persuade the countries of origin of genetic resources to make a distinction in their access regulations between the commercial and the non-commercial sector by recognising the valuable work that is carried out by botanical gardens, and recognise the latter as the representatives of their interests. In the long term, the important contribution made by botanical gardens to the conservation of biological diversity can only be guaranteed by means of a secure but easier plant exchange process. At the same time, the IPEN represents an excellent control mechanism for tracing the origins of biological material, and thus helps to safeguard claims by the countries of origin for benefit sharing.

The results of the first BMU and BfN workshop, “Access and benefit sharing: Ways and means for facilitating biodiversity research and conservation while safeguarding ABS provisions” were documented in an information document and distributed at the 8th Conference of the Parties to the Convention on Biological Diversity. Other events are in the pipeline.

### **Reintroduction of the European sturgeon**

*Project term: 1996-2009*

*Project partners: Gesellschaft zur Rettung des Störs e.V., Leibniz-Institut für Gewässerökologie und Binnenfischerei (IGB), Berlin*

Until the end of the 19<sup>th</sup> century, sturgeons were an important element of the natural biotic community in the rivers and oceans of northern Germany, and provided an important food source for the local population. The dramatic changes in natural habitats caused by waterbody contamination, obstruction and overly-intensive fishing led to a sharp decline in population levels, which endangered the sturgeon. In Germany, the last sturgeon disappeared from the Eider in 1969. Since then, the species is considered to have disappeared from or become extinct in Germany.

Using BMU funding, since 1996 the Federal Agency for Nature Conservation (BfN) has supported a project to reintroduce the European sturgeon to German rivers and marine regions of the North and Baltic Seas.

The primary aim of this project is to use both in-situ and ex-situ measures to conserve this species, which is one of Germany's most historically significant migratory fish, and to build up self-reproducing stocks of the two species in their original ranges. Successful reintroduction is dependent on the recreation and improvement of natural habitats, e.g. by means of an integrated river basin catchment area management system aimed at redynamising and improving structural diversity. The sturgeon is the ideal patron species for river ecosystems. Measures which benefit the sturgeon also serve to improve the living conditions for many other species.

The project is supported by the German Research Ministry and the state of Mecklenburg-West Pomerania together with the *Gesellschaft zur Rettung des Störs e.V.* (Save the Sturgeon Association). It is being executed in collaboration with the *Berlin Leibniz-Institut für Gewässerökologie und Binnenfischerei* (Berlin Leibniz Institute for Water Ecology and Freshwater Fishing, IGB), the *Landesforschungsanstalt für Fischerei Mecklenburg-Vorpommern* (Mecklenburg-Western Pomerania Fishing Research Institute), a number of Polish partners, including the Olsztyn Institute for Freshwater Fishing, together with numerous user and other interested party groups.

By ensuring the early cooperation and involvement of professional and sports fishermen, in both Germany and Poland, there is a high level of support for the

project among this important group of users. This includes both the development of more selective fishing techniques as well as a willingness to throw back and report any animals that are caught by mistake. Successful reintroduction could produce new long-term development opportunities for coastal and freshwater fishing in Germany. If, in a few years' time, there is evidence of sufficiently large stocks which are capable of reproducing naturally, then regulated, monitored fishing of native sturgeon could be possible in the long term.

Artificial reproduction of both species is now proving successful, following a few initial difficulties. Thanks to extensive habitat analysis in the original range, a number of potentially suitable spawning grounds have now been identified. Following ten years of preparation, in June 2007, the first bred, tagged young sturgeon, some of which had been fitted with transmitters, were released into the River Oder. The plan is to continue and expand the stocking measures over the next few years.

### **Nature conservation and health protection**

*Project term: Until 2008*

*Project partners: BMU, BfN, Bonn University*

Human health – both physical and mental – is linked to the landscape and nature. For example, in its European programme “Environment and Health”, the World Health Organisation (WHO) has addressed preventive nature and environment-related health protection as a means of protecting our physical and mental health in a pleasing natural environment, and is therefore based on holistic principles. The programme aims to make better use of the positive synergy effects between nature conservation and health. At the same time, the healthcare sector must be sensitised to the fact that nature conservation can aid health protection, and that many positive effects from nature on human health are dependent on the free services permanently provided by nature.

In this flagship project, strategies are being developed in three nature parks as model areas to link nature conservation with health-promoting and preserving measures. The nature parks TERRA.vita near Osnabrück, Hohes Venn in the Eifel region and Thüringer Wald (Thuringian Forest) were chosen as sample areas. As well as developing joint approaches to “Nature Conservation and Health” and bringing the

various players in the different regions together, there are also plans to trial the communication of an integral, health-oriented approach to nature conservation within the context of the project. This flagship project lends itself particularly well to the incorporation of gender-specific aspects.

**Future-viable landscape development – Relinking for the sustainable preservation of biological diversity: Development of a nationwide programme of measures to overcome barriers and relink ecological systems**

*Project term: from 2008*

*Project partners: BMU/BfN, BMVBS/BASt*

This flagship project aims to permanently safeguard ecological interactions by recreating important functional spaces (relinking) in the sense of a future-viable landscape development. In particular, this includes

- Recreating populations with long-term viability by joining together sub-populations
- Recreating supra-regional opportunities for the dispersion of species (migration, re-dispersion, ability of biotic communities to adapt and respond to environmental fluctuations)
- Restoring landscape functions which facilitate biological diversity (coherent succession cycles, migration of key species)
- Improving the useful value of landscapes for humans and nature
- Reducing the high number of accidents involving wild animals
- Eliminating accident blackspots at identified game paths
- Reducing the considerable economic losses and material costs thereby incurred in the healthcare system and in hunting

Focussing on the main areas of conflict that have been identified for relinking habitat corridors in the supraregional road network, the project will also investigate the feasibility of relinking measures from a technical, legal and financial viewpoint. Wherever possible, it is hoped that an efficient, phased implementation and action concept can be developed. The concept comprises various measures which will be selected according to the main areas of conflict. One of the particular distinguishing



features of this programme and its chosen projects is its cross-sectional approach. It is hoped that by involving schools, an understanding of the need and benefits of “habitat networks” can be anchored in the public consciousness from an early age. At the same time, the ability of nature conservation to integrate with utilisation aspects in other specialist areas will be convincingly conveyed, and nature conservation’s public image will be strengthened.

Overall, this flagship project by the German Government is an exemplary and unique programme. Together, nature users and nature conservationists are endeavouring to find a solution to a problem which hampers seriously biological diversity. In addition, the flagship project unites nature conservation requirements for the protection of biological diversity (recreating the passability of the landscape as the basis for the dissemination of species) with social and economic aspects (involvement of the general public in the overall process, nature conservation education, nature development, increasing the leisure value of nature and promoting the nature experience, preventing accidents involving humans and wild animals, and resolving conflicts of interest between various different divisions).

This project will make the Federal Republic of Germany one of the leading nations in this field.

## **Pendjari National Park: Joint protection benefits nature and mankind**

*Project term: 1998 -2012*

*Project partners: BMZ, GTZ, KfW; GfA, DED*

The Pendjari National Park in the north of Benin was placed under protection as an animal reserve in 1954. It is part of a 28,600 km<sup>2</sup> protected area in the border regions of Benin, Burkina Faso and Niger, which was recognised as a UNESCO biosphere reserve in 1986. Designation of the protected area and the associated reintroductions occurred without consulting the local population and without accompanying support and development measures. This led to overuse of the natural resources in the now densely populated peripheral areas of the national park, and the local population found it very difficult to accept the protective regulations imposed on the park. For example, land was illegally developed in the hunting zone, and human settlements were constructed. In consequence, environmental protection was no longer ensured, and conflicts between the park administrators and the local population were a daily occurrence.

The "Pendjari National Park" aims to permanently conserve the protected areas, install an efficient park management, and actively include and involve the local population.

In this sense, the project promotes the development of neighbouring areas where the local population resides, and advises the partner on the development of an effective organisational structure and on the management of the park and the hunting zones. Additionally, an ecological monitoring system has been set up which will allow the ecological status quo and its development to be monitored. The main focus is always on the active involvement of the local population, be it in the management of the protected and hunting zones, e.g. via participation in personnel decisions, or by creating additional sources of income via the promotion of tourism and handicrafts.

As the park authority is now financially independent, it has been agreed that 30 % of revenues from trophy hunting will be distributed among the surrounding villages for development measures of their own choosing. In addition, the villages are given the meat from trophy hunting, either for their own consumption or to sell. New agreements between neighbouring communities and the park and territorial

administration will waive the bans on agricultural activities in the protected area, subject to certain conditions (no permanent buildings, paths etc.).

130 full-time jobs have been created in the park and surrounding area for the neighbouring communities.

The number of hunting tourists remains constant at approximately 65 people. Revenues from hunting tourism total € 103,725. The potential is therefore largely exhausted.

It is hoped that a charitable foundation will help to bridge the financial shortfalls in the long term. The statutory foundations in this respect have already been laid.

Allowance has been made for the cultural requirements of the local population (ceremonies) within the hunting zones. These are contractually regulated. The illegal occupation of parts of the hunting zones has been legalised, subject to contractually specified conditions.

Many donors contribute to the success of the “Pendjari” project: The national protection programme, of which the Pendjari National Park is an important component, is also supported by the EU, the GEF, France and Holland, in addition to Germany’s development cooperation. Financial cooperation supports the construction, restoration and maintenance of pistes, the construction of administrative and residential buildings, and the excavation of water holes and supply of machinery and communications equipment. A trust fund helps to safeguard the financial sustainability of these measures in the long term.

### **“Pilot programme to preserve Brazil’s tropical rainforests” (PP-G7)**

*Project term: 1995 – approx. 2008*

*Project partners: Federal Ministry for Economic Cooperation and Development (BMZ), World Bank, EU*

The world’s largest tropical rainforest is located in the Amazon Basin in Brazil, and covers more than half of the country’s territory at approximately 3.6 million square metres.

In addition to the global significance of these forests in terms of climate and stabilisation of the natural water regime, it is estimated that they are also home to

one-fifth of the world's species. These rainforests provide the foundation for life of many tribes who have been managing the tropical forest for hundreds of years in an appropriate, nature-conserving manner using their traditional knowledge.

This forest is increasingly at risk, and every year large chunks of forest the size of the German state of Brandenburg are lost as a result of felling, slash-and-burn practices, unmodified agriculture, and extensive animal husbandry. In this way, around 16 percent of the forest area has already been irrevocably destroyed. The resultant loss of biodiversity is also linked to a loss of cultural diversity. Uncontrolled fires rob the indigenous tribes of their basic necessities of life. At the same time, important knowledge about the natural resources used by them is lost.

The principal objective of the international "Pilot Programme to Preserve Brazil's Tropical Rainforests" (PP-G7) is to harmonise economic interest in developing the region with measures to protect the rainforest.

Thanks to the high funding volume of around 400 million US dollars to date, more than 50 % of which was provided by Germany, this project has become a model of global environmental policy. The Reconstruction Loan Corporation (KfW), GTZ, DED and several academic programmes are all involved in the project. The implementing organisations collaborate closely with the Brazilian national government, local governments, industry and civil society on the following topics:

- Nature conservation areas and sustainable management of natural forests
- Demarcation, protection and management of tribal areas
- Regional planning and regional development in priority regions

The accompanying measures include the demarcation of reserves, agreements with private industry on sustainable use, forest fire protection measures, and the development of capacity among regional environmental authorities and local government institutions. Germany's involvement also extends to the Mata Atlântica, Brazil's tropical coastal rainforest.

Since the programme's inception, the Brazilian government has given higher priority to environmental protection, as demonstrated by the new legislation on conservation of the tropical forests. 90 forest and tribal protected areas have been set up, covering 12 percent of the Amazon Basin. Furthermore, the willingness of people to

sustainably use and protect the rainforest has increased sharply, as indicated by the continuous increase in private industry projects aimed at ecologically certified tropical wood production.

After more than ten years of implementation experience, PP-G7 is now nearing its end. It is due to be followed up by new national programme in the Brazilian Environment Ministry, the *Programa Amazonia*, which is devoted primarily to the broad-based implementation of the successful PP-G7 experiences. The experiences of the PP-G7 are also to be shared across the entire Amazon Basin, primarily in cooperation with the Amazon Cooperation Treaty Organisation (OTCA) and the Federation of Indigenous Organisations (COICA). They carry out projects to support transboundary nature conservation areas and native territories in conflict-ridden border regions (Peru, Bolivia and Columbia), as well as activities to promote dialogue and the exchange of experiences in the region.

PPG7 is a complex and difficult project which faces numerous challenges. Thanks to its extensive long-term involvement and successful achievements to date, the German Government and its partner organisations are making a decisive contribution to the sustainable protection of this region, which is vital to human survival on our planet.

### **BIOTA Africa: Biodiversity Monitoring Transect Analysis in Africa**

*Project term: Probably until 2010*

*Project partners: Numerous institutions at home and abroad*

BIOTA AFRIKA ([www.biota-africa.org](http://www.biota-africa.org)) is a joint project, the only one of its kind in the world, by the Federal Ministry of Education and Research (BMBF) with project partners in Benin, Burkina Faso, Germany, the Ivory Coast, Kenya, Namibia, South Africa and Uganda. The partners are involved in cataloguing biodiversity in Africa and developing standardised methods for long-term monitoring of the changes in various ecosystems. In close collaboration with the partners and stakeholders in the cooperation country, recommendations for the management and conservation of habitats are drawn up, and local capacity for the assessment of habitat is encouraged. The project partners include modellers, meteorologists, ecologists, taxonomists, and social and agricultural scientists. At the same time, these activities

contribute to the international DIVERSITAS programme and are relevant for the UN Conventions UNCBD and UNCCD. Closer links are also being forged with existing monitoring networks in Africa and worldwide.

### **Reward concepts for agricultural landscapes – Biodiversity and spatial complexity (BIOPLEX)**

*Project term: Probably until 2009*

*Project partners: BMBF, Universities of Giessen and Göttingen, Northeim district*

As part of a research project in the district of Northeim (Lower Saxony), a new reward concept is being developed to promote the sustainable use of agricultural land on a larger scale. In addition to conventional agricultural products, farmers are invited to provide ecological assets on a voluntary basis, such as meadows and hedges with a large variety of species, or wild herbs. In this way, the farmer is producing additional biological diversity, for which he then receives payment. The rules governing this system, i.e. the desired range of ecological assets and how they are rewarded, are being drawn up by a regional advisory committee in close collaboration with nature conservationists, farmers, politicians and administrators of the region. In order to ensure the longevity of this demand decision by the regional advisory council, the suggestions and interests of the local population are ascertained via surveys and taken into account.

Studies are also carried out to investigate the survey and control procedures and identify ways of improving the administrative and reward procedures, as well as the transaction costs. The model project is incorporated into the agro-environmental policy of the state of Lower Saxony.

## H Reporting, indicators and monitoring

### H 1 Reporting

In order to ensure that the biodiversity strategy helps to permanently conserve biological diversity, success monitoring needs to be carried out at regular intervals. For this reason, in future, each legislative period, the German Government will be presenting a report on the achievement of targets and implementation of measures in the various action areas.

Additionally, in future, summative success monitoring of the strategy will be undertaken with the aid of indicators. To this end, a suitable set of indicators will be drawn up for the national biodiversity strategy (chapter H 2). The indicators summarise complex correlations in an intelligible fashion and highlight national trends. They should reflect the topics addressed in the national strategy as broadly as possible. The set of indicators is regularly updated and is an integral part of the accountability report on the Government's national biodiversity strategy. The indicators currently available will be augmented in future to include other important areas. In particular, an adequate assessment of the success of the national biodiversity strategy needs further indicators capable of representing the status of biological diversity.

The set of indicators is based on the so-called DPSIR approach (Driving forces, Pressure, State, Impact, Response):

- Indicators which represent the status of biological diversity and its components ("state indicators") are pivotal to an assessment of the national biodiversity strategy. To this end, suitable monitoring programmes must be further expanded in future.
- Indicators which represent the factors influencing biological diversity are already available in considerable numbers, and will likewise be used for assessment purposes ("pressure indicators" represent the concrete impairments affecting biological diversity, while "response indicators" measure

the means by and extent to which politics and society respond to changes in biological diversity in the specified action areas).

- These are supplemented by impact indicators, which represent changes in biological diversity that have already occurred, such as threats to species and biotope types.

When compiling the set of indicators, consideration was given to synergy effects and compatibility with existing indicator systems and indicator developments. The indicators in the national strategy on biological diversity were selected against the background of existing indicator development (at international, national and *Länder* level):

- International: Indicator development under the CBD and OSPAR conventions
- European: Indicator process “Streamlining European Biodiversity Indicators (SEBI 2010)”; indicator development by the EU Commission in collaboration with the International Marine Research Councils
- National: Indicators of the National Sustainability Strategy (NHS); System of Core Environmental Indicators (KIS) at national level; development of indicators by the *Länderinitiative Kernindikatoren* (Länder Initiative for a Core Set of Indicators, LIKI).

As the existing indicators fail to cover all key aspects of the biodiversity strategy, further indicators have been identified. These indicators are linked to the visions and action areas of the strategy, with due regard for international specifications.

Based on the working method used to develop indicators for the CBD, indicators were selected at varying stages of development:

- Indicators which already exist and are available at short notice, and
- Indicators still to be developed which it is hoped will decisively improve statements on the success of the biodiversity strategy.



**H 2 Set of indicators for the national strategy on biological diversity**

The following indicators (Table H 1) make up the set of indicators for the national strategy on biological diversity, and in future will be audited and presented as a means of assessing progress with the national biodiversity strategy.

Table H 1: Indicators of the national biodiversity strategy

Indicator	DPSIR statement <sup>7</sup>	Set of indicators	Availability at national level
Sustainability indicator for species diversity	state	NHS, KIS, LIKI	Available
Endangered species	impact	KIS	2009
Conservation status of Habitats Directive habitat types and species	state	LIKI planned	from 2008
Number of non-native fauna and flora species in Germany	pressure	KIS	Available
Size of strictly protected areas	response	KIS, LIKI	Available
Natura 2000 area designations	response	KIS	Available
Land use: Increase in the amount of land used for human settlements and the transport infrastructure	pressure	NHS, KIS, LIKI	Available
Dissection of the landscape	pressure	KIS, LIKI	Available
Urban sprawl	pressure	-	2008
Agro-environmental subsidy (subsidised area)	response	KIS	Available
Organic farmland as a proportion of total agricultural land	response	NHS, KIS, LIKI	Available
Proportion of certified forest land in Germany	response		Available
Nitrogen surplus (overall balance sheet)	pressure	NHS, KIS	Available
Genetic engineering in agriculture	pressure/ response	-	2007
Water quality – Proportion of waterbodies with at least water quality grade II	impact	LIKI	Available

<sup>7</sup> DPSIR: D = Driving Forces: Driving force indicators indicate which human activities cause the relevant pressures on biological diversity. P = Pressure: Pressure indicators express which concrete pressures act on biological diversity. S = State: State indicators outline the status of biological diversity which is modified by influencing factors. I = Impact: Impact indicators highlight existing changes in biological diversity. R = Response: Response indicators measure the means by and extent to which politics and society respond to changes in biological diversity in the specified action areas.

Marine Trophic Index	pressure	CBD	Available
Populations of selected commercial marine species	impact	-	from 2010
Flowering season of indicator plants	impact	KIS	Available
Significance of environmental policy goals and tasks	response	-	from 2008

The following chapter H 3 examines the individual indicators in greater detail.

Chapter H 4 considers indicator development at national level in greater depth.

Chapter H 5 examines indicator development in an international and European context.

Chapter H 6 explains the relevant monitoring systems for indicator development.

### **H 3 The individual indicators**

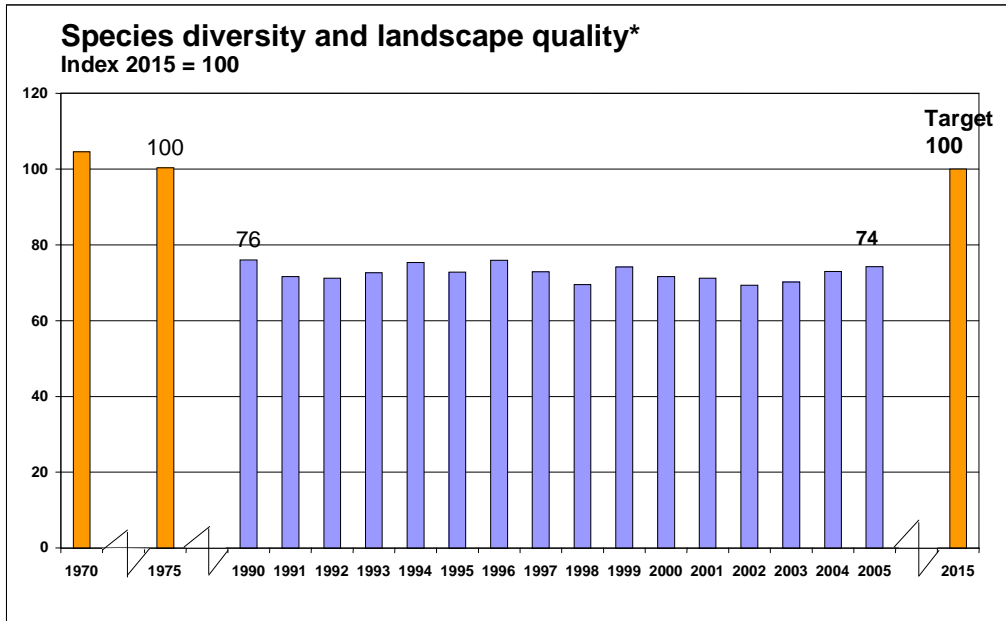
#### **Indicator: “Sustainability indicator for species diversity”**

The sustainability indicator for species diversity analyses the populations of 59 species of bird. Development of the bird population is representative of the quality of their habitats, and describes the suitability of the landscape as a habitat. Indirectly, this indicator also demonstrates the prevailing conditions for regional-typical species diversity in Germany.

The 2006 indicator report on the national sustainability strategy outlines the development of the indicator (Figure H 1): In the last year of reporting (2004), species populations had reached approximately 74 % of the target figure for 2015. In recent years, the status has neither deteriorated nor improved significantly.

The sustainability indicator for species diversity is comprised of six sub-indicators which distinguish between development in the principal habitat types: Agricultural land, forests, human settlements, inland waters, coastal/marine regions, Alps. At present, the sub-indicators indicate similar target achievement levels to the overall indicator.

Fig. H 1: Development of the overall indicator for species diversity with comparative figures for 1970 and 1975 (estimated values) and the target value for 2015

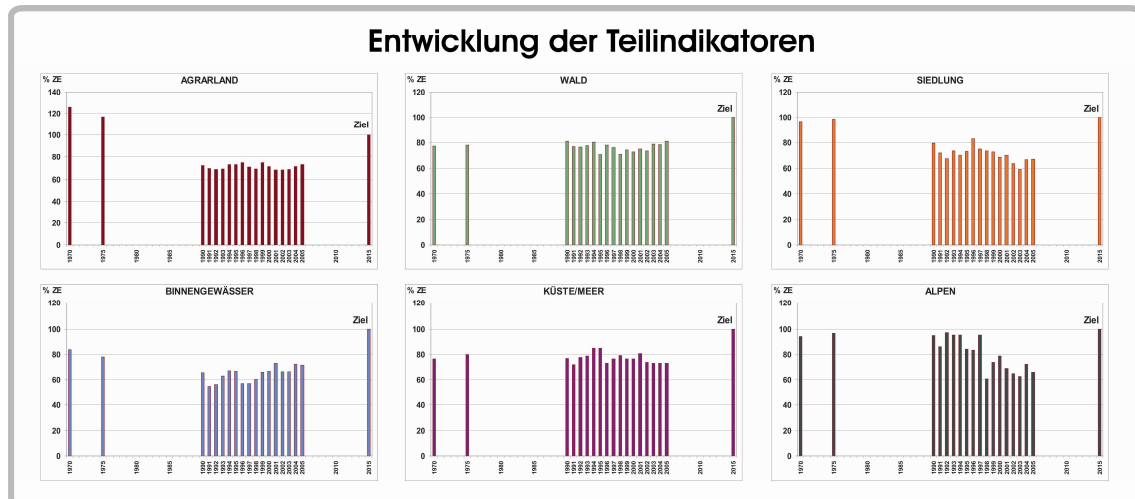


Source: Federal Agency for Nature Conservation, Indicator Report on the National Sustainability Strategy (2006)

### Development of sub-indicators

Development of the sub-indicator “agricultural land” (Fig. H 2), which has a high weighting in the overall indicator (50 %), has been relatively balanced since 1990. The sub-indicator for agricultural landscape is currently around 73 % of the target value. Development of the sub-indicator “Human settlements” indicates a clearly negative trend since 1990, from a target achievement level of around 80 % to less than 70 %. The sub-indicator for “Forests” has fluctuated around a target achievement level of 75 % since 1990 (no trend). Development of the sub-indicator “inland waters” has demonstrated a fluctuating development since 1990, with a clearly positive trend. The sub-indicator “Coastal / marine regions” has fluctuated around the 75 % target achievement mark since 1990 (no trend). The sub-indicator “Alps” has shown a slight downward trend since 1990, with a target achievement level of 66 % in 2005.

Fig. H 2: Development of the six sub-indicators over time



<Legende>:

*Development of the sub-indicators*

*Agricultural land / Forests / Human settlements / Inland waters / Coastal/marine regions / Alps*

Source: Federal Office for Nature Conservation (BfN) (2007)

### **Indicator “Endangered species”**

This indicator is intended to aggregate the risk to species (according to the Red Lists) from selected species groups (e.g. butterflies, vascular plants), thus mapping the development of the threat to species diversity in Germany. While the development of bird populations indicates the quality of habitats using common species, the Red List indicator outlines the influence on species diversity, with a particular emphasis on endangered species. The Government hopes to have formulated and trialled the indicator by 2009, and it will then be used to supplement the existing sustainability indicator for species diversity.

### **Indicator: Conservation status of Habitats Directive habitat types and species**

This indicator will aggregate the results of monitoring under the Habitats Directive and analyse the conservation status of habitat types and varieties as outlined in the Habitats Directive. This will serve to highlight the nationwide impacts of the Habitats

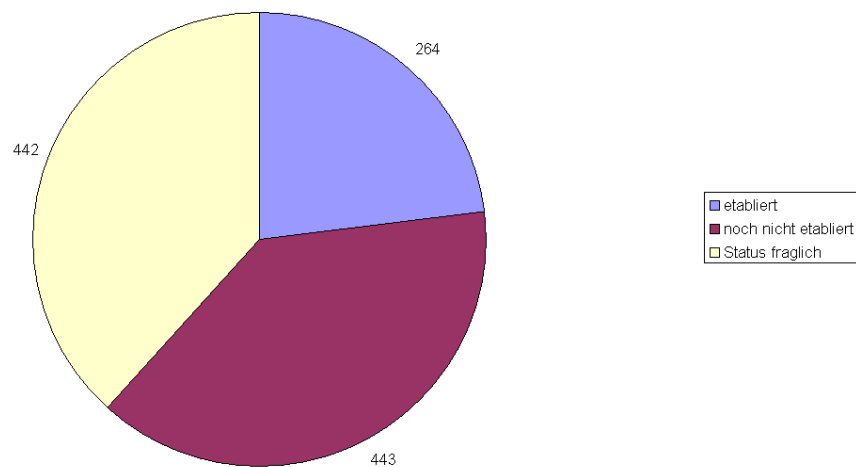
Directive as a mechanism for conserving biological diversity. The Government aims to have formulated this indicator by mid-2008, which will then replace the indicator "Natura 2000 area designations".

**Indicator: Number of non-native fauna and flora species in Germany**

This indicator amalgamates the number of non-native fauna and flora species occurring/established in Germany (neozoa and neophytes); (Figures H 3 and H 4).

Fig. H 3: Neozoa in Germany

Neozoen in Deutschland (Summe: 1149 Arten; Stand: Nov. 2003)



*Legende:*

Neozoa in Germany (total: 1149 species, as per: November 2003)

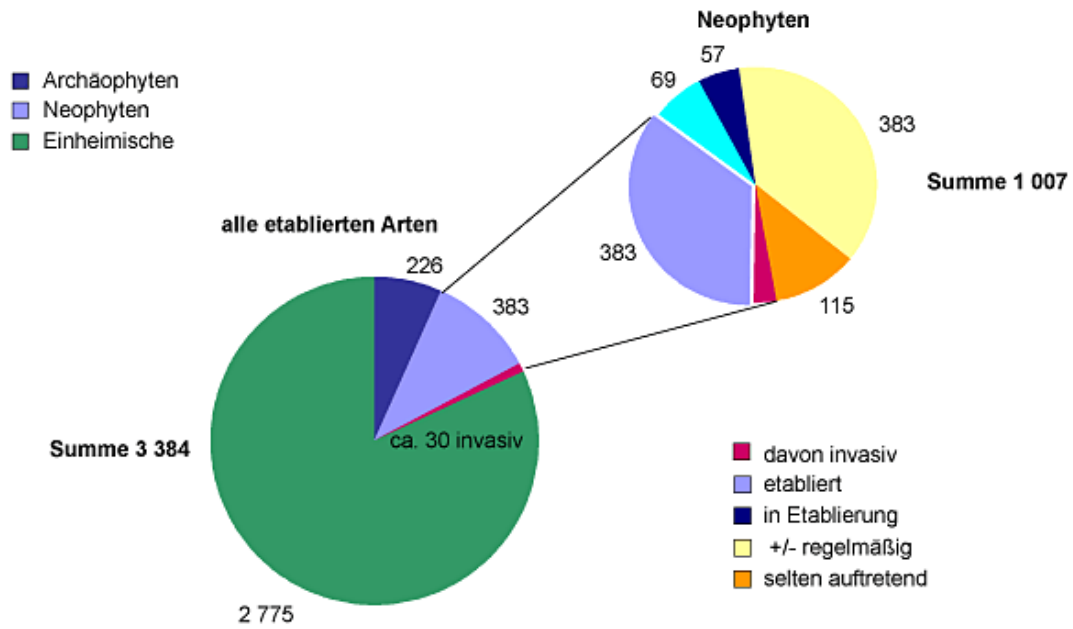
Established

Not yet established

Status questionable

Fig. H 4: Neophytes in Germany

**Heimische und gebietsfremde Pflanzenarten in Deutschland**



Quelle: Bundesamt für Naturschutz

Legende:

*Native and non-native plant species in Germany*

*Archaeophytes / Neophytes / Native*

*Neophytes*

*Total 1,007*

*All established species*

*Total 3,384*

*Approx. 30 invasive*

- *Of which invasive*

- *Established*

- *Establishing*

- *+/- regularly*



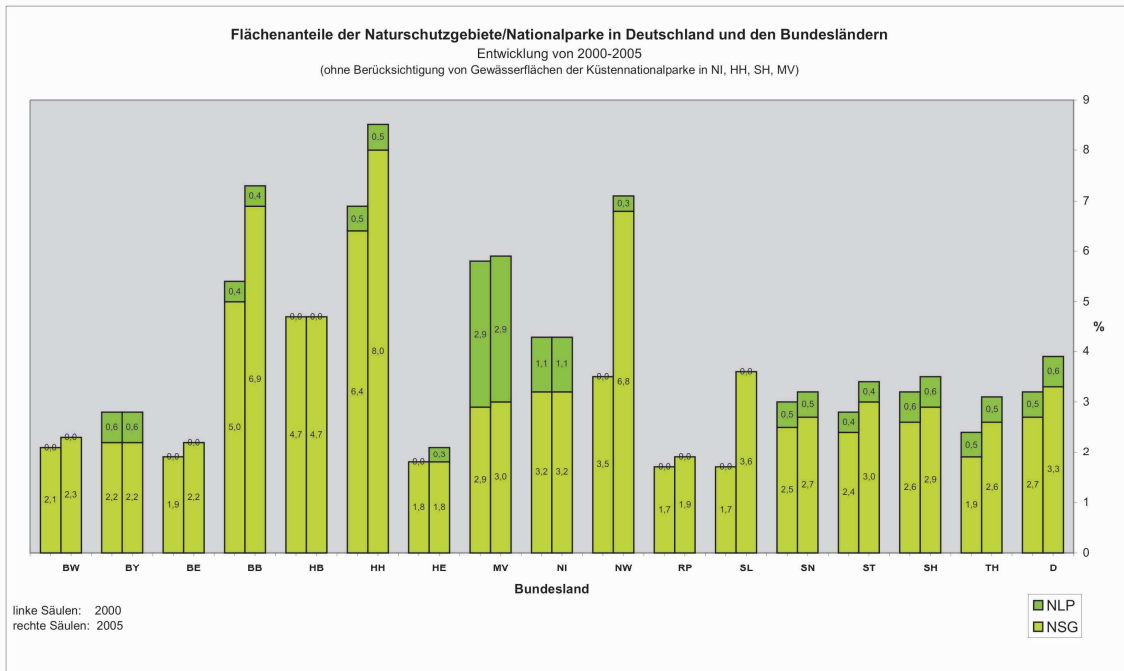
- *Rarely occurring*

*Source: Federal Agency for Nature Conservation*

**Indicator: Size of strictly protected areas**

This indicator (Figure H 5) represents the proportion of Germany's territory which is attributable to national parks and nature conservation areas (as per December 2005: Nature conservation areas account for 3.3 % of Germany's territory, corresponding to 1,185,402 ha).

Fig. H 5:



## &lt;Legende&gt;

*Proportions of land attributable to nature conservation areas/national parks in Germany and the Länder*

*Development from 2000 to 2005*

*(disregarding the water area of the coastal national parks in NI, HH, SH and MV)*

*Federal Land*

*Left-hand bar: figures for 2000*

*Right-hand bar: figures for 2005*

*NLP = National park*

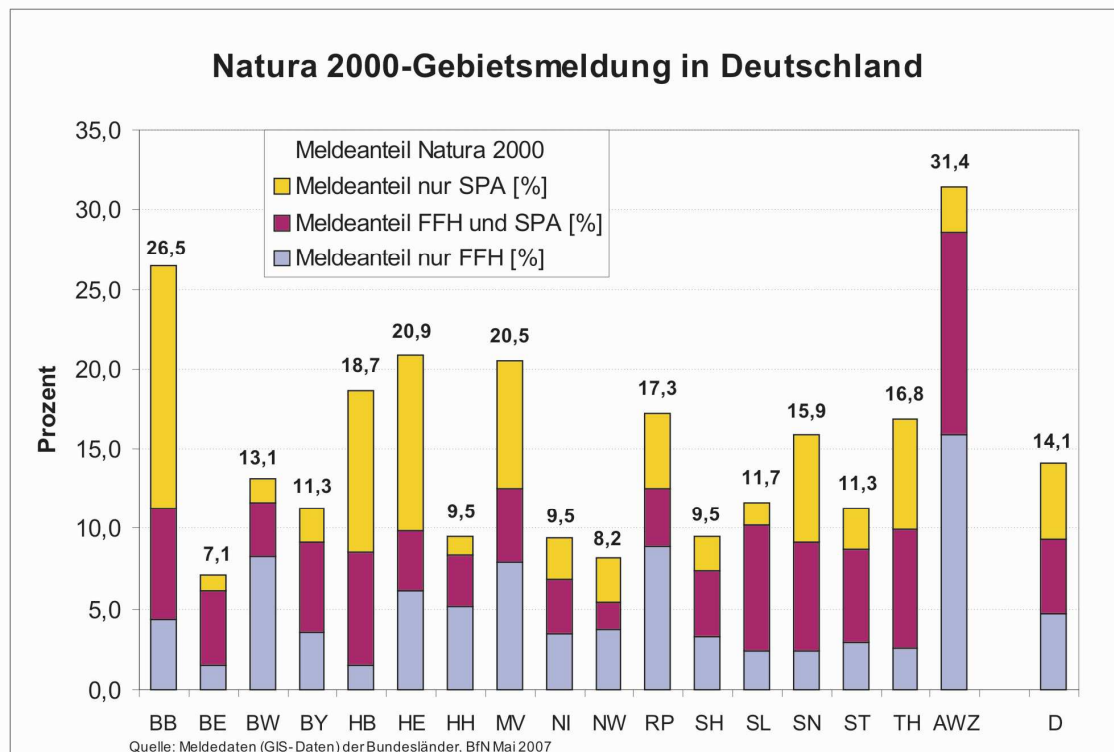
*NSG = Nature conservation area*

Source: Federal Office for Nature Conservation (BfN) (2007)

**Indicator: Natura 2000 area designations**

This indicator represents Natura 2000 areas reported to the European Commission as a proportion of Germany's terrestrial land (as at February 2005: 13 %) (Fig. H 6). It indicates which steps have been taken to achieve a coherent network of protected ecological areas in the EU.

**Fig. H 6:** Natura 2000 area designations in Germany (designated terrestrial land as a proportion of national territory, apart from the Exclusive Economic Zone: Designated marine area as a percentage of the total size of the EEZ)



<Legende>

*Natura 2000 area designations in Germany*

*Proportion reported as Natura 2000*

*Proportion reported as SPA only [%]*

*Proportion reported under the Habitats Directive and as SPA [%]*

*Proportion reported under the Habitats Directive only [%]*

*Percent*

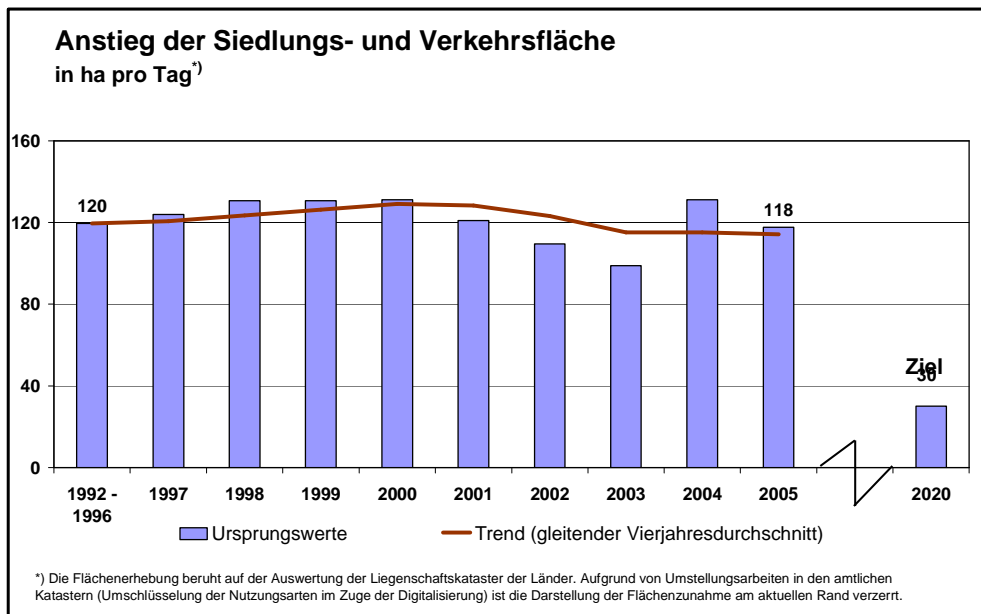
*Source: Reporting data (GIS data) from the Länder, BfN May 2007*

Source: Federal Office for Nature Conservation (BfN) (2007)

## Indicator: Land use: Increase in the amount of land used for human settlements and the transport infrastructure

Undeveloped, undissected and uninhabited land is a finite resource. In addition to the direct environmental consequences of increasing the amount of land used for human settlements and the transport infrastructure (such as the loss of natural soil functions due to sealing, the loss of fertile or semi-natural land and the loss of biodiversity), every new development in the vicinity of towns and cities and outside of existing core settlements generates more traffic, and hence further environmental impacts due to noise, energy consumption and pollutant emissions. For this reason, the German Government aims to limit the utilisation of new land for the purposes of human settlement and the transport infrastructure to 30 ha per day by the year 2020. Over the period 1992 to 2004, the amount of land used for human settlements and the transport infrastructure (Figure H 7) increased by 13.2 %, corresponding to an average increase of 121 ha per day.

Fig. H 7:



<Legende>:

Increase in the amount of land used for human settlements and the transport infrastructure in ha per day\*)

Target

Original values

Trend (sliding four-year average)

\*) The land survey is based on an evaluation of the property registers of the Länder. Due to the need to convert these official registers (re-coding of utilisation categories during the course of digitisation), the increase in land use may be somewhat distorted at the margins.

Source: Federal Statistical Agency, Indicator Report on the National Sustainability Strategy (2006)

### Indicator: Dissection of the landscape

This indicator (Figure H 8) represents a combination of two complementary sub-indicators:

- Sub-indicator “Number and area of undissected low-traffic areas”: This sub-indicator provides information on the number and area of undissected, low-traffic regions (as per 2005: Total area approx. 94,427 km<sup>2</sup>, number: 562). These are the last remaining large areas of land not dissected by roads (with more than 1,000 vehicles per day), railway lines (twin-track and single-track electrified lines), human settlements, airports or canals (with the status of a Category IV Federal waterway or above)
- Sub-indicator „Effective mesh size“ ( $m_{\text{eff}}$ )  
This sub-indicator represents the average level of dissection of the country. The effective mesh size ( $m_{\text{eff}}$  in km<sup>2</sup>) is the mathematical average of the “mesh size” of the transport network, which as well as considering the size of all sub-regions also makes allowance for the dissection structure of the area under consideration. It is particularly relevant in regions with very few large undissected low-traffic areas remaining.

The indicator investigates whether and to what extent measures to avoid or reverse the dissection effect, such as “green bridges” or “green underpasses” (wildlife crossings), may be taken into account, for example within the context of a further sub-indicator.

**Fig. H 8: Distribution of undissected low-traffic areas and figures for the effective mesh size in Germany**

Land	Land area [km <sup>2</sup> ] <sup>2</sup>	Effective mesh size [km <sup>2</sup> ] <sup>3</sup>	Undissected low-traffic areas > 100 km <sup>2</sup>		
			No. <sup>4</sup>	Area [km <sup>2</sup> ]	Percentage of territory
Baden-	35,751.36	34.72	18	2,736.19	7.65

Wuerttemberg					
Bavaria	70,549.19	68.55	86	15,026.11	21.30
Brandenburg	29,477.16	154.67	85	16,608.37	56.34
Hesse	21,114.72	37.95	12	2,096.94	9.93
Mecklenburg-West Pomerania	23,174.17	172.28	81	14,771.11	63.74
Lower Saxony	47,618.24	95.58	106	17,085.11	35.88
North Rhine- Westphalia	34,083.52	27.93	5	1,230.0	3.61
Rhineland- Palatinate	19,847.39	60.00	22	3,822.62	19.26
Saarland	2,568.65	19.38	0	55.27	2.15
Saxony	18,413.91	69.93	22	4,175.50	22.68
Saxony-Anhalt	20,445.26	112.17	40	7,218.00	35.30
Schleswig-Holstein	15,763.18	71.35	21	3,181.77	20.18
Thuringia	16,172.14	102.70	33	6,189.98	38.28
<b>D</b>	<b>357,030.32</b>	<b>83.75</b>	<b>562</b>	<b>94,426.95</b>	<b>26.45</b>

## Footnotes:

- <sup>1</sup> Comprehensive counts of district roads are not available for all *Länder*. However, all available district road statistics have been taken into account in these calculations and depicted in cartographic form.
- <sup>2</sup> Federal Statistical Office (2005)
- <sup>3</sup> Esswein, H. & Schwarz-v.Raumer, H.-G. (2005)
- <sup>4</sup> 31 undissected low-traffic areas > 100 km<sup>2</sup> are situated in the border region between *Länder* and have been allocated on a pro rata basis to the territory of the respective *Land*, but in total have only been counted once for Germany as a whole.

**Indicator: Urban sprawl**

This indicator will describe the impairment to biological diversity caused by the spatial structure of human settlement activity, and will therefore complement the indicators “Land use: Increase in the amount of land used for human settlements and the transport infrastructure” and “Dissection of the landscape”. It is due to be complete by late 2008.

**Indicator: Agro-environmental subsidy (subsidised area)**

This indicator provides information on land development within the context of agro-environmental subsidies in Germany (Figure H 9). It indicates the financial support given to land management techniques with an emphasis on sustainable production. In 2004, 29 % of agricultural land was eligible for such subsidies.

**Fig. H 9: Development of land within the context of agro-environmental subsidies in Germany**

Subsidised  
land (million  
hectares)

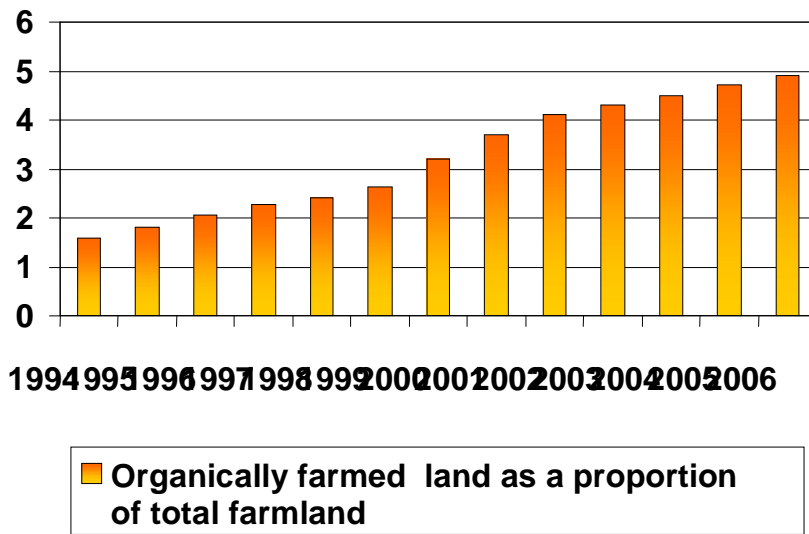
Source: Federal Ministry of Food, Agriculture and Consumer Protection (BMELV), agricultural reports by the German Government, Federal Environmental Agency

**Indicator: Organic farmland as a proportion of total agricultural land**

This indicator represents the proportion of organically farmed land as a percentage of total farmland in Germany (Figure H 10). Because of the special production methods used in organic farming, the indicator represents nature-compatibility in food production.



**Fig. H 10: Organically farmed land as a proportion of total agricultural land (%)**



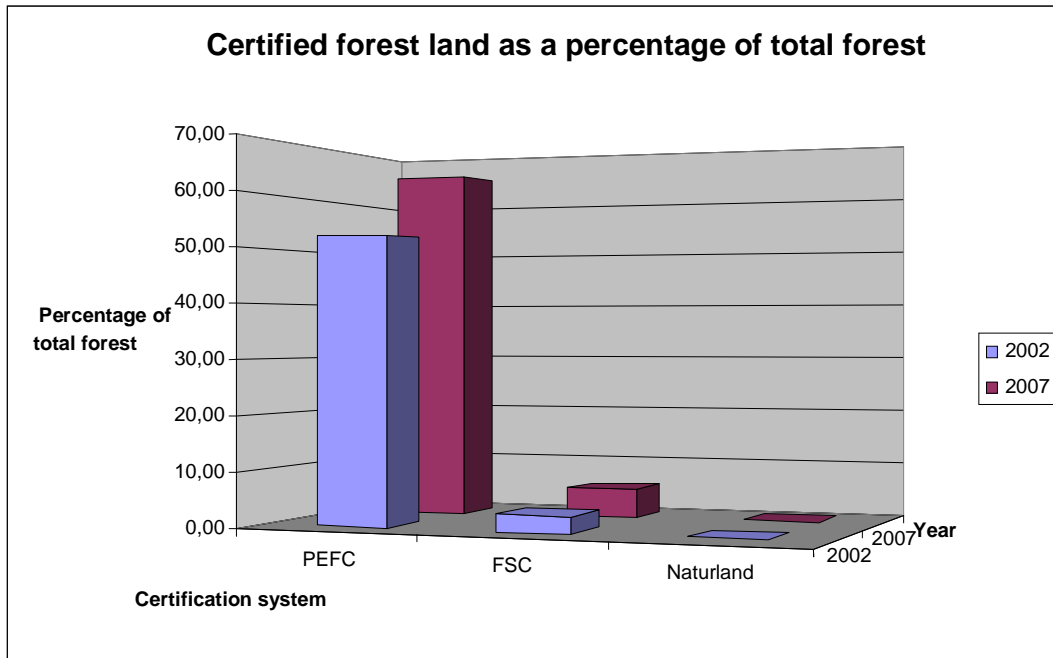
Status as at 31/12 each year

Source: SÖL

### **Indicator: Proportion of certified forest land in Germany**

This indicator measures the certified forest land currently in use in Germany (Figure H 11). Certified land represents the proportion of forestry land in which silviculture makes a particular contribution towards conserving biological diversity. Forest land certified under the PEFC, FSC and *Naturland* schemes are currently included in this indicator.

Fig. H 11:

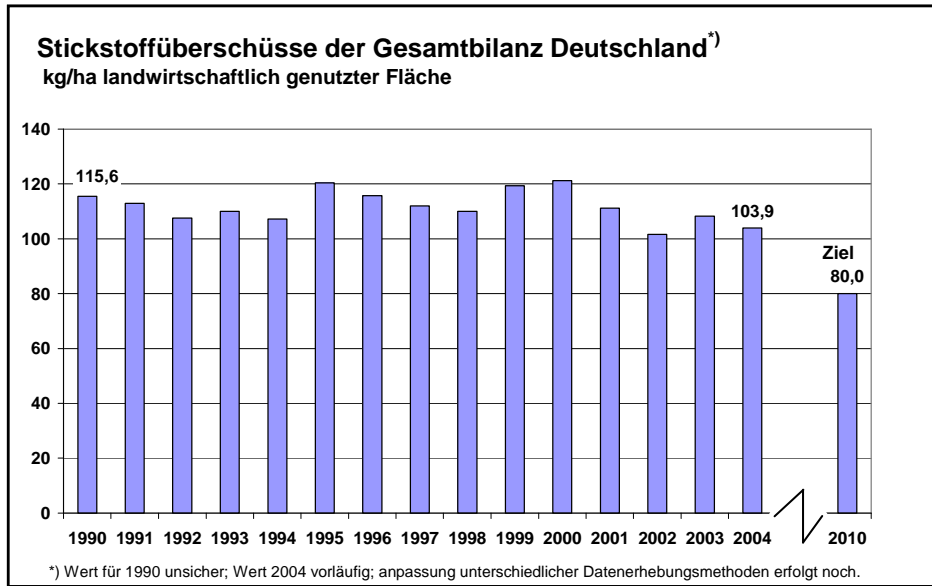


Source: Federal Office for Nature Conservation (BfN) (2007)

### Indicator: Nitrogen surplus (overall balance sheet)

This indicator is calculated from the total nitrogen balance. Nitrogen surpluses are calculated from the difference between nitrogen flows in agriculture and nitrogen flows emanating from it (Figure H 12). The calculated nitrogen surpluses are averages for Germany, and represent a yardstick of the potential discharges into groundwater, surface waters and the air. The nitrogen surplus from agricultural sources in Germany fluctuated between 100 and 120 kg/ha between 1991 and 2004. In 2004 it totalled around 104 kg/ha. The 2006 amendment to the Fertilisers Ordinance will lead to a further reduction in the nitrogen surplus.

Fig. H 12



<Legende>

*Nitrogen surpluses in Germany's overall balance sheet\*)*

*kg/ha of agricultural land*

*Target*

*\*) Figure for 1990 uncertain; figure for 2004 provisional; different data collection methods have yet to be consolidated*

Source: Federal Statistical Agency, Indicator Report on the National Sustainability Strategy (2006)

### **Indicator: Genetic engineering and agriculture**

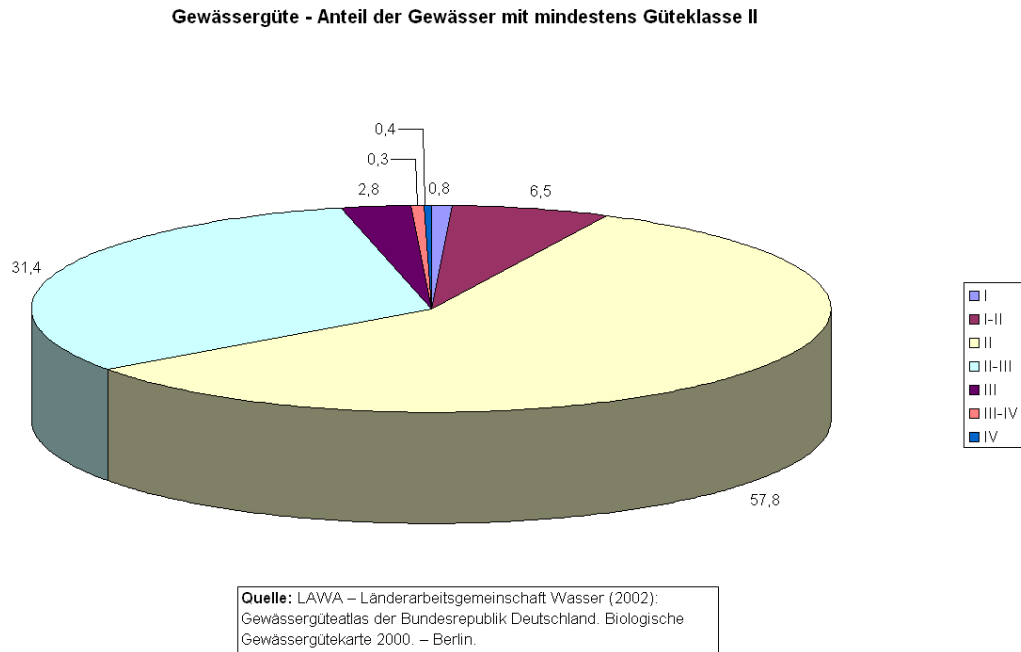
The indicator "Genetic engineering and agriculture" is comprised of two sub-indicators: "Land cultivated with genetic engineering" (the LIKI is currently working on an indicator with the same statement) and "Agricultural land without the cultivation of genetically modified plants". The indicator will be formulated by the end of 2007.

### **Indicator: Water quality – Proportion of waterbodies with a water quality grade of at least II**

For the purposes of the national biodiversity strategy, the indicator “water quality” under the heading “protection of natural resources” is ideal for making a statement on the quality of our waters.

The indicator (Figure H 13) adds together the sections of watercourses with no more than moderately polluted waters as a proportion of Germany’s combined watercourse length (status in 2000: 65.1 %; LAWA 2002). The indicator represents the biological water quality. It is also a yardstick of the living conditions in watercourses for the conservation of biological diversity.

Fig. H 13:



<Legende>

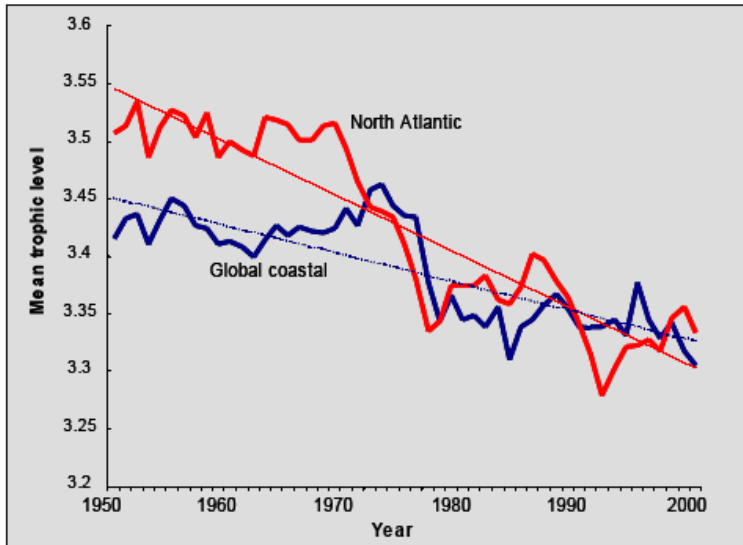
*Water quality – Proportion of waterbodies with a water quality grade of at least II*

*Source: LAWA – Länderarbeitsgemeinschaft Wasser (2002): Gewässergüteatlas der Bundesrepublik Deutschland. Biologische Gewässergütekarte 2000. - Berlin*

### **Indicator: Marine Trophic Index**

This indicator represents the average trophic level of commercial marine fish landings. A decrease in the indicator is indicative of rising fishing levels and overfishing. The indicator represents the utilisation intensity of marine fish use, which has increased significantly in recent decades, particularly in the North Atlantic (Figure H 14).

Fig. H 14: Development of the Marine Trophic Index, both globally and in the North Atlantic



#### **Indicator: Populations of selected commercial marine species**

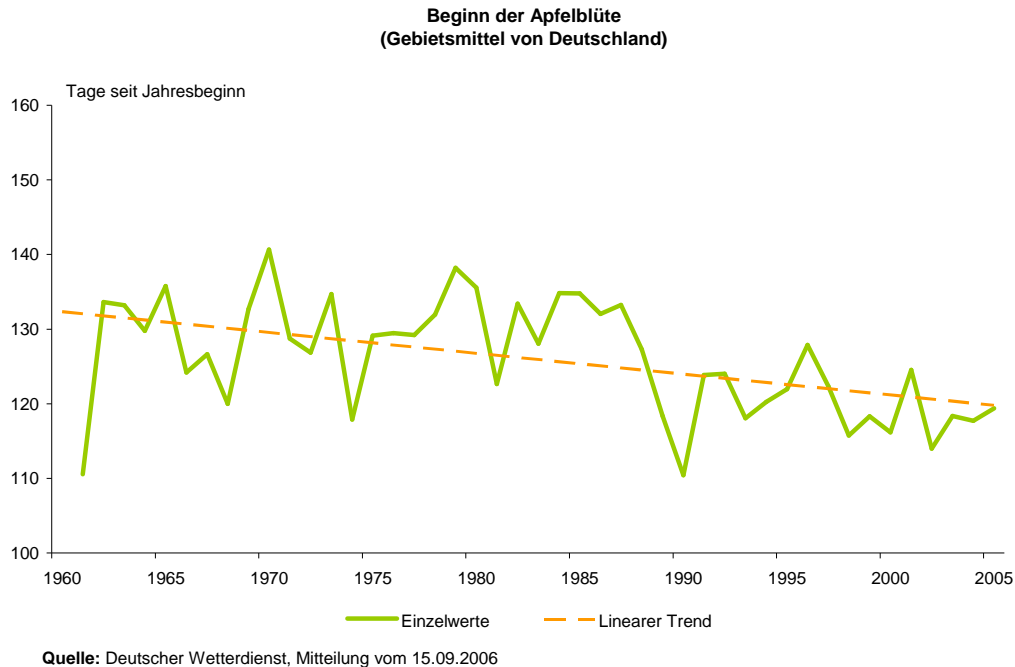
This indicator aggregates the spawning populations of selected commercial fish species (such as cod, sole, herring) and the number of individuals of selected invertebrates (such as the North Sea prawn, common mussel). In this way, the effects of fishing on species populations of various marine life forms may be represented in a summarised format. Based on preliminary work carried out by the European Environment Agency (EEA), the indicator is being further developed by the Federal Agency for Nature Conservation in collaboration with the Federal Research Centre for Fisheries for the set of indicators in the national biodiversity strategy; this work is expected to be completed by 2010.

#### **Indicator: Flowering season of indicator plants**

This indicator emulates the impacts of climate change using the example of apple blossom (Abb. H 16). Climate change in Germany and Europe is now so significant that initial effects are being seen in our flora and fauna. There are signs that the phenological spring phase has occurred significantly earlier during the past fifty years, which is a good reflection of the rise in temperatures in Germany over this

period. Average annual temperatures in Germany for the years 1901 to 2003 indicate an increase of 0.8°C in 100 years, with a rising trend.

Fig. H 16:



<Legende>

*Onset of apple blossom (area average for Germany)*

*Days into the year*

*Individual values*

*Linear trend*

*Source: Deutscher Wetterdienst (German Meteorological Service), communication dated 15 September 2006*

### **Indicator: Significance of environmental policy goals and tasks**

This indicator summarises the results of public surveys on the importance of protecting biological diversity. The 2004 study on environmental awareness found that 49 % of respondents rated the objective of "preventing the extinction of fauna and flora species" as very important, while 42 % rated the task of "ensuring improved

nature conservation" as very important (BMU 2004). This indicator should be available from 2008.

#### **H 4 Integrating the set of indicators into national indicator systems**

##### **H 4.1 Indicators of the national sustainability strategy**

The following indicators from the national sustainability strategy represent the status and development of biological diversity and the actions which affect them, and also serve to evaluate the success of the national strategy on biological diversity:

- Indicator: Sustainability indicator for species diversity
- Indicator: Land use: Increase in the amount of land used for human settlements and the transport infrastructure
- Indicator: Organic farmland as a proportion of total agricultural land
- Indicator: Nitrogen surplus (overall balance sheet).

##### **H 4.2 System of core environmental indicators (KIS)**

The Federal Environmental Agency (UBA) in collaboration with the Federal Office for Nature Conservation (BfN) has developed a system of 58 core environmental indicators (KIS) outlining developments in the fields of climate, biodiversity, environment and resource use. The core environmental indicators (KIS) provide the basis for the indicators in the national biodiversity strategy. The following KIS indicators were selected for the system of indicators used in this strategy:

- Indicator: Natura 2000 area designations
- Indicator: Size of strictly protected areas
- Indicator: Endangered species
- Indicator: Number of non-native fauna and flora species in Germany
- Indicator: Agro-environmental subsidy (subsidised area)
- Indicator: Dissection of the landscape
- Indicator: Flowering season of indicator plants



The NHS indicators cited in chapter H 4.1 likewise belong to the KIS indicators.

### **H 4.3 Sustainable development indicators of the Federal and *Länder* Governments (LIKI indicators)**

The “Federal/Länder Working Group on Sustainable Development” (BLAG NE) was commissioned by the Conference of Environmental Ministers to present a set of 24 core environmental indicators for sustainable development. The indicators were prepared in close collaboration with the *Länder* initiative for a core set of indicators (LIKI) by the *Land* environment authorities, with the aim of ensuring the uniform application of indicators at Federal and *Länder* level. The LIKI indicators are designed to embrace all environment-related aspects of sustainability (such as climate protection, mobility, land use, protection of natural resources). Some LIKI indicators also form part of the sustainability strategy or the KIS (cf. Table 2).

As such, the LIKI indicators are also relevant to the national strategy on biological diversity, and facilitate the assessment of development at *Länder* level.

The following LIKI indicators were included in the set of indicators for the strategy:

- Indicator: Conservation status of habitat types and species under the Habitats Directive
- Indicator: Water quality – Proportion of waterbodies with a water quality grade of at least II

Other indicators from chapters H 1 and H 2 are likewise included in the LIKI indicators (cf. Table H 1).

### **H 4.4 Other indicators developed at national level**

In addition, the following indicators will be included in the set of indicators of the strategy, and were developed or further developed specifically for this purpose at Federal Government level.

- Indicator: Urban sprawl
- Indicator: Populations of selected commercial marine species
- Indicator: Genetic engineering in agriculture
- Indicator: Proportion of certified forest land in Germany

- Indicator: Significance of environmental policy goals and tasks.

## **H 5 Integrating the set of indicators into international and European indicator systems**

### **Indicators of the Convention on Biological Diversity (CBD)**

As part of the CBD, indicators are to be used to assess the success of measures for the conservation of biological diversity. In addition to the indicators already available at national and international level, new ones will also be developed and represented with the aim of achieving a more comprehensive depiction of changes in biological diversity. The 7th Conference of the Parties to the CBD drafted a list of current and future indicators for the assessment of the 2010 goal (Decision VII/30 Annex I). This list was concretised and further developed at the 8<sup>th</sup> Conference of the Parties (Decision VIII/15 Annex II). These proposals have been taken into account when formulating the national strategy indicators.

The following CBD indicator was included in the set of indicators for this strategy:

- Indicator: Marine Trophic Index.

### **European development of indicators**

The indicator process “Streamlining European Biodiversity Indicators (SEBI 2010)”, which is currently ongoing, amalgamates global, European and EU requirements with regard to indicators in the field of biodiversity. A joint set of indicators is being developed to combine indicator developments at international level and to assess implementation of the CBD at European level. Indicators on the status of biodiversity will soon be ready for implementation. *Inter alia*, indicators are being developed to assess population changes in bird, butterfly and other species, to identify changes in the size of valuable habitats, and to reflect changes in the risk situation of endangered and protected species.

### **Indicators for marine regions**

In collaboration with the International Council for the Exploration of the Sea (ICES), and with the involvement of the Federal Research Centre for Fisheries, the EU

Commission has developed an indicator “Populations of selected commercial marine species”, which it is hoped will serve as a basis for assessing progress in the national strategy on biological diversity:

Under the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic, a system of Ecological Quality Objectives (EcoQO) is to be developed, part of which will also be used as indicators to evaluate the effectiveness of protective measures. Under a resolution by the 5<sup>th</sup> International Conference on the Protection of the North Sea, ten such EcoQOs are to be trialled as a pilot project for the North Sea (including the German regions). These 10 EcoQOs include the development of the seal population and monitoring of the imposex phenomenon (whereby female animals develop male sex organs and become infertile) in whelks.

## H 6 Monitoring systems

### **Improvement in the data situation**

The data collated within the context of monitoring programmes provides a key foundation for the current representation of indicators. Specific monitoring programmes are needed for the “State Indicators” used in the national strategy on biological diversity, which are outlined below. The monitoring programmes supply the results required for the indicators of this strategy (such as bird population data for the sustainability indicator on species diversity), as well as providing further information which can be used to help shape nature conservation policy. The regulation of competencies in Germany means that usually the *Länder* are usually responsible for the collation of monitoring data on biological diversity, with the exception of the Exclusive Economic Zone (EEZ). The monitoring areas, which are categorised to represent the status of biological diversity in Germany, will be strengthened in future with the implementation of monitoring programmes, in order to facilitate the depiction of all indicators in the national strategy on biological diversity.

### **Monitoring of bird species in Germany**

The *Dachverband Deutscher Avifaunisten* (Federation of German Avifaunists, DDA) in collaboration with the *Deutsche Ornithologen-Gesellschaft* (German Ornithologists' Society) and the *Naturschutzbund Deutschland* (German Society for Nature Conservation, NABU) are involved in the voluntary mapping of bird species, which is tailored to biodiversity aspects. Bird monitoring encompasses common and rare species of breeding birds, as well as resting waterfowl. Conceptually, the monitoring programme for common bird species is based on the early work for ecological area sampling, thereby facilitating a nationwide extrapolation of populations and trends.

The programme will provide data enabling the sustainability indicator for species diversity to be updated. The programme is to be institutionalised in order to support and permanently protect the voluntary system of bird monitoring (citizen science). In the medium to long-term, monitoring will be continued by the *Stiftung Vogelmonitoring Deutschland* (German Bird Monitoring Foundation). The monitoring of waterfowl and resting birds at sea is officially ensured by the responsible *Länder* and the Federal Government.

### **Butterfly monitoring in Germany**

A project by the *Umweltforschungszentrum* (Environmental Research Centre) Halle-Leipzig in collaboration with the Federal Government and ZDF, is in the process of setting up a voluntary system of butterfly monitoring.

### **Monitoring under the Habitats Directive**

Article 11 of the Habitats Directive obligates Member States to monitor the conservation status of habitat types and species of European interest. This obligation encompasses all habitat types (Annex I) and species (Annexes II, IV and V) in the Directive. In Germany, the Federal *Länder* are responsible for the implementation of monitoring, while in Germany's Exclusive Economic Zone (EEZ) of the North and Baltic Seas, responsibility lies with the Federal Government. The Federal Office for Nature Conservation accompanies this process in a coordinating capacity. Proposals for surveying and assessing conservation status are developed jointly. The monitoring results will represent the population size, area, habitat quality, and

impairments. These results provide the basis for the indicator "Conservation status of habitat types and species under the Habitats Directive".

### **Monitoring in the coastal and marine region**

In Germany's Exclusive Economic Zone (EEZ) of the North and Baltic Seas, responsibility for monitoring lies with the Federal Government, while responsibility for the coastal sea region (12 nautical mile zone) lies with the coastal *Länder*. Given the high momentum and continuous exchange process between marine regions, the monitoring programmes required for implementation of the EU Water Framework Directive, the Habitats Directive and the Birds Directive are carried out in a system of nationwide cooperation between the Federal Government and *Länder*. This monitoring programme will also cover the monitoring obligations arising from resolutions under the marine conservation conventions OSPAR and HELCOM. In order to meet this target, there are plans to restructure and expand the existing Federal/*Länder* Measurement Programme in the North and Baltic Sea (BLMP). The Helsinki Commission on the Protection of the Marine Environment of the Baltic Sea Area (HELCOM) will draw up a HELCOM Baltic Sea Action Plan by the end of 2007. In an initial step, ecological quality targets for the four priority areas of eutrophication, hazardous substances, shipping and biodiversity have been compiled. Supplementary to this, initial potential indicators have been identified which will form a key component of the HELCOM Baltic Sea Action Plan.

### **Monitoring of genetically modified organisms**

Under the EC Directive, every genetically modified organism which is licensed for marketing is subject to compulsory monitoring. Monitoring aims to document any unforeseen impacts of the genetically modified organism and its use on human health and the environment. According to EU regulations, monitoring must be capable of identifying any direct and indirect, immediate and long-term as well as cumulative and unforeseen effects. To date there has been no coordinated EU-wide concept for the monitoring of genetically modified organisms. In order to identify any potential impairments to biological diversity associated with genetically modified organisms, new monitoring programmes are currently being set up in Germany (such

as biodiversity monitoring with extensions to include specific aspects relating to genetically modified organisms).

### **GEOSS, GMES and INSPIRE**

The 2003 Earthwatch Summit in Washington highlighted species conservation and species diversity as a key topic in the development of a Global Earth Observation System of Systems (GEOSS). Europe's contribution is the Global Monitoring for Environment and Security (GMES) programme, focussing initially on the development of monitoring services for land coverage and land use. The development of an Infrastructure for Spatial Information in Europe (INSPIRE) will additionally obligate Member States to make decision-critical data records available for the conservation of biological diversity.

A powerful geodata infrastructure which transcends Federal Government, *Länder* and local governments, and which links together decentralised data records from a wide range of specialist administrations, is needed in order to provide a decision-making basis for the development of activities and the control thereof throughout all action areas and for the purposes of subsequent monitoring, partly in order to facilitate operative implementation of the national strategy on biological diversity. By developing data records and via the use of geo-Web services and the creation of interoperability based on prescribed standards, the German Government hopes to promote this process as its contribution towards implementation of the INSPIRE Directive 2007/2/EC.

## I Appendix

### I 1 Allocation to CBD resolutions, the EU biodiversity strategy and relevant German sector strategies

The various chapters of the National Strategy on Biological Diversity contain references to the following resolutions of previous Conferences of the Parties (COPs) to the Convention on Biological Diversity:

- COP I: Nassau, Bahamas; 28 November – 9 December 1994
- COP II: Jakarta, Indonesia; 6 – 17 November 1995
- COP III: Buenos Aires, Argentina; 4 – 5 November 1996
- COP IV: Bratislava, Slovakia; 4 – 15 May 1998
- COP V: Nairobi, Kenya; 15 – 26 May 2000
- COP VI: The Hague, Netherlands; 7 – 19 April 2002
- COP VII: Kuala Lumpur, Malaysia; 9 – 20 February 2004
- COP VIII: Curitiba, Brazil; 20 – 31 March 2006
- BS: Kuala Lumpur, Malaysia; 23 – 27 February 2004 (Biosafety).

The various chapters of the national strategy on biological diversity contain references to the following strategies and action plans of EU biodiversity policy:

- EU biodiversity strategy of 1998
- EU action plan to conserve natural resources of 2001
- EU action plan on agriculture of 2001
- EU action plan on fisheries of 2001
- EU action plan for economic development cooperation of 2001
- European plant conservation strategy of 2001



- EU “Message from Malahide” of 2004
- Commission Communication “Halting the loss of biological diversity by 2010 – and beyond” of 2006
- “EU action plan until the year 2010 and beyond” of 2006
- EU leading indicators for biological diversity of 2006
- EU action plan “Forest Law Enforcement, Governance and Trade (FLEGT) of 2003

The Commission Communication on Halting the Loss of Biological Diversity by the year 2010 – and Beyond contains the following four key policy areas and ten priority Objectives:

- ***Policy area 1: Biodiversity in the EU***
  - Objective 1: To safeguard the EU’s most important habitats and species.
  - Objective 2: To conserve and restore biodiversity and ecosystem services in the wider EU countryside
  - Objective 3: To conserve and restore biodiversity and ecosystem services in the wider EU marine environment
  - Objective 4: To reinforce compatibility of regional and territorial development with biodiversity in the EU.
  - Objective 5: To substantially reduce the impact on EU biodiversity of invasive alien species and alien genotypes
- ***Policy area 2: The EU and global biodiversity***
  - Objective 6: To substantially strengthen effectiveness of international governance for biodiversity and ecosystem services.
  - Objective 7: To substantially strengthen support for biodiversity and ecosystem services in EU external assistance.
  - Objective 8: To substantially reduce the impact of international trade on global biodiversity and ecosystem services.

- **Policy area 3: Biodiversity and climate change**
  - Objective 9: To support biodiversity adaptation to climate change
- **Policy area 4: The knowledge base**
  - Objective 10: To substantially strengthen the knowledge base for conservation and sustainable use of biodiversity, in the EU and globally.

The various chapters of the National Strategy on Biological Diversity include references to the general national sustainability strategy and to the following relevant German sector strategies:

- Agrobiodiversity strategy of the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV) (sector strategy)
- Biodiversity sector concept of the Federal Ministry for Economic Cooperation and Development (BMZ)
- Strategy on the conservation and sustainable use of biological diversity in Germany's forests (BMELV, *Länder*) (sector strategy)
- Programme for the conservation of forest genetic resources
- National programme on animal genetic resources
- National programme on aquatic genetic resources
- National programme for the conservation of genetic resources for food, agriculture and forestry
- National marine strategy
- National strategy for integrated coastal zone management.
- National plant genome research programme ("GABI – Genome analysis in the biological system") of the Federal Ministry of Education and Research (BMBF)
- National animal genome research programme ("FUGATO – Functional genome analysis in the animal organism") of the BMBF
- National research priority "Systems biology" of the BMBF

The various references contained in each chapter of the National Strategy on Biological Diversity are listed below:

## **A CURRENT SITUATION**

### CBD:

- Convention on Biological Diversity: Articles 1-42
- Decision IV/14: National reports by the Member States
- Decision V/19: National reporting
- Decision V/20: Strategic plan and 2010 targets
- Decision VI/9: Global Strategy for Plant Conservation (GSPC)
- Decision VI/25; VII/25: National reporting
- Decision VI/26: Strategic plan for the Biodiversity Convention
- Decision VIII/8: Implementation of the Convention and its strategic plan
- Decision VIII/31: Administration and budget for the work programme 2007 – 2008

### The EU:

- European biodiversity strategy of 1998
- European plant conservation strategy of 2001
- EU action plan on natural resources of 2001
- EU action plan on agriculture of 2001
- EU action plan on fisheries of 2001
- EU action plan on economic development and cooperation of 2001
- EU "Message from Malahide" of 2004
- Commission Communication of 2006
- EU action plan until the year 2010 and beyond

### National:

- Agrobiodiversity strategy of the BMELV
- Programme for the conservation of forest genetic resources
- National programme on animal genetic resources

## **B CONCRETE VISION**

### **B 1 Conserving biological diversity**

#### **B 1.1 Biodiversity**

##### **B 1.1.1 Biodiversity in general**

###### CBD:

- Decision VI/26: Strategic plan and 2010 targets
- Decision VII/30: Strategic plan – Future evaluation
- Decision VII/31: Multi-year work programme until 2010
- Decision VIII/8: Implementation of the Convention and its strategic plan

###### The EU:

- EU resolution to halt the loss of biological diversity (Göteborg Summit)
- 5th Pan-European Conference of Environment Ministers, 2003, in Kiev
- EU “Message from Malahide” of 2004
- Commission Communication of 2006

###### National:

- National sustainability strategy

##### **B 1.1.2 Species diversity / B 1.1.4 Genetic diversity**

###### CBD:

- Decision III/11: Protection and sustainable use of agro-biodiversity
- Decision III/12: Work programme for terrestrial biodiversity: Forests
- Decision III/13: Work programme for terrestrial biodiversity: Forests, mountains, inland waters
- Decision IV/5: Work programme for the protection and sustainable use of marine and coastal ecosystems
- Decision V/8: Alien species that threaten ecosystems, habitats and species
- Decision V/9: Global taxonomy initiative
- Decision V/10: Global plant conservation strategy
- Decision VI/8: Global taxonomy initiative

- Decision VI/9: Global Strategy for Plant Conservation (GSPC)
- Decision VII/9: Global taxonomy initiative
- Decision VII/13: Alien species that threaten ecosystems, habitats and species
- Decision VII/28: Protected areas

The EU:

- Objective II 1/2: Conservation of ecosystems and species
- Objective II 1/3: In-situ conservation: Natura 2000 network
- Objective II 1/4: Non-native species
- Objective II 1/5: Introduction of genetically modified organisms
- Objective II 1/2-4: Conservation of natural assets
- European plant conservation strategy
- EU action plan on natural resources
- EU action plan on agriculture
- EU action plan on fisheries
- Objectives 1 – 5 and 9 of the Commission Communication of 2006

National:

- Agrobiodiversity strategy of the BMELV
- Programme for the conservation of forest genetic resources
- National programme on animal genetic resources

**B 1.2 Habitats**

**B 1.2.1 Forests**

CBD:

- Decision II/9: Forests and biodiversity
- Decision III/12: Work programme on biodiversity in forests
- Decision IV/7: Forest biodiversity
- Decision V/4: Progress report on implementation of the work programme
- Decision VI/9: Global Strategy for Plant Conservation (GSPC)

- Decision VI/22: Biodiversity in forests

The EU:

- Objective II 1/3: In-situ conservation: Natura 2000
- Objective II 5/ 26-29: Forests
- EU action plan on natural resources
- Objectives 1, 2 and 4 of the Commission Communication of 2006

National:

- Strategy on the conservation and sustainable use of biological diversity in Germany's forests (BMELV, *Länder*) (sector strategy)
- Programme for the conservation of forest genetic resources
- National plant genome research programme ("GABI – Genome analysis in the biological system") of the Federal Ministry of Education and Research (BMBF)
- National animal genome research programme ("FUGATO – Functional genome analysis in the animal organism") of the BMBF
- National research priority "Systems biology" of the BMBF

### **B 1.2.2 Coastlines and oceans**

CBD:

- Decision II/10: Protection and sustainable use of biodiversity in marine and coastal regions
- Decision IV/5: Work programme for the protection and sustainable use of marine and coastal ecosystems
- Decision V/3: Progress report on implementation of the work programme on biodiversity in the marine and coastal region
- Decision VI/3: Marine and coastal biodiversity (SBSTTA recommendation)
- Decision VII/5: Marine and coastal biodiversity
- Decision VIII/21: Conservation and sustainable use of the genetic resources of the deep sea
- Decision VIII/22: Implementation of integrated marine and coastal management

The EU:

- Objective II 1/3: In-situ conservation Natura 2000
- Objective III 3/ 17-20: Fisheries

- EU action plan on fisheries
- Objectives 3 and 9 of the Commission Communication of 2006

National:

- National marine strategy
- National strategy for integrated coastal zone management

**B 1.2.3 Lakes, ponds, pools and lagoons / B 1.2.4 Rivers and water meadows / B 1.2.5 Peatlands**

CBD:

- Decision III/13: Future work programme on terrestrial biodiversity (water ecosystems)
- Decision IV/4: Status and trends in the biodiversity of inland waters and options for their protection and sustainable use
- Decision V/2: Progress report on implementation of the work programmes on the biodiversity of inland water ecosystems
- Decision VI/2: Biodiversity of inland waters
- Decision VII/4: Biodiversity of inland water ecosystems
- Decision VIII/20: Biodiversity of inland water ecosystems
- Decision VIII/24: Protected areas

The EU:

- Objective II 1/3: In-situ conservation Natura 2000
- Objective III 3/ 17-20: Fisheries
- EU action plan on natural resources: 3.3. Protection of wetland areas
- EU action plan on fisheries
- Objectives 1, 2, 5 and 9 of the Commission Communication of 2006

**B 1.2.6 Mountains**

CBD:

- Decision III/13: Work programme on terrestrial biodiversity (mountains)
- Decision VII/27: Biodiversity in mountains
- Decision VIII/24: Protected areas

The EU:

- Objective II 1/3: In-situ conservation Natura 2000
- European plant conservation strategy
- Objectives 1, 2 and 9 of the Commission Communication of 2006

### **B 1.3 Landscapes**

#### **B 1.3.1 Areas of wilderness / B 1.3.2 Cultivated landscapes / B 1.3.3 Urban landscapes**

##### CBD:

- Decision VI/9: Global Strategy for Plant Conservation (GSPC)
- Decision VII/28: Protected areas
- Decision VII/12: Sustainable use
- Decision VII/11: Ecosystem approach
- Decision VII/14: Biodiversity and tourism
- Decision VII/24: Education and public awareness
- Decision VIII/24: Protected areas

##### The EU:

- Objective II 1/3: In-situ conservation Natura 2000
- Objective II 1/ 2-4: Conservation of natural assets
- European plant conservation strategy
- EU action plan on natural resources
- EU action plan on agriculture
- Objectives 1, 2 and 9 of the Commission Communication

##### National:

- Strategy on the conservation of biological diversity in Germany's forests (BMELV, *Länder*)
- Agrobiodiversity strategy of the BMELV

### **B 2 The sustainable use of biological diversity**

#### **B. 2.1 Nature-compatible management**

##### CBD:

- Decision III/18: Incentive measures



- Decision III/21: Relationship between the Convention and the Commission for Sustainable Development and biodiversity-related conventions, institutions and processes
- Decision V/15: Incentive measures
- Decision VI/9: Global Strategy for Plant Conservation (GSPC)
- Decision VI/13: Sustainable use
- Decision VI/15: Incentive measures
- Decision VII/12: Sustainable use

The EU:

- Objective II 1/7-8: Financial incentives for the sustainable use of elements of species diversity
- Objective II 1/9: Abolition of incentives that are harmful to biodiversity
- EU action plan on natural resources: *Including 4.2.7 Eco-label; 4.2.8 Economic instruments*
- EU action plan on agriculture
- EU action plan on fisheries
- EU action plan on economic and development cooperation
- Objectives 6, 7 and 8 of the Commission Communication of 2006

National:

- National sustainability strategy

**B 2.2 The government as role model**

- CBD: Decision III/18: Incentive measures
- Decision III/21: Relationship between the Convention and the Commission on Sustainable Development and biodiversity-related conventions, institutions and processes
- Decision V/6: Ecosystem approach
- Decision VI/12: Ecosystem approach
- Decision VI/13: Sustainable use
- Decision VII/12: Sustainable use
- Decision V/15: Incentive measures
- Decision V/17: Education and public awareness
- Decision VI/15: Incentive measures

- Decision VI/19: Education and public awareness
- Decision VII/24: Education and public awareness

The EU:

- Objective II 1/8: Award of eco-labels
- Objective II/ 1/9: Abolition of incentives that are harmful to biodiversity
- EU action plan on natural resources: Including 4.2.1 Precautionary principle; 4.2.6 Public awareness; 4.2.7 Eco-label; 4.2.8 Eco-audit
- EU action plan on economic and development cooperation

National:

- National sustainability strategy
- Biodiversity sector concept of the Federal Ministry for Economic Cooperation and Development (BMZ)

**B 2.3 Effects of German activities on biological diversity worldwide**

CBD:

- Decision III/21: Relationships between the Biodiversity Convention and the Commission on Sustainable Development and biodiversity-related conventions, other international conventions, institutions and relevant processes
- Decision IV/15: Relationships between the Biodiversity Convention and the Commission on Sustainable Development and biodiversity-related conventions, other international conventions, institutions and relevant processes
- Decision V/17: Education and public awareness
- Decision VI/19: Education and public awareness
- Decision VI/20: Cooperation with other organisations, initiatives and conventions
- Decision VII/24: Education and public awareness
- Decision VII/31: Multi-year work programme of the Conferences of the Parties until 2010

The EU:

- EU action plan on natural resources: Including 5.3.3 International forest policy
- EU action plan on economic and development cooperation
- Objectives 6, 7 and 8 of the Commission Communication of 2006

National:

- Biodiversity sector concept of the Federal Ministry for Economic Cooperation and Development (BMZ)
- National sustainability strategy
- Agrobiodiversity strategy of the BMELV

**B 2.4 Agriculture**CBD:

- Decision III/13: Protection and sustainable use of agricultural biodiversity
- Decision V/5: Agricultural biodiversity: Review of the work programme
- Decision IV/6: Agricultural biodiversity
- Decision VII/3: Agricultural biodiversity

The EU:

- Objectives III/ 2/ 5-16: Agriculture
- EU action plan on natural resources: Including 4.1.1 Landscape; 4.1.3 Structural fund
- EU action plan on agriculture
- Objective 2 of the Commission Communication of 2006

National:

- Agrobiodiversity strategy of the BMELV
- National programme on animal genetic resources
- National marine strategy
- National plant genome research programme (“GABI – Genome analysis in the biological system”) of the Federal Ministry of Education and Research (BMBF)
- National animal genome research programme (“FUGATO – Functional genome analysis in the animal organism”) of the BMBF
- National research priority “Systems Biology” of the BMBF

**B 2.5 Soil use**CBD:

- Decision III/18: Incentive measures

- Decision V/6: Ecosystem approach
- Decision V/15: Incentive measures
- Decision VI/12: Ecosystem approach
- Decision VI/13: Sustainable use
- Decision VI/15: Incentive measures
- Decision VII/12: Sustainable use
- Decision VIII/23B: International initiative for the conservation and sustainable use of biodiversity

The EU:

- EU action plan on natural resources: Including 3.1 Water Framework Directive; 4.2.3 Environmental pressures
- EU action plan on agriculture
- Objectives 2 and 4 of the Commission Communication of 2006

National:

- National sustainability strategy

## **B 2.6 Mining of raw materials and energy extraction**

CBD:

- Decision III/18: Incentive measures
- Decision V/6: Ecosystem approach
- Decision V/15: Incentive measures
- Decision VI/12: Ecosystem approach
- Decision VI/13: Sustainable use
- Decision VI/15: Incentive measures
- Decision VIII/23: Incentive measures

The EU:

- Objectives III 6/ 30-31: Energy and transport
- EU action plan on natural resources: Including 5.2.1 Climate change

National:

- National sustainability strategy
- National plant genome research programme (“GABI – Genome analysis in the biological system”) of the Federal Ministry of Education and Research (BMBF)

## **B 2.7 Land use for human settlement and transport**

### CBD:

- Decision III/18: Incentive measures
- Decision V/6: Ecosystem approach
- Decision V/15: Incentive measures
- Decision VI/12: Ecosystem approach
- Decision VI/13: Sustainable use
- Decision VI/15: Incentive measures
- 

### The EU:

- Objectives III 2/8: Sustainable land use
- Objectives III 4/ 21-25: Regional policy-making and regional planning
- Objectives III 6/ 30-31: Energy and transport
- Objective 4 of the Commission Communication of 2006

### National:

- National sustainability strategy

## **B 2.8 Mobility**

### CBD:

- Decision III/18: Incentive measures
- Decision V/15: Incentive measures
- Decision V/17: Education and public awareness
- Decision VI/15: Incentive measures
- Decision VII/14: Biodiversity and tourism

### The EU:

- Objectives III 4/ 21-25: Regional development and regional planning
- Objective 4 of the Commission Communication of 2006

### National:

- National sustainability strategy

### **B 2.9 Nature-based recreation and tourism**

#### CBD:

- Decision V/25: Biodiversity and tourism
- Decision VI/14: Biodiversity and tourism
- Decision VII/14: Biodiversity and tourism

#### The EU:

- Objectives III 7/ 32-37: Tourism
- Objectives III 4/ 21-25: Regional development and regional planning
- EU action plan on economic and development cooperation
- Objectives 2 and 4 of the Commission Communication of 2006

### **B 3 Environmental influences on biological diversity**

#### **B 3.1 Area-wide diffuse substance discharges**

#### CBD:

- Decision VII/7: Assessment of environmental influences

#### EU:

- Objective III 6/ 30-31: Energy and transport
- European strategy for the conservation of plant diversity of 2001
- EU action plan on natural resources: Including 4.2.3 Environmental pressures
- EU action plan on agriculture

#### **B 3.2 Climate change**

#### CBD:

- Decision VII/15: Biodiversity and climate change

#### EU:

- Objective III 5/29: Climate change and forest ecosystem
- European strategy on plant monitoring of 2001

- EU action plan on natural resources: Including 5.2.1 Climate change; 5.2.3 Ozone layer
- Action plan on economic and development cooperation
- Objective 9 of the Commission Communication

National:

- Biodiversity sector concept of the Federal Ministry for Economic Cooperation and Development (BMZ)
- Strategy on the conservation and sustainable use of biological diversity in Germany's forests (BMELV, *Länder*)
- Programme for the conservation of forest genetic resources<sup>^</sup>
- Framework programme "Research for Sustainability" (FoNa) of the BMBF

**B 4 Genetic resources**

**B 4.1 Access to genetic resources and equitable sharing of benefits**

CBD:

- Decision II/11: Access to genetic resources
- Decision II/12: Intellectual property rights
- Decision III/15: Access to genetic resources
- Decision III/17: Intellectual property rights
- Decision IV/8: Access and benefit sharing
- Decision V/26: Access to genetic resources
- 
- Decision VI/24: Access and benefit sharing
- Decision VII/19: Access and benefit sharing
- Decision VIII/4: Access and benefit sharing (including international regime and Bonn Guidelines)



EU:

- Objective II 2/10: Benefit sharing etc.
- Objective II 2/11: National sovereignty over genetic resources
- EU action plan on natural resources: Including 4.3 Genetic resources

National:

- Biodiversity sector concept of the Federal Ministry for Economic Cooperation and Development (BMZ)
- Programme for the conservation of forest genetic resources
- National programme on animal genetic resources

**B 4.2 Conservation and sustainable use of genetic resources (in situ, ex situ, on farm)**CBD:

- Decision II/11: Access to genetic resources
- Decision III/10: Identification, monitoring, assessment
- Decision II/12: Intellectual property rights
- Decision III/15: Access to genetic resources
- Decision III/17: Intellectual property rights
- Decision IV/8: Access and benefit sharing
- Decision V/26: Access to genetic resources
- Decision VI/9: Global Strategy for Plant Conservation (GSPC)
- Decision VI/24: Access and benefit sharing
- Decision VII/19: Access and benefit sharing
- Decision VIII/4: Access and benefit sharing (including international regime and Bonn Guidelines)

EU:

- Objective II 1/6: Gene banks, breeding centres, zoos and botanical gardens
- Objective III 2/10: Conservation and sustainable use of genetic resources
- European strategy on plant monitoring of 2001
- EU action plan on natural resources: Including 4.3 Genetic resources

- Action plan on economic and development cooperation

National:

- Agrobiodiversity strategy of the BMELV
- Biodiversity sector concept of the Federal Ministry for Economic Cooperation and Development (BMZ)
- Programme for the conservation of forest genetic resources
- National programme on animal genetic resources
- National plant genome research programme (“GABI – Genome analysis in the biological system”) of the Federal Ministry of Education and Research (BMBF)
- National animal genome research programme (“FUGATO – Functional genome analysis in the animal organism”) of the BMBF
- National research priority “Systems biology” of the BMBF

**B 5 Social awareness**

CBD:

- Decision V/17: Education and public awareness
- Decision VI/9: Global Strategy for Plant Conservation (GSPC)
- Decision VI/19: Communication, education and public awareness
- Decision VII/24: Education and public awareness (Article 13)

EU:

- Objectives II 4/23-26: Education, training and public information
- European strategy on plant monitoring of 2001
- EU action plan on natural resources: Including 4.2.6 Participation and public awareness
- Action plan on economic and development cooperation
- Objective 10 of the Commission Communication of 2006

National:

- National sustainability strategy
- Agrobiodiversity strategy of the BMELV
- Biodiversity sector concept of the Federal Ministry for Economic Cooperation and Development (BMZ)

## **C ACTION AREAS**

### **C 1 Interlinked biotopes and networks of protected areas**

#### CBD:

- Decision II/9: Forests and biodiversity
- Decision II/10: Protection and sustainable use of biodiversity in marine and coastal regions
- Decision III/12: Work programme on biodiversity in forests
- Decision III/13: Future work programme on terrestrial biodiversity (water ecosystems)
- Decision III/13: Future work programme on terrestrial biodiversity (mountains)
- Decision IV/4: Status and trends in the biodiversity of inland waters and options for their protection and sustainable use
- Decision IV/5: Work programme for the protection and sustainable use of marine and coastal ecosystems
- Decision IV/7: Forest biodiversity
- Decision V/2: Progress report on implementation of the work programmes on the biodiversity of inland water ecosystems
- Decision V/3: Progress report on implementation of the work programme on biodiversity in the marine and coastal region
- Decision V/4: Progress report on implementation of the work programme
- Decision VI/2: Biodiversity of inland waters
- Decision VI/3: Marine and coastal biodiversity (SBSTTA recommendation)
- Decision VI/9: Global Strategy for Plant Conservation (GSPC)
- Decision VI/22: Biodiversity in forests
- Decision VII/4: Biodiversity of inland water ecosystems
- Decision VII/5: Marine and coastal biodiversity
- Decision VII/27: Biodiversity in mountains
- Decision VIII/24: Protected areas

#### EU:

- Objectives II 1/2-9: Conservation and sustainable use of biodiversity

- Objective III 1/ 2-4: Conservation of natural assets
- European plant conservation strategy
- EU action plan on natural resources
- Objectives 1 – 4 of the Commission Communication of 2006

National:

- Agrobiodiversity strategy of the BMELV
- Strategy on the conservation and sustainable use of biological diversity in Germany's forests (BMELV, *Länder*)
- National marine strategy
- National strategy for integrated coastal zone management

## **C 2 Species conservation and genetic diversity**

CBD:

- Decision II/9: Forests and biodiversity
- Decision III/12: Work programme on biodiversity in forests
- Decision III/13: Future work programme on terrestrial biodiversity (water ecosystems)
- Decision III/13: Future work programme on terrestrial biodiversity (mountains)
- Decision IV/4: Status and trends in the biodiversity of inland waters and options for their protection and sustainable use
- Decision IV/5: Work programme for the protection and sustainable use of marine and coastal ecosystems
- Decision IV/7: Forest biodiversity
- Decision V/2: Progress report on implementation of the work programmes on the biodiversity of inland water ecosystems
- Decision V/3: Progress report on implementation of the work programme on biodiversity in the marine and coastal region
- Decision V/4: Progress report on implementation of the work programme
- Decision VI/2: Biodiversity of inland waters
- Decision VI/3: Marine and coastal biodiversity (SBSTTA recommendation)
- Decision VI/9: Global Strategy for Plant Conservation (GSPC)

- Decision VI/22: Biodiversity in forests
- Decision VII/10: Protection and sustainable use of biodiversity in marine and coastal regions
- Decision VII/4: Biodiversity of inland water ecosystems
- Decision VII/5: Marine and coastal biodiversity
- Decision VII/27: Biodiversity in mountains

EU:

- Objective II 1/ 2-4: Conservation of natural assets
- European plant monitoring strategy of 2001
- EU action plan on natural resources: Including 4.3 Genetic resources
- EU action plan on agriculture
- Objectives 1 – 3 and 5 of the Commission Communication of 2006

National:

- Agrobiodiversity strategy of the BMELV
- Strategy on the conservation and sustainable use of biological diversity in Germany's forests (BMELV, *Länder*)
- Programme for the conservation of forest genetic resources
- National programme on animal genetic resources
- National plant genome research programme (“GABI – Genome analysis in the biological system”) of the Federal Ministry of Education and Research (BMBF)
- National animal genome research programme (“FUGATO – Functional genome analysis in the animal organism”) of the BMBF
- National research priority “Systems biology” of the BMBF

**C 3 Biosafety and preventing the adulteration of fauna and flora**

Biosafety

CBD:

- Decision II/5: Need for a protocol on the safe transfer and use of modified organisms
- Decision IV/3: On the problem of biosafety
- Decision V/1: Work plan on the Cartagena Protocol on Biosafety

- Decision VI/9: Global Strategy for Plant Conservation (GSPC)

Adulteration of fauna and flora

- Decision V/8: Alien species that threaten ecosystems, habitats and species
- Decision VI/23: Alien species that threaten ecosystems, habitats and species
- Decision VII/13: Alien species that threaten ecosystems, habitats and species
- Decision VIII/27: Alien species that threaten ecosystems, habitats and species

EU:

- Objective II 1/4: Non-native species
- Objective II 1/5: Introduction of genetically modified organisms
- European plant conservation strategy
- EU action plan on natural resources: Including 5.3.2 Biosafety Protocol
- Objective 5 of the Commission Communication of 2006

National:

- Agro-biodiversity strategy of the BMELV
- Biodiversity sector concept of the Federal Ministry for Economic Cooperation and Development (BMZ)
- Programme for the conservation of forest genetic resources
- National programme on animal genetic resources

**C 4 Water protection and flood prevention**

CBD:

- Decision III/13: Future work programme on terrestrial biodiversity (water ecosystems)
- Decision IV/4: Status and trends in the biodiversity of inland waters and options for their protection and sustainable use
- Decision V/2: Progress report on implementation of the work programmes on the biodiversity of inland water ecosystems
- Decision VI/2: Biodiversity of inland waters
- Decision VII/4: Biodiversity of inland water ecosystems

EU:

- Objective III 1/ 2-4: Conservation of natural assets
- European plant monitoring strategy of 2001
- EU action plan on natural resources: Including 3.1 Water protection
- EU action plan on agriculture
- Objectives 1 – 3 of the Commission Communication of 2006

National:

- National marine strategy
- National strategy for integrated coastal zone management

**C 5 Access to genetic resources and equitable sharing of benefits**

CBD:

- Decision II/11: Access to genetic resources
- Decision III/13: Future work programme on terrestrial biodiversity (mountains)
- Decision III/15: Access to genetic resources
- Decision V/2: Progress report on implementation of the work programmes on the biodiversity of inland water ecosystems
- Decision V/26: Access to genetic resources
- Decision VII/4: Biodiversity of inland water ecosystems
- Decision VII/27: Biodiversity in mountains

EU:

- Objective II 2/10: Benefit sharing
- Objective II 2/11: National sovereignty over genetic resources
- Objective III 4/ 21-25: Regional development and regional planning
- EU action plan on natural resources: Including 4.3 Genetic resources

National:

- Biodiversity sector concept of the Federal Ministry for Economic Cooperation and Development (BMZ)
- Programme for the conservation of forest genetic resources
- National programme on animal genetic resources

- National plant genome research programme (“GABI – Genome analysis in the biological system”) of the Federal Ministry of Education and Research (BMBF)
- National research priority “Systems biology” of the BMBF
- Framework programme “Research for Sustainability” (FoNa) of the BMBF
- Research priority “Biodiversity and Global Change” (BIOLOG) of the BMBF
- Research priority “Biosphere research – Integrative and application-oriented model projects” (BioTeam) of the BMBF

## **C 6 Agriculture and silviculture**

### CBD:

- Decision II/9: Forests and biodiversity
- Decision III/12: Work programme on biodiversity in forests
- Decision III/13: Protection and sustainable use of agricultural biodiversity
- Decision IV/6: Agricultural biodiversity
- Decision IV/7: Forest biodiversity
- Decision V/4: Progress report on implementation of the work programme
- Decision V/5: Agricultural biodiversity: Review of the work programme
- Decision V/17; VI/19; VII/23: Education and public awareness
- Decision VI/9: Global Strategy for Plant Conservation (GSPC)
- Decision VI/13; VI/12: Sustainable use
- Decision VI/22: Biodiversity in forests
- Decision VII/3: Agricultural biodiversity
- Decision VIII/19: Biodiversity in forests
- Decision VIII/23: Agricultural biodiversity

### EU:

- Objective III 1/ 2-4: Conservation of natural assets
- Objective III 2/ 5-16: Agriculture
- Objective III 4/ 21-25: Regional development and regional planning
- Objective III 5/ 26-29: Forests



- European plant conservation strategy
- EU action plan on natural resources
- EU action plan on agriculture
- Objective 2 of the Commission Communication of 2006

National:

- Strategy on the conservation and sustainable use of biological diversity in Germany's forests (BMELV, *Länder*)
- Agrobiodiversity strategy of the BMELV
- Programme for the conservation of forest genetic resources
- National programme on animal genetic resources
- National plant genome research programme ("GABI – Genome analysis in the biological system") of the Federal Ministry of Education and Research (BMBF)
- National animal genome research programme ("FUGATO – Functional genome analysis in the animal organism") of the BMBF
- National research priority "Systems biology" of the BMBF

**C 7 Hunting and fishing**

CBD:

- Decision II/10: Protection and sustainable use of biodiversity in marine and coastal regions
- Decision III/13: Future work programme on terrestrial biodiversity (water ecosystems)
- Decision III/18; V/15; VI/15: Incentive measures
- Decision IV/4: Status and trends in the biodiversity of inland waters and options for their protection and sustainable use
- Decision IV/5: Work programme for the protection and sustainable use of marine and coastal ecosystems
- Decision V/2: Progress report on implementation of the work programmes on the biodiversity of inland water ecosystems
- Decision V/3: Progress report on implementation of the work programme on biodiversity in the marine and coastal region
- Decision V/6: Ecosystem approach
- Decision V/17: Education and public awareness

- Decision VI/2: Biodiversity of inland waters
- Decision VI/3: Marine and coastal biodiversity (SBSTTA recommendation)
- Decision VI/12: Ecosystem approach
- Decision VI/12: Sustainable use
- Decision VI/13: Sustainable use
- Decision VI/19: Education and public awareness
- Decision VII/4: Biodiversity of inland water ecosystems
- Decision VII/5: Marine and coastal biodiversity
- Decision VII/23: Education and public awareness

EU:

- Objective III 3/ 17-20: Fisheries
- Objective III 5/ 26-29: Forests
- EU action plan on natural resources: Including 2.3 Management of huntable species; 4.1.2 Fisheries and aquaculture
- EU action plan on fisheries
- Objectives 2 and 3 of the Commission Communication of 2006

National:

- Strategy on the conservation and sustainable use of biological diversity in Germany's forests (BMELV, *Länder*)
- Agrobiodiversity strategy of the BMELV
- National programme on animal genetic resources
- National marine strategy

**C 8 Mining of raw materials and energy generation**

CBD:

- Decision III/18: Incentive measures
- Decision V/15: Incentive measures
- Decision V/17: Education and public awareness
- Decision VI/12: Sustainable use

- Decision VI/13: Sustainable use
- Decision VI/15: Incentive measures
- Decision VI/19: Education and public awareness
- Decision VII/23: Education and public awareness

EU:

- Objective III 1/ 2-4: Conservation of natural assets
- Objective III 4/ 21-25: Regional development and regional planning
- EU action plan on natural resources

National:

- National sustainability strategy
- National marine strategy
- National plant genome research programme (“GABI – Genome analysis in the biological system”) of the Federal Ministry of Education and Research (BMBF)

**C 9 Human settlements and transport**

CBD:

- Decision III/18: Incentive measures
- Decision V/6: Ecosystem approach
- Decision V/15: Incentive measures
- Decision VI/9: Global Strategy for Plant Conservation (GSPC)
- Decision VI/12: Ecosystem approach
- Decision VI/12: Sustainable use
- Decision VI/13: Sustainable use
- Decision VI/15: Incentive measures
- Decision V/17: Education and public awareness
- Decision VI/19: Education and public awareness
- Decision VII/23: Education and public awareness

EU:

- Objectives III 2/9: Sustainable agriculture and rural development
- Objectives 4/21-25: Regional development and regional planning
- European plant monitoring strategy of 2001
- EU action plan on natural resources: Including 4.1.4 Urban environment
- Objective 4 of the Commission Communication of 2006

National:

- National sustainability strategy
- Agrobiodiversity strategy of the BMELV

**C 10 Acidification and eutrophication**CBD:

- Decision VII/7: Assessment of environmental influences
- Decision VII/15: Biodiversity and climate change

EU:

- European strategy for the conservation of plant diversity of 2001
- EU action plan on natural resources: Including 4.2.3 Environmental pressures; 5.2.1 Climate change

National:

- National sustainability strategy
- Biodiversity sector concept of the Federal Ministry for Economic Cooperation and Development (BMZ)
- Strategy on the conservation and sustainable use of biological diversity in Germany's forests (BMELV, *Länder*)

**C 11 Biodiversity and climate change**CBD:

- Decision VII/15: Biodiversity and climate change
- Decision VIII/30: Biodiversity and climate change

EU:

- Objective 9 of the Commission Communication of 2006
- Framework programme “Research for Sustainability” (FoNa) of the BMBF
- Research priority “Biodiversity and Global Change” (BIOoLOG) of the BMBF
- Research priority “Biosphere research – Integrative and application-oriented model projects” (BioTeam) of the BMBF

## **C 12 Rural regions and regional development**

### CBD:

- Decision III/21: Relationship between the Convention and the Commission on Sustainable Development
- Decision III/18: Incentive measures
- Decision V/6: Ecosystem approach
- Decision V/15: Incentive measures
- Decision VI/9: Global Strategy for Plant Conservation (GSPC)
- Decision VI/12: Ecosystem approach
- Decision VI/12: Sustainable use
- Decision VI/13: Sustainable use
- Decision VI/15: Incentive measures
- Decision V/17: Education and public awareness
- Decision VI/19: Education and public awareness
- Decision VII/23: Education and public awareness
- Decision VIII/6: Global initiative on communication, education and public awareness

### EU:

- Objective III 2/9: Sustainable agriculture and rural development
- Objectives 4/21-25: Regional development and regional planning
- European strategy for the conservation of plant diversity of 2001
- EU action plan on natural resources
- EU action plan on agriculture
- Objective 4 of the Commission Communication of 2006

National:

- National sustainability strategy
- Agrobiodiversity strategy of the BMELV
- Strategy on the conservation and sustainable use of biological diversity in Germany's forests (BMELV, *Länder*)

**C 13 Tourism and nature-based recreation**CBD:

- Decision V/6: Ecosystem approach
- Decision V/17: Education and public awareness
- Decision V/25: Biodiversity and tourism
- Decision VI/9: Global Strategy for Plant Conservation (GSPC)
- Decision VI/12: Ecosystem approach
- Decision VI/12: Sustainable use
- Decision VI/13: Sustainable use
- Decision VI/19: Education and public awareness
- Decision VII/23: Education and public awareness
- Decision VIII/6: Global initiative on communication, education and public awareness

EU:

- Objective III 7/ 32-37: Tourism
- European plant conservation strategy
- EU action plan on natural resources
- Objective 4 of the Commission Communication of 2006

National:

- Strategy on the conservation and sustainable use of biological diversity in Germany's forests (BMELV, *Länder*)
- Biodiversity sector concept of the BMZ
- National marine strategy

## **C 14 Education and information**

### CBD:

- Decision III/18: Incentive measures
- Decision III/21: Relationships between the Biodiversity Convention and the Commission on Sustainable Development and biodiversity-related conventions, other international conventions, institutions and relevant processes
- Decision IV/15: Relationships between the Biodiversity Convention and the Commission on Sustainable Development and biodiversity-related conventions, other international conventions, institutions and relevant processes
- Decision V/6: Ecosystem approach
- Decision V/15: Incentive measures
- Decision V/17: Education and public awareness
- Decision VI/9: Global Strategy for Plant Conservation (GSPC)
- Decision VI/12: Ecosystem approach
- Decision VI/12: Sustainable use
- Decision VI/13: Sustainable use
- Decision VI/15: Incentive measures
- Decision VI/19: Communication, education and public awareness
- Decision VI/20: Cooperation with other organisations, initiatives and conventions
- Decision VII/24: Education and public awareness
- Decision VII/31: Multi-year work programme of the Conferences of the Parties until 2010
- Decision VIII/6: Global initiative on communication, education and public awareness

### EU:

- Objectives II 4/23-26: Education, training and public information
- European plant conservation strategy
- EU action plan on natural resources: Including 4.2.6 Access to information, public participation
- Objective 10 of the Commission Communication of 2006

### National:

- National sustainability strategy

- Agro-biodiversity strategy of the BMELV Biodiversity sector concept of the BMZ
- Framework programme “Research for Sustainability” (FoNa) of the BMBF

### **C 15 Research and technology transfer**

#### CBD:

- Decision II/1: Report and recommendations of the scientific committee
- Decision II/2: Publications and distribution of scientific and technical information
- Decision III/2: Report and recommendations of the scientific committee
- Decision III/16: Support channels for the transfer and development of technologies
- Decision IV/1: Report and recommendations of the scientific committee
- Decision V/14: Scientific and technical cooperation and the clearing house mechanism
- Decision VI/9: Global Strategy for Plant Conservation (GSPC)
- Decision VI/18: Scientific and technical cooperation and the clearing house mechanism
- Decision VII/23: Scientific and technical cooperation and the clearing house mechanism
- Decision VII/29: Technology transfer and cooperation
- Decision VIII/12: Technology transfer and cooperation

#### EU:

- Objective II 2/12: Technology transfer
- Objective II 2/13: Technical and scientific cooperation
- Objective II 3/14-22: Research identification, monitoring and information exchange
- Objective III 8/ 28-41: Development and economic cooperation
- EU European plant conservation strategy
- EU action plan on natural resources: Including 4.3.2 Dealing with biotechnology
- EU action plan on economic and development cooperation
- Objective 10 of the Commission Communication of 2006

#### National:

- Biodiversity sector concept of the Federal Ministry for Economic Cooperation and Development (BMZ)



- Agro-biodiversity strategy of the BMELV programme to conserve forest genetic resources
- National programme on animal genetic resources
- National plant genome research programme (“GABI – Genome analysis in the biological system”) of the Federal Ministry of Education and Research (BMBF)
- National animal genome research programme (“FUGATO – Functional genome analysis in the animal organism”) of the BMBF
- National research priority “Systems biology” of the BMBF
- Framework programme “Research for Sustainability” (FoNa) of the BMBF
- Research priority “Biodiversity and Global Change” (BIOLOG) of the BMBF
- Research priority “Biosphere research – Integrative and application-oriented model projects” (BioTeam) of the BMBF

## **C 16 Combating poverty and development cooperation**

### CBD:

- Decision I/12: International Biodiversity Day
- Decision II/3: Clearing house mechanism
- Decision II/12: Intellectual property rights
- Decision II/13: Cooperation with other biodiversity-related conventions
- Decision II/15: FAO – Global System
- Decision III/4/5: Funding mechanism
- Decision III/17: Intellectual property rights
- Decision IV/13: Funding mechanism
- Decision VI/26: Strategic plan for the Biodiversity Convention

### EU:

- Objective II 2/12: Technology transfer
- Objective II 2/13: Technical and scientific cooperation
- Objective III 8/ 38-41: Development and economic cooperation
- European plant monitoring strategy of 2001
- EU action plan on economic and development cooperation

- Objectives 6 – 8 of the Commission Communication of 2006

National:

- Biodiversity sector concept of the Federal Ministry for Economic Cooperation and Development (BMZ)
- National sustainability strategy

#### **D INNOVATION AND EMPLOYMENT**

CBD:

- Decision III/16: Technology transfer
- Decision III/18: Incentive measures
- Decision V/25: Biological diversity and tourism
- Decision VI/14: Biological diversity and tourism
- Decision VI/24: Access to genetic resources and benefit sharing
- Decision VII/29: Technology transfer and cooperation

#### **E ERADICATING POVERTY AND PROMOTING JUSTICE**

CBD:

- Decision I/2: Financial resources and mechanisms
- Decision III/14: Implementation of Article 8 (j)
- Decision III/16: Technology transfer
- Decision III/18: Incentive measures
- Decision VI/24: Access to genetic resources and benefit sharing
- Decision V/25: Biological diversity and tourism
- Decision VI/15: Incentive measures
- Decision VII/29: Technology transfer and cooperation

#### **F IMPLEMENTATION OF THE MILLENNIUM ECOSYSTEM ASSESSMENT IN GERMANY**

CBD:

- VII/INF/34: Report on the Millennium Ecosystem Assessment
- Decision VI/7: Millennium Ecosystem Assessment
- Decision V/21; VI/20: Cooperation with other organisations, initiatives and conventions
- Decision VI/9: Global Strategy for Plant Conservation (GSPC)

## **H MONITORING AND INDICATORS**

### CBD:

- Decision III/10: Identification, monitoring and assessment
- Decision V/7: Identification, monitoring, assessment and indicators
- Decision VII/8: Monitoring and indicators

### EU:

- Objective II 3/14-22: Research, identification, monitoring and information exchange
- European plant conservation strategy
- EU leading indicators on biological diversity (Appendix 2 to the Commission Communication of 2006)

### National:

- National sustainability strategy
- Agrobiodiversity strategy of the BMELV

## I 2 Glossary

**Action target:** Methodology for calculating a quality target.

**Agenda 21:** Programme created by the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro. Agenda 21 is not an internationally binding legal document, but instead outlines numerous action areas and key principles for solving eco-social problems over the next century.

**Agro-ecosystem:** Production ecosystem whose functional unit, the biosphere, is a structure comprised of wild plants and cultivated plants, wild animals and many livestock, and whose energetic, material and informational interactions are regulated by man.

**Alien / non-native:** Wild animal or plant species which has not occurred in the wild in a given area for more than one hundred years.

**Alien species:** Collective term for neophytes and neozoa.

**Anthropogenic:** Caused by man.

**Biocoenosis:** Community of different species which are at least partially dependent on one another.

**Biocide:** Generic term for all substances which damage or kill living organisms.

(▶ herbicide, ▶ fungicide, ▶ pesticide)

**Biodiversity:** Generic term indicating the diversity of ecosystems, biotic communities, species and genetic diversity within a species.

**Bio-indicator:** Indicator

**Bio-indicators:** Organisms whose presence or absence allows conclusions to be drawn with regard to certain location properties and which therefore also lend themselves to the identification of pollutants.

**Biological diversity:** Cf. biodiversity

**Biomass:** Totality of the biochemically synthesised mass of all living creatures, i.e. the mass of all living creatures including their organic metabolic products.

**Bio-monitoring:** The monitoring of indicator organisms (bio-indicators) in their natural habitats, or the release of indicator organisms in a certain region in order to monitor and analyse the status of the environment (e.g. lichens for air monitoring).

**Biosphere:** Part of the earth inhabited by living creatures. The biosphere may also be defined as a global ecosystem comprising the totality of all ecosystems.

**Biosphere reserve:** International label for an area within the context of the UNESCO Man and the Biosphere (MAB) programme; independently from this, a national protected area category as defined in § 25 of the Federal Nature Conservation Act (BNatSchG).

**Biotope:** Habitat of a biocoenosis with uniform characteristics which may be clearly delimited from its environment to a greater or lesser extent.

**Biotope complex:** Characteristic, frequently recurring combination of biotope types within a fixed geographical structure. This includes sequences of habitat types along a certain locational gradient (e.g. marine coasts, water meadows) and mosaics of biotope types (e.g. peatlands).

**Biotope cross-linking:** Functional relationship structure between plant and/or animal organisms within a habitat.

**Biotope protection:** Measures for the protection and maintenance of biotopes. Biotope protection measures are usually aimed at endangered or rare biotopes (particularly protected biotopes).

**Biotope type:** Abstracted type from the totality of similar biotopes.

**Birds Directive:** Convention of 1979 on the conservation of wild European bird species via the creation of special protected areas; areas under the Birds Directive form part of the *Natura 2000* system of protected areas.

**Capacity of the landscape ecology:** The landscape capacity resulting from substances, structures and energetic processes (e.g. biotic regeneration potential, filtering, buffering and transformation capacity of the soil, water supply potential, biotic yield potential, recovery potential).

**CBD Decisions:** Decisions by the Convention on Biological Diversity are binding under international law, and must be implemented in Germany. The decisions each have a numerical code, whereby the first number in Roman numerals indicates the Conference of the Parties, with the various decisions by that Conference being numbered consecutively in Arabic numerals (e.g.: Dec.V/3 means decision number three of the fifth Conference of the Parties).

**Characteristic feature:** Particular constellation of natural and cultural elements / features which have usually emerged over a long period of historical development and which give a landscape region its characteristic nature.

**Clearing house mechanism:** Instrument for sharing information and know-how on implementation of the Convention on Biological Diversity. (► Biodiversity Convention)

**Climate:** The typical atmospheric conditions of an area and its characteristic average weather patterns.

**Climate change:** Climate change on earth over a long period, or the global warming occurring during our lifetime.

**Climate protection:** Collective term for all efforts to counteract climate change.

**Conference of the Parties:** Decision-making body of the CBD, policy-making committee.

**Contract-based nature conservation:** Contracts with land users specifying conditions for sustainable management, often setting out concrete targets for species and biotope conservation, in exchange for financial compensation for the associated reduction in earnings.

**Convention on Biological Diversity (CBD):** International convention on the protection of biological diversity, signed at the United Nations Conference on the Environment and Development (UNCED) in Rio de Janeiro (1992).

**Critical level:** Quantitative assessment of the concentration of pollutants in the atmosphere (immissions) above which direct harmful effects may occur in receptors (humans, plants, animals, ecosystems, materials), according to current scientific knowledge. Often equated with a critical pollution level.

**Critical load:** Quantitative assessment of the deposition of one or more pollutants below which, according to current scientific knowledge, no evidence of harmful effects is found in specified receptors. Often equated with a critical pollution limit.

**Crop plant:** Plant species that is cultivated by humans in a planned way and which is subject to harvesting or breeding.

**Cultivated landscape:** Landscape that has emerged as a result of human use over the course of history and has been shaped by usage forms, with predominantly anthropogenic ecosystems (in contrast to a natural landscape).

**Deadwood:** Dead (fallen and standing) branches, trunks and trees.

**Degree of naturalness:** Three-point scale indicating the level of human influence on an ecosystem or biocoenosis: Natural = Created without direct human influence or not altered by man; near-natural = not significantly altered by man; semi-natural = not consciously created by but nevertheless influenced by man, and dependent upon this influence.

**Dissection:** Active anthropogenic fragmentation of habitats etc. as a result of linear intervention (e.g. road and rail construction, power lines, construction).

**Ecological area sampling:** Monitoring of the landscape, biotope and species structure using a random sampling technique; within nature conservation, the discipline of environmental monitoring, which has been devised on a nationwide basis, and is currently being used in North-Rhine Westphalia and for national bird monitoring.

**Ecological balance:** Comprises the components soil, water, air, climate, fauna and flora, fungi and microorganisms, and the interactions between them. Term referring to the relationship between energy and bio-elements in the form of input, internal turnover and output in nature, generally in relation to ecosystems.

**Ecology:** “Environmental science”, the study of the interactions between living creatures and their animate and inanimate environment.

**Ecology of human settlements:** Study of the energetic, material and informational interactions in human settlements, which range from rural settlements which often have only a low level of anthropogenic influence through to heavily condensed urban/industrial settlements.

**Ecosystem:** Structural and functional system of interrelations between functional ecological elements; an open, relatively delimited, spatiotemporal system capable of limited self-regulation and biological reproduction between cohabiting organisms and their inorganic environment, with its own material and energy flows, its own internal cycle, its own productivity and species diversity.

**Emission:** Output of substances (gases, dusts) and energy (waste heat, radiation, noise) to the environment. The output substances themselves are likewise known as emissions.

**Endemite:** Species which only occurs within a narrowly limited area.

**Environmental impact assessment:** Integral part of an administrative procedure for the licensing of projects (§ 2 of the Environmental Impact Assessment Act (UVPG)): comprises the identification, description and assessment of a project’s impacts on humans, fauna and flora, soil, water, air, climate and landscape, including the respective interactions and the effects on cultural and other material assets.

**Environmental monitoring:** Nationwide monitoring concept for cataloguing and assessing the status and development of nature and the environment (including abiotic factors, bioindication and ecosystem monitoring).

**Environmental quality standard:** Specified in the form of a normative target and proposed action to avoid or limit environmental pressures.

**Environmental quality targets:** Social guidelines for the avoidance of direct and long-term damages to humans, fauna, flora and material assets, and to conserve the performance of the natural balance, in the form of operationalised statements (standards).

**Erosion:** Elimination of soil due to the effects of wind and water. The natural erosion process may be exacerbated by human soil management (especially arable farming and forestry).

**Eutrophication:** Accumulation of nutrients leading to changes in an ecosystem or parts thereof. A commonly used term for the overfertilisation of surface waters and oceans due to the natural or artificial accumulation of nutrients.

**Evolution:** The ‘development’ of fauna and flora species over the course of history. Evolution occurs as a result of mutation and selection.

**Exclusive economic zone (EEZ):** Marine zone between 12 and 200 nautical miles.

**Ex-situ conservation:** Conservation of elements of biological diversity outside of their natural habitats, e.g. in zoological or botanical gardens, gene banks or breeding stations.

**Extensification:** Reduction in the use of yield-promoting agents (such as fertilisers, pesticides) or reduction in utilisation intensity (such as herd size per ha) and/or work per unit area.

**Fauna:** The animal world.

**Flora:** The totality of all plant species in a given area.

**Fragmentation:** Breakdown of a formerly coherent biotope (and the organisms which populate it) into several (usually isolated) parts.

**Fungicide:** Agent which destroys fungi

**Genes:** Genetic factors, genetic tendencies, genetic units for the inheritance of features, comprised of a defined sequence of nucleotides within the genetic information (DNA).

**Global Environment Facility (GEF):** Multilateral fund based at the World Bank as an interim financing mechanism for implementation of the Convention on Biological Diversity (► Biodiversity Convention); awards subsidies to developing and transformation countries for investments and technical consultation in the fields of climate protection, biological diversity, protection of international waters, and protection of the ozone layer.

**Habitat:** Monotope (“residence”) of a plant or animal species which satisfies all the living conditions required of that site by the species; the totality of all habitats of individual species constitutes the biotope for the biotic community found at that location.

**Habitats Directive:** EC Directive on the conservation of natural habitats and of wild fauna and flora (1992). Interest focuses primarily on the conservation of habitats. Together with areas which are protected under the EU Birds Directive, areas under the Habitats Directive make up the European network of protected areas known as Natura 2000.

**Habitat type:** Originally the German equivalent of the term biotope type. During the course of implementing the Habitats Directive, it now usually refers solely to the habitat types of Community interest referred to in Annex I of the Directive. This term therefore refers to a sub-section of the biotope types occurring in Germany for which the EU Member States have undertaken to establish a network of protected areas.

**Herbicide:** Agent which kills plants.

**ICZM:** Integrated coastal zone management

**Immission:** Discharge of air or water impurities into ecosystems.

**Indicator:** Generic term for indicator organisms (indicator species) and indicator parameters (other ecosystem-based parameters, indices).



**Indigenous:** A wild species of fauna or flora whose range or regular migration territory is (or was in historical times) either wholly or partially within a given country, or which spreads naturally into the country.

**Insecticide:** Agent which kills insects

**In-situ conservation:** Conservation of ecosystems and biotic communities, and the preservation and restoration of viable populations of species in their natural environment.

**Interlinked biotopes:** Geographical linking of various biotopes in order to ensure the range and exchange of biotic communities occurring within the biotopes. They may be linked by linear elements (such as river meadows, mountain ranges, or hedges, field boundaries, riparian buffer strips) or by so-called stepping-stones (stepping-stone biotopes), i.e. flat elements. However, interlinked biotopes also comprise large-scale core areas; as a nature conservation concept (system of interlinked biotopes), their aim is the conservation of species, species communities and habitats as a whole (§ 3 of the Federal Nature Conservation Act (BNatSchG)).

**Intervention:** Man-made changes to the structure and/or use of habitats which may considerably or permanently impair their performance. In legal terms, intervention refers to an anthropogenic measure which may impair the performance of the natural balance or landscape.

**Intervention regulation:** Under nature conservation law, intervention regulation aims to safeguard the performance of the natural balance and the landscape. The law requires interventions to be planned and implemented in such a way that any impairments are avoided, or unavoidable impairments are at least kept within a reasonable framework and compensated.

**Invasive species** Following the discovery of America in 1492, an animal or plant species imported by man into an area which has undesirable effects on other species, biotic communities or biotopes, and which often also causes economic or health problems.

**Landscape (1):** Part of the earth's surface that is viewed as a unit, and which is distinguishable from its characteristic structure (landscape design) and function (landscape balance) (cf. cultivated landscape, natural landscape).

**Landscape (2):** How a landscape looks, as perceived by our senses.

**Landscape aesthetics:** The nature and manifestations of landscape beauty.

**Landscape conservation:** Totality of nature conservation and landscape management measures to preserve landscapes and parts of landscapes.

**Landscape ecology:** Structure of relationships and effects between living creatures and their inanimate environment both within a landscape and between neighbouring landscapes.

**Landscape management:** Practical use of measures to ensure the sustainable usability of natural assets as well as the diversity, uniqueness and beauty of nature and landscape, e.g. by conserving traditional management forms.

**Landscape planning:** Regional-based statutory planning instrument for the achievement of nature conservation and landscape management objectives in populated and unpopulated landscapes, classified into landscape programmes, framework landscape plans, landscape plans, and open space plans.

**Limit:** Upper or lower (= largest or smallest) level of concentration or quantity of a substance, as specified by a standard or statutory provision.

**Measures:** Concrete actions to achieve a quality target.

**Model:** Target formulated in general terms in regional planning and other areas, which is based on the currently valid socio-political principles.

**Monitoring:** On-going observation of abiotic and/or biotic factors and compartments in order to monitor the status of the environment and identify any changes.

**Monoculture:** In agriculture and silviculture, the repeat, exclusive cultivation, over many years, of an annual or perennial plant species on the same piece of land.

**National park:** Large area which is strictly protected by law, in which natural procedures have absolute priority over usage.

**Natura 2000:** European system of protected areas which includes areas under the ► Birds Directive and the ► Habitats Directive.

**Natural:** Unaltered by man, in its original state. The degree of naturalness belonging to nature, and caused by nature.

**Natural forest reserve:** Area of forest aimed at the conservation, development and research of near-natural forest ecosystems; all forms of commercial intervention are prohibited.

**Natural landmark:** A creation of nature, either in object form or in the form of an area which is clearly delimited from the surrounding area, which is legally protected for scientific reasons, due to its uniqueness, rarity or beauty.

**Natural landscape:** Landscape that has remained uninfluenced by direct human activities, and which is based solely on the interactions between the currently prevailing, natural ecological factors.

**Nature:** Totality of animate and inanimate phenomena not created by man.

**Nature-compatible:** Refers to a way of utilising or handling nature which facilitates the preservation of historically evolved cultivated landscapes meriting protection, as well as the residues of natural or near-natural ecosystems.

**Near-natural:** Coming close to a natural state.

**Neophyte:** Plant species imported, introduced or entrained as a result of human influence following the discovery of America in 1492.

**Neozoa:** Animal species imported, introduced or entrained as a result of human influence following the discovery of America in 1492.

**Oligotrophy:** Lack of nutrients or low nutrient supply.

**Organic farming:** Collective term for farming methods which observe uniform cultivation guidelines. The common objective is to dispense completely, or at least largely, with the use of commercial fertilisers and synthetically manufactured pesticides. Another aim is to achieve unity of plant and animal production, i.e. a closed nutrient cycle. The EC Eco-Regulation provides the legal basis for organic farming in the EU.

**Paris Declaration:** In March 2005, more than 100 bilateral and multilateral donors and partner countries signed the Paris Declaration on the Effectiveness of Aid, in which they undertook to harmonise their operations and coordinate their actions in order to relieve the pressure on developing countries by adopting a uniform and transparent procedure, thereby maximising the efficiency of aid. Efforts to improve the deployment of funds in development cooperation are aimed at expanding international cooperation, strengthening the autonomy and ability of developing countries to take action, and reducing transaction costs for coordinating development cooperation between the various donors.

**Polluter pays principle:** Principle of environmental policy whereby the costs associated with the avoidance, rectification or compensation of environmental pollution must be paid by the polluter, and are therefore included in his cost accounting.

**Population:** Totality of individuals in a given species which live in a (more or less self-contained) habitat and which constitute a natural reproduction community.

**Precautionary principle:** Principle of environmental policy which states that government measures should be implemented in such a way that all environmental risks, as far as possible, are avoided from the outset.

**Process protection:** Enabling all natural processes for a given ecosystem, both biotic and abiotic.

**Production ecosystem:** Ecosystems deliberately created and preserved by man, primarily as a result of agriculture and silviculture, for the efficient production of plants as foodstuffs, animal feeds and raw materials for processing and handling.

**Quality target:** Aspired status of nature and landscape, backed up with deadlines and key figures.

**Ramsar sites:** Protected areas under the “Convention on Wetlands of International Importance Especially as Waterfowl Habitat” (Ramsar Convention) of 1971, although this Convention, like many of its successors, is not binding.

**Recultivation:** Rehabilitation (targeted site upgrading) of the terrestrial areas of former intensively utilised industrial areas (such as clay, sand and gravel pits; landfill sites) and their integration into the surrounding landscape, with the aim of subsequent agricultural, silvicultural or recreational use – industry-based redevelopment (▶renaturation).

**Red Lists:** Directories of endangered species, communities of species and biotopes.

**Renaturation:** Conversion of anthropogenically modified habitats into a state which is closer to nature. (cf. degree of naturalness), e.g. waterbody renaturation.

**Resources:** Assets, both material and conceptual, which are generally only available in limited quantities. Natural resources are also known as natural assets.

**Retention area:** Flood control basin

**Saprobic level:** In limnology: Intensity of degradation of dead organic matter in waterbodies, which is determined to a decisive extent by the degree of contamination.

**Sealing:** Sealing of soil surfaces (e.g. via asphaltting, concreting, construction) leading to the loss of natural soil functions (habitat, water and nutrient cycles, filtering and buffering properties).

**Species:** Unit in the classification of organisms. Individuals of one species form a natural reproduction community, and are unable to interbreed with individuals of another species. In all key features, they are consistent with one another and with their young.

**Species conservation:** Collective term for measures to protect all free-living animal species as well as all wild plant species.

**Species diversity:** The quantitative and qualitative species composition of a biocoenosis, expressed as the number of species per area or spatial unit and their relative frequency, i.e. the distribution of individuals among the individual species within a biocoenosis.

**Succession:** In botanics, the gradual succession of plant communities or vegetation phases: Grass phase – Shrub phase – Bush phase – Tree phase.

**Sustainable use:** Using the components of biological diversity in a manner and on a scale which precludes the long-term depletion of diversity.

**Taxon:** General term for a systematic (taxonomic) category in biology (e.g. species, order, family).

**Trophic:** Pertaining to the nutrient supply/content of an ecosystem; referring to different levels in the food chain.

**Urbanisation:** The spread of urban lifestyles, activities and behaviour patterns into areas that were originally rural, and the associated interlinked structures and processes.

**Urban sprawl:** The spreading, mosaic-like encroachment into coherent landscape areas caused by human settlement activities (e.g. with human settlements, farmland and infrastructure).

**Water quality:** Indication of the quality of surface waters according to the Saprobic System; quality is classified according to oxygen content, oxygen depletion, BOD5 value etc.

**World Heritage Convention:** UNESCO convention of 1972 = Convention Concerning the Protection of the World Cultural and Natural Heritage.

<b>I 3 List of abbreviations</b>
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<i>Abbreviation</i>	<i>Meaning</i>
€	Euro
ABS	Access and Benefit Sharing
AEWA	Agreement on the Conservation of African-Eurasian Migratory Waterbirds
Art.	Article
ASCOBANS	Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas
BAKÖV	Federal Academy for Public Administration
BAT	Best Available Technology
BBodSchG	Federal Soil Conservation Act
BEP	Best Environmental Practise
BfG	Federal Institute of Hydrology
BfN	Federal Office for Nature Conservation
BIG	Federal Information System on Genetic Resources
BImSchV	Statutory Ordinance on the Implementation of the Federal Immission Control Act
BIOKON	Bionics network
BIOLOG	Key research area of the Federal Ministry for Education and Research on “Biological Diversity and Global Change”
BIOTEAM	Research program of the BMBF on “Biosphere research – Integrative and application-oriented model projects”
BLE	Federal Institute for Agriculture and Food
BLMP	Federal/ <i>Länder</i> Measurement Programme
BMBF	Federal Ministry for Education and Research
BMELV	Federal Ministry for Food, Agriculture and Consumer Protection
BMU	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
BMVBS	Federal Ministry of Transport, Building and Urban Development
BMZ	Federal Ministry for Economic Cooperation and Development
bn	Billion
BNatSchG	Federal Nature Conservation Act
BT-Drs.	Document of the German Bundestag (Lower House of Parliament)
BUND	<i>Bund für Umwelt und Naturschutz Deutschland e. V.</i> (German Society for Nature Conservation)
CAP	Common Agricultural Policy of the EU
CBD	Convention on Biodiversity
cf.	compare
CFP	Common Fisheries Policy
CGIAR	Consultative Group on International Agricultural Research
CHM	Clearing House Mechanism
CITES	Convention on International Trade in Endangered Species of Wild Fauna and

	Flora (also known as the Washington Convention – see WC)
CO <sub>2</sub>	Carbon dioxide
COM	Communication from the Commission of the European Community
COM	Commission of the European Community
COP	Conference of the Parties
COST	European Cooperation in the Field of Scientific and Technical Research
DBU	<i>Deutsche Bundesstiftung Umwelt</i> <German Environment Foundation>
DBV	<i>Deutscher Bauernverband</i> (German Farmers' Association)
DC	Development Cooperation
DDA	<i>Dachverband Deutscher Avifaunisten</i> (Federation of German Avifaunists)
DED	<i>Deutscher Entwicklungsdienst</i> (German Development Service)
DGF	<i>Deutsche Gesellschaft für Finanzwirtschaft</i> (German Finance Association)
DIVERSITAS	International Programme on Biodiversity
DNR	<i>Deutscher Naturschutzring</i> (German Conservation Ring), umbrella organisation of German nature conservation associations
EAS	Ecological area sampling
EC	European Community
EcoQO	Ecological Quality Objectives
EC WFD	European Water Framework Directive
EEG	Renewable Energy Sources Act
EEP	European Conservation Programme
EEZ	Exclusive economic zone
e.g.	for example
EIA	Environmental impact assessment
ELER	European Agricultural Fund to Promote Rural Development
EMAS	Eco Management and Audit Scheme
EMA	European Medicines Agency
EPPO	European and Mediterranean Plant Protection Organisation
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FFH	Habitats Directive of the European Community
Fig.	Figure
FLO	Fairtrade Labelling Organizations International; umbrella organisation for so-called fair trade
FSC	Forest Stewardship Council
GAK	Joint Task of Improving Agricultural Structures and Coastal Protection
GBIF	Global Biodiversity Information Facility; international interlinked information system on global biological diversity
GCDT	Global Crop Diversity Trust; international organisation devoted to conserving crop seed variety
GEF	Global Environmental Facility

GENRES	Genetic resources
GenTG	Genetic Engineering Act
GfA	<i>Gesellschaft für Arzneimittelforschung</i> (Pharmaceutical Research Association)
GM	Genetically modified (e.g. organisms, flora, fauna)
GMO	Genetically modified organisms
GMP	Genetically modified plants
GROMS	Global Register of Migratory Species
GSPC	Global Strategy for Plant Conservation
GTI	Global Taxonomy Initiative of the CBD
GTZ	<i>Gesellschaft für Technische Zusammenarbeit</i> (German Technical Cooperation)
ha	Hectares
HELCOM	Helsinki Commission; International Convention for the Protection of the Baltic Sea
HQ 100	Areas which in statistical terms become flooded at least once every 100 years.
IARC	International Agricultural Research Centres
ICES	International Council for the Exploration of the Sea
ICZM	Integrated coastal zone management
IENE	Infra Econetwork Europe
IFOAM	International Federation of Organic Agricultural Movements
INSPIRE	Infrastructure for Spatial Information in Europe
IPEN	International Plant Exchange Network
IPGRI	<i>Institut für pflanzengenetische Ressourcen</i> (Institute for Plant Genetic Resources)
IPK	<i>Leibniz-Institut für Pflanzengenetik und Kulturpflanzenforschung</i> (Leibniz Institute for Plant Genetics and Crop Plant Research)
IPPC	International Plant Protection Convention
IPPC	Council Directive concerning integrated pollution prevention and control
ISSC-MAP	International Standard of the Sustainable Wild Collection of Medicinal and Aromatic Plants
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
IUCN	International Union for the Conservation of Nature
KfW	<i>Kreditanstalt für Wiederaufbau</i> (Reconstruction Loan Corporation)
kg	Kilogram
KIS	<i>Umwelt-Kernindikatoren-system</i> (System of Core Environmental Indicators)
km	Kilometre
LANA	<i>Länderarbeitsgemeinschaft Naturschutz, Landschaftspflege und Erholung</i> (Working Group of the Federal States on Nature Conservation, Landscape Management and Recreation)
LAWA	<i>Länderarbeitsgemeinschaft Wasser</i> (Working Group of the Federal States on Water Problems)
LEADER	<i>Liason entre actions de développement de l'économie rurale</i> ; Links Between Actions for the Development of the Rural Economy
LIFE	<i>L'instrument financier pour L'environnement</i> ; EU finance mechanism for the environment and nature



LIKI	<i>Länderinitiative Kernindikatoren (Länder Initiative for a Set of Core Indicators)</i>
LRTAP	Long-range Transboundary Air Pollution
m	Million
m <sup>3</sup>	Cubic metres
MAT	Mutually Agreed Terms
MDG	Millennium Development Goals
MEA	Millennium Ecosystem Assessment
M <sub>eff</sub>	Effective mesh size
MPA	Marine Protected Areas
MSC	Marine Stewardship
MV	Mecklenburg-West Pomerania
Natura 2000	Coherent European network of protected areas
NCA	Nature conservation area
NEC Directive	EU Directive on national emission ceilings for certain atmospheric pollutants
NGO	Non-government organisation
nm	Nautical mile
NRW	North Rhine-Westphalia
NSS	National Sustainability Strategy for Germany
OECD	Organization for Economic Cooperation and Development
OSPAR	Oslo-Paris Convention for the Protection of the Marine Environment of the North-East Atlantic (formerly Oslo and Paris Conventions for the Prevention of Marine Pollution of the North-East Atlantic by Dumping)
OTCA	Amazon Cooperation Treaty Organisation; Amazonas Pact
POP	Persistent Organic Pollutants
PP-G7	Pilot programme to preserve Brazil's tropical rainforests
ppp	Public Private Partnership; an initiative for partnerships between the public sector and private companies
REACH	Registration, Evaluation and Authorisation of Chemicals
Reg.	(EU) Regulation
SBSTTA	Subsidiary Body on Scientific, Technical and Technological Advice
SD	Sustainable development
SEBI	Streamlining European 2010 Biodiversity Indicators
SI	Sustainability indicator
SME	Small and medium-sized enterprises
SO <sub>2</sub>	Sulphur dioxide
SpecConsPr	Species conservation programmes
SSC	Species Survival Commission of IUCN
StratGIA	<i>Strategie gegen gebietsfremde invasive Arten (strategy against invasive non-native species)</i>
Tab.	Table
TEN	Trans-European networks

TZ-FZ	<i>Bilaterale technische und finanzielle Zusammenarbeit mit Entwicklungsländern</i> (Bilateral technical and financial cooperation with developing countries) (BMZ-guidelines)
UBA	Federal Environmental Agency
UMK	Conference of Environmental Ministers
UN	United Nations
UN	United Nations
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development, June 1992, Rio de Janeiro
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United States of America
WC	Washington Convention (cf. CITES)
WFD	EC Water Framework Directive
WHO	World Health Organization
WSSD	World Summit on Sustainable Development, 2002 in Johannesburg
WTO	World Trade Organization
WTO	World Tourism Organization
WWF	World Wide Fund of Nature (formerly World Wildlife Fund)
ZDF	<i>Zweites Deutsches Fernsehen</i> (a German broadcasting station)