



**DENMARK'S FIRST NATIONAL REPORT**  
to the  
**CONVENTION ON BIOLOGICAL DIVERSITY**

**Ministry of Environment and Energy**  
**The National Forest and Nature Agency**

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## 1. Introduction

The Convention on Biological Diversity was adopted in 1992 and signed by 157 parties or states including the European Community at the UN Conference on Environment and Development, Rio de Janeiro, June 1992. Article 6 of the Convention states that countries shall prepare national strategies for the protection and sustainable use of biodiversity. The strategy is also mentioned in “Agenda 21”, the Global Action Plan which was adopted at the UN Conference in Rio de Janeiro in 1992. As far as the EU Member States are concerned, recognition of this obligation was confirmed by the European Council in 1992.

The Convention on Biological Diversity is a framework convention emphasising the need for national strategies, plans or programmes. In response, Denmark has adopted a strategy, entitled “Biological Diversity in Denmark - Status and Strategy” (hereafter referred to as the “Strategy”), which was completed in May, 1995.

The conclusions of the Strategy were incorporated in the overall policy document, “Denmark’s Nature and Environment Policy 1995” published by the Danish Ministry for Environment and Energy, and adopted by the Government in June, 1995, followed by a debate in the Parliament in November, 1995. One of the results of the debate was a request to the Government to report to the Parliament on follow-up to the policy document. A report on follow-up was published in December, 1996. The relevant conclusions of this report are included in the present report.

The Convention prescribes regular reporting to the Conferences of the Parties to the Convention by the individual countries, on their launched and planned measures and efforts for protection of biological diversity. The present report shall be seen in this light and forms part of the Danish contribution to the Conference of the Parties to the Convention in 1998.

The report describes the status and initiatives with regard to biological diversity in a Danish context and is to a large extent a summary of the conclusions and statements contained in the Strategy mentioned above. Initiatives and efforts to fulfil the obligations of the Convention, which have been implemented after the completion of the Strategy, are also mentioned. Finally, statistic data is only included to a very limited extent, but where used has been updated.

The report does not attempt to give a complete overview of considerations and measures concerning protection of biodiversity in Denmark, but covers important sectors, which have direct influence on biodiversity: Agriculture, fisheries and forestry. It is important to emphasise, that activities within other sectors, e.g. transport and industry, has an important impact on biodiversity, but often in a more indirect way. These sectors are therefore not dealt with in this report.

Denmark has since UNCED increased its global, regional and bilateral efforts related to biodiversity conservation. Denmark’s aid to developing countries in-

clude consideration of biodiversity related issues, and in addition The Parliament in 1993 decided to increase environmental and catastrophe aid significantly. Biodiversity is one of the primary target areas for this aid. More information on Denmark's international efforts can be found in the Strategy.

Two parts of The Kingdom of Denmark have a special legal status: The Faroe Islands and Greenland. These parts have an extensive self governance, and are not covered by the above mentioned strategy or by this report.

Section 2 of the report describes the approaches reflected in the Strategy and in section 3 the overall considerations for conservation of biodiversity and the most important in-situ conservation measures are outlined. Sections 4-6 deal with biodiversity within the sectors of agriculture, forestry and fisheries and consist of short descriptions of the general conditions for biodiversity, the action taken until the present date and the forthcoming efforts. A more thorough description of the historical and actual conditions can be found in the Strategy. Sections 7-9 deal with cross-cutting issues including genetic diversity, monitoring programmes as well as public awareness and education. In section 10 the needs for future action are summarised.

## **2. The Strategy**

### **2.1. The preparation process**

The Strategy was prepared by the National Forest and Nature Agency, Danish Ministry for Environment and Energy, and was - during the process of preparation - regularly discussed by a consultative committee with participants from relevant ministries and authorities, research institutes and NGOs. Furthermore the draft report was submitted to a wide circle of authorities, organisations etc., for comments and amendments.

Agenda 21 recommends national country studies to be carried out prior to - and as the basis for - the formulation of the national strategy due to the fact that many countries lack the requisite knowledge of prevailing conditions, and therefore, also lack one of the basic requirements for taking effective action against detrimental factors.

It was decided by the Danish Ministry of Environment and Energy not to carry out a country study prior to the elaboration of the Strategy. The decision was based on the fact, that the Danish flora and fauna, and the conditions that affect them, have been studied relatively thoroughly and reports on these topics are published regularly, for instance, in publications as "Facts and Figures on Nature and Environment" prepared by the Ministry of Environment and Energy and the Danish Bureau of Statistics, along with many other specific status reports prepared by the Ministry of Environment and Energy and, at regional level, by the county councils.

Besides, in 1996 the Ministry of Food, Agriculture and Fisheries made a country-status report on the Plant Genetic Resources for Agriculture. The report was used as input for the Global Plan of Action, conducted by FAO. The

Danish status report about Plant Genetic Resources for Agriculture is mainly based on the work conducted at the Nordic Genebank.

However, there is also in Denmark a continuous need for more comprehensive and updated knowledge on biodiversity.

## **2.2 The approach**

As indicated below Denmark has introduced various biodiversity conservation measures long before the entry into force of the Convention on Biological Diversity. In recent years *sector integration* has been at the focus of environmental policy. The initiatives taken regarding sector integration have had a general environment protection approach with biodiversity as one important cross-sectoral component rather than focusing specifically on biodiversity as such.

Against this background the Strategy for Biological Diversity in Denmark is primarily based on existing strategies, legislation and generally approved guidelines for Environment and Nature Protection in Denmark.

The Strategy covers biodiversity in Denmark in general, describes the status of the biodiversity, reveals problems and indicates forthcoming target areas. The follow-up on target areas is the responsibility of the Government, i.e. the Ministry of Environment and Energy, along with the ministries responsible for other sectors. In many cases however, their effective implementation will depend on the co-operation of the local authorities (particularly the county councils).

The Strategy is an integral part of the "Strategic Environmental Planning" (SEP) which the Danish Government decided to launch in 1993. The SEP is intended to establish a basis for an on-going assessment of whether environmental objectives can be met through the planned initiatives and whether environmental initiatives will need adjustment during the process. This will ensure that environmental initiatives as a whole enhance preventive measures and address the problems from a more holistic and target-oriented point of view. Further the SEP is meant to strengthen the interaction between environmental policy and sector plans. Integration of environmental concerns is for instance an essential ingredient in the preparation of sector plans for agriculture and fishery. Finally, SEP is an important tool for setting priorities in the formulation of specific future political initiatives in the environmental field in the form of legislation, action plans, recommendations, reports, etc.

Moreover, the Danish approach is characterised by a wide range of efforts from implementation of legislation, strategies and guidelines at national and regional level to promotion of public awareness and training at local level.

The status for the implementation of SEP, including the integration of environmental considerations into different sector plans and policies, has been reviewed by the Ministry of Environment and Energy in May, 1996, in a report to the Parliament.

### 3. Conservation of Biodiversity in Denmark

#### 3.1 General perspectives

In a global perspective, Denmark's natural biological diversity appears quite insignificant. A single hectare of the Malayan rain forest has three times as many woody species as the whole of Denmark. Denmark is the home of 49 species of mammals - The Democratic Republic of Congo has 409.

The reason for this apparent poverty of species and ecosystems is partly the northern location of the country and its history of glaciation and partly that Denmark is an intensively cultivated country where man has succeeded in altering nature over the past 7.000 years. Today, the Danish terrestrial ecosystems consist almost exclusively of semi- or fully cultivated nature types.

The Danish biodiversity is not less valuable or worthy of conservation because of its scarcity. Meadows and heaths, forest and watercourses and coastal waters are the habitats of flora and fauna that have evolved and adapted to the prevailing conditions. These species, and the genetic variation they represent, are just as unique in their adaptations as are the colourful fish that inhabit a coral reef or the wealth of orchids in a tropical rain forest.

Despite its insignificant size Denmark possesses types of countryside and habitats important also from an international standpoint, and which we therefore have a special obligation to protect.

Because of the extent to which the Danish countryside is a product of human intervention, it perhaps represents our most important cultural-historical monument. The Danish landscape, with its flora and fauna, is a part of all Danes history - a part of our cultural identity.

The biodiversity of Denmark has always been considerably affected by human beings. The pertinent question is not "if" but "in what way and how much" influence we should exert in the future.

An overall target for the Danish strategy is the preservation of viable populations of native species and their variation and habitats as cornerstones of Danish nature. This requires preservation of well functioning ecosystems and their protection against invasive alien species.

The desire to preserve Denmark's authentic biodiversity and to prevent what is often called *flora and fauna pollution* shows that, as far as certain ecosystems are concerned, an increase in the number of species is not a goal in itself. It is characteristic, for instance, of raised bogs, heaths, poor fen and lobelia lakes, that they are poor in species - i.e. that they are only inhabited by organisms that have adapted to their extreme growth conditions over millennia.

Denmark has a long tradition of nature protection and the efforts to date have reduced the impact on biodiversity of our intensive use of the country's natural resources. However, it has not been possible to avoid gradual diminishment of

the populations of a large number of both rare and common species. The endeavours until recent years can be described as largely defensive, directed primarily at the treatment of symptoms and directed especially at particularly vulnerable species and habitats.

Apart from protecting the aspects of nature that are considered especially valuable, efforts are now also being directed towards either a general approach, towards protection of species and ecosystems or developing more and more environmental friendly production. At the same time, more attention has been devoted to the causes of depletion rather than its effects. In other words, traditional nature conservation is now being supplemented with preventive measures to ensure that the depletion of biodiversity is avoided in the future. Where such depletion has already occurred, nature restoration is being carried out..

*Economic incentives* has become an increasingly important tool alongside with traditional regulatory tools.

Care must be taken and when possible zero-solutions should be adopted so that activities including nature are carried out on basis of the precautionary principle. When intervention is necessary due consideration must be given to the needs of the species, their variation and their habitats.

### **3.2 In-situ conservation**

A variety of measures are used for in-situ conservation in Denmark. Some of these measures are included in relevant sectoral policies within the agricultural, forestry and fisheries sectors, and are described in the subsequent chapters related to these sectors (4-6). Ex-situ measures are covered by the sectoral sections, and by section 7 on genetic diversity.

The measures directly targeting nature conservation can be divided into three main groups: Landscape and habitat conservation, protection of species and nature restoration.

#### **3.2.1. Landscape and habitat conservation**

##### *Conservation orders - the classical tool*

The first *Nature Conservation Act* entered into force in 1917. From that time up to the 1960s, the most important instrument for nature protection in the open countryside was the *conservation order* (conservation easement). Conservation orders make it possible to specify provisions for the management of an area, for the purpose of sustaining or developing the qualities that comprise the underlying reason for which conservation is desired. A large proportion of these conservation orders have been laid down with the purpose of protecting the habitats of plants and animals. Since the introduction of this instrument 190,000 ha of dry land or 4% of Denmark's area, has been conserved.

The conservation order is still an important instrument in the nature protection programme. An *Action Plan for future nature conservation* was in 1992 elaborated by the Ministry of Environment in close collaboration with the county councils and the Danish Society for the Conservation of Nature. With regard to biodiversity, this action plan contains guidelines for the safeguarding of new areas through conservation, nature management, nature restoration and modernisation of the management provisions of certain old conservation orders. The areas have largely been chosen for the purpose of safeguarding and improving the conditions of plant and animal life.

Besides, the Minister for the Environment can lay down conservation orders at sea in order to protect natural habitats in these areas. The most important of these conservation orders is the one covering the Danish Wadden Sea with strict regulation on hunting, sailing, recreational and commercial activities.

#### *General protection of nature types*

A number of nature types have been covered by a general conservation scheme since 1972. This scheme has the effect that all activities changing the actual condition of the relevant areas requires a permit from the relevant county council in advance.

As a result of the advancing impairment and diminution of uncultivated or extensively cultivated nature areas, this scheme has been extended on several occasions - most recently through the adoption of the *Nature Protection Act (1992)*.

According to a registration carried out by the county councils in 1992-96 about 44,000 ha of coastal meadow, 82,000 ha of heath, 104,000 ha of humid permanent grassland, 26,000 ha of uncultivated dry meadows, 91,000 ha of bogs and 57,000 ha lakes and ponds are within the scope of this legislation. This corresponds to approximately 9% of Denmark's total area. In addition about 28,000 km of watercourses are also protected under the Nature Protection Act.

A further contribution to conservation of biodiversity is the *Watercourse Act*. Since 1992, this act has prescribed, that landowners has to leave a 2 meter uncultivated strip along all watercourses, which are natural and/or in the regional plans are planned to be waters for fish to live in. Before this, cultivation typically has taken place out to the very edge of many watercourses. The physical management of the watercourses in order to secure their ability to lead water from the field also has to follow the regional plans for the quality of the watercourse, which has a overall positive effect on biodiversity in the watercourses.

#### *International protection areas*

In 1977, Denmark ratified the *Ramsar Convention On Wetlands of International Importance Especially As Waterfowl Habitat*. 27 Ramsar Sites with a total area of 7,400 km<sup>2</sup> have been designated, 25 of which include marine areas covering almost 6,000 km<sup>2</sup>



*EU Protection Areas* have been designated pursuant to the EC Bird Protection Directive of 1979, which obliges member states to protect the habitats of a number of specific bird species. 111 EC Bird Protection Areas, which also include the 27 Ramsar Sites, have been designated and 51 of these protection areas apply to areas in our territorial waters. Marine areas comprise by far the greater part of these areas.

The Ramsar Sites and the EC Bird Protection Areas are subject to a set of independent protection provisions pursuant to an Executive Order, which will be extended to include the EC Habitat Areas mentioned below.

A directive on the conservation of nature types and wild plants and animals (the EC Habitats Directive) came into force on 5 June 1994. The obligations of this directive correspond to the EC Bird Protection Directive, aiming to protect mammals, amphibians, reptiles, fish, invertebrates habitats and nature types. The central goal is to assist in safeguarding the biodiversity of member states. The most important instrument is the designation of protected areas, which is aimed at the maintenance or restoration of a satisfactory state of conservation for the nature types and habitats of specific lists. Within these areas authorities are obliged to administrate in order to ensure these conservation goals.

#### *Trends in future efforts*

The forthcoming nature protection effort will to a greater extent be directed towards entire landscapes - at ecological landscape planning. The still-increasing agricultural areas that are being marginalised is a help towards this goal, and nature protection efforts thus become more and more closely related to the policies and programmes of the agricultural sector (see chapter 4).

The objective is to conserve and recreate true *ecological networks* all over the country, through a mosaic of core areas interconnected by corridors that are designated in the regional plans of the counties. Such an initiative within and across the regions would contribute to work in progress at the European level, which is intended to develop ecological networks ("NATURA 2000") in the EU, through the above mentioned EC Bird Protection and Habitats Directives and, at the Pan-European level, through following up the Nature Conservation Conference of Maastricht, in 1993, and the Pan European Landscape and Biodiversity Strategy adopted in Sofia, 1995.

The Danish Government has the means necessary to attain such goals, in the form of physical planning, conservation orders, general habitat protection, nature restoration and management and the subsidy schemes for agriculture. These tools must be closely co-ordinated with flexible interaction, through efficient co-operation between the authorities involved, i.e. the Ministry of Food, Agriculture and Fisheries, the Ministry of Environment and Energy and the county councils.

### **3.2.2. Species protection**

Denmark has a long tradition for protection of wildlife species. Regulation of hunting has taken place for many years in order to protect wildlife. In the new *Hunting and wildlife management Act* from 1997, species protection and sustainable management of wildlife resources are integrated. The hunting regulation in Denmark is based on facts on ecology and status of the different wildlife species.

The species protection in this context has been extended to point out wild game reserves in order to increase wildlife stocks and to secure important areas for migratory birds. In the game reserves, hunting is often forbidden and regulations on public access are determined. At present, wildgame reserves within the EU-birdprotection areas are pointed out, including areas free of hunting, in order to protect birds. Research has shown, that this type of regulation in fact attracts more birds to an area in general to the benefit of hunters as well.

The protection of fish species is regulated by the Ministry of Food, Agriculture and Fisheries in co-operation with and within the framework of the Common Fisheries Policy of the European Union.

A protection of plants, invertebrates and other vertebrates than mammals, birds and fish can be carried out based on the Nature Conservation Act, as the overall protection of amphibians and reptiles is a good example of. It is continuously evaluated, whether specific protective measures of single species can contribute to a higher protective level than measures already taken.

### **3.2.3. Nature restoration and re-establishment**

In 1989 a more proactive element of protection of biodiversity was introduced in Danish nature protection. As a result of a Marginal Land Strategy in 1987, economic means were reserved to ensure nature restoration, to improve public outdoor facilities in nature and to increase state afforestation at a larger scale.

Since then, through both State and County level efforts, a number of lakes, coastal meadows, humid permanent grassland, bogs, uncultivated dry meadows and heaths have been restored to the benefit of biodiversity. Also a large number of ponds and the like have been established or re-established, and afforestation efforts have gained momentum.

Information to the public plays a significant role in the process of nature restoration.

During the period 1989 to 1996, more than DKK 1,1 billion has been used for nature restoration, public management, and afforestation. In total, about 5,550 ha of nature have been restored and 4,000 ha of state forest have been planted. The goal for afforestation is to double the forest area from app. 12 % to app. 25 % of the country's area.

Most of the large nature restoration projects have been carried out on land purchased by the Government. The means available has ensured full compensation to the land owners involved, long-term security for the implementation of projects and a fixed framework for the future management of these areas.

Many projects have had the restoration of wetlands as the primary goal. This has supported Denmark's leading role internationally on research in river and lake restoration methods, and ensured the possibility for fish migration in rivers with weirs, restoring the natural dynamics of watercourses, biomanipulation by planktivore fish reduction etc. To the benefit of biodiversity, approximately 50 larger lakes have been restored and more than 20 larger (> 10 ha) lakes, previously drained for agricultural purposes, have been re-established. In addition, many watercourses have been restored, i.e. with re-established windings or opened streams, earlier put into pipes.

Apart from their direct significance as habitats, restored wetlands are able to reduce the nitrogen loading in the freshwater recipient areas significantly.

It is the goal of the Danish Government to reinforce nature restoration efforts in the future. The efforts should to the greatest possible extent be co-ordinated with and supplement the subsidy schemes that support ecological agricultural measures.

## **4. The Agricultural Sector**

### **4.1 General conditions**

Denmark has been an agricultural country for centuries. Today 64 % of the Danish land area is used for agricultural purposes and thus agriculture has a decisive impact on nature and biodiversity in Denmark.

During the past three decades, Danish agriculture has changed significantly in terms of production patterns and structure. The main trend has been a development towards fewer and larger holdings with a more intensified and specialised production. The development has included an increased mechanisation and use of fertilisers and pesticides.

The changes have left a more monotonous landscape with less room for plants and animals both in cultivated and non-cultivated rural areas. Biodiversity has been affected negatively both by the physical changes in the landscape and by the changes in agricultural production methods.

The physical changes caused by cultivation have led to a significant decrease in many nature (including semicultural) types. The area of both wetlands and drier nature types have decreased significantly within the past 100 years. Watercourses have been laid in pipes and straightened, lakes and waterholes drained, hedgerows and dikes demolished in order to remove physical barriers to enlarge the production of ever fewer crops. A fragmentation of natural

habitats in the landscape has taken place and the number of corridors for wild-life migration have been reduced.

In addition, the use of traditional agricultural practices, such as cattle grazing and hay harvesting, have been reduced significantly, with an adverse impact on biodiversity.

In recent years this negative trend for biodiversity has been somehow reversed due to marginalisation of agricultural land, nature restoration and the removal of “perverse” economic incentives for activities such as draining and land reclamation.

#### **4.2 Protective measures and forthcoming efforts**

A number of significant changes regarding protection of biodiversity have taken place in agricultural and environmental policy, particularly since the end of the 1980s. The measures taken have mainly been expressed in comprehensive action plans, guidelines and strategies, as well as in more strict legislation concerning nature and environmental protection.

The implementation of programmes for information will - together with the ongoing protective measures - hopefully lead to a gradual change towards a more holistic approach to environmental management. Problems with the nutrient emissions have shown, that environmental costs of separating production and protection are too high. For this reason, the farmer of the years to come to a higher degree should become a nature manager both by adjusting the production methods and by protecting the more marginal land areas of the countryside.

The main measures to meet the indicated objectives, including both national and international (EU) efforts, in forms of legislation and generally approved guidelines, are listed below.

##### **4.2.1 The EU Common Agricultural Policy (CAP)**

The reform of the EU Common Agricultural Policy (CAP), which was adopted in 1992 contains two main elements: the restructuring of market organisations, including the introduction of a set-aside (fallow) schemes, and its accompanying measures.

The CAP in the beginning solely put emphasis on the market. The 1992 reform was the first step towards a better integration of environmental aims, introducing the accompanying measures and also providing for some environmental considerations in the general set aside scheme.

The *accompanying measures* makes it possible to subsidise a number of practices beneficial to biodiversity, including organic farming, reduced use of fertilisers, no use of pesticides, stop to drainage, 20 years fallow periods, management of habitats, afforestation and planting of hedgerows.

Recent preliminary evaluations have shown that these measures have a positive effect on biodiversity. As an example, changes in drainage practise can lead to the re-establishment of wetlands. Combined with a stop to the use of fertilisers and pesticides this seems to have a significant positive effect on biodiversity.

In its Agenda 2000 proposals for new reforms of the CAP, the Commission has suggested to strengthen further the environmental aspects.

Denmark is continuously working on increasing the integration of nature and environmental considerations within the CAP. One of the goals is to increase the role of the accompanying measures.

Another goal is to introduce environmental conditions in the general schemes for direct aid, including hectare and animal premia, in order to integrate environmental considerations in the agricultural practises.

The subsidy scheme for organic agriculture represents a significant increase in the total support available for this type of production in Denmark. From 1989 to 1996 the number and hectares receiving subsidies for the transformation to organic production has increased from 8.284 hectares to 44.991 hectares. Recent evaluations show that wild animal and plant life is more variegated on organically-farmed land than on conventionally-farmed land.

#### **4.2.2 Action plans on agriculture and environment**

Three major action plans on agriculture and environment have emerged over the past decade. Each of them is of significance to biodiversity. The primary goal of these action plans has been to reduce the loading imposed by nutrients and substances alien to the environment on the ecological material cycles. In recent decades, these substances have shown themselves to have negative effects, not only on the aquatic environment but also on plant and animal life on land.

The *Action Plan on the Aquatic Environment (I)* of 1987 resulted in a number of initiatives intended to restrict the total discharges of nitrogen and phosphorus by 50% and 80%, respectively, in the *sewage* from agriculture, industry and urban areas, before 1993. According to the plan, agriculture shall reduce its discharge of nitrogen by an annual 127,000 tonnes, in part through the establishment of storage capacity for manure from domestic animals.

However, it was noted in a status report of 1990 that it would not be possible to attain this goal through the initiatives that had been started unless additional action is taken to restrict the discharge of nutrient salts.. Therefore, the government in 1991 set forth the *Action Plan for Sustainable Development in Agriculture* with a number of new initiatives. In this action plan, the goal of reducing the nitrogen loss by 50 % was retained, but the implementation time was extended to the turn of the century. The measures used so far for reducing nitrogen input include, for instance, requirements on the storage and

application of manure from domestic animals, on the drafting of fertilisation plans and crop rotation systems and on the dissemination of information and advice.

The *Action Plan on the Aquatic Environment (II)* was finalised in the beginning of 1998. The aim of this Plan is to further reduce the discharges of nitrogen from the agricultural fields. According to the Plan, the maximum amount of nitrogen fertiliser allowed per hectare is to be reduced by 10%, and a fine for exceeding this maximum amount is to be introduced. Furthermore, extended re-establishment of wetlands, extended use of set-aside schemes, and afforestation are among the means to be used in reducing discharge of nitrogen.

A sharp increase in the use of pesticides was noted in the mid-1980s. For this reason, Parliament adopted a proposed resolution on the *Action Plan for the Reduction of Pesticide Use*. The goal was to reduce use of pesticides by 25 % before 1990 and by a further 25 % before 1997. Use was to be restricted both in terms of the quantity of active ingredient and the frequency of application. The frequency of application indicates the number of times an agricultural area can be treated in the course of a year, provided that the recommended dose is used. The primary means of attaining this goal were through advice, guidance and research.

Towards the year 2005 the goal of reducing the use of pesticides is further intensified, in addition to the goal of promoting the transformation to organic production.

The latest studies have shown that the reduction in pesticide *consumption* is now very close to the target, whereas the *frequency of treatment* is still very far from the target. Consumption can drop without a corresponding drop in treatment frequency because the tendency today is to use pesticides that are active in extremely small doses. Thus, lower consumption does not necessarily result in a reduced pressure on biodiversity.

Studies have shown, that many pesticides can be found in the groundwater, streams and lakes. A consequence has been, that the use of the pesticides found in the groundwater has been banned. Which implications this has on biodiversity is not known.

The experience on environmental regulations of agricultural production has meant, that high priority is given to research and development projects in landscape ecology and management. This research will be a part of the basis of the forthcoming efforts within this area.

## **5. Forestry Sector**

### **5.1. General conditions**

The greater part of Denmark was covered by virgin forest for a period after the last ice age. Although the forests had been reduced to only 3 percent of the

land cover 200 years ago, target-oriented afforestation and reforestation efforts have increased the forest area so that it now constitute about 12 % of the country's area. Thus, for historical reasons, most of the forests today consist of managed deciduous and coniferous plantations, and the virgin forest has long been gone.

In this century shifts from deciduous to coniferous species in plantations may have had a negative impact on the biodiversity in the affected areas.

A number of initiatives have been launched in recent years, which have opened up opportunities for protecting and increasing the biodiversity of the forests.

## **5.2. Protective measures and forthcoming efforts**

### **5.2.1. General Protective measures**

A number of different acts and strategies states general measures for promoting the conservation of biodiversity in the forests.

*The Forest Act* from 1989 has been revised in 1996. The Act ensures that forest reserves are kept under forest cover in perpetuity. The Ministry of Environment and Energy estimates that 80-90% of Denmark's forest areas are forest reserves, of which approximately 2/3 are in private ownership. The Forest Act also contains rules governing other types of habitat. Thus, lakes, watercourses, bogs, uncultivated dry meadows, coastal meadows, coastal reed beds and heaths in forest reserves must not be cultivated, drained, planted or otherwise altered, regardless of their size, thereby providing stronger protection of habitats than the *Nature Protection Act*. Moreover the Forest Act contains rules on the preservation of oak coppices and of forest edges consisting of deciduous trees and bushes.

The revised Forest Act sanctions the following main types of subsidies:

(1) promotion of multiple-use forestry and conservation of natural forest habitats, (2) afforestation, (3) information and guidance for forest owners and managers. The subsidy schemes makes it possible to grant subsidies for promoting the cultivation of deciduous trees with their native deciduous tree and bush species, preservation of old trees. It is also possible for the Government to support the management of private forests of particular nature value. This scheme is aimed primarily at promoting the setting aside of untouched forest and coppice forest, which private forest owners would perhaps not otherwise maintain for economic reasons. For 1998 app. DKK 36 million has been reserved for grants under this scheme. For afforestation on private land is reserved app. DKK 40 million.

### **5.2.2 Goals for the future efforts**

Denmark's future forestry will rest on two newly-developed strategies; one for *sustainable forest management* and one for protection of *natural forests*.

The overall objectives are to operate all forests as multiple-use and to double the forest area from the present 12% to about 25% over the coming 80 to 100 years. Interim goals for the year 2000 are also specified.

Monitoring of the implementation of the strategies will be given priority in the future through the overall nature and environmental monitoring programme.

*Strategy for Sustainable Forest Management (1994)*

In 1993, the Minister of Environment appointed an interministerial committee of government officials, which was assigned the task of drafting a consolidated Danish forestry policy as a follow-up on the Rio Conference. The strategy was completed in 1994 and contains 18 national-level criteria for sustainable forest management.

The implementation of the strategy is an on-going process, which will continue for some years. In the state forests “*green forestry*”, which is an initiative “born” as a consequence of the strategy, is given high priority. The efforts include introduction of more natural forestry methods in the forest management including planting of more deciduous trees and bushes in coniferous forests and through the use of mixed stands, uneven-aged and, as far as possible, natural regeneration. In addition the project covers implementation of training-programmes on sustainable forestry for employees in the present 25 state forest districts.

The training programme, which lasted for a period of two years, was completed by the end of 1996. The aim of the programme was to introduce new approaches for integration of consideration for biodiversity into forest management. The impact of the programme is already reflected in a gradual change in the management of the state forests.

*The Strategy for Natural Forests (1994)*

The “*Strategy for Natural Forest and other Forest Types of High Conservation Value in Denmark*” was published in 1994. The primary goal of conserving the biodiversity applies to public as well as private forests. The quality of existing forests is to be improved by increasing shares of deciduous trees and promoting the use of more stable coniferous trees in the forests of central and western Jutland where unsatisfactory health conditions prevail today. The strategy for promoting natural forests specifies interim goals for the year 2000 and a final goal for 2040 and is a continuation of the conservation effort of recent decades, the amendment of the Forest Act and the plans for doubling the total forest area.

The strategy is founded on the long-term objective of designating, by the year 2040, at least 40,000 hectares as natural forests, untouched and forests with traditional management regimes. The concept of “natural forests” is defined as old forest of local origin (genetically). In addition to the activities centred on state forests, which have hitherto resulted in the identification of 3,500 hectares for natural forests and 5,700 hectares for traditional management regimes, the Ministry of Environment and Energy aims at setting aside another



1,500 hectares of private forests for natural forests before the turn of the century.

Some of the goals have already been attained, as the following have already been implemented in state forests: safeguarding of natural forests; safeguarding of all oak coppices, coppice forests and forests similar to virgin forests; designating of 65 cohesive areas of between 25 and 1,000 ha, in which the forest shall either remain untouched or be under old traditional management. In 1997 an initiative to reduce the use of pesticides by 50% will be launched in the state forests.

The strategy will be reviewed in the year 2000, at which time its tangible expression will also be reported.

## **6. Fisheries Sector**

### **6.1 General conditions**

#### *Commercial fishery*

The fish taken by commercial fisheries affect fish populations in various ways. In combination with other factors, the improvement of fishing efficiency can result in or has already resulted in population reductions of unintentional and unsustainable proportions in the case of certain heavily fished species. Since 1983 Denmark has reduced the fleet capacity by 30 %.

Emissions of nutrients and various hazardous substances such as heavy metals and chemical compounds has in general affected the biodiversity at sea and might be one of the supplementing factors in population decrease.

The average age and size of the fish have generally dropped. The balance between the fish populations has shifted and is constantly shifting. The average age and size of fish have generally dropped, which may be of relevance to biodiversity in relation to the occupation of different ecological niches by different life stages. The balance between fish populations has shifted towards smaller species, and although it continues to shift, the impact of fishing on the observed species shift cannot be excluded.

Fishing with dredging and other bottom disturbance is another potential detrimental factor.

Bottom trawling and mussel dredging injures plant and animal life in and on the sea bed. Successive dredging activities constitute a threat, e.g. to the perennial seaweed growth. Fishing nets constitute a danger to porpoises, seals and marine birds, which can drown in the nets. Successive dredging activities can constitute a threat, e.g., to perennial seaweed growth or to sessile bottom fauna

Only a small part of the Danish fish species are of socio-economic significance. The knowledge of the condition of fish populations and benthic fauna is concentrated mainly on the species that are of commercial interest. But even in the

case of the species that are of commercial interest the knowledge on reproductive conditions and the habitat requirements of early life stages and juvenile fish is incomplete..

During the course of the 1980s, great reductions were observed in the catches of such important commercial species as plaice and Norway lobster. These two species have in common the fact that they live on or near the sea bed. The reduction in the catches of these species appear to be related to frequent periods of oxygen depletion in the inner Danish waters that result from the excessive discharge of nutrient salts.

#### *Fishfarming and the like.*

The rivers and watercourses in the western part of Denmark is locally used for intensive fishfarming. App. 500 freshwater fishfarms are found throughout Jutland. These farms use mainly water from the watercourses and feed the fish in ponds nearby the watercourse. The fishfarms have traditionally caused severe organic and nutrient emissions to the local recipients of their waste water. Besides, the use of water from the watercourses often causes a barrier to local animal migration.

Aquaculture, mussel cultivation and the release of artificially propagated fish can result in various changes in the surrounding ecosystem, changes in the gene pool and the spreading of fish diseases and parasites. Therefore only a few marine fish farms have been allowed in Danish waters. Equally, mussel cultivation is almost absent from Danish waters.

## **6.2 Protective measures and forthcoming efforts**

### **6.2.1 General Protective Measures**

In order to safeguard the biodiversity of the seas, a number of protective measures have been launched. The present protection covers *combating pollution* (limitation of waste water), the *Action Plan on the Aquatic Environment (1987)* (reducing the discharge of nitrogen and phosphorus into the aquatic environment by 50% and 80%), *designation of protected areas* (Ramsar Sites and EC Bird Protection Areas, EU Habitat Areas) and the The Common Fisheries Policy of the European Union (which in Denmark primary concerns the national administration of management and conservation of commercial fish species, completed by national regulation of local marine fish populations) and national management and conservation of fish species in fresh water ecosystems.

Concerning the freshwater fish farms, a strict and efficient regulation of these fishfarms within the Environmental Protection Act and the Watercourse Act have taken place since 1989 in order to reduce the emissions and to remove the barriers and secure a more natural dynamic in the watercourse passing the fish farm.

## **6.2.2 Goals for the future efforts**

### *Regulation of fisheries*

The regulation of fisheries and the protection of fish populations, crustaceans and mollusc is carried out pursuant to national legislation and EU regulation.

The EU fishery policy was revised in 1992. A main objective added at that time was to ensure the future protection and preservation of living marine resources and promote the responsible utilisation of them on a sustainable basis and with consideration for the marine ecosystem and socio-economic conditions. This objective is expressed in the EU's preservation, control and research policy. It is also a consequence of the Maastricht Treaty that consideration for the environment shall be integrated into all sector policies, including the common fishery policy.

The strategy for the sustainable utilisation of fish resources is based on both national and international laws and regulations. Apart from fishing quotas, the principles of the protection measures adopted encompass a large number of technical conservation measures, for instance, concerning the selectivity of fishing equipment, restriction of fisheries and increased supervision. Moreover the need is also confirmed for specifying new administrative strategies based, for instance, on models that take into account the interaction between species.

### *Accumulation of scientific knowledge*

It is a forthcoming target area for the Danish Government to strengthen the scientific knowledge of the biological processes in the sea in order to attain a position from which Denmark can institute sufficiently preventive and restorative measures against the vitiation of biodiversity.

Future research programmes in the field of biology should concentrate on research into the sea's ecological balance and the sustainable use of biological and raw-material resources. This should, for instance, be expressed in the establishment of a better foundation for consequence analyses in a broad sense and, thus, a better foundation for a goal-oriented protection programme with development of cohesive criteria for the designation of different protection areas in the marine environment.

Scientific advice in the field of fishing should be based to a greater extent on a knowledge of the total ecosystem, and given in such a way that our knowledge of species that are not used commercially and on the interaction between fish populations is taken into account in administration. To this end there is a special need for better illumination of spawning conditions and fry biology for a number of species of fish.

There is a need for increased knowledge of the effects of fishing equipment on the sea bed and on how the unintentional capture of birds, marine mammals and other species can be avoided. Finally, there is a need for increasing the body of knowledge on the effects on biodiversity of the release of alien fish-species and of the spread of parasites and fish diseases. The Danish Ministry of

Food, Agriculture and Fisheries is currently involved in a project with European participants on the impact of releases of flatfish on the natural fish populations.

Within the EU a declaration concerning joint fishing research has been adopted, in which the need for achieving better basic data for fishing research is emphasised and in which higher priority is assigned to research on ecological and socio-economic conditions. This declaration will be expressed in specific research programmes in the fishing field.

In continuation of the Nordic Strategy for Environment and Fisheries from 1995 recommending the development of indicators for safeguarding of the biodiversity in the Nordic territorial waters, a study on the marine biodiversity was completed in 1996. The study recommends that further financing for studies and project applications is allocated in order to improve the level of scientific knowledge on biodiversity, particularly on non-commercial species.

The conclusion is that there is still a considerable need to increase the knowledge of marine biodiversity from the standpoint of; identifying and demarcating the different marine nature types; development of indicators of the state and trend of the sea's nature types; identifying factors influencing biodiversity; specifying future quality criteria for the target for marine biodiversity on the basis of the information obtained from the indicators. Three of these objectives are addressed by an ongoing EU research project on monitoring of biodiversity in the North Sea in which the Danish Institute for Fisheries Research participates

#### *Restoration of Marine Nature*

No nature restoration project has hitherto been undertaken in the Danish sea. The hard sea bed is, however, of special significance to biodiversity, and the removal of stones from stone reefs has meant the loss of habitats vital to plants and animals. However, there is a need to create an overview of the damage and to assess the needs and practical opportunities for, and appropriateness of, undertaking marine nature restoration including, for instance, the construction of artificial reefs. The Danish Ministry of Food, Agriculture and Fisheries will develop a project on this in co-operation with the Ministry of Environment and Energy, the Danish Coastal Authority, the Danish Hydraulic Institute, the Association of Fisheries in Denmark, and two private companies.

#### *Reduction of Discharge of Nutrients*

In general, the reductions of discharges of nutrients from waste water follows the targets in the plan for the aquatic environment. Still, emissions from agricultural production causes severe problems in the aquatic environment including damage on fish stocks.

## 7. Genetic Diversity

### 7.1. *General conditions*

Genetic diversity is a basic condition for the ability of plants and animals to adapt themselves to changed living conditions. The larger a population, and therefore its variation, the greater the chance that it possesses hereditary characteristics that can ensure its continued adaptation. Genetic diversity also forms the basis for breeding of crop plants and domestic animals.

A genetic impoverishment has taken place in nature, primarily caused by the isolation of habitats and, consequently, of populations of species. Many plants and animals today are only present in a few, very limited, populations, which are genetically isolated from each other. In situ conservation is therefore the main strategy of nature management, whereas ex situ conservation in botanical and zoological gardens, arboreta, gene banks etc. is a necessary, secondary approach.

### 7.2. *Protective measures and forthcoming efforts*

In 1994 the European Union adopted a Council Regulation (no. 1467/94) on conservation, characterisation, collection and utilisation of genetic resources in agriculture. The objective of the regulation is to co-ordinate and to promote work on genetic resources in agriculture and to support and supplement efforts made in the Member States. The regulation covers both animal and plant genetic resources and Denmark participates actively in these activities as well.

In the same way that species protection is a supplement to the protection of habitats, protection of genetic resources is a supplement to both habitat and species protection. Ecological landscape planning, with the establishment of ecological corridors that can counteract the isolation of populations, is a key element in the protection of genetic diversity. If the general tools of the legislation, including nature protection, show to be insufficient, the forthcoming Danish effort will concentrate on conserve specific areas in order to safeguard the genetic diversity of plants and animals.

#### *Wild species*

The Ministry of Environment and Energy has published a *Strategy for conservation of the Genetic resources of Trees and Bushes in Denmark* (1994). The strategy indicates about 1,800 gene conservation populations that include 75 Danish species. In addition the Ministry has in 1995 started to prepare a new *Strategy for Conservation of the Genetic Resources of Wild Herbs*, the purpose of which is to ensure a reasonable relationship between conservation of the genetic resources of the herbs that occur in nature and the need to produce and use Danish plants and seeds here in Denmark.

#### *Domestic animal strains*

Populations of some of the old Danish domestic animal strains are small. The conservation of these strains is of culture-historical significance and of significance to agriculture's breeding of domestic animals. There are today 24 strains of old Danish domestic animal, if the counting includes dogs, pigeons and the brown bee.

In 1985, the *Committee for Conservation of the Genetic resources of Danish Domestic Animals* was appointed under the Danish Ministry of Food, Agriculture and Fisheries to promote work on tracing, collecting and conserving populations of the old traditional strains of domestic animals. The committee has prepared a list of Danish domestic animals worthy of conservation and has contributed to establishing conservation centres at farms, where economic support is given to conserve traditional domestic animals.

A *Nordic Gene Bank for Domestic Animals* (NGH) was established in 1984. Its primary task is to establish a common Nordic data base for domestic-animal resources and to stimulate and co-ordinate practical conservation activities. The actual work of conservation is carried out by the individual countries.

#### *Domestic Crops and Plants*

Denmark is an active participant in the work of *The Nordic Gene Bank* (NGB) on plant genetic resources. The mandate and the strategy of the NGB is to preserve, document and encourage the utilisation and genetic diversity in Nordic agriculture and horticultural plant and their wild relatives, and to distribute free material and information to plant breeders, plant scientist and other bona fide users.

Wherever possible plants originate in Denmark and that have been cultivated widely here or associated with breeding, are stored as seed at the *Nordic Gene Bank* (NGB). The seed samples include improved varieties and populations of cultivated crops of the following main groups; corn, grasses, root vegetables, oil plants, pulse, potatoes, green vegetables, fruit and berries. Moreover, fruits and berries are stored as either clones or seed, in which the NGB co-operates with national institutions.

In 1994 a strategy for the conservation work towards the year 2000 was prepared by NGB. The implementation of the strategy is an on-going process of which a total amount of DKK 10 Million (= 1,5 Million US \$) has been allocated in 1996.

Denmark's participation in the international co-operation is mainly concentrated on Nordic Co-operation. However, a programme for the conservation, description and use of the genetic diversity of domestic animals and crops has been planned under the auspices of the EU. The programme prepares the reinforcement and increased co-ordination of work on the genetic diversity that is significant to agriculture within the EU. Finally, Denmark participates in FAO's "*World programme for the Management of Farm Animal Genetic Resources*".

### *Gene Technology*

Denmark was one of the first countries in the world to enact legislation on safety in gene technology already in 1986. Our regulatory system is founded on the precautionary principle and on a principle of openness, participation and transparency in decision making. The same principles now lay the foundation for the legislation within the European Union.

Gene technology is still a very new technology which now is entering into a phase from carefully conducted field trials to commercial production of genetically modified organisms. Thus, Denmark believes that the EU should maintain a high level of protection in its legislation in accordance with the precautionary principle.

Consequently, Denmark is also strongly committed to the finalization of the Biosafety Protocol under the Convention of Biological Diversity within the next year.

## **8. Nature and Environmental Monitoring Programmes**

The foundation of improved possibilities for conserving Danish biodiversity is a constantly expanding knowledge of the range and condition of our strains, species and nature types. Nature monitoring is an instrument to achieve this goal.

According to the Nature Protection Act, the Ministry of Environment and Energy is obligated to monitor the status of the nature in co-operation with the counties and other concerned public authorities and institutions. Moreover a number of international conventions by which Denmark is bound, including the Convention on Biological Diversity, imposes national obligations to carry out nature monitoring.

The current *nature monitoring programme* includes regular reviews of the state and trend of populations of wild plants and animals and the nature types in which they occur. The programme is conducted by the National Environmental Research Institute within the framework of the program for national monitoring. A part of the programme includes the total recording, about every five years, of selected, rare types of vegetation, as well as monitoring population trends of selected indicator species and groups of species, in a selection that is as representative as possible of the nature types in which they occur. Every five years, moreover, the programme records the small biotopes occurring in selected landscapes and urban areas, in which are carried out counts, index calculations and detailed studies of bird life on ecological and conventional farms.

Another status work is the so-called *Red Data Book of Endangered Species* which is updated at regular intervals and on the basis of the nature monitoring programme. The latest Red Data Book was published by the Ministry of Environment in 1991 and the following will be published in 1998.

Excessive monitoring on the environmental quality of air, water, soil etc. is taking place all over Denmark. Emissions are recorded and consequences of different activities on environment is described, i.e. in the nation-wide monitoring programme on aquatic environment, which was initiated along with the Action Plan for the Aquatic Environment. Environmental monitoring is carried out by almost every authority, dealing with regulation of emissions etc.

Annually, the Ministry of Environment and Energy sums up the different indicators on the environmental and nature condition, which to some extent deals with indicators on biodiversity.

It is considered to include the local state of biodiversity in the annual report on the environmental impact of activities at the state forest districts, which could be used to future action for higher biodiversity.

In order to strengthen the monitoring efforts and improve the possibilities for conserving the Danish biodiversity, the Ministry of Environment and Energy has adopted a comprehensive *nation-wide monitoring programme*. The programme which will enter into force from 1998, includes a wide range of new elements (compared to the previous efforts) of which the most important are:

- Development of indicators for biodiversity;
- Monitoring of biodiversity on various levels;
- Integration of nature monitoring and environmental monitoring;
- Establishment of centralised and decentralised monitoring through economically binding agreements covering several years;
- Reinforcement of terrestrial monitoring;
- Preparation of nation-wide status descriptions.

The programme is - due to fact that it includes development of indicators for biodiversity - expected to be a valuable instrument for the implementation of the national strategy for biodiversity.

## **9. Public Awareness and Education**

The promotion of public awareness and educational training is a high priority field of the Danish environmental policy. Efforts to promote public awareness at national, regional and local level have in the recent years been initiated.

Denmark has a long tradition of engaging its population in the cause of nature protection, e.g. through the special right of the Danish Society for the Conservation of Nature (DSCN) to initiate actions on conservation issues.



Motivation is a valuable instrument in preventive measures to preserve biodiversity and raise the environmental awareness. Authorities and organisations are becoming increasingly aware of the fact that information and the creation of satisfying frameworks in which to experience nature are important instruments in the overall nature protection policy.

In connection with land owned by the Ministry of Environment and Energy's, in counties and municipalities, at museums and in the Danish Outdoor Council's member organisations, higher priority has been given to the presentation of nature, through the employment of environmental interpreters, nature kindergartens, and nature centres in recent years. The presentation of nature has, thus, become an integrated part of the field of the people engaged in work on the areas in which people are employed on nature management and popular information.

*The Environmental Interpreter Service*, which was started in 1987, has been a great success. It is therefore a forthcoming goal to strengthen this programme as popular interest in it increases. Projects that can contribute to the continuous development of methods of nature presentation will continue to be launched through the subsidisation of experiments in ranging financed with nature management funds and other sources. A major programme of nature presentation will be carried out under the auspices of the Open Air Council.

The foundations of nature comprehension should be laid as early as possible. Man's interaction with nature is now included in the objects curricula of the new Primary Education Act. The Ministry of Environment and Energy and the Ministry of Education and Research are co-operating in developing the future environment syllabus of the Danish schooling system.

In order to provide the school children with better opportunities to learn about nature outside the normal framework of schooling, *60 nature centers* have been established since 1972. 27 are located on land owned by the Ministry of Environment and Energy's area and 33 are operated mainly by local authorities in connection with other nature areas. The Ministry of Environment and Energy will endeavour to establish another 20 eco-schools before 1998, thereby bringing the total number up to 80.

Finally, the Ministry of Environment and Energy has established consultative committees of the users of the forests managed by the State Forest Districts in order to give the public greater influence on how the state-owned forests and other nature areas should be managed.

## **10. Summary of the Needs for Future Action**

Biodiversity considerations are included in Denmark's general environmental policies and strategies as an important component. The implementation of the Strategy therefore to a great builds on these general policies and strategies. The current protective measures, in forms of legislation, major action plans

and strategies, are qualified instruments, particular in the field of nature protection and nature restoration in which Denmark has a long tradition.

However, there is still a need to qualify and strengthen the protective measures in certain fields and to adopt approaches for strengthening the integration of biodiversity into different sector plans and policies. In addition, there is a need to develop more tangible goals for the follow-up on the Strategy. The preparation of the comprehensive nature and environmental monitoring programme is considered as a valuable input to meet this need.

The conclusions of the current effort and the needs for future action within the selected areas can be summarised as:

- The current **nature management** effort will be maintained and strengthened. The completed nature restoration projects have demonstrated that this tool can pave the way for significant improvements in the state of the natural environment. This work will therefore be further intensified.
- The measures taken within the cultivated areas and **agricultural production** will continue to take into account the biodiversity and enhance integration of agricultural and nature considerations. A targeted Danish effort for further integration implicates a joint work in both regional, national and international fora (especially the EU).
- The general **environmental protection** effort will continue and especially problems with the water quality in general is expected to be very much in focus
- Denmark will continue to and support the work to conserve and utilise **genetic resources** for agricultural purposes, for both ex situ and in situ material.
- Future **forestry** will, against the backdrop of the Danish objective of doubling the forest area, be based on two strategies: sustainable forestry and natural forests. The revised Forest Act from 1996 includes a number of subsidy schemes supporting the implementation of the strategies.
- Monitoring of the implementation of the forest strategies will be given priority in the future through the nature and environmental monitoring programme and a review of the natural forests strategy is planned to take place in the year 2000, at which time its tangible results also will be reported.
- Finally, priority will be given to continue the training programmes on sustainable forestry for employees in the state forest districts.
- The future development of **fisheries** should ensure an economically viable fishing industry on a sustainable foundation, thus preserving the marine ecosystem and biological diversity. Consequently, the Government will support a comprehensive, environmentally acceptable framework for com-

mercial and recreational fisheries in the EU. To fulfil this objective, the government focuses on improving the knowledge base on fish species and the impact of the different fishery types on nutrient decomposition and transformation as well as the biological structure, in marine areas as well as in freshwater areas.

- There is a general need for strengthening the co-operation with **research** institutions that conduct research relevant to the implementation of the Strategy. An example is the recent National Strategy for Public-Sector Agricultural Research and Development in Denmark, where priority is given to research and development-programmes with particular regard to the maintenance of a high degree of bio-diversity.
- Denmark will continue its effort for promoting **public awareness** and involvement of the population in conserving biodiversity.