4

NATURE AND BIODIVERSITY MANAGEMENT*

Features

- Aquatic ecosystems
- Spatial planning and the territorial reform
- Climate change and nature
- Nature protection and agriculture
- Proposal on national parks

* The present chapter reviews progress in the last ten years, and particularly since the previous OECD Environmental Performance Review of 1999. It also reviews progress with respect to the objectives of the 2001 OECD Environmental Strategy.

Recommendations

The following recommendations are part of the overall conclusions and recommendations of the environmental performance review of Denmark:

- establish *national parks* in priority conservation areas and clarify their role in relation to other protected areas; complete *management plans for all protected areas* including the Natura 2000 areas, incorporating biodiversity objectives and ecological integrity indicators, and establish a network of corridors linking them; develop and adopt *ecosystem quality objectives* for terrestrial and aquatic habitats, including as part of implementation of the EU Habitats and Water Framework Directives;
- develop time-bound objectives for the *national nature and biodiversity conservation action plan*, including with regard to integration of biodiversity considerations in *agriculture*, *fisheries* and other sectoral policies; develop and implement a *comprehensive planning system*, with a sea use planning component and with cumulative impact assessment and climate change impact scenarios;
- adjust the *levels of economic incentives* and revise the land use legal framework, so as to enhance biodiversity conservation, production of ecological services (e.g. reduction of nitrogen and phosphorus leaching) and groundwater protection (e.g. in priority contaminated areas) on private land;
- expand *restoration projects for major ecosystems*, including major rivers and future national parks, to re-establish their capacity to produce ecological services and to support biodiversity;
- accelerate the rate of *environmental certification* of fish farms.

Conclusions

After the OECD Environmental Performance Review in 1999, Denmark took several steps to emphasise the conservation of biodiversity. It adopted the National Strategy on Biological Diversity (2004) and the *Action Plan for Biodiversity and Nature Conservation* (2004-09). It prevented housing construction in a widened *coastal and dune protection zone* (from 100 to 300 metres). In the context of *Natura 2000*, Denmark has designated 254 special conservation areas and 113 special protection areas, including 27 Ramsar sites, covering 8.4% of its terrestrial areas (i.e. 3 600 km^2) and 12.3% of its marine areas (i.e. 13 050 km^2). Environmental monitoring was extended to nature conservation through the creation of the National Monitoring and Assessment Programme for the Aquatic and Terrestrial Environments (NOVANA). A number of *species*, like the white-tailed eagle, peregrine falcon, common crane, Eurasian spoonbill and corncrake, are starting to return to Denmark.

Roe deer and red deer are increasing, as are grey seal populations in the seas. Denmark has initiated seven pilot projects in support of the creation of national parks, although none has been created yet.

However, agriculture (including aquaculture and intensive livestock farming), urbanisation and increased infrastructure development continue to exert negative impacts on nature and biodiversity. The Danish fish catch represents a major part of the total catch from the North Sea. Depleted fish stocks (due to overfishing), recurring fish kills in the Baltic (due to water pollution), and finding of deformed fish and snails changing sex, of fish unfit for human consumption, and of invasive species (some as a result of climate change) all point towards an *impoverished and degraded aquatic environment*. Further efforts are needed to follow up on several of the 1999 OECD recommendations. The national Action Plan for Nature and Biodiversity Conservation lacks clear time-bound objectives. It has yet to integrate comprehensive biodiversity conservation targets in *fisheries and agricultural policies*. The management plans for protected areas are incomplete and the goal of increasing the forest cover is behind schedule. Despite NOVANA, Denmark has not fully developed indicators and a monitoring system to evaluate progress toward the 2001 Gothenburg EU Summit objective of halting the decline of biodiversity by 2010. Denmark's next challenge will be to move towards ecosystem-specific quality objectives. This will require cross-sectoral co-ordination, particularly among landscape and seascape planning, agriculture and fisheries, and urbanisation and infrastructure development. It will also require improved institutional integration, enhanced use of economic instruments and the application of a risk management approach, particularly with regard to climate change impacts. In 2006, the European Commission launched infringement procedures against Denmark over violations of both the Birds and the Habitats Directives.

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1. Nature Conservation Policy Objectives

Denmark has outlined its nature conservation policy objectives in a range of documents: the *National Strategy for Sustainable Development* (2002) sets targets and principles for sustainable development including the objective of securing a high degree of biodiversity and preserving Denmark's ecosystems; the *Wilhjelm Committee report* "Danish Nature: Status, Trends and Recommendations" (2001), issued partly in response to the 1999 OECD Environmental Performance Review, proposes future biodiversity policies and contains specific targets;[1] the *National Strategy on Biological Diversity* (2004) brings together laws and establishes targets

for the conservation of biodiversity; the *Action Plan for Biodiversity and Nature Conservation* (2004-09) specifies actions to protect nature and biodiversity in accordance with the National Strategy and with EU legislation and the Convention on Biological Diversity; the *Action Plan for Nature Conservation* (2005) specifies criteria for prioritising nature conservation by site of natural landscape or recreational value, when conservation cannot be done by use of other instruments.[2]

Denmark's performance can also be evaluated in light of the *recommendations of the 1999 OECD Environmental Performance Review*:

- continue the implementation of the national strategy for biological diversity and formulate a national action plan for nature protection, including quantitative targets and deadlines;
- develop a national ecological network in support of county efforts to develop such networks;
- continue the development of management plans for areas under conservation orders;
- continue to improve and extend the conservation of marine areas, and improve the integration of biodiversity concerns in fisheries policy;
- accelerate the implementation of the 300 metre dune and beach protection zones;
- investigate the possibility of establishing a network of national parks, which could include some of the most valuable coastal ecosystems, such as tidal flats, dune areas, cliff coasts and heaths;
- improve the integration of nature, landscape and biodiversity concerns in agricultural policies and practices;
- strengthen efforts to meet the objectives for afforestation and natural forest protection, and promote sustainable forestry practices;
- develop comprehensive nationwide area statistics for all protected areas and improve the co-ordination of biodiversity knowledge and nature monitoring as part of a comprehensive nationwide monitoring programme.

2. Habitats, Ecosystems, Fauna and Flora

2.1 State and pressure

Denmark uses its land and sea areas intensively. *Pressures from human activities* continue to adversely affect nature and biodiversity. The marked decrease in the quantity of open natural habitat and the decline in the quality of the habitat that

remains, as a result of intensive agriculture, urbanisation, land reclamation and infrastructure development, have led to the *extinction of 340 species* over the past 150 years. In addition, aquaculture, intensive domestic animal farming (e.g. pig, chicken and cattle) and *climate change* exacerbate these negative pressures on the environment (Box 4.1). Indicators such as depleted fish stocks, recurring fish kills in the Baltic Sea, deformed fish, snails changing sex, fish unfit for human consumption, and invasive species point toward an impoverished and degraded natural environment. Although some progress has been observed, these negative indicators also show that Denmark's environmental policies and measures to protect nature and biodiversity have *not adequately addressed* the severity of the situation.

The reduction in meadows, marshes, dry grasslands, streams and lakes is reflected in the reduced *populations of birds and animals*. Over the past 20 years, most Danish species have declined in number and very few have gained ground. The number of breeding birds in the open countryside has fallen by one quarter. The decline of birds that live on arable land, such as the lapwing and the swallow, has continued since the last OECD Environmental Performance Review, while the whitethroat seems to have stabilised. Some species like the white-tailed eagle, peregrine falcon, common crane, Eurasian spoonbill and corncrake are starting to return to their Danish habitats. Roe deer have also proliferated due to their tolerance for agriculture and the abundance of food they find in the fields. Hares continue to decline due to the disappearance of hedges from farm enlargements. The otter is repopulating streams as a result of the order to modify eel traps to prevent otters from drowning if they are caught. In the seas, grey seals have started to breed again (NERI, 2004 and 2005a).

Botanists estimate that one-third of Denmark's *wild plant species* are on the verge of disappearing. The area of original forest, especially valuable to biodiversity, has been steadily reduced over the last 200 years and today makes up only a fraction of Denmark's total area.

2.2 Habitat and ecosystem protection

Habitats in protected areas

Denmark has protected *11.1% of its total area*, less than the OECD average of 16.4%, although a third of Denmark's protected areas are in the International Union for Conservation of Nature (IUCN) categories I and II (Figure 4.1). *Protected open-land habitat types* (dune, heathland, coastal meadow, freshwater meadow, dry grassland and marsh) were most widespread in Denmark 200 years ago when they covered as much as 60% of the country. Today these habitats cover less than 9% of

Box 4.1 **Climate change and nature**

The Danish climate is getting *warmer*, and forecasts for the future predict a warmer, more *humid and windier* climate with more storms and more frequent periods of precipitation. The mean temperature in Denmark has increased by 1 °C since 1870 and is now about 8 °C. During the last century, annual precipitation has gone up by 110 mm to around 750 mm.

According to Denmark's Climate Center, trends toward 2100 show an increase in annual precipitation of 10 to 20% with a clear trend toward a *wetter winter* and increased *drought risk in summer*. The annual average temperature could be 3 °C to 5 °C higher than today, with greater increases in night temperatures. Westerly winds will likely prevail more frequently in the future.

Forests

As the 1999 storm evidenced, more frequent storms and more severe storms will mean greater risk of *windfalls* in Danish forests. Storm damage could be extensive, as a large part of the Danish forest cover is old stands of Norway spruce, a tree that is not particularly resilient to high wind. Norway spruce is naturally occurring in regions with cold winters and the species has already shown signs of poorer health in periods with warmer winters.

The *marginal growth increment* of individual tree species has increased considerably due to increased CO_2 levels and longer growth seasons. The growth season in Denmark has been extended by two to three weeks and is expected to increase further. The expected climate change should enhance growth, particularly of those species that have their northern tree line in southern Scandinavia. The advantages of the longer growing season for these species could however be counterbalanced by the drop in precipitation during summer and the increased risk of drought.

Plants and wildlife

If the temperature increases by 3 °C, the natural northern limit for many plant and animal species' natural habitats could move 300 to 400 kilometres to the north. On the other hand, a warmer climate would make it possible for southern plant and wildlife species to migrate to the north. The extent to which this actually occurs depends on the barriers such species meet in the form of farmed fields, urban areas and road infrastructure. Many species will have difficulty reacting to the rapidly changing conditions by moving (*migration*) or by adjusting physically (*genetic adaptation*) (NERI, 2003). As well, new species adapted to a warmer climate will appear and compete with traditional Danish species and may have negative impacts on crops, forest or natural ecosystems.

Box 4.1 **Climate change and nature** *(cont.)*

The coasts

Anticipated sea level rises of 50 cm up to the year 2100 will increase the water depth locally and trigger or accelerate *costal erosion*. According to the Danish Academy of Technical Sciences, the west coast of Jutland between the towns of Hvide Sande and Thyborøn could retreat by up to 60 to 70 metres if the erosion is not compensated by more beach feeding.

Along Denmark's inner coastline, incidents of *tidal flooding*, which today are rare, could become commonplace. Changed wind patterns alone would mean that what today is a 100-year incident might happen annually if the sea level rises by 50 cm. As the risk of flooding increases, so will the need for adjusting the safety level of the approximately 900 km of dikes along Denmark's inner coastline. More storm activity in combination with rising sea levels increases the risk of *storm flood* incidents and flooding of still larger land areas. A sea rise of 50 cm, for example, would reduce the present safety level of 500 to 1 000 years for the dikes around Thyborøn to 50 to 100 years.

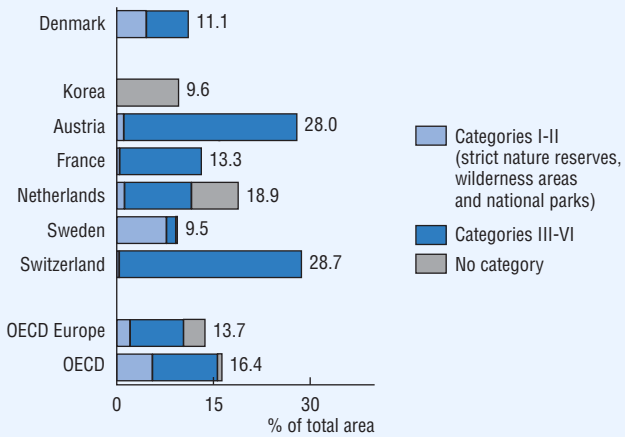
The *Wadden Sea* including the salt meadows along the southern part of the Jutland west coast will be seriously affected by the general rise in sea level. Its location outside the dikes means that the salt meadows and tidal flats will be obstructed from following the coastline as it retreats inland and the natural area will disappear.

The marine environment

Sea temperatures around Denmark are expected to increase by 3 °C to 5 °C in the years approaching 2100. A higher water temperature in the North Sea will also entail the *northward migration of southern species*. This phenomenon has been observed already for benthic animals around the British Isles over the past 50 years. In Danish marine waters, species such as mullet and rockfish, which prefer a warmer climate, are being observed more and more frequently.

Denmark (Table 4.1). The regional distribution of habitat types shows that heathland is most common on the sandy and nutrient-poor soil in West Jutland, whereas dry grassland is the predominant habitat type on the more fertile moraine soil in East Jutland and on Funen and Zealand. Open-land natural habitat types are today protected against further decline by Denmark's Nature Conservation Act. Almost 50% of the areas have been designated as Natura 2000 sites, which gives them double protection. The decline in the area of open-land habitat types has been accompanied by a fragmentation and general reduction of natural areas in Denmark.

Figure 4.1 **Protected areas,**[a] 2004



a) Terrestrial and marine areas. IUCN management categories I-VI and protected areas without IUCN category assignment. National classifications may differ.
Source: IUCN/UNEP-WCMC (2005), World Database on Protected Areas.

Table 4.1 **Protected open land**

Natural habitat type	Area (ha)	Denmark's land area (%)	% situated in Natura 2000 habitat sites
Dry grassland	25 986	*0.6*	*23.6*
Heathland	82 013	*1.9*	*49.7*
Freshwater meadows	103 722	*2.4*	*56.1*
Marshes	89 919	*2.1*	*32.6*
Coastal meadows	43 622	*1.0*	*76.4*
Dunes (estimated)	30 000	*0.7*	–
Total	375 262	*8.7*	*47.2*

Source: NERI.

Denmark's implementation of the *EU Habitats and Birds Directives* and *Ramsar site* designations with respect to Natura 2000 areas now includes: 254 EU habitat areas, 113 EU special protection areas for birds and 27 Ramsar sites, with a total surface area of 6 638 km^2 (Table 4.2). Of these areas, 30% are terrestrial and 70%

marine. By the end of 2006, Denmark had almost completely implemented the recommendations of Natura 2000. The selected habitat types and species are encompassed in the relevant laws, i.e. the Nature Conservation Act and the Act on Environmental Objectives. The latter act establishes a timetable for planning according to Natura 2000 and the Water Framework Directive, and ensures a co-ordinated and coherent implementation of Natura 2000 and the Water Framework Directive. Management plans for Denmark's Natura 2000 areas should be completed according to an EU schedule.

Under the Nature Conservation Act, Denmark has *established protected zones of 300 metres along the coasts* in rural areas, 150 metres around lakes and streams,

Table 4.2 **Protected areas**

	Number	Area km² [b] (%)	Share (%)	
Natura 2000 sites[a]				
Terrestrial[b]		3 591 (*21.6*)	*8.4*	Of the terrestrial area of Denmark
Marine[c]		13 047 (*78.4*)	*12.3*	Of the marine area of Denmark
Total		16 638 (*100*)		
Sites of community importance[d]	254			
Terrestrial		3 173 (*28.5*)	*7.4*	Of the terrestrial area of Denmark
Marine		7 963 (*71.5*)	*7.5*	Of the marine area of Denmark
Total		11 136 (*100*)	*66.9*	Of the total area of Natura 2000
Special protection areas[e]	113			
Terrestrial		2 596 (*17.7*)	*6.1*	Of the terrestrial area of Denmark
Marine		12 112 (*82.3*)	*11.4*	Of the marine area of Denmark
Total		14 708 (*100*)	*88.4*	Of the total area of Natura 2000
Ramsar sites[f]	27			
Terrestrial		1 402 (*19*)	*54.0*	Of the total area of terrestrial SPAs
Marine		5 981 (*81*)	*49.4*	Of the total area of marine SPAs
Total		7 383 (*100*)	*50.2*	Of the total area of SPAs

a) The total area of Natura 2000 sites is not equal to the sum of the Sites of Community Importance (SCI) and the Special Protection Areas (SPA) because some of the latter are identical or overlapping.
b) 2 179 km² of the terrestrial Natura 2000 areas are designated as both SCIs and SPAs, 995 km² are designated uniquely as SCI's, and 418 km² are designated as SPAs.
c) 7 028 km² of the marine Natura 2000 areas are designated as both SCIs and SPAs, 935 km² are designated uniquely as SCI's, and 5 084 km² are designated as SPAs.
d) SCIs under the Habitats Directive.
e) SPAs under the Birds Directive.
f) The Danish Ramsar sites are all within Special Protection Areas.
Source: MoE.

300 metres around woods and churches, and 100 metres around ancient monuments. Following the OECD's recommendation in 1999, Denmark has initiated *seven pilot projects to create national parks* (Box 4.2). In establishing the parks, the government's two main objectives are to designate large, homogeneous reserves to protect and improve biodiversity and the country's scenic and cultural heritage, and to improve opportunities for outdoor recreation (Danish Government, 2004). Designing and managing national parks will require habitat restoration and possible species reintroduction to enhance the representation of biodiversity. Very good experience has been gained in several restoration projects, notably the restoration of the Lower Skjern River (Box 4.3). To date, three out of the seven pilot projects are supported by the public while the other four projects continue to face opposition, which is stalling the process. Nonetheless, a cost-benefit analysis of the project shows that the Danish people have a considerable "willingness to pay" for the establishment of national parks. For "full development" of the parks (i.e. extra measures for nature protection, restoration, protection of threatened species, and pathways), the cost ranges from DKK 1 430 to DKK 1 750 per household per year.

Aquatic ecosystems

At sea, fishing, dumping of material and mineral exploitation have altered the *aquatic ecosystems*. The shallow Danish *marine waters* are especially vulnerable to eutrophication because water exchange with the stratification of the water masses often limits the input of oxygen to the bottom water (NERI, 2004). The amount of oxygen in Danish marine waters has not improved since the previous OECD review and was the worst ever in 2002. The poor condition of *fish populations*, especially cod, has led the EU to impose fishing quotas on Danish waters, which had been considered some of the best fishing grounds in the world. The environmental impact of fishing also includes damage resulting from bottom trawling, which destroys habitat. The quality of marine areas is also strongly influenced by actions on land and by the atmospheric deposition of pollutants (Chapter 7). In addition, *micropollutants* such as organochlorines, hexachlorobenzenes and toxins are released into the marine waters and spread throughout the environment through shipping channels and dredging operations and are ultimately absorbed through the food chain. In 2003, five species of snails displayed widespread signs of reproductive disruption, apparently due to the widespread presence of tributyltin (used in boat paint), a well-known ecotoxin. One positive sign is that trends in nutrient loading are on the right track (e.g. reduction of discharges, emissions and losses of nutrients to marine waters, and quality of the marine environment). Fjords and the open sea have benefited from the reduced nutrient run-off. However, Danish authorities have concluded from an assessment of the conditions in fjords and the marine environment that the overall situation has not improved.

Box 4.2 **Establishing national parks**

Denmark currently has no national parks. In October 2002, however, the government launched a pilot phase *to establish national parks* with seven pilot projects and a National Advisory Committee. The objective was to create large, coherent nature areas and to protect and improve nature and biodiversity, cultural heritage and public recreation with involvement of the local public.

The pilot projects were to build on a bottom-up process *involving local citizens and organisations*. A local steering committee was set up for each pilot project. The proposal was to be based on a voluntary approach and compensation to private landowners.

The report from the National Advisory Committee on National Parks recommended to the Minister *a Danish model for national parks*, including a legal framework, criteria and a procedure for designation, governance and public involvement. The report together with the pilot projects provides the basis for the establishment of national parks.

Many different activities have been carried out to involve the public (e.g. thematic working groups and groups targeted at youth, families with children and farmers). The local citizens have expressed awareness and a sense of *ownership and commitment*, although private landowners have often been sceptical or opposed to the national parks. In two of the seven pilot projects, the Local Agenda 21 networks have been independent partners of the public participation. The main obstacles have been: i) the conflict of interest between private landowners and interest groups supporting nature protection and leisure activities including public access, and ii) the difficulty in involving women and young people. In three of the seven pilot projects a unanimously agreed proposal was made by the local steering committee, but in the four others the opposition resulted in minority proposals concerning the boundary of the national park.

Critics have claimed that the projects have focused more on participation than on actually conserving biodiversity, as evaluations have shown that the larger areas would not be more effective at representing biodiversity (Larsen *et al.*, 2006). In addition, it is not clear that the conservation role of national parks in relation to other protected areas has been clarified. It is obviously difficult in a country where land is used so intensively to find wild or natural areas with abundant biodiversity. *Designing and managing national parks* will require habitat restoration and possibly species reintroduction to enhance the representation of biodiversity. It will also demand that recreational activities be limited to specific sections of the parks or to certain times of the year so as to protect especially sensitive species. Very good experience has been gained in several restoration projects, notably the restoration of the Lower Skjern River (Box 4.3).

A *cost-benefit analysis*, which found that the Danish people have a considerable willingness to pay for the establishment of national parks, also found that: the public's willingness to pay for additional protection and restoration of natural areas and site-specific animals and plants amounts to approximately DKK 580 per year per

Box 4.2 **Establishing national parks** *(cont.)*

household; that willingness to pay for more pathways and access in parks is slightly less than DKK 70 per year per household; and that willingness to pay for a "full development" scenario (i.e. additional effort for general nature protection and restoration, specific efforts to protect threatened species, and additional access options and pathways) ranges from DKK 1 430 to DKK 1 750 per year per household, depending on the site. The public's preferred locations for new national parks (based on responses to a survey that asked respondents to rank possible sites) are Lille Vildmose and Vadehavet; the least preferred locations are Læsø and Nordsjælland. This ranking of public preference is directly reflected in the public's willingness to pay for the different areas (e.g. willingness to pay for a national park in Lille Vildmose is DKK 309 higher than for one in Læsø).

A *draft Act on National Parks* based on the National Advisory Committee recommendations was published in September 2006 and subsequently presented to Parliament in January 2007. It is expected that by mid-2007, the Minister of Environment will have, as a start, chosen three areas to go through the legal procedures. The first Danish national park would then be established in 2008, at the earliest.

A large number of *watercourses* have been straightened, canalised or subjected to rigorous maintenance. Today, only about 2% of Denmark's remaining watercourses follow a naturally meandering course (Wilhjelm Committee, 2001), and of this 2%, much is the result of watercourse restoration projects (Box 4.3). *Water quality in lakes* is improving: the concentration of nitrogen nearly halved from 1990 to 2003 and the water has become clearer.[3] However, this has not been sufficient to improve the water quality significantly, mainly because of the large quantities of phosphorus in lake sediments and the high concentrations of pesticides in streams and lakes, which exceeded their limits in 2003 by about 10%. In 2003, targets for water quality were met only 34% of the time and achievements indicated no changes since the 1990s (Chapter 3). The government intends to change its policy focus from controlling the discharge of toxics to achieving specific ecological goals in the aquatic environment, which takes into consideration the ecological capacity of each stream or water catchment.

While 90% of *domestic and industrial waste waters* are cleaned effectively, non-point source discharges are not (Chapter 3). The *agricultural sector* continues to be by far the largest contributor of nutrients (e.g. nitrogen, phosphorus and BOD) to aquatic ecosystems (NERI, 2004). Reducing pesticide and nutrient loading is essential, but enhancing the use of natural non-point source pollution and nutrient

Box 4.3 **Restoration of the Lower Skjern River**

The Skjern, the *largest river in Denmark*, drains 2 490 km^2 of cultivated, sandy plains in western Jutland and discharges into the Ringkøbing Fjord lagoon and the North Sea coast. In 1987, the Danish Parliament decided to restore the lower reaches of the Skjern River and its valley. A project proposal and environmental assessment were published in 1997. The objectives were to restore the nutrient retention capacity of the lower 19 kilometres of the river and its river valley of about 22 km^2, to restore an internationally valuable wetland, to promote fishing and to increase the recreational and tourist values of the project area.

This section of the river was channelled and deepened in the 1960s and the river valley wetlands were reclaimed for agricultural cultivation, partly by pumping the drainage water into the channelled river. The *restoration project* included re-establishment of a meandering river, natural water levels, and water level fluctuation in the river and its valley. The purposes were to improve living conditions for the flora and fauna, assure a high level of water quality in the river and in the downstream lagoon, and improve possibilities for outdoor recreation. According to the cost-benefit analysis by the Wilhjelm Committee, this project gives net present value of DKK 225 million at a discount rate of 3%, while it falls to DKK 8 million but still positive at a 7% rate with an infinite time horizon.

Monitoring of the *interim results of the project* in 2003 found that: a 22 km^2 natural and semi-natural river valley ecosystem had been restored and a *coherent ecosystem* formed, including the largest Danish river and the shallow lakes and ponds, wetlands and meadows created in the restored river valley; the restored area had become a significant breeding area for *waterfowl*, an important resting area for migrating birds and, consequently, a popular area for bird watching; the restoration had improved the breeding and survival possibilities for *amphibians* because of the formation of a large number of shallow ponds and bogs surrounded by uncultivated meadows; the restoration had not led to negative impacts on *rare species* in the area, except for a minor increase in the mortality of migrating smolts of salmon and trout caused mainly by increasing predation by cormorants and herons; the number of *otter* counted in the restored area had increased; the retention of *nitrogen and phosphorus* was small (e.g. less than 10%) compared to the total transport of nutrients through the river into the coastal Ringkøbing Fjord (it was not possible to calculate the amount of nitrogen and phosphorus retained in the restored river valley).

During the coming years, the flora and fauna in the project area are expected to further develop towards a new ecological equilibrium corresponding to the new conditions. Management plans will have to be adapted to the changing ecosystem conditions. Since 2004, the environmental monitoring programme for the project area has been part of the national *NOVANA monitoring programme*.

recycling is also critical. This could be achieved by applying binding high quality environmental objectives with watershed or landscape level planning, incorporating specific ecological goals for each stream or water catchment.

Terrestrial ecosystems

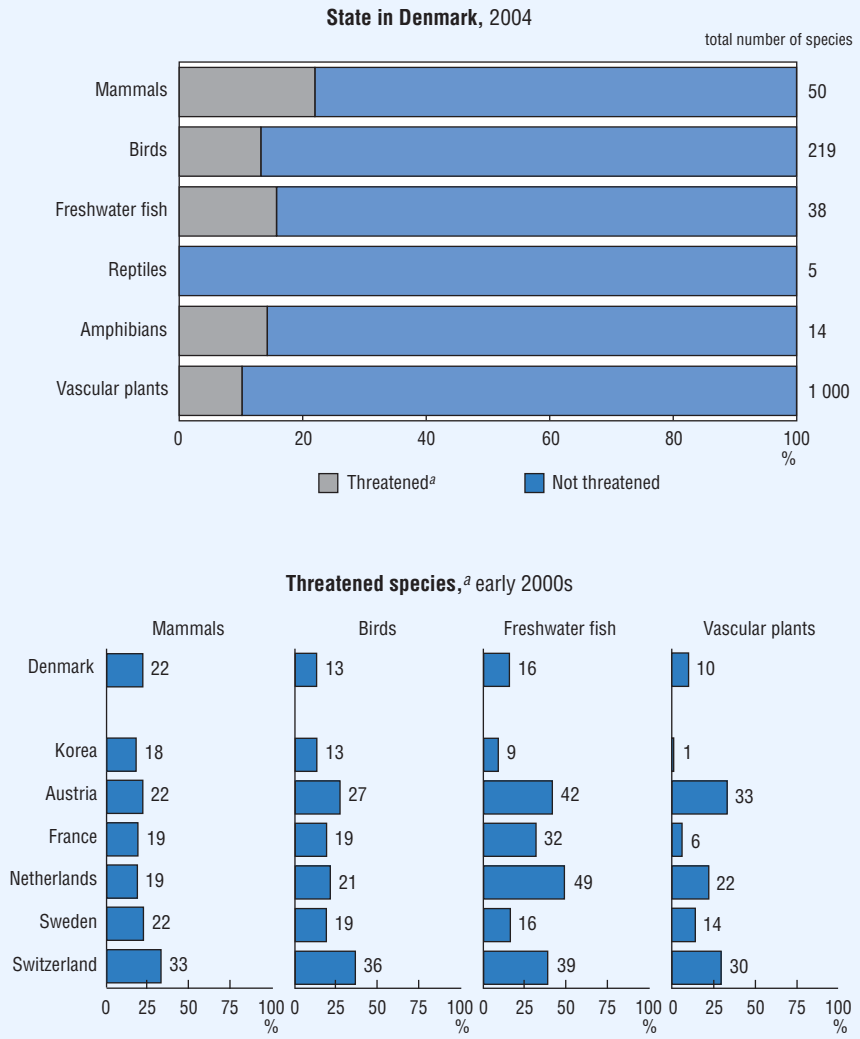
Denmark is a country of large arable lands and relatively few natural areas. Over the past 100-200 years, the landscape has been transformed by *intensive land use*, primarily attributable to the expansion of farmland, the intensification of agriculture and the development of built-up areas. This transformation has eliminated numerous habitats for fauna and flora, causing a loss of biodiversity. Many of the remaining natural and semi-natural areas are relatively small and are scattered in the landscape, making it difficult for species to disperse. Past land reclamation and drainage projects, together with groundwater pumping, have reduced *wetlands* and water flow in streams. This is unfortunate as wetlands constitute a very rich and productive habitat for biodiversity and can play a key function in cleaning up water from non-point source pollution. *Forest surface* areas are gradually increasing; the total forested area now covers 4 862 km^2, or 11% of the landmass. While the quality of the forests has improved over the last decade, more emphasis should be placed on creating natural forest ecosystems. Denmark has adopted a new regulation to prevent construction in a widened *coastal and dune protection zone* (from 100 to 300 metres) to reduce pressures on these habitats. The total area under protection has increased from 80 000 to 160 000 hectares. This new rule should be expanded to other areas of the country to ensure the protection of sensitive and valuable habitats.

2.3 Fauna and flora protection

Denmark has yet to follow the OECD recommendation to develop a *national biodiversity conservation strategy* with time-bound objectives, including the integration of biodiversity considerations in agriculture, fisheries and other sectoral policies. This recommendation should be the underpinning of its conservation policies. Although Denmark like other EU countries has agreed to stop the decline in biodiversity by 2010, this goal has not been fleshed out or interpreted at the national level (NERI, 2005a). A *technical criterion* has been developed for favourable conservation status for the various habitat types and species covered by the EU habitats and birds protection directives.

A preliminary assessment for the *NOVANA system* of 13 habitats and 79 species found that 3 habitats and 22 species were in unfavourable condition and 13 species had disappeared. Some 22% of Denmark's mammals, 13% of birds, 16% of freshwater fish, 14% of amphibians and 10% of vascular plants are threatened

Figure 4.2 **Fauna and flora**



a) IUCN categories "critically endangered", "endangered" and "vulnerable" in % of known species.
Source: OECD Environment Directorate.

according to the IUCN categories (Figure 4.2). Around 30% of marine fish species are currently red-listed (e.g. excessive fishing), and initiatives have been taken to reduce fishing capacity (Chapter 7). As most of Denmark's land is privately owned, it is difficult to protect endangered species with *habitat prescriptions*. These measures, to be effective, would require funding for financial compensation of landowners to give priority to the conservation of an endangered species.

All *indigenous species* are protected under the Nature Conservation Act. Wildlife reserves (Hunting and Wildlife Management Act) and nature reserves (Nature Conservation Act) are areas protected for breeding, resting and foraging wildlife, especially birds. Currently, Denmark has more than 100 such reserves, covering more than 330 000 ha. Most of these areas are marine (i.e more than 90%, about 294 000 ha). The rest are found in fresh water (30 000 ha) or on land (7 000 ha). Since 2003, 4 355 species have been assessed (the species belong to eight major groups such as birds, reptiles, amphibians, invertebrates, vascular plants (orchids only) and fungi. Hunting and game management are regulated through the Hunting and Wildlife Management Act. Indigenous species cannot be hunted unless state game authorities give special permission for species and conditions. Currently, 45 species can be hunted. Illegal hunting is not considered to be a problem in Denmark. The government subsidises game release if various criteria are met. In 2005, DKK 3.7 million was allocated for game release.

A rising number of *invasive species* appears in Denmark every year. Most arrive by way of imports related to forestry, agriculture and aquaculture and also as stowaways in the ballast water of boats or in the soil of plants. Some of the species are relatively innocuous but others, like the hogweed, can cause environmental damage and necessitate costly control/restoration measures. Recently, new species of insects have appeared due to the rising temperatures associated with climate change. A Strategy for Invasive Species is foreseen for 2007.

3. Policy Measures for Nature and Biodiversity

3.1 Legal and institutional framework

The following laws create the legal framework for nature and biodiversity conservation in Denmark. The *Nature Conservation Act* (modified in 1997 and 2004) provides Denmark's main legislative framework for nature conservation. It comprises four pillars: general protection for habitats; coastal zone protection; land acquisition; and specific regulatory powers for the protection of nature. Natura 2000 and Ramsar sites are established under this act. It protects: natural lakes of more than 100 m^2, watercourses or parts of watercourses that have been designated as protected areas,

heaths, bogs, marshes, moors, salt marshes, swamps, coastal meadows, humid permanent grassland and uncultivated dry grassland of more than 2 500 m^2. The *Forest Act* allows for the protection of natural forest areas in both state forests and privately owned forests. The *Planning Act* offers protection of the open land and coasts. It is realised through national plans, regional plans, and plans for separate municipalities and specific local areas within municipalities. These plans may contain provisions for green corridors and afforestation areas. The *Hunting and Wildlife Management Act* regulates the hunting of game species and permits the designation of protected areas for wildlife and birds. The *Marine Environment Protection Act* allows the Ministry of Defence to take action in case of an oil spill that could adversely impact the marine environment, including Natura 2000 and marine reserves. The *Fisheries Act* aims to protect marine resources and areas by setting aside spawning sites in marine species habitats. Under this act, quotas to limit the fishing of fish or shellfish species may be established. The *Act on Environmental Objectives* sets out the framework for protecting water bodies from deterioration, and for the planning and future management of international nature protection areas.

Several *other laws* have an important but indirect impact on nature and biodiversity conservation. These include the Acts on: Environmental Assessment of Plans and Programmes; Operations; Fertilisation; Watercourses; Environment Protection; Rural Development Support; Environment and Genetic Engineering.

The *Ministry of the Environment* co-ordinates the implementation of the Action Plan for Biodiversity and Nature Conservation (2004-09) and is responsible for ensuring compliance with the National Strategy on Biological Diversity. As such, it is responsible for the conservation and restoration of endangered species, including the genetic variation within wild species. The ministry is in charge of the conservation of EU habitat and bird protection areas as well as the development of economic instruments and environmental indicators to support conservation. Through the Forest and Nature Agency and the state forest districts, the ministry manages important habitats. It is also responsible for international negotiations on nature conservation. The Ministry of the Environment is also responsible for administrating the subsidies to the forest sector, including those that promote biodiversity in forests. These subsidies include private afforestation, reforestation, close to nature management and green forest planning.

The *Ministry of Food, Agriculture and Fisheries* is responsible for assuring the sustainable management of marine and freshwater fisheries. Also, via the National Land Fund, the ministry manages certain kinds of nature restoration and afforestation projects and areas with special natural assets. It is responsible for the conservation and sustainable use of farm plant and animal genetic resources.

3.2 Spatial planning

The *Planning Act* (1992) applies to all of Denmark's land and coastal areas but not its marine area.[4] Since 1971, public administration has been based on a division of responsibility between the national, regional and municipal levels. At the *national* level, the Minister of Environment presents after every parliamentary election a national spatial planning report with policy guidelines for national territorial development. This report aims to ensure that the planning synthesises societal interests with respect to land use and contributes to protecting the country's nature and environment. *County* plans, revised every four years, govern the rural zone, landscape, environmental themes, distribution of new area for urban development and subordinate infrastructure. *Municipal* planning governs comprehensive municipal planning, detailed local planning and permits for construction and changes in land use in rural zones. A *major territorial reform* took effect on 1st January 2007 abolishing counties and reducing the number of municipalities (Box 4.4).

Denmark is divided into *urban zones*, *summer cottage areas* and *rural zones*. Special rules apply to development in rural zones where agriculture is the priority economic activity. Whereas new independent dwellings, urban businesses and institutions require a rural zone permit, new agricultural buildings can be built without a permit. This protects recreational and valuable landscapes, and ensures that agriculture retains good production opportunities. However, considering that agriculture is the most important contributor to aquatic contamination, it would be opportune to revisit this rule. It is commonly known that farm buildings can have a significant impact on the environment, especially on surface and groundwater contamination, depending on their nature and location.

Special rules for planning are in place for *coastal zones*. The Danish coasts (including what are now summer cottage areas) have been *remarkably protected* by a 100-metre protection zone since the 1930s. This zone is enlarged to 300 metres in open coastal areas. In urban areas, the protection zone, from 0 to 300 metres, has to be designated by a special Coastal Protection Committee. A special three-kilometre coastal area planning zone is determined in the Planning Act. The planning zone requires justification by special planning or functional reasons prior to locating buildings and construction works in coastal areas. The aim is to keep them as free as possible of development and installations that do not need to be located near the coast.

Although one of the *five goals of the new planning systems* stipulates that spatial planning should be based on respect for nature and the environment, the planning approach does not incorporate the principles of integrated landscape or watershed planning, which are based on the need to preserve and enhance ecosystem functions. Municipal councils are asked to include both the local perspective and the perspective

Box 4.4 **Territorial reform and land-use planning**

Up until 1st January 2007, the planning system was based on a top-down management framework in which plans could not contradict the planning decisions made at higher levels. The municipal councils were responsible for comprehensive municipal planning, detailed local planning and permits for construction and changes in land use in rural zones. The state could veto the planning of regional and municipal authorities to uphold national interests. Legal issues with respect to planning decisions could be appealed to the Nature Protection Board of Appeal. All draft plans and programmes were subject to public consultations.

Since 1st January 2007, a *structural territorial reform* has been put in place. Counties have been abolished and replaced by five regions without planning responsibilities. In addition, 271 municipalities have been combined to make 98 that have full planning responsibilities. The regional plan, which contained regional planning guidelines with regard to environmental matters such as nature protection, landscape values and water quality, will be abolished and such environmentally-related planning guidelines will become part of the *new municipal plans*. The future municipal plans will contain objectives, restrictions and administrative guidelines for management and development in both urban and rural areas. The future municipal plans will be the key document for citizens and businesses with respect to land-use regulation. The future municipal plans will include administrative guidelines linked to land use for forestry, agriculture, infrastructure, tourism, nature protection, and historical and cultural heritage. Denmark's nature and environmental protection laws have not been changed, but municipalities will take over the responsibility for administration and implementation.

Counties used to play a central role in planning and administering the use and protection of water resources, including the responsibility for drawing up *river basin management plans* (water district plans). Following the territorial reform and pursuant to the Act on Environmental Objectives, since January 2007 the number of water districts has been reduced from 13 (almost matching the former county borders) to 4. The water district plans have become a national responsibility, but municipalities are now required to draw up municipal action plans that specify local priorities and initiatives for water management, which goes beyond the requirements of the EU Water Framework Directive. Similarly, the drawing up of *Natura 2000 plans* was transferred from counties to the state, and new municipal action plans have been introduced to enhance local initiatives for the protection and management of Natura 2000 sites.

The Ministry of the Environment is setting up *seven new decentralised national environmental centres* (Miljøcentres), which will be the supervising and consultative authorities regarding legislation for nature and environmental protection. This is a challenging and significant transition that will demand the appropriate transfer of expertise and resources to the newly created bodies to allow them to adequately carry out their enhanced responsibilities. Operations like this are both time and energy consuming. It is thus recommended that the Ministry of the Environment provide *support and guidance* to the newly formed municipalities to ensure that the EU Directive, the national conservation objectives, and the ecosystem-level objectives are implemented according to schedule and that the progress to achieve them is monitored.

across municipal boundaries in their planning for nature and the environment, and this might fall short of a plan based on an ecosystem approach. The incorporation of the Water Resource Plan, Natura 2000 and the Regional Raw Material Supply Plans to be completed in 2009 also shows a lack of integrating ecosystem functions and ecological objectives.

Concerning *landscape preservation*, outdoor advertising in the countryside is generally prohibited with some exceptions, provided signs do not dominate the landscape and are not visible over a long distance. Public structures in the countryside must be located and designed with the greatest possible consideration of scenic value and environmental interests. The location and design of major roads and electric wires must be approved by the Ministry of the Environment. In a country almost completely surrounded by water and comprising more than 400 islands, it is surprising that the Planning Act and the planning framework do *not include the marine seascape*. Numerous activities occur in the marine environment, and these need to be integrated into a seascape planning system that carefully analyses and integrates their interactions in order to preserve the marine ecosystem's biodiversity and its capacity to produce essential ecological services. Denmark's landscape has been significantly changed by the establishment of some 5 500 wind turbines.

The use of *an ecosystem-based planning approach* would facilitate thinking in terms of landscape or seascape processes and dynamics as opposed to static zones. This is highly important in the event of changes to the land and seascape resulting from climate change, particularly rising sea levels that could affect a large portion of the Danish coastline (NERI 2006). Pro-active anticipatory modelling techniques should be used to anticipate the potential combined effects of rising sea levels, frequent storms and a warmer climate with more precipitation.

3.3 Agriculture, forestry and aquaculture policies

Agriculture

About 66% of total area of Denmark (i.e 28 900 km^2) is used for agriculture. The agricultural sector produced 1.5% of GDP in 2005, but has been on a steady decline since 1990 when it represented 4.5% of GDP.[5] The sector continues to have a *strong impact* on nature and the environment. The adoption of *intensive farming* increased the average size of holdings from 16 ha in 1965 to about 48 ha in 2000, while the number of holdings decreased from about 200 000 to 55 000 during the same period.[6] It also increased the number of livestock. This intensification can result in pollution becoming more concentrated in certain areas but it can also favour a more efficient use of nutrients and pesticides, if appropriate pollution prevention measures are

adopted. The type of crops produced may also change due to the European demand for biofuels and to the increasing demand for organic products, which currently represent around 5% of Danish food consumption. Intensive farming practices result in reduced variation in landscape and reduced wildlife in and around the fields.

Several Danish policies aim to reduce the environmental impact of agriculture by promoting organic farming, re-establishment of wetlands, environmentally sound farming practices, the controlled use of genetically modified organisms, and the reduced use of pesticides and nutrients (Box 4.5, Chapter 3). For instance, farmers are encouraged to take *wetlands* out of agricultural production and re-establish them. Farmers are compensated for the loss of the farmland value or offered a corresponding area of farmland elsewhere. However, Denmark's goal of establishing 8 000 to 12 000 ha of wetlands on private lands by 2003 was almost entirely missed, which prompted the authorities to choose a less ambitious goal. This new goal of converting 6 500 ha of agricultural land to wetland between 2004-06 was supported by a DKK 142-million fund (co-financed by the EU), but was still not reached because of the high economic value of agricultural land compared to wetlands.

Forestry

To reach the *forest policy objective* of doubling the country's forest area in 80-100 years, the amount of forested land would have to increase by 5 000 ha a year. Denmark is currently reaching only half of this goal. Meanwhile, for the past two years the interest in afforestation and applications for subsidies have been rising (Figure 4.3). The priority areas for afforestation are those where groundwater needs to be protected as a source of drinking water. For the Action Plan for the Aquatic Environment III, the afforestation goal of 22 800 ha should be actively supported by an adequate budget. The challenges are to reduce the costs of afforestation and to mobilise alternative sources of financing, such as carbon sequestration, groundwater protection measures and co-financing to augment the ecological services derived from forests.

In general, forest management has started to shift towards *sustainable forest management*, which is a challenge considering that many forests are very homogeneous and look like plantations. An important objective of the National Forest Programme (2002) is to promote a conversion to "close to nature forestry". An action plan for the introduction of close to nature forestry in the state forests (2005) identifies the use of native or other well-adapted tree species, the retention of permanent forest cover by avoiding large clear-cuttings, use of natural regeneration, development of diverse forest structures, and single tree management as the key principles for the close to nature policy. The exploitation of all state forests (25% of Danish forests) is now environmentally certified, which confirms the trend towards emphasising non-timber and environmental values. The relatively extensive

Box 4.5 **Nature protection and agriculture**

Several policies aim to *reduce the environmental impact of agriculture* by re-establishing wetlands, promoting organic farming and environmentally sound farming practices, controlling the use of genetically-modified organisms, and reducing pesticide and nutrient application (Chapter 3).

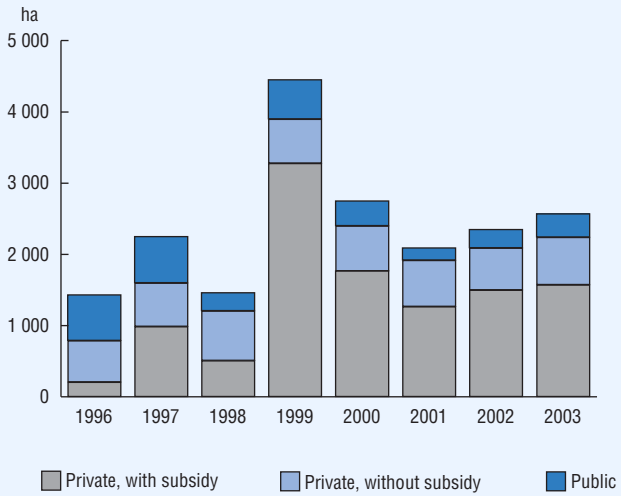
For *wetlands*, a voluntary scheme encourages farmers to take reclaimed wetlands out of agricultural production and re-establish them as wetlands. Participants are either compensated for the loss of the farmland value or offered a corresponding area of farmland. The counties were responsible for implementing this programme, and the central administration was responsible for co-ordination and financing.

The *1999 Action Plan for Organic Farming* is implemented as part of Denmark's Action Plan for the Aquatic Environment. The plan offers farmers who convert to organic production an annual maintenance payment, education and training, financial support for innovation, and information and promotional activities. Yet after several years of growth, organic farming in Denmark has experienced a recession in both the area and the number of converted farms. Now at 150 000 hectares, the organic area is just half of what was expected in the Action Plan. The sector is in a difficult situation with overproduction of organic milk and low income on small arable farms. Several technological, regulatory and economic issues would have to be tackled to move closer to the 1999 objective.

A 1998 support programme encourages *environmentally sound farming practices* in environmentally sensitive agricultural areas. The programme is co-financed by the EU through the Danish rural development programme. All environmentally sensitive areas (one million ha or about 25% of Denmark) are eligible. A payment per hectare is given to farmers who apply specified agricultural practices such as: reducing nitrogen fertiliser application to 60%; cultivation without the use of plant protection products; establishment of pesticide-free border zones; establishment of 55 000 ha buffer zones along rivers and lakes; and establishment of catch crops. The cost to the government is DKK 130 million per year, and a budget of DKK 375 million is planned for the 2005-09 period.

The *Pesticides Action Plan 2004-09* (PAP III) aims to reduce the frequency of field treatments to 1.7 times per year, to promote the re-adjustment of agriculture to non-pesticide cultivation, and to facilitate the establishment of 25 000 ha of pesticide-free marginal areas along streams and lakes before the end of 2009. Application frequency has decreased by 13% since 1981-85 (the reference period); in 2005, the frequency was 2.32 times per year (Chapter 3). The third Action Plan for the Aquatic Environment (*VMP III*) also has a positive effect on nature (e.g. setting goals for establishment of wetlands, non-cultivated strips along water courses).

Figure 4.3 **Afforestation,** 1996-2003



Source: Danish Forest and Nature Agency.

management regime of forests favours many of the endangered plants and animals that live in, or have connections with, forests. The limited use of fertilisers and pesticides in forests is also favourable to groundwater reserves essential to Danish drinking water.

Aquaculture

Aquaculture can also stress ecosystems (Box 3.1). The demand for more effective technologies to reduce pollutants in effluents and more effective use of extracted water has led to a shift from many small farms to fewer but larger operations. Fish farms are required to obtain *water extraction permission and an environmental approval*.[7] Fish farm owners must send the government information about the type and amount of feed and drugs used and the results of the freshwater fish farm's self regulation. Denmark must also perform an environmental assessment of the fish farms in accordance with the EU Habitats and Birds Directives and the Ramsar Convention.

A large number of *complaints* are registered against fish farms because of concern about their impacts on the local water environment due to the presence of nutrients from

leftover food and antibiotics. Nonetheless, waste feed and discharges of phosphorus and nitrogen were halved for fish production between 1989 and 2006 (NERI, 2004).

3.4 Financing and expenditure

Financing for nature and biodiversity protection in Denmark consists of both direct and in-kind funding. The main sources of direct funding are public funding (state, counties until end of 2006), municipalities, EU and private funding. The Nature Conservation Act provides funds for acquisition of property to implement major nature restoration projects and state afforestation projects. The act also provides loans or subsidies to municipalities (and provided them to counties until the end of 2006), as well as to organisations and private landowners who wish to tend and restore natural areas and improve the opportunities for recreational activities. In-kind or voluntary funding is generally through management or monitoring activities by the public.

Total government *expenditure on nature conservation* including county and municipality expenditures was DKK 2 528 million in 2005, up from DKK 2 118 million in 2000 (Table 4.3). While overall public funding has increased for nature protection, contributions from the national government dropped from DKK 1 012 million in 2000 to DKK 968 million in 2005. In the last ten years, public funds were distributed roughly into 40% for nature conservation, 40% for afforestation and 20% for recreational activities (Enemark, 2002). The number of personnel involved in nature conservation and protection was reduced by 20% (from 1 271 in 2002 to 1 024 in 2006).

Table 4.3 **Public expenditure[a] for nature protection**

(DKK million)

	2000	2003	2005
Total national government expenditure	1 012	912	968
County expenditure	809	975	1 101
Expenditure by municipalities	297	353	458
Total	2 118	2 240	2 528

a) Management of state-owned areas included.
Source: MoE, National Forest and Nature Agency.

Since the OECD Environmental Performance Review in 1999, Denmark has benefited from *EU funding* for many projects associated with nature and biodiversity. The EU Common Agricultural Policy (CAP) programmes exert a very strong influence on nature by promoting multifunctional agriculture. Additionally, the EU LIFE programme has contributed significant funds for conservation projects. In view of the importance of forests for the production of ecological services like the regeneration of groundwater, government funding of DKK 6.5 million is made available annually for private landowners for consultation purposes and developing plantations. The low rate of reforestation leads one to believe that the incentive programmes could not compete with the return on investments from competing sectors, such as agriculture or industrial livestock production.

No data are available on *private funding* for nature conservation or protection in Denmark. However, two organisations are major actors in nature protection through land purchase and management: the Danish Bird Protection Foundation (with more than 850 ha in 17 bird sanctuaries) and the Aage V Jensen's Foundation (several properties in the country). Several other large private foundations exist and contribute to Danish nature conservation and research.

3.5 International co-operation

By 2006, Denmark had ratified almost all *international conventions* concerning nature and biodiversity, including the Convention on Biological Diversity (1993) with all three elements (i.e. genes, species, ecosystems) and the protocols on genetically modified organisms (GMOs) and access and benefit sharing.

Denmark has worked toward the objective of *halting the loss of biodiversity by 2010* in accordance with the targets set at the Gothenburg EU Summit in 2001 and the World Summit on Sustainable Development in Johannesburg in 2002. Denmark is a signatory of the Ramsar (wetlands), the Washington (CITES) and the Bonn (migratory wild species) Conventions, which are implemented through various government programmes.

Denmark is also a party to all the *regional agreements* that are important to it, including: the Wadden Sea Seal Agreement, the African-Eurasian Waterbirds Agreement (AEWA), the Agreement on Conservation of European Bats (EUROBATS), and the Agreement on the Conservation of Small Cetaceans of the Baltic and North Sea (ASCOBANS) (Chapter 7). Denmark has also signed the UNECE forest initiatives as well as the regional conventions (e.g. Oslo, Helsinki, and the Bern and Landscape Conventions of the Council of Europe).

Lately, Denmark ratified the *Convention on the Law of the Sea* and the Agreement related to implementation of its part XI (2004). Denmark has not ratified the *International Convention for the Control and Management of Ships' Ballast Water and Sediments*. Ratification and adoption of a vigorous plan of action are both required to address the adverse effects of alien invasive species on local biodiversity.

Denmark's *international development assistance* supports projects that encourage the conservation of nature and biodiversity and are consistent with the Convention on Biological Diversity objectives of substantially reducing the loss of biodiversity by 2010. It has identified five priority issues to advance biodiversity and nature conservation: sustainable forest management and combating illegal logging; mutually supportive efforts to combat climate change and preserve biodiversity; integration of biodiversity considerations in climate change mitigation and adaptation; establishment of a global network of protected areas on land and at sea; combating and preventing the introduction of invasive alien species; development of an international regime on access to genetic resources and benefit sharing.

Notes

1. The Danish government appointed the Wilhjelm Committee in 2000. The committee was composed of 35 members representing farmer, fisher and forest associations; non-governmental organisations; research institutions; ministries; and local government associations.
2. In addition, the *National Forest Programme* (2002) aims at increasing forested land use to 25% of the total land by 2040 through afforestation, including by implementing Natura 2000 recommendations related to forested landscape; the *Aquatic Action Plans I, II (1987-98) and III (2004)* include responsibilities for implementing the EU Nitrates Directive that aims to reduce the nitrogen discharge from agriculture; the *National Pesticide Plan* (2004-09) aims to reduce the frequency of pesticide treatment to 1.7 times per year, to obtain 25 000 ha of pesticide-free buffer zones along streams and lakes by 2009, and to ensure that the discharge of pesticides into streams is within accepted limits; the *National Spatial Plan* (2007) integrates social and environmental aspects, including nature, in a new spatial context; the *EU's Sixth Environmental Action Plan* (2001) aims to halt the decline of biodiversity by 2010.
3. By 2004, emissions of ammonia, nitrogen and phosphorus from agriculture had fallen by 30% (since 1985), 43% (since 1989) and 81% (since 1989) respectively. Pesticide use has also decreased by 58% since the early 1980s. These reductions have resulted in lowering the concentrations of nitrogen by 30% and phosphorus by 28% in water streams since 1989.
4. Denmark's marine area covers 105 000 km^2 and is more than twice the land area of 44 000 km^2.
5. Employment in agriculture shows a similar trend: civilian employment in the primary sector declined from 4.4% in 1995 to 3.1% in 2005 (OECD, 2006).
6. The crop yield now comes from a slightly smaller land base and it is estimated that this trend will continue until 2015, causing a further agricultural surface reduction of 6.5% and the disappearance of 22 000 farming units (approximately half of the total) (NERI, 2005b).
7. The number of registered freshwater fish farms was reduced from 422 to 326 while the number of environmentally approved freshwater fish farms increased from 105 to 140 (43%) between 1998-2005.

Selected Sources

The government documents, OECD documents and other documents used as sources for this chapter included the following. Also see list of websites at the end of this report.

Andersen, J.M. (2005), *Restaurering af Skjern Å. Sammenfatning af Overvågningsresultater 1999-2003*, Faglig rapport fra DMU, Nr. 531, (Restoration of Skjern River, Summary of Environmental Monitoring Results 1999-2003, NERI Technical Report No. 531), Ministry of the Environment, Copenhagen.

ATV (Danish Academy of Technical Sciences) (2003), *Effekter af klimaændringer – tilpasninger i Danmark* (*On Climate Change Effects in Denmark*, only available in Danish), ATV, Copenhagen.

Danish Government (2004), *Action Plan for Biodiversity and Nature Conservation in Denmark 2004-2009*, Ministry of the Environment, Copenhagen.

Enemark, S. (2002), *Land and Environmental Management in Denmark*, *the Danish Way*, Publication No. 7, Danish Association of Chartered Surveyors, Copenhagen.

EPSON (European Spatial Planning Observation Network) (2006), *Territory Matters for Competitiveness and Cohesion: Evidence from the ESPON 2006 Programme*, EPSON, Luxemburg.

Jacobsen, B.H., N. Madsen and J.E. Ørum (2005), *Organic Farming at the Farm Level – Scenarios for the Future Development*, Report No. 178, Environment and Regional Analyses, Food and Resource Economics Institute, Copenhagen.

Larsen, F.W., *et al.* (forthcoming), *A Quantitative Analysis of Biodiversity and Outdoor Valuesof Potential Parks in Denmark*, Center for Macroecology, Institute of Biology, University of Copenhagen, Copenhagen.

NERI (National Environmental Research Institute) (2003), *Miljøtilstandsrapport 2005 (The State of the Environment in Denmark 2005),* Danish Academy of Technical Sciences, Copenhagen.

NERI (2004), *Aquatic Environment 2004 State and Trends, Technical Summary,* NERI Technical Report No. 561, Environmental Protection Agency and Ministry of the Environment, Copenhagen.

NERI (2005a), *Criteria for Favourable Conservation Status in Denmark*, NERI Technical Report, NERI and Ministry of the Environment, Copenhagen.

NERI (2005b), *State of the Environment in Denmark 2005, Illustrated summary*, NERI and Ministry of the Environment, Copenhagen.

OECD (1999), *Environmental Performance Reviews: Denmark*, OECD, Paris.

OECD (2006), *OECD in Figures 2006-2007*, OECD, Paris.

Wilhjelm Committee (2001), *Danish Nature – Status, Trends and Recommendations for Future Biodiversity Policies*, Danish Forest and Nature Agency, Copenhagen.

REFERENCES

I.A Selected environmental data

I.B Selected economic data

I.C Selected social data

II.A Selected multilateral agreements (worldwide)

II.B Selected multilateral agreements (regional)

III. Abbreviations

IV. Physical context

V. Selected environmental websites

I.A: SELECTED ENVIRONMENTAL DATA (1)

		CAN	MEX	USA	JPN	KOR	AUS	NZL	AUT	BEL	CZE	**DNK**	FIN
LAND													
Total area (1000 km^2)		9971	1958	9629	378	100	7713	270	84	31	79	**43**	338
Major protected areas (% of total area)	*2*	8.7	9.2	25.1	17.0	9.6	18.5	32.4	28.0	3.4	15.8	**11.1**	9.1
Nitrogenous fertiliser use (t/km^2 of agricultural land)		2.5	1.2	2.7	9.0	20.1	0.2	2.6	2.9	10.7	6.9	**7.8**	5.9
Pesticide use (t/km^2 of agricultural land)		0.06	0.04	0.08	1.24	1.20	-	0.02	0.09	0.69	0.10	**0.11**	0.06
Livestock densities (head of sheep eq./km^2 of agr. land)		192	256	191	1011	1560	62	685	492	1790	287	**912**	290
FOREST													
Forest area (% of land area)		45.3	33.9	32.6	68.9	63.8	21.4	34.7	41.6	22.4	34.1	**12.7**	75.5
Use of forest resources (harvest/growth)		0.4	0.2	0.6	0.4	0.1	0.6	..	0.7	0.9	0.7	**0.7**	0.7
Tropical wood imports (USD/cap.)	*3*	1.6	0.2	2.1	10.7	6.1	4.0	3.4	0.4	24.2	0.3	**3.8**	1.4
THREATENED SPECIES													
Mammals (% of species known)		31.6	34.0	18.8	24.0	17.9	24.7	18.0	22.0	30.5	18.9	**22.0**	11.9
Birds (% of species known)		12.9	17.0	11.6	12.9	13.3	12.5	21.0	27.3	28.1	49.5	**13.2**	13.3
Fish (% of species known)		7.3	34.4	14.4	25.3	9.2	0.8	10.0	41.7	23.8	40.0	**15.8**	11.8
WATER													
Water withdrawal (% of gross annual availability)		1.5	15.9	19.2	20.4	36.2	4.8	1.7	5.0	32.5	12.7	**4.1**	2.1
Public waste water treatment (% of population served)		72	35	71	67	79	..	80	86	46	71	**88**	81
Fish catches (% of world catches)		1.2	1.4	5.3	4.7	1.7	0.2	0.6	-	-	-	**1.1**	0.1
AIR													
Emissions of sulphur oxides (kg/cap.)		76.3	12.2	49.4	6.7	10.4	123.6	18.6	4.4	14.5	22.2	**4.0**	16.4
(kg/1000 USD GDP)	*4*	2.6	1.4	1.4	0.3	0.6	4.2	0.8	0.2	0.5	1.4	**0.1**	0.6
% change (1990-2005)		-27	..	-31	-14	-46	58	39	-55	-58	-88	**-88**	-64
Emissions of nitrogen oxides (kg/cap.)		78.4	12.0	63.9	15.8	24.4	78.0	39.0	24.7	26.3	32.3	**34.3**	40.5
(kg/1000 USD GDP)	*4*	2.7	1.4	1.8	0.6	1.3	2.7	1.7	0.9	0.9	2.0	**1.1**	1.5
% change (1990-2005)		-6	18	-19	-2	47	25	16	-3	-24	-40	**-32**	-32
Emissions of carbon dioxide (t./cap.)	*5*	17.2	3.6	19.8	9.5	9.6	17.6	8.1	9.2	11.1	11.6	**9.4**	13.2
(t./1000 USD GDP)	*4*	0.57	0.39	0.54	0.36	0.50	0.61	0.36	0.31	0.40	0.69	**0.32**	0.47
% change (1990-2004)		29	27	20	15	105	36	49	31	7	-23	**1**	25
WASTE GENERATED													
Industrial waste (kg/1000 USD GDP)	*4, 6*	..	..	..	40	40	20	10	..	50	30	**10**	110
Municipal waste (kg/cap.)	*7*	420	340	750	400	380	690	400	560	460	290	**740**	470
Nuclear waste (t./Mtoe of TPES)	*8*	6.2	0.1	1.0	1.5	3.2	-	-	-	2.2	1.7	**-**	1.9

.. not available. - nil or negligible.

1) Data refer to the latest available year. They include provisional figures and Secretariat estimates.
Partial totals are underlined. Varying definitions can limit comparability across countries.

2) IUCN management categories I-VI and protected areas without IUCN category assignment; national classifications may differ.

3) Total imports of cork and wood from non-OECD tropical countries.

4) GDP at 2000 prices and purchasing power parities.

Source: OECD Environmental Data Compendium.

OECD EPR / SECOND CYCLE

FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SLO	ESP	SWE	CHE	TUR	UKD*	OECD*
549	357	132	93	103	70	301	3	42	324	313	92	49	506	450	41	779	245	35042
13.3	31.5	5.2	8.9	9.5	1.2	19.0	17.1	18.9	6.4	29.0	8.5	25.2	9.5	9.5	28.7	4.3	30.1	16.4
7.6	10.4	2.9	5.8	0.7	7.9	5.2	-	13.8	10.1	4.8	2.3	3.7	3.5	5.2	3.6	3.6	6.3	2.2
0.27	0.17	0.14	0.17	-	0.05	0.58	0.33	0.41	0.08	0.06	0.40	0.16	0.14	0.05	0.10	0.06	*0.21*	*0.07*
514	689	245	207	65	1139	488	4351	2142	845	315	498	226	339	409	794	290	*674*	208
31.6	30.2	22.8	19.5	1.3	9.4	23.3	34.5	9.5	39.2	30.0	36.9	41.6	33.3	73.5	30.8	27.0	11.6	34.4
0.6	0.5	0.6	0.5	-	0.7	0.5	0.5	0.6	0.5	0.6	0.8	0.5	0.5	0.7	0.8	0.5	0.6	0.6
6.8	1.8	2.7	0.1	2.8	11.2	7.2	-	15.6	3.6	0.3	17.6	0.1	6.2	2.2	0.6	0.5	2.7	4.0
19.0	41.8	37.8	71.1	-	1.8	40.7	51.6	18.6	3.4	14.1	17.7	22.2	26.3	22.4	32.9	22.2	*6.3*	..
19.2	27.3	1.9	18.8	44.0	5.4	18.4	50.0	21.5	7.7	8.6	13.7	14.4	25.5	19.1	36.4	30.8	*15.4*	..
31.9	68.2	26.2	32.1	-	23.1	29.0	27.9	48.9	-	7.0	22.9	24.1	52.9	16.4	38.9	9.9	*11.1*	..
17.5	18.9	12.1	4.7	0.1	2.3	44.0	3.3	10.0	0.9	18.3	12.0	1.3	33.3	1.5	4.7	17.0	*22.4*	*11.4*
79	93	56	57	50	70	69	95	99	76	59	60	52	55	85	97	35	*98*	*68*
0.7	0.3	0.1	-	1.9	0.3	0.3	-	0.6	2.7	0.2	0.2	-	0.9	0.3	-	0.5	0.7	26.2
9.0	7.4	46.3	24.5	35.0	24.5	11.6	6.7	5.3	4.9	38.1	28.4	19.0	37.3	6.5	2.3	25.2	16.9	27.5
0.3	0.3	2.6	1.7	1.2	0.8	0.4	0.1	0.2	0.1	3.5	1.5	1.6	1.7	0.2	0.1	3.4	0.6	1.1
-60	-89	4	-76	22	-48	-63	-80	-58	-58	-55	-9	-81	-29	-45	-60	18	-73	-41
22.6	17.2	28.9	17.9	90.4	31.0	22.2	38.1	26.6	46.9	20.8	27.8	19.0	34.7	27.1	11.4	13.1	26.8	34.2
0.8	0.7	1.6	1.2	3.1	1.0	0.8	0.7	0.9	1.3	1.9	1.5	1.6	1.6	1.0	0.4	1.8	1.0	1.4
-29	-48	11	-24	-2	5	-34	-27	-28	-5	-38	13	-53	14	-25	-46	35	-43	-18
6.4	10.3	8.5	5.6	7.7	10.2	7.9	24.9	11.4	7.9	7.8	5.7	7.0	7.7	5.8	6.0	2.9	9.0	11.1
0.23	0.40	0.43	0.38	0.24	0.31	0.30	0.45	0.39	0.21	0.65	0.31	0.55	0.34	0.20	0.20	0.40	0.32	0.44
9	-12	33	-19	19	37	16	7	18	26	-15	52	-34	59	1	8	63	-4	17
50	20	..	30	10	40	20	30	40	20	120	50	130	30	110	-	30	30	50
540	600	440	460	520	740	540	710	620	760	250	470	270	650	480	650	440	580	560
4.2	1.2	-	1.7	-	-	-	-	0.1	-	-	-	3.0	1.2	4.1	1.9	-	1.0	1.5

UKD: pesticides and threatened species: Great Britain; water withdrawal and public waste water treatment plants: England and Wales.

5) CO_2 from energy use only; sectoral approach; international marine and aviation bunkers are excluded.

6) Waste from manufacturing industries.

7) CAN, NZL: household waste only.

8) Waste from spent fuel arising in nuclear power plants, in tonnes of heavy metal, per million tonnes of oil equivalent of total primary energy supply.

I.B: SELECTED ECONOMIC DATA (1)

		CAN	MEX	USA	JPN	KOR	AUS	NZL	AUT	BEL	CZE	**DNK**
GROSS DOMESTIC PRODUCT												
GDP, 2005 (billion USD at 2000 prices and PPPs)		990	983	11049	3477	958	596	94	246	294	182	**164**
% change (1990-2005)		51.3	53.8	55.3	21.6	125.0	64.5	58.2	38.2	33.2	22.7	**38.1**
per capita, 2005 (1000 USD/cap.)		30.6	9.3	37.3	27.2	19.9	29.3	22.9	29.9	28.2	17.8	**30.3**
Exports, 2005 (% of GDP)		37.9	29.9	10.5	14.3	42.5	19.1	27.9	54.4	86.3	71.6	**48.5**
INDUSTRY	*2*											
Value added in industry (% of GDP)		32	27	23	31	43	26	25	32	27	40	**27**
Industrial production: % change (1990-2005)		46.7	51.3	55.9	3.2	210.9	30.5	29.5	70.1	21.0	11.8	**38.3**
AGRICULTURE												
Value added in agriculture (% of GDP)	*3*	3	4	2	1	4	4	7	2	1	4	**3**
Agricultural production: % change (1990-2005)		25.6	41.5	27.6	-12.3	19.3	25.4	47.9	9.9	13.0	..	**0.7**
Livestock population, 2005 (million head of sheep eq.)		118	275	787	53	30	283	99	17	25	12	**24**
ENERGY												
Total supply, 2005 (Mtoe)		272	177	2340	530	214	122	17	34	57	45	**20**
% change (1990-2005)		29.9	42.0	21.4	19.3	128.9	39.3	22.9	37.1	15.2	-7.7	**9.6**
Energy intensity, 2005 (toe/1000 USD GDP)		0.27	0.18	0.21	0.15	0.22	0.20	0.18	0.14	0.19	0.25	**0.12**
% change (1990-2005)		-14.2	-7.7	-21.8	-1.8	1.7	-15.3	-22.3	-0.8	-13.5	-24.8	**-20.6**
Structure of energy supply, 2005 (%)	*4*											
Solid fuels		10.2	4.9	23.8	21.1	23.1	44.5	11.9	11.9	9.1	43.6	**19.1**
Oil		35.5	58.8	40.8	47.4	45.0	31.1	40.4	42.5	40.7	21.6	**42.1**
Gas		29.4	25.0	21.8	13.3	12.8	18.9	18.9	24.2	25.2	16.6	**22.6**
Nuclear		8.8	1.6	9.0	15.0	17.9	-	-	-	22.1	14.0	**-**
Hydro, etc.		16.1	9.7	4.7	3.2	1.2	5.5	28.9	21.4	2.9	4.2	**16.3**
ROAD TRANSPORT	*5*											
Road traffic volumes per capita, 2004 (1000 veh.-km/cap.)		9.8	0.7	16.2	6.5	3.2	9.8	12.3	9.3	9.0	4.6	**7.8**
Road vehicle stock, 2005 (10 000 vehicles)		1883	2205	24119	7404	1540	1348	271	502	559	439	**245**
% change (1990-2005)		13.8	129.3	27.8	31.1	353.5	37.9	47.0	36.0	31.2	69.4	**29.5**
per capita (veh./100 inh.)		58	21	81	58	32	66	66	61	54	43	**45**

.. not available. - nil or negligible.

1) Data may include provisional figures and Secretariat estimates. Partial totals are underlined.

2) Value added: includes mining and quarrying, manufacturing, gas, electricity and water and construction; production: excludes construction.

Source: OECD Environmental Data Compendium.

OECD EPR / SECOND CYCLE

FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SLO	ESP	SWE	CHE	TUR	UKD	OECD
153	1693	2165	225	156	10	141	1521	26	478	180	475	194	73	995	269	231	568	1699	30283
37.4	29.5	26.6	56.3	33.3	57.2	156.5	20.9	90.8	40.4	59.6	68.2	37.2	35.9	54.5	35.2	17.1	75.6	43.3	44.3
29.1	27.8	26.2	20.3	15.4	33.8	34.2	26.0	56.8	29.3	39.0	12.4	18.4	13.6	22.9	29.7	31.0	7.9	28.3	25.9
41.8	26.0	40.7	20.8	66.4	32.0	81.2	26.3	159.3	69.9	45.3	37.2	28.6	77.3	25.5	48.6	47.9	27.4	26.4	24.3
32	25	30	23	31	27	42	29	20	26	38	30	29	32	30	28	27	31	26	29
75.6	18.2	16.9	19.5	92.2	..	312.8	10.5	57.6	20.8	35.5	113.0	15.1	19.5	27.0	55.3	27.6	78.3	8.6	34.6
4	3	1	7	4	9	3	3	1	3	2	3	4	5	3	2	1	12	1	3
-3.9	0.9	-4.7	10.1	-10.5	5.4	2.6	10.7	13	-9.2	-9.4	-15.8	1.1	..	7.4	-10.2	-4.3	18.2	-8.0	..
8	156	117	21	12	1	50	64	6	42	9	58	19	6	100	13	12	111	113	2639
35	276	345	31	28	4	15	185	5	82	32	93	27	19	145	52	27	85	234	5548
19.8	21.1	-3.2	39.7	-2.8	66.9	47.5	25.2	33.7	22.6	49.3	-6.9	53.1	-11.7	59.4	9.7	8.6	60.9	10.3	22.6
0.23	0.16	0.16	0.14	0.18	0.36	0.11	0.12	0.18	0.17	0.18	0.20	0.14	0.26	0.15	0.19	0.12	0.15	0.14	0.18
-12.8	-6.5	-23.6	-10.7	-27.1	6.2	-42.5	3.5	-29.9	-12.7	-6.4	-44.7	11.5	-35.0	3.2	-18.9	-7.2	-8.4	-23.1	-15.1
14.8	5.1	23.7	29.2	11.3	2.7	17.8	9.1	1.8	10.2	2.3	58.1	12.6	22.2	14.1	5.0	0.6	26.3	16.2	20.4
32.0	32.5	35.8	57.7	26.5	24.5	56.7	45.2	70.3	41.0	42.8	23.6	59.8	18.1	49.1	28.3	48.1	35.0	36.3	40.6
10.8	14.6	23.4	7.7	44.4	-	23.0	39.0	26.2	44.0	15.6	13.0	14.1	30.8	20.5	1.6	10.5	26.7	36.4	21.8
18.1	41.9	12.3	-	13.3	-	-	-	-	1.3	-	-	-	24.4	10.3	35.9	23.0	-	9.1	11.0
24.3	5.9	4.8	5.4	4.5	72.7	2.6	6.7	1.7	3.6	39.3	5.3	13.5	4.5	6.0	29.2	17.9	11.9	2.0	6.2
9.7	8.6	7.1	8.7	2.3	10.2	9.5	8.9	8.9	8.0	7.8	3.9	7.4	2.7	4.8	8.2	8.0	0.8	8.2	8.4
282	3617	4803	552	333	21	198	3894	34	806	252	1472	552	150	2516	463	419	843	3217	64939
26.2	27.1	28.8	118.7	49.4	59.8	108.5	30.2	68.0	40.7	29.9	126.8	151.3	44.4	74.2	17.9	28.9	257.1	35.0	38.7
54	59	58	50	33	72	48	66	74	49	55	39	52	28	58	51	56	12	54	56

3) Agriculture, forestry, hunting, fishery, etc.

4) Breakdown excludes electricity trade.

5) Refers to motor vehicles with four or more wheels, except for Italy, which include three-wheeled goods vehicles.

I.C: SELECTED SOCIAL DATA (1)

		CAN	MEX	USA	JPN	KOR	AUS	NZL	AUT	BEL	CZE	**DNK**
POPULATION												
Total population, 2005 (100 000 inh.)		323	1053	2965	1278	481	203	41	82	104	102	**54**
% change (1990-2005)		16.6	25.4	18.8	3.5	12.3	19.2	21.9	6.7	4.7	-1.4	**5.3**
Population density, 2005 (inh./km^2)		3.2	53.8	30.8	338.2	483.3	2.6	15.2	98.2	341.9	129.6	**125.7**
Ageing index, 2004 (over 64/under 15)		72.3	18.6	59.7	140.3	44.4	65.4	54.9	97.1	97.2	91.6	**79.5**
HEALTH												
Women life expectancy at birth, 2004 (years)		82.4	77.6	80.1	85.6	80.8	83.0	81.3	82.1	82.4	79.0	**79.9**
Infant mortality, 2004 (deaths /1 000 live births)		5.3	19.7	6.9	2.8	5.3	4.7	6.2	4.5	4.3	3.7	**4.4**
Expenditure, 2004 (% of GDP)		9.9	6.5	15.3	8.0	5.6	9.6	8.4	9.6	10.1	7.3	**8.9**
INCOME AND POVERTY												
GDP per capita, 2005 (1000 USD/cap.)		30.6	9.3	37.3	27.2	19.9	29.3	22.9	29.9	28.2	17.8	**30.3**
Poverty (% pop. < 50% median income)		10.3	20.3	17.0	15.3	..	11.2	10.4	9.3	7.8	4.4	**4.3**
Inequality (Gini levels)	*2*	30.1	48.0	35.7	31.4	..	30.5	33.7	26.0	26.0	25.0	**24.0**
Minimum to median wages, 2000	*3*	42.5	21.1	36.4	32.7	25.2	57.7	46.3	x	49.2	32.3	**x**
EMPLOYMENT												
Unemployment rate, 2005 (% of civilian labour force)	*4*	6.8	3.5	5.1	4.4	3.7	5.1	3.7	5.2	8.4	7.9	**4.8**
Labour force participation rate, 2005 (% 15-64 years)		79.2	58.6	66.0	78.0	68.5	77.1	67.8	78.4	67.7	71.1	**81.0**
Employment in agriculture, 2004 (%)	*5*	2.6	15.9	1.6	4.5	8.1	3.7	7.5	5.0	2.0	4.3	**3.1**
EDUCATION												
Education, 2004 (% 25-64 years)	*6*	84.3	22.6	87.9	84.0	74.4	64.1	77.6	80.2	63.6	89.1	**81.4**
Expenditure, 2003 (% of GDP)	*7*	6.1	6.8	7.5	4.8	7.5	5.8	6.8	5.5	6.1	4.7	**7.0**
OFFICIAL DEVELOPMENT ASSISTANCE	*8*											
ODA, 2006 (% of GNI)		0.30	..	0.17	0.25	..	0.30	0.27	0.48	0.50	..	**0.80**
ODA, 2006 (USD/cap.)		114	..	76	91	..	103	62	183	187	..	**411**

.. not available. - nil or negligible. x not applicable.

1) Data may include provisional figures and Secretariat estimates. Partial totals are underlined.

2) Ranging from 0 (equal) to 100 (inequal) income distribution; figures relate to total disposable income (including all incomes, taxes and benefits) for the entire population.

3) Minimum wage as a percentage of median earnings including overtime pay and bonuses.

Source: OECD.

OECD EPR / SECOND CYCLE

FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SLO	ESP	SWE	CHE	TUR	UKD	OECD
52	609	825	111	101	3	41	586	5	163	46	382	106	54	434	90	74	721	600	11690
5.2	7.3	3.9	10.0	-2.8	16.1	17.9	3.3	18.5	9.2	9.0	0.3	7.0	1.7	11.7	5.5	10.8	28.3	4.8	12.0
15.5	110.8	231.0	84.1	108.4	2.9	58.8	194.5	175.9	393.0	14.3	122.0	114.8	109.9	85.8	20.1	180.2	92.5	245.0	33.4
89.6	88.5	134.5	121.5	98.7	52.2	53.5	133.1	75.3	74.2	74.3	76.9	107.8	66.8	116.0	97.3	100.8	19.4	87.1	70.2
82.3	83.8	81.4	81.4	76.9	82.7	80.7	82.5	81.0	81.4	82.3	79.4	80.5	77.8	83.8	82.7	83.7	73.8	80.7	..
3.3	3.9	4.1	4.1	6.6	2.8	4.9	4.1	3.9	4.1	3.2	6.8	4.0	6.8	3.5	3.1	4.2	23.6	5.1	..
7.5	10.5	10.6	10.0	8.0	10.2	7.1	8.8	8.0	9.2	9.2	6.5	10.1	5.9	8.1	9.1	11.6	7.7	8.4	..
29.1	27.8	26.2	20.3	15.4	33.8	34.2	26.0	56.8	29.3	39.0	12.4	18.4	13.6	22.9	29.7	31.0	7.9	28.3	25.9
6.4	7.0	9.8	13.5	8.2	..	15.4	12.9	5.5	6.0	6.3	9.8	13.7	..	11.5	5.3	6.7	15.9	11.4	10.2
25.0	28.0	28.0	33.0	27.0	35.0	32.0	33.0	26.0	27.0	25.0	31.0	38.0	33.0	31.0	23.0	26.7	45.0	34.0	30.7
x	60.8	x	51.3	37.2	x	55.8	x	48.9	47.1	x	35.5	38.2	..	31.8	x	x	..	41.7	..
8.4	9.9	9.6	9.8	7.2	2.6	4.4	7.7	4.5	4.7	4.6	17.7	7.6	16.3	9.2	6.4	4.5	10.0	4.8	6.6
74.6	69.3	78.2	64.9	60.0	84.6	72.5	62.6	69.1	77.9	79.1	63.9	77.5	68.7	71.3	78.3	86.3	53.0	76.0	68.7
4.9	3.5	2.4	12.6	5.3	6.3	6.4	4.5	1.3	3.0	3.5	18.0	12.1	5.1	5.5	2.1	3.7	34.0	1.3	6.1
77.6	65.3	83.9	56.2	75.4	60.0	62.9	48.2	62.3	70.7	88.3	50.1	25.2	84.7	45.0	82.9	84.5	26.1	65.1	67.5
6.1	6.3	5.3	4.2	6.1	8.0	4.4	5.1	3.6	5.0	6.6	6.4	5.9	4.7	4.7	6.7	6.5	3.7	6.1	5.8
0.39	0.47	0.36	0.16	..	..	0.53	0.20	0.89	0.81	0.89	..	0.21	..	0.32	1.03	0.39	..	0.52	0.30
157	171	126	35	..	..	235	62	633	334	631	..	37	..	86	437	220	..	209	63

4) Standardised unemployment rates; MEX, ISL, TUR: commonly used definitions.

5) Civil employment in agriculture, forestry and fishing.

6) Upper secondary or higher education; OECD: average of rates.

7) Public and private expenditure on educational institutions; OECD: average of rates.

8) Official Development Assistance by Member countries of the OECD Development Assistance Committee.

II.A: SELECTED MULTILATERAL AGREEMENTS (WORLDWIDE)

Y = in force S = signed R = ratified D = denounced

			CAN	MEX	USA
1946	Washington	Conv. - Regulation of whaling	Y D	R	R
1956	Washington	Protocol	Y D	R	R
1949	Geneva	Conv. - Road traffic	Y R		R
1957	Brussels	Conv. - Limitation of the liability of owners of sea-going ships	Y S		
1979	Brussels	Protocol	Y		
1958	Geneva	Conv. - Fishing and conservation of the living resources of the high seas	Y S	R	R
1959	Washington	Treaty - Antarctic	Y R		R
1991	Madrid	Protocol to the Antarctic treaty (environmental protection)	Y R		R
1960	Geneva	Conv. - Protection of workers against ionising radiations (ILO 115)	Y	R	
1962	Brussels	Conv. - Liability of operators of nuclear ships			
1963	Vienna	Conv. - Civil liability for nuclear damage	Y	R	
1988	Vienna	Joint protocol relating to the application of the Vienna Convention and the Paris Convention	Y		
1997	Vienna	Protocol to amend the Vienna convention	Y		
1963	Moscow	Treaty - Banning nuclear weapon tests in the atmosphere, in outer space and under water	Y R	R	R
1964	Copenhagen	Conv. - International council for the exploration of the sea	Y R		R
1970	Copenhagen	Protocol	Y R		R
1969	Brussels	Conv. - Intervention on the high seas in cases of oil pollution casualties (INTERVENTION)	Y	R	R
1973	London	Protocol (pollution by substances other than oil)	Y	R	R
1969	Brussels	Conv. - Civil liability for oil pollution damage (CLC)	Y D	D	S
1976	London	Protocol	Y R	R	
1992	London	Protocol	Y R	R	
1970	Bern	Conv. - Transport of goods by rail (CIM)	Y		
1971	Brussels	Conv. - International fund for compensation for oil pollution damage (FUND)	Y D	D	S
1976	London	Protocol	Y R	R	
1992	London	Protocol (replaces the 1971 Convention)	Y R	R	
2000	London	Amendment to protocol (limits of compensation)	Y R	R	
2003	London	Protocol (supplementary fund)			
1971	Brussels	Conv. - Civil liability in maritime carriage of nuclear material	Y		
1971	London, Moscow, Washington	Conv. - Prohib. emplacement of nuclear and mass destruct. weapons on sea-bed, ocean floor and subsoil	Y R	R	R
1971	Ramsar	Conv. - Wetlands of international importance especially as waterfowl habitat	Y R	R	R
1982	Paris	Protocol	Y R	R	R
1987	Regina	Regina amendment	Y R	R	
1971	Geneva	Conv. - Protection against hazards of poisoning arising from benzene (ILO 136)	Y		
1972	London, Mexico, Moscow, Washington	Conv. - Prevention of marine pollution by dumping of wastes and other matter (LC)	Y R	R	R
1996	London	Protocol to the Conv. - Prevention of marine poll. by dumping of wastes and other matter	R		S
1972	Geneva	Conv. - Protection of new varieties of plants (revised)	Y R	R	R

OECD EPR / SECOND CYCLE

Y = in force S = signed R = ratified D = denounced

JPN	KOR	AUS	NZL	AUT	BEL	CZE	**DNK**	FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SVK	ESP	SWE	CHE	TUR	UKD	EU
R	R	R	R	R	R	R	**R**	R	R	R		R	R	R	R		R	R		R	R	R	R	R		R	
R	R	R	R	R	R	R	**R**	R	R	R		R	R	R	R		R	R		R	R	R	R	R		R	
R	R	R	R	R	R	R	**R**	R	R		R	R	R	R	R	R	R	R	R	R	R	R	R	S	R	R	
D		D			D		**D**	D	D	D			R		S		D	D	R	R		R	D	R		D	
		R			R			S		S						R			R	R		R		R		D	
		R	S		R		**R**	R	R				S	S			R			R		R		R		R	
R	R	R	R	R	R	R	**R**	R	R	R	R	R			R		R	R	R		R	R	R	R	R	R	
R	R	R	R	S	R	R	**S**	R	R	R	R	S			R		R	R	R		S	R	R	S		R	
R					R	R	**R**	R	R	R	R	R			R		R	R	R	R	R	R	R	R	R	R	
	S				S					S				S			R			R							
						R						R							R		R	S				S	
					S	R	**R**	R	S	R	R	R			R		R	R	R	S	R	S	R	S	S	S	
						S						S			S				S								
R	R	R	R	R	R	R	**R**	R		R	R	R	R	R	R	R	R	R	R	S	R	R	R	R	R	R	
					R		**R**	R	R	R			R	R			R	R	R	R		R	R			R	
					R		**R**	R	R	R			R	R			R	R	R	R		R	R			R	
R	S	R	R		R		**R**	R	R	R	S		R	R	R		R	R	R	R		R	R	R		R	
		R	S		R		**R**	R	R	R				R	R		R	R	R	R		R	R	R		R	
D	D	D	D		D		**D**	D	D	D	D		D	D	D	R	D	D	D	D		D	D	D			
R	R	R			R		**R**	R	R	R	R		R	D	R	R	R	R	R	R		R	R	R			
R	R	R	R		R		**R**	R	R	R	R		R	R	R	R	R	R	R	R		R	R	R	R	R	
				R	R	R	**R**	R	R	R	R	R		R	R	R	R	R	R	R	R	R	R	R	R	R	
D	D	D	D		R		**D**	D	D	D	D		D	D	D		D	D	D	R		D	D	D		D	
R		R	R		R		**R**	R	R	R	R		R	D	R		R	R	R	R		R	R			D	
R	R	R	R		R		**R**	R	R	R	R		R	R	R	R	R	R	R	R		R	R	R	R	R	
R	R	R	R		R		**R**	R	R	R	R		R	R	R		R	R	R	R		R	R		R	R	
R			R		R		**R**	R	R	R				R	R		R	R		R		R	R				
					R		**R**	R	R	R					R		R	R		S		R	R			S	
R	R	R	R	R	R	R	**R**	R		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R	R	R	R	R	R		**R**	R	R	R	R	R	R	R	R		R	R	R	R			R	R	R	R	
						R		R	R	R	R	R			R						R	R		R			
R	R	R	R		R		**R**	R	R	R	R	R	R	R	R	R	R	R	R	R		R	R	R		R	
		R	R		R		**R**	S	R	R			R	R			S	R				R	R	R		R	
R	R	R	R	R	R	R	**R**	R	R	R		R		R	R		R	R	R	R	R	R	R	R		R	

II.A: SELECTED MULTILATERAL AGREEMENTS (WORLDWIDE) (cont.)

Y = in force S = signed R = ratified D = denounced

		CAN	MEX	USA
1978 Geneva	Amendments	Y R	R	R
1991 Geneva	Amendments	Y		R
1972 Geneva	Conv. - Safe container (CSC)	Y R	R	R
1972 London, Moscow, Washington	Conv. - International liability for damage caused by space objects	Y R	R	R
1972 Paris	Conv. - Protection of the world cultural and natural heritage	Y R	R	R
1973 Washington	Conv. - International trade in endangered species of wild fauna and flora (CITES)	Y R	R	R
1974 Geneva	Conv. - Prev. and control of occup. hazards caused by carcinog. subst. and agents (ILO 139)	Y		
1976 London	Conv. - Limitation of liability for maritime claims (LLMC)	Y	R	
1996 London	Amendment to convention	Y S		
1977 Geneva	Conv. - Protection of workers against occupational hazards in the working environment due to air pollution, noise and vibration (ILO 148)	Y		
1978 London	Protocol - Prevention of pollution from ships (MARPOL PROT)	Y R	R	R
1978 London	Annex III	Y R		R
1978 London	Annex IV	Y		
1978 London	Annex V	Y	R	R
1997 London	Annex VI	Y		S
1979 Bonn	Conv. - Conservation of migratory species of wild animals	Y		
1991 London	Agreem. - Conservation of bats in Europe	Y		
1992 New York	Agreem. - Conservation of small cetaceans of the Baltic and the North Seas (ASCOBANS)	Y		
1996 Monaco	Agreem. - Conservation of cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area	Y		
1996 The Hague	Agreem. - Conservation of African-Eurasian migratory waterbirds	Y		
2001 Canberra	Agreem. - Conservation of albatrosses and petrels (ACAP)	Y		
1982 Montego Bay	Conv. - Law of the sea	Y R	R	
1994 New York	Agreem. - relating to the implementation of part XI of the convention	Y R	R	S
1995 New York	Agreem. - Implementation of the provisions of the convention relating to the conservation and management of straddling fish stocks and highly migratory fish stocks	Y R		R
1983 Geneva	Agreem. - Tropical timber	Y R		R
1994 New York	Revised agreem. - Tropical timber	Y R	R	R
1985 Vienna	Conv. - Protection of the ozone layer	Y R	R	R
1987 Montreal	Protocol (substances that deplete the ozone layer)	Y R	R	R
1990 London	Amendment to protocol	Y R	R	R
1992 Copenhagen	Amendment to protocol	Y R	R	R
1997 Montreal	Amendment to protocol	Y R		R
1999 Beijing	Amendment to protocol	Y R		R
1986 Vienna	Conv. - Early notification of a nuclear accident	Y R	R	R
1986 Vienna	Conv. - Assistance in the case of a nuclear accident or radiological emergency	Y R	R	R
1989 Basel	Conv. - Control of transboundary movements of hazardous wastes and their disposal	Y R	R	S

OECD EPR / SECOND CYCLE

Y = in force S = signed R = ratified D = denounced

JPN	KOR	AUS	NZL	AUT	BEL	CZE	**DNK**	FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SVK	ESP	SWE	CHE	TUR	UKD	EU
R	R	R	R	R		R	**R**	R	R	R		R		R	R		R	R	R	R	R		R	R		R	
R	R	R		R		R	**R**	R		R		R					R		R		R	R	R			R	
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R		R	R	R	R	R	R	R	R	R	R	S	R	
R	R	R	R	R	R	R	**R**	R	R	R	R	R	S	R	R	R	R	R	R		R	R	R	R		R	
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R					R	R	**R**	R	R	R		R	R	R	R			R		R	R		R	R			
R		R	R		R		**D**	D	R	D	R			R		R	R	R	R			R	R	R	R	R	
		R					**R**	R	S	R						R	S	R				R	R	R		R	
					R	R	**R**	R	R	R		R			R			R		R	R	R	R			R	
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		R	
R	R	R		R	R	R	**R**	R	R	R	R	R			R	R	R	R	R	R	R	R	R	R		R	
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R					R		**R**	R	R	R	R					R		R	R			R	R			R	
		R	R	R	R	R	**R**	R	R	R	R	R		R	R	R	R	R	R	R	R	R	R	R		R	R
				R	R	R	**R**	R	R	R		R		R		R	R	R	R	R	R		R			R	
					R		**R**	R	R	R							R		R				R			R	S
									R		R				R					R		R					
					R		**R**	R	R	R	S	R		R	R	R	R			R	R	R	R	R		R	R
		R	R						S													R				R	
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	S		R	R
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	S		R	R
S	S	R	R	R	R		**R**	R	R	R	R		R	R	R	R	R	R	R	R		R	R			R	R
R	R	R	R	R	R		**R**	R	R	R	R			R	R	R	R	R		R		R	R	R		R	R
R	R	R	R	R	R		**R**	R	R	R	R			R	R	R	R	R		R		R	R	R		R	R
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R	R	R	R	R	R	R	**S**	R	R	R	R	R	S	R	R	R	R	R	R	R	R	R	R	R	R	R	
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R

II.A: SELECTED MULTILATERAL AGREEMENTS (WORLDWIDE) (cont.)

Y = in force S = signed R = ratified D = denounced

		CAN	MEX	USA
1995 Geneva	Amendment			
1999 Basel	Prot. - Liability and compensation for damage			
1989 London	Conv. - Salvage	Y R	R	R
1990 Geneva	Conv. - Safety in the use of chemicals at work (ILO 170)	Y	R	
1990 London	Conv. - Oil pollution preparedness, response and co-operation (OPRC)	Y R	R	R
2000 London	Protocol - Pollution incidents by hazardous and noxious substances (OPRC-HNS)			
1992 Rio de Janeiro	Conv. - Biological diversity	Y R	R	S
2000 Montreal	Prot. - Biosafety (Cartagena)	Y S	R	
1992 New York	Conv. - Framework convention on climate change	Y R	R	R
1997 Kyoto	Protocol	Y R	R	S
1993 Paris	Conv. - Prohibition of the development, production, stockpiling and use of chemical weapons and their destruction	Y R	R	R
1993 Geneva	Conv. - Prevention of major industrial accidents (ILO 174)	Y		
1993	Agreem. - Promote compliance with international conservation and management measures by fishing vessels on the high seas	Y R	R	R
1994 Vienna	Conv. - Nuclear safety	Y R	R	R
1994 Paris	Conv. - Combat desertification in those countries experiencing serious drought and/or desertification, particularly in Africa	Y R	R	R
1996 London	Conv. - Liability and compensation for damage in connection with the carriage of hazardous and noxious substances by sea (HNS)	S		
1997 Vienna	Conv. - Supplementary compensation for nuclear damage			S
1997 Vienna	Conv. - Joint convention on the safety of spent fuel management and on the safety of radioactive waste management	Y R		R
1997 New York	Conv. - Law of the non-navigational uses of international watercourses			
1998 Rotterdam	Conv. - Prior informed consent procedure for hazardous chemicals and pesticides (PIC)	Y R	R	S
2001 London	Conv. - Civil liability for bunker oil pollution damage			
2001 London	Conv. - Control of harmful anti-fouling systems on ships			S
2001 Stockholm	Conv. - Persistent organic pollutants	Y R	R	S

Source: IUCN; OECD.

OECD EPR / SECOND CYCLE

Y = in force S = signed R = ratified D = denounced

JPN	KOR	AUS	NZL	AUT	BEL	CZE	**DNK**	FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SVK	ESP	SWE	CHE	TUR	UKD	EU
			R	R	R	R	**R**	R	R	R		R				R	R	R	R	R	R	R	R	R	R	R	R
							S	S	S			S				S							S	S		S	
		R	R		R		**R**	S	R	R	R		R	R	R		R	R	S			R	R	R		R	
	R														R			R	R				R				
R	R	R	R				**R**	R	R	R	R		R	R	R		R	R	R	R		R	R	R	R	R	
		R					**S**	S	S	S	R						R		R	R		R	R				
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R		R	R	R	R	**R**	R	R	R	R	R	S	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	S	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		R	R
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
					R												R						R				
R	R	R																R					R				R
R	R	R		R	R	R	**R**	R	R	R	R	R	S	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
							S	S		S							S	S					S			S	
		S				S									S												
R	R	R		R	R	R	**R**	R	R	R	R	R		R	R	R	R	R	R	R	R	R	R	R		R	
								R		S		R				S	R	R		R			R				
R	R	R	R	R	R	R	**R**	R	R	R	R	R		R	R	R	R	R	R	R		R	R	R	S	R	R
											R				S	R						R	S				
R		S					**R**	S			R					R		R	R			R	R				
R	S	R	R	R	R	R	**R**	R	R	R	R	S	R	S	S	R	R	R	S	R	R	R	R	R	S	R	R

II.B: SELECTED MULTILATERAL AGREEMENTS (REGIONAL)

			CAN	MEX	USA
1933 London	Conv. - Preservation of fauna and flora in their natural state	Y			
1940 Washington	Conv. - Nature protection and wild life preservation in the Western Hemisphere	Y		R	R
1958 Dublin	Amendments	Y			
1960 London	Amendments	Y			
1961 Copenhagen	Amendments	Y			
1962 Hamburg	Amendments	Y			
1963 London	Amendments	Y			
1950 Brussels	Agreem. - Prior consultation concerning setting up near the border of permanent storage of	Y			
1950 Paris	Conv. - Protection of birds	Y			
1956 Rome	Agreem. - Plant protection for the Asia and Pacific region	Y			
1957 Geneva	Agreem. - International carriage of dangerous goods by road (ADR)	Y			
1975 New York	Protocol	Y			
1958 Geneva	Agreem. - Adoption of uniform conditions of approval and reciprocal recognition of approval for motor vehicle equipments and parts	Y			
1960 Paris	Conv. - Third party liability in the field of nuclear energy	Y			
1963 Brussels	Supplementary convention	Y			
1964 Paris	Additional protocol to the convention	Y			
1964 Paris	Additional protocol to the supplementary convention	Y			
1982 Brussels	Protocol amending the convention	Y			
1982 Brussels	Protocol amending the supplementary convention	Y			
1988 Vienna	Joint protocol relating to the application of the Vienna Convention and the Paris Convention	Y			
1962 Stockholm	Agreem. - Protection of the salmon in the Baltic Sea	Y			
1972 Stockholm	Protocol	Y			
1991 Brussels	Protocol	Y			
1964 Brussels	Agreem. - Measures for the conservation of Antarctic Fauna and Flora	Y			R
1964 London	Conv. - Fisheries	Y			
1966 Rio de Janeiro	Conv. - International convention for the conservation of Atlantic tunas (ICCAT)	Y	R	R	R
1967 London	Conv. - Conduct of fishing operations in the North Atlantic	Y	S		S
1968 Strasbourg	Agreem. - Restriction of the use of certain detergents in washing and cleaning products	Y			
1983 Strasbourg	Protocol	Y			
1968 Paris	Conv. - Protection of animals during international transport	Y			
1979 Strasbourg	Protocol	Y			
1969 London	Conv. - Protection of the archaeological heritage	Y			
1969 Rome	Conv. - Conservation of the living resources of the Southeast Atlantic	Y			
1972 London	Conv. - Conservation of Antarctic seals	Y	R		R
1973 Oslo	Agreem. - Conservation of polar bears	Y	R		R
1973 Gdansk	Conv. - Fishing and conservation of the living resources in the Baltic Sea and the Belts	Y			
1982 Warsaw	Amendments	Y			

OECD EPR / SECOND CYCLE

JPN	KOR	AUS	NZL	AUT	BEL	CZE	**DNK**	FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SVK	ESP	SWE	CHE	TUR	UKD	EU
					R				S						R					S		R				R	
					R		**R**		R	R			R	R			R	R	R	R		R	R			R	
					R		**R**		R	R			R	R			R	R	R	R		R	R			R	
					R		**R**		R	R			R	R			R	R	R	R		R	R			R	
					R		**R**		R	R			R	R			R	R	R	R		R	R			R	
					R		**R**		R	R			R	R			R	R	R	R		R	R			R	
					R				R							R											
				S	R				S		S		R		R	R	R			S		R	R	R	R		
	R	R	R						R								R			R						R	
				R	R	R	**R**	R	R	R	R	R			R	R	R	R	R	R	R	R	R	R		R	
				R	R		**R**	R	R	R		R			R	R	R	R	R	R		R	R	R		R	
R		R	R	R	R	R	**R**	R	R	R	R	R			R	R	R	R	R	R	R	R	R	R	R	R	R
				S	R		**R**	R	R	R	R				R	S	R	R		R		R	R	S	R	R	
				S	R		**R**	R	R	R					R	S	R	R				R	R	S		R	
				S	R		**R**	R	R	R	R				R	S	R	R		R		R	R	S	R	R	
				S	R		**R**	R	R	R					R	S	R	R				R	R	S		R	
				S	R		**R**	R	R	R	R				R	S	R	R		R		R	R	S	R	R	
				S	R		**R**	R	R	R					R	S	R	R				R	R	S		R	
					S	R	**R**	R	S	R	R	R			R		R	R	R	S	R	S	R	S	S	S	
							R			R									R				R				
							R			R									R				R				
									R	R						R	R							R				
R		R	R		R				R						R			R	R						R		
					R		**R**		R	R				R	R	S	R		R	R		R	R			R	
R	R								R				R		S			R		S		S			R	R	R
					R		**R**		R	R			R	S	R		R	R	S	R		R	R			R	
					R		**R**		R	R					R	R	R					R		R		R	
							R			S						R	R					R		S		R	
				R	R	R	**R**	R	R	R	R		R	R	R	R	R	D		R		R	D	R	R	R	
				R	R	R	**R**	R	R	R	R		R	R	R	R	R	D		R		R	D	R	R	R	
				R	R		**R**		D	R	R		R		R	R				D		R	D	D		D	
D	R				R				R	R					R				R	R		R					
R		R	S		R				R	R					R			R	R							R	
							R											R									
							D	D		D									R			D				R
							D	D		D									R			D				R

II.B: SELECTED MULTILATERAL AGREEMENTS (REGIONAL) (cont.)

			CAN	MEX	USA
1974 Stockholm	Conv. - Nordic environmental protection	Y			
1992 Helsinki	Conv. - Protection of the marine environment of the Baltic Sea area	Y			
1978 Ottawa	Conv. - Future multilateral co-operation in the Northwest Atlantic fisheries (NAFO)	Y	R		R
1979 Bern	Conv. - Conservation of European wildlife and natural habitats	Y			
1979 Lima	Conv. - Conservation and management of the Vicuña	Y			
1979 Geneva	Conv. - Long-range transboundary air pollution (CLRTAP)	Y	R		R
1984 Geneva	Protocol (financing of EMEP)	Y	R		R
1985 Helsinki	Protocol (reduction of sulphur emissions or their transboundary fluxes by at least 30%)	Y	R		
1988 Sofia	Protocol (control of emissions of nitrogen oxides or their transboundary fluxes)	Y	R		R
1991 Geneva	Protocol (control of emissions of volatile organic compounds or their transboundary fluxes)	Y	S		S
1994 Oslo	Protocol (further reduction of sulphur emissions)	Y	R		
1998 Aarhus	Protocol (heavy metals)	Y	R		R
1998 Aarhus	Protocol (persistent organic pollutants)	Y	R		R
1999 Gothenburg	Protocol (abate acidification, eutrophication and ground-level ozone)	Y	S		R
1979 Honiara	Conv. - South Pacific Forum Fisheries Agency	Y			
1980 Madrid	Conv. - Transfrontier co-operation between territorial communities or authorities	Y			
1995 Strasbourg	Additional protocol	Y			
1998 Strasbourg	Second protocol	Y			
1980 Canberra	Conv. - Conservation of Antarctic marine living resources	Y	R		R
1980 Bern	Conv. - International carriage of dangerous goods by train (COTIF)	Y			
1980 London	Conv. - Future multilateral co-operation in North-East Atlantic fisheries	Y			
1982 Paris	Memorandum of understanding on port state control	Y	R		
1982 Reykjavik	Conv. - Conservation of salmon in the North Atlantic Ocean	Y	R		R
1983 Bonn	Agreem. - Co-operation in dealing with poll. of the North Sea by oil and other harmful subst.	Y			
1989 Bonn	Amendment	Y			
1985 Nairobi	Conv. - Protection, management and development of the marine and coastal environment of the Eastern African region	Y			
1985 Nairobi	Protocol (protected areas and wild fauna and flora in the Eastern African region)	Y			
1985 Nairobi	Protocol (co-operation in combating marine pollution in cases of emergency in the Eastern African region)	Y			
1988	Agreem. - Conservation of wetlands and their migratory birds		R	R	R
1989 Stockholm	Agreem. - Transboundary co-operation with a view to preventing or limiting harmful effects for human beings, property or the environment in the event of accidents	Y			
1989	Agreem. - Co-operation in environmental protection				
1989 Geneva	Conv. - Civil liab. for damage caused during carriage of dang. goods by road, rail, and inland navig. (CRTD)				
1989 Wellington	Conv. - Prohibition of fishing with long driftnets in the South Pacific	Y			R
1990 Noumea	Protocol	Y			R
1990 Noumea	Protocol	Y	S		

OECD EPR / SECOND CYCLE

JPN	KOR	AUS	NZL	AUT	BEL	CZE	**DNK**	FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SVK	ESP	SWE	CHE	TUR	UKD	EU
							R	R										R					R				
							R	R		R									R				R				R
R	R						**R**		R				R					R	R	D		D					R
				R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
				R	R	R	**R**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
				R	R	R	**R**	R	R	R	R	R		R	R	R	R	R	R	R	R	R	R	R	R	R	R
				R	R	R	**R**	R	R	R		R			R	R	R	R			R	R	R	R			
				R	R	R	**R**	R	R	R	R	R		R	R	R	R	R	S		R	R	R	R		R	R
				R	R	R	**R**	R	R	R	S	R			R	R	R	R		S	R	R	R	R		R	S
				R	R	R	**R**	R	R	R	R	R		R	R	R	R	R	S		R	R	R	R		R	R
				R	R	R	**R**	R	R	R	S	R	S	S	S	R	R	R	S	S	R	S	R	R		R	R
				R	R	R	**R**	R	R	R	S	R	R	S	S	R	R	R	S	S	R	S	R	R		R	R
				S	S	R	**R**	R	S	R	S	S		S	S	R	R	R	S	R	R	R	R	R		S	R
		R	R																								
				R	R	R	**R**	R	R	R		R	S	R	R	R	R	R	R	R	R	R	R	R	R		
				R	S				R	R			S		S	R	R			S	R		R	R			
				S	S				S	R			S			R	R			S	R		R	R		R	
R	R	R	R		R			R	R	R	R				R		R	R	R			R	R			R	R
				R	R	R	**R**	R	R	R	R	R		R	R	R	R	R	R	R	R	R	R	R	R	R	
							R		R				R					R	R								R
					R		**R**	R	R	R	R		R	R	R		R	R	R	R		R	R			R	
							R	R					R					R					D				R
					R		**R**		R	R							R	R					R			R	R
					R		**R**		R	R							R	R					R			R	R
									R																		S
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							R	R										R					R				
						S				S									S								
										S																	
		R	R						S																		

II.B: SELECTED MULTILATERAL AGREEMENTS (REGIONAL) (cont.)

				CAN	MEX	USA
1990	Lisbon	Agreem. - Co-op. for the protection of the coasts and waters of the North-East Atlantic				
1990	Magdeburg	Agreem.-International commission for the protection of the Elbe river				
1991	Espoo	Conv. - Environmental impact assessment in a transboundary context	Y	R		S
2001	Sofia	Amendment				
2003	Kiev	Prot.- Strategic environmental assessment				
1992	Helsinki	Conv. - Transboundary effects of industrial accidents	Y	S		S
2003	Kiev	Prot. - Civil liability and compensation for damage caused by the transboundary effects of industrial accidents on transboundary waters				
1992	Nuuk	Agreem. - Co-op. on research, conservation and managt of marine mammals in the N. Atlantic	Y			
1992	Helsinki	Conv. - Protection and use of transboundary water courses and international lakes	Y			
1999	London	Prot. - Water and health	Y			
2003	Kiev	Prot. - Civil liability and compensation for damage caused by the transboundary effects of industrial accidents on transboundary waters				
1992	La Valette	European Conv. - Protection of the archaeological heritage (revised)	Y			
1992	Vienna	Agreem. - Forecast, prevention and mitigation of natural and technological disasters				
1992	Moscow	Conv. - Conservation of anadromous stocks (North Pacific Ocean)	Y	R		R
1993	Lugano	Conv. - Civil liability for damage resulting from activities dangerous to the environment				
1993		North American agreement on environmental co-operation	Y	R	R	R
1993	Copenhagen	Agreem. - Co-op. in the prevention of marine poll. from oil and other dangerous chemicals	Y			
1993	Rome	Agreem. - Establishment of the Indian Ocean Tuna Commission	Y			
1994	Lisbon	Treaty - Energy Charter	Y			
1994	Lisbon	Protocol (energy efficiency and related environmental aspects)	Y			
1994	Washington	Conv. - Conservation and management of pollock resources in the Central Bering Sea				S
1995	Port Moresby	Conv. - Regional convention on hazardous and radioactive wastes (Waigani Convention)	Y			
1996	Wroclaw	Agreem.-International commission for the protection of the Oder river against pollution				
1998	Aarhus	Conv. - Access to env. information and public participation in env. decision-making	Y			
2003	Kiev	Prot. - Pollutant Release and Transfer Registers (PRTR)				
1998	Strasbourg	Conv. - Protection of the environment through criminal law				
2000	Florence	Conv. - European landscape convention	Y			
2000	Geneva	Agreem. - International carriage of dangerous goods by inland waterways (AND)				
2003	Kiev	Conv. - Framework Convention on the Protection and Sustainable Development of the Carpathians	Y			

Source: IUCN; OECD.

OECD EPR / SECOND CYCLE

JPN	KOR	AUS	NZL	AUT	BEL	CZE	**DNK**	FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SVK	ESP	SWE	CHE	TUR	UKD	EU
									R											R		S					R
						R				R																	R
				R	R	R	**R**	R	R	R	R	R	S	R	R	R	R	R	R	R	R	R	R	R		R	R
										R						R			R				R				
		S			S	R	**S**	R	S	S	S	S		S	S	S	S	S	S	S	S	S	R			S	S
				R	R	R	**R**	R	R	R	R	R			R	R	S	R	R	R	R	R	R	R		R	R
				S	S		**S**	S			S	R				S		S	S	S			S			S	
													S					S									
				R	R	R	**R**	R	R	R	R	R			R	R	R	R	R	R	R	R	R	R		S	R
					R	R	**S**	R	R	S	S	R	S		S	R	S	R	S	S	R	S	S	S		S	
				S	S		**S**	S			S	R				S		S	S	S			S			S	
					S	R	**R**	R	R	R	S	R		R	S	S	S	R	R	R	R	S	R	R	R	R	
				S								S			R				S		S						
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R		S		R	R	R	**R**	R	R	R	R	R	S	R	R	R	R	S	R	R	R	R	R	R	R	R	R
R		S		R	R	R	**R**	R	R	R	R	R	S	R	R	R	R	S	R	R	R	R	R	R	R	R	R
S	S																		S								
		R	R																								
						R				S									S								S
				R	R	R	**R**	R	R	R	R	R	S	S	R	R	R	R	R	R	R	R	R	S		R	R
				S	S	S	**S**	S	S	S	S	S		S	S	R	S	S	S	S		S	S	S		R	S
				S	S		**S**	S	S	S	S		S		S	S							S				
					R	R	**R**	R	R		S			R	R	S		R	R	R	R	S	S	S	R	S	
				R		S			S	S		R			S	S	R				S						
						R						R							S		R					R	

Reference III

ABBREVIATIONS

AMAP	Arctic Monitoring and Assessment Programme
BOD	Biochemical oxygen demand
CAP	EU Common Agricultural Policy
CDM	Clean Development Mechanism (Kyoto Protocol)
CFCs	Chlorofluorocarbons
CLRTAP	United Nations Convention on Long-range Transboundary Air Pollution
DANIDA	Danish International Development Agency
DANVA	Danish Water and Waste Water Association
DSFI	Danish Stream Fauna Index
EIA	Environmental impact assessment
EMAS	European Eco-management Audit Scheme
EMEP	Environmental Monitoring and Evaluation Programme
EPA	Environmental Protection Agency
GDP	Gross domestic product
Ha	hectare
IMO	International Maritime Organisation
IPPC	Integrated Pollution Prevention and Control
JI	Joint Implementation (Kyoto Protocol mechanism)
MoE	Ministry of the Environment
Mtoe	Million tonnes of oil equivalent
NEC	National Emissions Ceiling (EU Directive)
NERI	National Environmental Research Institute
NGO	Non-governmental organisation
NOVANA	Denmark's nationwide monitoring and assessment programme for the aquatic and terrestrial environments
ODA	Official development assistance
ODS	Ozone depleting substances
PAH	Polycyclic aromatic hydrocarbon
PAP	Pesticide Action Plan
PCBs	Polychlorinated biphenyls
PM	Particulate matter
POP	Persistent organic pollutant

PPPs	Purchasing power parities
PVC	Polyvinyl chloride
PWS	Public water supply
QSAR	Quantitative structure-activity relationship
REACH	EU Directive concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
TFC	Total final consumption
TPES	Total primary energy supply
TSP	Total suspended particulate matter
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
VOC	Volatile organic compound
VMP (I, II, III)	Denmark's Action Plans for the Aquatic Environment
WHO	World Health Organization
WWTP	Waste water treatment plant

Reference IV
PHYSICAL CONTEXT

Denmark covers 43 000 km^2 on the *peninsula of Jutland and an archipelago of 406 islands*, of which 81 are inhabited. The largest islands are Zealand, Funen, Lolland, Falster and Bornholm. Denmark is surrounded by the North Sea and the Wadden Sea to the west and the Baltic Sea to the east. It is separated from Sweden by the Kattegat and the narrow Øresund Strait, and from Norway by the Skagerrak. Its only land frontier is with Germany to the south, along 68 kilometres. Denmark's outlying territories are Greenland, the world's largest island (341 700 km^2), which lies east of Canada, and the Faroes, a group of 18 islands in the North Atlantic between Scotland and Iceland.

The Danish *landscape* is made up of plains and low-lying hills, moraine from the last two glacial eras. The highest point is only 175 metres above sea level. The landscape is dominated by agricultural land, which accounts for a much larger proportion of total surface area (62%) than in other OECD countries. Open-land habitats such as meadows, dry grasslands, dunes, coastal meadows, heaths, marshes and lakes cover 10% of total area. Forest is being established on former arable land, which represents 13% of Denmark.

Denmark's climate is cool and temperate, moderated by the North Atlantic Drift. Annual precipitation averages 715 mm. Though Denmark has abundant *water resources*, most of its watercourses are streams. Its largest river, the Gudenaa in Jutland, is 148 kilometres long. There are several hundred lakes. The largest, Lake Arre, covers 41 km^2. Lagoons have formed behind the coastal dunes in western Jutland. The mostly sedimentary bedrock holds large groundwater resources.

Denmark is a *net exporter of food and energy* and enjoys a comfortable balance of payments surplus. In addition to petroleum and natural gas resources, the country also has fish, salt, limestone, chalk and gravel. There is an average wind speed of 7 to 8 metres per second, which is being exploited to generate *wind power*.

Reference V
SELECTED ENVIRONMENTAL WEBSITES

Website	Host institution
Government	
www.denmark.dk	Denmark's official website
www.mim.dk	Danish Ministry of the Environment
glwww.mst.dk	Danish Environmental Protection Agency
www.skovognatur.dk	Danish Forest and Nature Agency
www.trm.dk	Danish Ministry of Transport and Energy
www.ens.dk	Danish Energy Authority
www.fvm.dk	Danish Ministry of Food, Agriculture and Fisheries
www.dfu.dtu.dk	Danish Institute for Fisheries Research
www.oem.dk	Danish Ministry of Economic and Business Affairs
www.fm.dk	Danish Ministry of Finance
www.skm.dk	Danish Ministry of Taxation
www.um.dk	Danish Ministry of Foreign Affairs
www.danidadevforum.um.dk	Danish International Development Agency (DANIDA)
www.dst.dk	Statistics Denmark
www.ft.dk	Danish Parliament
www.dmu.dk	National Environmental Research Institute (NERI)
Other	
www.sum.uio.no/susnordic/denmark/	SusNordic Gateway, Governance for Sustainable Development in the Nordic Region

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LIST OF FIGURES, TABLES AND BOXES

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Boxes

Signs

The following signs are used in Figures and Tables:

. . : not available
– : nil or negligible
. : decimal point

Country Aggregates

OECD Europe: All European member countries of the OECD (Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey and United Kingdom).

OECD: The countries of OECD Europe plus Australia, Canada, Japan, the Republic of Korea, Mexico, New Zealand and the United States.

Country aggregates may include Secretariat estimates.

The sign * indicates that not all countries are included.

Currency

Monetary unit: krone (DKK).
In 2006 DKK 7.459 = EUR 1.

Cut-off Date

This report is based on information and data available up to June 2007.

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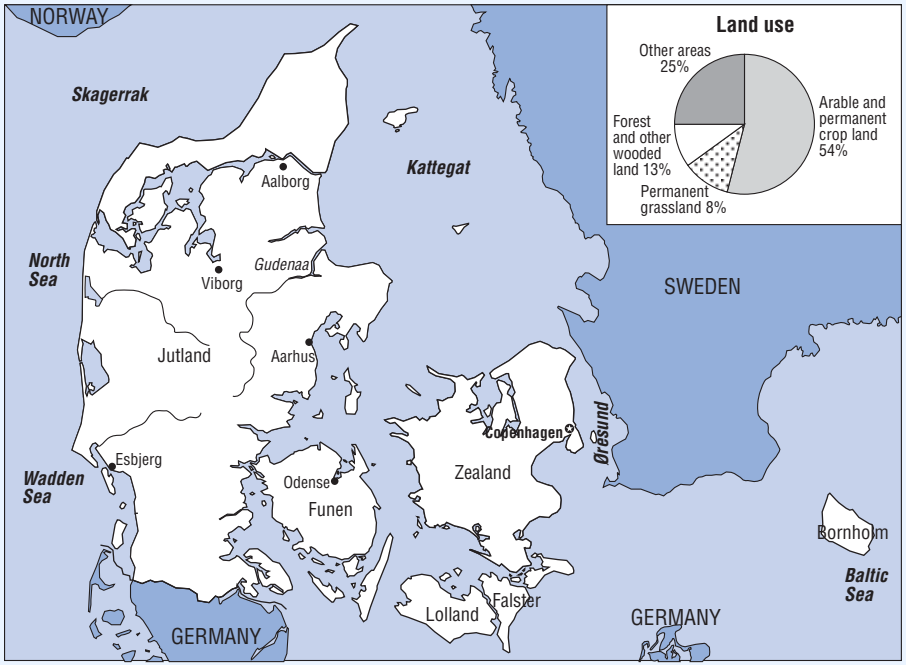
Map of Denmark



Source: OECD.