

Forth National Report on the implementation of the Convention of Biological Diversity of Greenland

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Executive Summary

The Kingdom of Denmark is the signatory part to the Convention of Biological Diversity. The Danish Kingdom consists of Denmark and the self-governing areas of Greenland and the Faeroe Islands. The Government of Greenland has the overall management responsibility over several sectors including the right of self-determination over biodiversity and living resources while aspects such as foreign affairs, defence, and the judicial system are however shared with Denmark. The ruling authority in Greenland is the Government with its parliament. The National Day 21th. of June 2009, Greenland had self-governance.

In line with the Convention, Greenland has in the recent years paid attention to different actions to secure the implementation of the Convention.

In 1999, a comprehensive country report was compiled of Greenland's ecosystem by the Greenland Institute of Natural Resources, "The Biodiversity of Greenland – a country study". This document has been updated and translated into English (Jensen & Christensen 2003).

In 2003 a new Nature Protection Act (Landstings Act no 29 of 18 December 2003 on the Protection of Nature) was adopted. The Act implements a number of obligations that can be derived from the Biodiversity Convention. The overall objective of the law is to conserve biological diversity, including genes, habitats, species and ecosystems and to ensure sustainable exploitation of natural resources. The main objective is to support the Government of Greenland on its implementation of the Biodiversity Convention and other closely related international agreements and to conserve the biodiversity in Greenland.

Climate changes with its impacts on Arctic biodiversity are of great concern even if it is not the only stressor. Others include; environmental contaminants, invasive species, increased shipping and air traffic, and regional development such as oil and gas exploration and production.

Consequences of climate change includes more open coastal waters and following increased human activities such as increasing tourism and mineral exploitation, which all may contribute to increased threats towards biodiversity, habitats, and ecosystems. Monitoring and adaptive management responses are therefore of prime importance for future management systems.

Some of the Greenlandic species did show a decline during the last decades among others due to unsustainable hunting, which has been explained as one of the major threats. However during the last years efforts has been given to secure sustainable hunting by following the scientific biological recommendation on the game species with a successful increase in some populations. The harvest of many marine mammal species are regulated in executive orders and follow biological harvest advice on sustainable off-take. There is, however, a need to constantly monitor harvests of non-regulated species to assess whether regulation is needed.

The development of management plans for protected areas and local awareness are given very high priority in Greenland. Identifying conservation interests and ensure relevant protection of areas important for biodiversity are needed. Greenland has initiated a project that will identify national conservation priorities, develop a national strategy for monitoring protected areas, develop management plans for specific areas, focus on information dissemination initiatives, etc.

The major obstacles to encountered the implementation of the Convention are due to lack of resources / and manpower. This is of major concern in relation to implementation of international agreements, development and implementation of comprehensive monitoring programmes for protected areas and resources etc.

Chapter 1 – Overview of Biodiversity Status, Trends and Threats.

Greenland is situated in the arctic region. The total area of the island is 2.166.086 km² making it the worlds largest. The central part of the island is ice-covered (85 %), and only around 410.449 km² is ice-free during summer. Climate spans from low (sub) arctic in the south to high arctic in the north affecting distribution patterns of flora and fauna. Distribution patterns are however also influenced by altitude as well as inland versus coastal regions.

Greenland was totally covered by ice during the last glacial period (until ca 8.000 years ago) and all flora and fauna has invaded Greenland in this period. Atlantic and Arctic waters surround the island of Greenland creating barriers to terrestrial wildlife and plants. During winter much of Greenlandic sea freezes, with the exception of south western Greenland where coastal areas are kept open by the golf current. The closest landmass is Elsemere, Canada, which is separated from Northwest Greenland by the 26 km narrow Nares Strait. The 240 km wide Denmark Strait separates Greenland from Iceland.

Ecosystems and habitat diversity

On the following pages a short presentation of the Greenlandic habitats will be given with a presentation of status, trend and threats.

Terrestrial ecosystems

Greenland has the northernmost and the longest north-south stretch of landmass in the Arctic and the range from north to south is more than 2,600 km. Combined with rugged coastline, mountainous terrain, arctic desserts, inland areas, this results in a wide range of variation in physical conditions and therefore, a diversity of living conditions for terrestrial organisms. The geology is rich and complicated in some areas, simpler in others, and supports remains of some of the earliest life on earth more than 4 billion years old. An important feature is that 85 % of the terrestrial country is covered by the Greenland Ice Cap and only 15 % is ice free. The landscape was formed and continues to be formed, by the effects of the ice on its surface and glaciers. Permafrost occurs throughout Greenland in continuous, discontinuous and sporadic patterns.

Primary production and decomposition of dead organic matter is low and slow in Greenland in comparison to more temperate and tropical regions. Nutrient levels in ground layers, and thereby a plant's growing conditions, varies with terrain and the history of the landscape. Areas where the inland ice has recently exposed the ground are barren with only few pioneer species. However, the inner fjords in south Greenland are fertile and scrub and woodland growth can be found here.

The mentioned physical conditions shape species composition and distribution of plant communities and habitats. The diversity of terrestrial habitats can be illustrated by describing the plant communities. Below is a short description of the overall various terrestrial plant communities taken from Jensen & Christensen (2003), where more details about sub-communities and references can be found.

Table 1: Terrestrial habitat types - Inspired by Jensen & Christensen (2003)

Habitat type	Description	Status and trends – potential threats
Heath:	Vegetation dominated by dwarf shrubs, i.e woody plants less than half a meter tall. Heath is the most common vegetation type, especially in Low arctic Greenland. In the southern part of Greenland northern willow <i>salix glauca</i> and bog bilberry <i>Vaccinium uliginosum</i> ssp. <i>microphyllum</i> are widespread. Crowberry <i>Empetrum</i> dominates the coastal areas, while dwarf birch <i>Betula nana</i> and rock cranberry <i>Vaccinium vitis-idaea</i> ssp. <i>minus</i> assume the dominant role in the warmer arid inland. In the Middle arctic part, white Arctic bell-heather <i>Cassiope tetragona</i> is completely dominant in places with a protective snow cover every winter. Tundra willow <i>salix arctica</i> is present in nearly all plant communities in the High Arctic.	Favourable. No overall threats.

Scrub:	Meter-high scrub of northern willow <i>Salix glauca</i> is found in the Low arctic along streams and protected slopes with heavy snow cover during the winter. Inland, in southwest Greenland, green <i>alder</i> <i>Alnus crispa</i> makes up the scrub.	Favourable. No overall threats.
Forest:	Together with scrub, forest belongs to the most productive terrestrial habitats. Birch forest is only found in the summer-warm inland areas in South Greenland. These areas contain several boreal species not found elsewhere in Greenland. Trees of mountain birch <i>Betula pubescens</i> can reach heights of up to 7 meters. Closely associated with mountain birch are several fungi. Qinnua Valley in South Greenland has the most developed subarctic birch forest.	Favourable. Potential threat due to sheep grazing in South Greenland.
Snow-bed	The snow-bed plant community is located on sites that covered by snow large parts of the year due to wind, shadow or other physical parameters. The species here are adapted to the short growing season and favour the stable winter temperatures and humidity	Favourable. No overall threats.
Herb-slope	Like snow-beds this habitat has a thick and stable snow cover during the winter. In contrast to snow-beds however, the growing season is only shortened by a small amount since herb-slopes primarily occur on south facing slopes with a high amount of solar radiation and thus an early snow melt. Characteristic to this community type are several species of fern and two of Greenland's orchid species. Northern willow <i>salix glauca</i> is the only woody plant that grows on herb-slopes.	Favourable. Potential future threat in South Greenland since many herb slopes here are located close to the sparse agricultural places.
Grassland and steppe	Dry grass and sedge dominated habitats occur in central West and East Greenland. They are associated with south facing slopes and flat valley bottoms with a thin snow cover.	Favourable. No potential threats.
Mires	Mires predominantly occur in the southern and northern part of Greenland. They are dominated by sedge or grass plant communities. Tundra sedge <i>Carex stans</i> dominates the Greenlandic High Arctic mires, while loose-flower alpine sedge <i>Carex rariflora</i> and russet sedge <i>Carex saxatilis</i> dominate the Low Arctic regions.	Favourable. No potential threats

Freshwater ecosystems

Most of Greenland's fresh water is bound in the 1,700,000 km² inland ice, which amounts to about 9% of all fresh water on Earth. A large amount of fresh water is released every spring as melt water from the Ice Cap and from snow. Surface drainage is poor due to the permafrost layer and rocky underground. Hence most of the rain that falls in terrestrial habitats (not as snow on the inland ice) feed water runoffs and plays a role in building and eroding the landscape.

Most Greenlandic freshwater areas are nutrient poor since they only receive a minimum of nutrients from the clean melt water.

As one moves north, a general adaptation among Arctic insects is an increasing degree of dependence upon water and moist surroundings.

The melting of glaciers and of the Ice Cap itself and summer rainfall leads to the countryside crisscrossed by an abundance of melt water streams. Below is a short description of the various Greenlandic freshwater habitats. The text below is taken from Jensen & Christensen (2003), where more details and references can be found.

Table 2: Overall freshwater habitat types according to Jensen & Christensen (2003)

Habitat type	Description	Status and trend – potential threats
Streams	Created by meltwater from glaciers. They transport a lot of sediment and are very cold. Only a few algae are present and the vegetation along streams is generally lush and consists of mosses and attached algae, which can be found as thin layers on the rocks. There are usually no aquatic plants. As in all of	Favourable. No overall threats.

	Greenland's fresh water, midge larvae, an important food source for Arctic char, are present. Arctic char, Atlantic salmon and three-spined sticklebacks can be found.	
Brooks	Often cut through the landscape in the same place from year to year and on their way, create substrates for mats of vegetation. They are shallow and usually dry out in the summer. They can have rich bottom vegetation consisting of aquatic plants, mosses and algae.	Favourable. No overall threats.
Outflow from lakes	Is often clear and has a slower water flow than streams (Røen, 1981). The temperature of the outflow depends on the temperature of the associated lake. Outflows are usually more nutrient rich than the lake itself and support well-developed vegetation, consisting primarily of algae and mosses. In comparison to the other types of fresh water, they also contain a rich midge and entomostracan fauna.	Favorable. No overall threats.
Homeothermic Springs	Are unique areas with a special diversity compared to the other freshwater areas. The warm water affects the local climate and results in the occurrence of specific species in and around the springs. It also results in an accelerated growth rate of plants and animals in the area. Most of Greenland's homeothermic springs are found on Qeqertarsuaq and along the Blossville Coast in East Greenland. There are thousands of homeothermic springs on Qeqertarsuaq, most of which have a temperature between 0 and 3°C. Most of the springs that are known from the east coast are 38-62°C. There are three homeothermic springs with a temperature of 40-42°C on the island of Uunartoq in South Greenland.	Favourable. Human activities can on few location be a threat
Nutrient poor lakes	The most <i>nutrient poor lakes</i> are found in areas from which the ice has withdrawn recently and the vegetation cover, and hence the addition of organic matter, is still sparse. Characteristic plants include the spiny spore quillwort <i>Isoetes echinospora</i> , which becomes less common as the amounts of nutrients and ions decrease, burreed <i>Sparganium hyperboreum</i> and alternate flowered milfoil <i>Myriophyllum alterniflorum</i> . The bottom is covered in moss <i>Drepanocladus exannulatus</i> and the characteristic algae are of the genera <i>Oedogonium</i> and <i>Microspora</i> , which are filamentous green algae, and <i>Lynghya</i> (blue-green algae)	Favourable. No overall threats.
Nutrient rich lakes and ponds	Are found in areas with runoff from loose soil, raised marine deposits, moraine particles and calcium containing substrates. Nutrient-rich lakes and ponds are particularly vegetation-rich and have the richest fauna, composed of several groups of crustaceans (Crustacea), aquatic beetles (Coleoptera) and insect larvae.	Favourable. No overall threats.
Saline lakes	<i>Saline lakes</i> are found in some areas with low precipitation, for example, at the base of the fjords by the fjord Kangerlussuaq, Uummannaq Fjord and Independence Fjord. The lakes receive meltwater that contains salts released during cliff erosion and the concentration of calcium, sodium and magnesium salts is increased when water evaporates from the surface of the lakes. The lakes have a skewed distribution of phosphate and nitrogen and only a few plants can live under these conditions.	Favourable. Like homeothermic springs they have a unique flora and fauna and a few are very close to developed areas and attention is necessary.

Coastal Ecosystems

Greenland's coast has a countless number of large and small islands and fjords resulting in a coastline of about 40,000 km. It is rocky coastline with numerous islands, deep fjords and large fjord networks.

The coast and some of the fjords are characterized by relatively high primary production. In addition to the spring bloom of phytoplankton, a late summer bloom also occurs. The recycling or transport of nutrients to the top water layers, by ocean currents and tidal water movement, causes this late summer bloom. Because of the high primary production, life along and near the coast is rich in comparison to the rest of the marine

environments. The coastal areas support several important habitats including nesting sites, moulting areas and feeding areas for a variety of birds. There are *haul-out sites* for harbour seals and walrus on the coast and marine environments near the coast function as *spawning* and *maturity grounds* for fish, including capelin and lumpfish *Cyclopterus lumpus*. Arctic char *Salvelinus alpinus* stay close to the coast during their migration. This productivity provides feeding grounds for a number of marine mammals, including polar bears, narwhals, beluga, seals, etc.

Marine Ecosystems

Greenland is surrounded by several bodies of water and these are affected by the different currents that adjoin Greenland. The transportation of water with different salinities and temperatures by ocean currents, and the dispersion of ice and marine organisms are of fundamental importance to the distribution and composition of marine ecosystems. The relationship between the cold East Greenland Current and the warmer, more saline Irminger current varies from year to year and affects the distribution of marine species. It also affects which species of fish and marine mammals that are able to enter Greenlandic waters. The currents result in upwellings of nutrient-rich water, which provide the basis for a high level of primary production. The currents are also important in the transportation and distribution of sea ice.

Thus marine ecosystems in Greenland are characterized by seasonal ice cover and marked fluctuations in temperature and light. In regions with seasonal ice cover, the ice and ice melt have a significant influence on ecological conditions. When the ice melts, there is typically a sudden increase in light and a burst of plant growth in the form of an ice edge bloom in spring and summer. These support large populations of fish, marine mammals and birds.

The waters surrounding Greenland can be divided into several regions that vary in primary production levels. Production can be high throughout the summer, with limited production in darker, colder winter months. In Greenland, organisms that are pelagic throughout their life dominate the zooplankton. The most important being crustaceans, pteropods, jellyfish, ctenophores and arrow worms.

Crustaceans, especially species of the genus *Calanus* and krill (Euphausiacea), are important in the marine ecosystem. Fish, fish larvae, birds and marine mammals all feed on crustaceans. Among the pelagic fishes, polar cod *Boreogadus saida* and capelin *Mallotus villosus* play the most important role in the ecosystem as prey for several predators.

Most of Greenland's birds are bound to the sea and live primarily on a diet of crustaceans and small fish like the capelin. Blue whales *Balaenoptera musculus* and bowhead whales *Balaena mysticetus* feed exclusively on crustaceans and other planktonic organisms, while the other great whales, to greater or lesser degrees, supplement their diet with fish. Among the toothed whales, killer whales *Orcinus orca* and sperm whales *Physeter catodon* are able to take the largest prey, while narwhal and beluga prey on Greenland halibut and invertebrates. Walrus have a narrow food niche and mainly eat benthic bivalves, which they take from banks. Other seals primarily prey on fish. Polar bears *Ursus maritimus* primarily feed on ringed seals *Phoca hispida* and bearded seals *Erignathus barbatus*, but will also hunt harp seals *Pagophilus groenlandicus* on pack ice.

Threats to ecosystems and habitats

Climate Changes

Climate changes with its impacts on biodiversity are of great concern even if it is not the only stressor in the Arctic. Others include; environmental contaminants, to some extent habitat fragmentation, invasive species, increased shipping and air traffic, and regional development such as oil and gas exploration and production.

The Arctic Climate Impact Assessment (2004) forecasts increases in average temperatures by 2°C in the low arctic areas of South Greenland over the next century, while, the average winter temperature is likely to increase by 6 - 10°C in north Greenland, but dramatic changes in the average summer temperature are not expected. According to the ACIA report Greenland will see an increase in rain- and snowfall by 10 to 50 per cent.

The potential earlier melting of the snow, higher temperatures and along with an increase in rainfall the lengthened growing season is likely to lead to an increase in plant cover. Immigration of species from the south can be envisaged, but would be impeded by barriers in the form of open seawater and competition from already established species.

There is a risk that most of the high-Arctic zone will disappear together with the unique fauna and flora that are adapted to precisely this zone. In north-east Greenland, large areas are completely without vegetation. There are few species of Arctic flora and fauna, and those present have adapted to the extreme climate conditions. Many plants and mammals depend on a stable snow cover to protect them against the cold. Other species are dependent on the snow disappearing early - or being blown away altogether in winter. The distribution, duration, and thickness of the snow cover are therefore just as important factors as the temperature for the general conditions of life for many plants and animals in Greenland. In high-Arctic Greenland, more ample precipitation would presumably mean more extensive plant cover, and large parts of this zone would possibly change character to become more like low-Arctic areas.

However, the effects of climate change also bring new opportunities to the Greenlandic society. Retreating ice is exposing ancient bedrock enriched with minerals, including diamonds, olivine and zinc, and Greenland is experiencing an increase in mineral exploration activities. The economy largely depends on fisheries and tourism, but new industries are developing with the mineral activities and the plans for an aluminium smelter on the island of Maniitsoq. In South Greenland agriculture is developing as more vegetables can be grown and in the future small scale forestry might develop and current livestock of sheep might be supplemented by cattle.

The Greenlandic marine ecosystems are, as part of the Arctic Oceans, subjected to the threats mentioned in the Arctic Climate Impact Assessment for the region. The consequences can be comprehensive for the biodiversity, as well as for the people depending on the ocean for their living. Changes in stocks call for a re-orientation of the industry as northern shrimp *Pandalus borealis* has started to disappear from the waters off South Greenland, while large stocks of Atlantic cod *Gadus morhua* are reappearing.

Except for climate change effects on habitats, almost no habitats are threatened by habitat deterioration. Main part of the ice-free area of Greenland (99,8 %) is undisturbed by human activities, without modern infrastructure and devoid of human activity apart from an impact from traditional hunting and fishery. These activities do not influence habitats, but do have some impact on some exploited species (see species chapter). The following negative impacts on terrestrial and aquatic ecosystems and habitats – commonly found in other areas of the world can not be found in Greenland or only to a very limited extent:

- *Fragmentation*, there is no roads between towns and settlements.
- *Drainage*, only very small areas in the sheep farming districts.
- *Dams*, only in relation to two smaller rivers in relation to water power stations.
- *Transmission lines*, in total only 55 km can be found.
- *Forestry*. Almost no forest areas can be found in Greenland.
- *Agricultural production*. Very little land is used for agricultural purposes.
- *Freshwater pollution*. Only very limited impact in sheep holder districts.
- *Aquaculture* does not exist.

Tourism

Tourism has increased rapidly in the last 20 years and though localised disturbance has been recorded no habitats are threatened. In the World Heritage Site – Ilulissat Ice Fjord a management plan is developed – among others to make attention to threats from tourism (f. ex. erosion, disturbance of wildlife, removal of cultural artefacts).

Waste water and garbage

In relation to threats to coastal ecosystems some minor effects has been recorded locally. For instance there are no waste water treatment plants in Greenland today. Waste water produced both on land and at sea is disposed off into the ocean. Most households have drains that connect with public sewers, but there are still households with no access to sewerage. These houses often have an open waste pipe allowing spill water to run into the terrain, while toilet water is collected and disposed off into the ocean. Industrial waste water from the small scale industry is also disposed off into the ocean.

Fishing

Further various studies have been completed on the effect of scallop scraping on the sea floor. Fishing with scallop scrapers can cause large-scale unevenness on the sea floor, lift large pebbles from the sediment and presumably damage the epifauna. Intensive scallop fishing during strong tidal currents leads to an upwhirling of sediment. This can have a negative impact on scallops as well as other sedentary shellfish since large amounts of clay or mud (particulate inorganic matter) can clog their gills and prevent the absorption of food and oxygen. The scallop fishery has possibly contributed to the decline in the number of moulting king eiders locally some places in Greenland.

Emissions

Regarding the Greenlandic Marine ecosystems and habitats a wide range of activities may influence. Since Greenland lies far from the core industrialized world, one would not expect that environmental problems is serious. However the presence of heavy metals such as cadmium and mercury and chlorinated organic compounds are found in high concentrations in the tissue of arctic organisms. Many studies show that the Greenlandic marine ecosystems are affected by human made pollution. Studies under the Arctic Monitoring and Assessment Programme (AMAP) of the Arctic Council prove that levels of certain heavy metals and POPs are relatively high in a number of marine mammals living in Greenland waters, i.e. ringed seal *Phoca hispida*, harp seal *Pagophilus groenlandicus*, minke whale *Balaenoptera acutorostrata*, beluga whale *Delphinapterus leucas* and narwhale *Monodon monoceros*. The National Environmental Research Institute and the Greenland Institute of Natural Resources (GINR) study the polar bears and have drawn special attention to the health of the East Greenland population, as the animals here have high levels of POPs. Attention is further drawn to activities within the fisheries and hunting, mineral resources activities, the transportation of goods and passengers at sea, cruise tourism and finally non-commercial activities with an influence on the marine environment.

Mineral and hydrocarbon exploitation

Greenland has no exploitation of hydrocarbon resources today, but exploration is taking place in 13 offshore licence areas, including areas in the Greenland parts of the Davis Strait and in the southeast Baffin Bay, west of Nuuk, south and west of Cape Farwell . Besides the exploration of hydrocarbon also prospecting for hydrocarbon has increased over the past years. In Greenland there is broad political consensus that measures should be taken to develop the mineral resource sector into one of the mainstays of the economy.

Also a number of non-commercial activities may influence the marine environment. Some of these activities are of small scale and do not impact the marine environment, while other activities may influence marine environment and biodiversity and may call for measures of protection.

Species diversity

A nationwide study of the Biodiversity of Greenland (Jensen & Christensen 2003) showed that about 9,400 species are present in Greenland. This number only includes the species that have been recorded and the actual number of species occurring in Greenland is probably higher. It is not possible here to go into details on the status of all species or groups of species and only a rough overview is given below. For a more detailed description of the species and ecosystem types – see Jensen & Christensen 2003 and references herein.

As with other landmasses in the Northern Hemisphere, species diversity decreases from south to north in Greenland. In addition to the gradient in species diversity from north to south, for some terrestrial groups the number of species decreases from inland to coastal areas and from low to high altitude. Adaptations to cold and drought are the primary factors determining the distribution of terrestrial species. The distribution of marine species is primarily shaped by ocean currents, which influence water temperature, salinity and the distribution of sea ice. The inland ice is home to algae and micro-invertebrates and mammals can occasionally be found in the perimeter.

A limited number of species are endemic to Greenland. Endemic species of algae, vascular plants and a single water mite (Hydracarina) have been recorded. A few bird subspecies breed only in Greenland, but winter elsewhere. The small number of endemic species may be attributable to the fact that almost all species present today had to immigrate to Greenland after the last ice age. The time period over which new species could have evolved in Greenland is probably too small for new species to appear.

In 2007, the first Red List for Greenland was published (Boertmann, 2007). Mammals, birds, freshwater fish, butterflies and orchids were selected to be assessed, as these were the taxa, which had the adequate level of knowledge. In total 115 species/subspecies/populations have been assessed, including 37 mammals, 65 birds, 3 freshwater fish, 5 butterflies and 5 orchids.

Three species/subspecies/discrete populations are categorised as *extinct* (EX) or *regionally extinct* (RE), six as *critically endangered* (CR), three as *endangered* (EN), 12 as *vulnerable* (VU) and 12 as *near threatened* (NT). This red list comprises 34 % of the assessed species/subspecies/discrete populations. Five species of marine mammals are categorised as *data deficient* (DD), and five species of mammals, six birds and one butterfly are categorised as *not applicable* (NA). This leaves 13 mammals, 39 birds, two freshwater fish, four butterflies and four orchids as *least concern* (LC).

The *critically endangered* (CR) species comprise six species/populations of marine mammals: Atlantic walrus, Northwater population *Odobenus rosmarus*, harbour seal *Phoca vitulina*, bowhead whale, Spitsbergen population *Balaena mysticetus*, northern right whale *Eubalaena glacialis*, white whale *Delphinapterus leucas* and narwhal, West Greenland population *Monodon monoceros*. The harbour seal is at its most northern limit, hence in small numbers. Furthermore new research has shown higher numbers of the narwhal population than was previously believed and given advice upon. The populations of the two baleen whales bowhead and northern right, were reduced by commercial hunting in previous centuries, and has recovered only slightly or not since the termination of this hunt. The other critically endangered species are all utilised in Greenland at levels that until recently possibly was not sustainable. However in recent years the utilisation is following recommendations from international conventions and GINR based on sustainable harvest.

The *endangered* (EN) species are made up of one mammal and three birds: Atlantic walrus, West Greenland population, Greenland white-fronted goose *Anser albifrons flavirostris* and common guillemot *Uria aalge*. The walrus is hunted, and the combined catches of Greenland and Canada, which share this population. The white-fronted goose is only hunted to a limited degree in Greenland (more in Iceland), but face the potential threat of competition from a rapidly increasing population of Canada geese *Branta canadensis*. The common guillemot has a restricted and localised breeding distribution in Greenland..

Three mammals are categorised as *vulnerable* (VU): One discrete population of caribou *Rangifer tarandus*, polar bear *Ursus maritimus* and wolf *Canis lupus*. The caribou population is listed as vulnerable due to its high degree of isolation from other populations, the wolf population is very small, and the polar bear is threatened due to a predicted reduction in the distribution and quality of its main habitat, the ice surrounding Greenland. In addition, the combined catches of Canada and Greenland for the shared populations of Baffin Bay and Kane Basin are probably non-sustainable. Eight birds are categorised as *vulnerable* (VU). These include: common eider, West Greenland population *Somateria mollissima* and Brünnich's guillemot *Uria lomvia*, whose populations are depleted and have been harvested until recently below sustainable levels; black-legged kittiwake *Rissa tridactyla*, declining probably due to a combination of harvest and climatic factors; ivory gull *Pagophila eburnea*, which is expected to decline in numbers due to reduction in habitat (ice covered waters) and white-tailed eagle *Haliaeetus albicilla*, Ross's gull *Rhodosthetia rosea* and a black-headed gull *Larus ridibundus* which all have very small populations in Greenland. The spawning population of Atlantic salmon *Salmo salar* is also categorised as *vulnerable* (VU), because there is only one river in Greenland where spawning occurs. Among the orchids the small round-leaved orchid *Amerorchis rotundifolia* is categorised as *vulnerable* (VU) because it is only known from very few sites in Greenland.

Near threatened (NT) species/populations comprise three mammals: One local and discrete population of caribou, the northeast Greenland population of walrus and the Baffin Bay/Davis Strait population of bowhead whale. The walrus was highly reduced in numbers by commercial hunt in previous centuries. New research has revealed a much higher number of individuals of this whale than hitherto believed. Eight species of birds are categorised as *near threatened* (NT) because their populations are small: great northern diver *Gavia immer*, harlequin duck *Histrionicus histrionicus*, Atlantic puffin *Fratercula arctica*, European golden plover *Pluvialis apricaria*, Whimbrel *Numenius phaeopus*, light-bellied brent goose, East Atlantic population *Branta bernicla hrota*, gyrfalcon *Falco rusticolus* and Sabine's gull *Larus sabini*. Arctic tern *Sterna paradisaea* is also categorised as near threatened due to a population decline.

Threats to the Greenlandic species

Hunting

While habitats in Greenland are considered intact, some utilised species has been under pressure from overharvest in recent decades. Out of a population of about 56.000 people, around 2500 Greenlanders are occupational hunters licenced to trap, hunt and fish, and close to 6000 are recreational hunters. Hunting is an important income in economic and socio economic terms. Until recently hunting has been one of the main threat towards Greenland's natural resources given the fact that some populations was utilised on unsustainable levels. A large action radius (larger motors) and improved means of transport have moreover, opened to access to far larger areas than were previous available for hunting. However important steps have been taken to secure sustainable hunting among other based on improved scientific knowledge of many the species.

Commonly caught wildlife species include seals (6 species including walrus), polar bear, whales (minke whale, fin whale, narwhale, beluga, harbour porpoise and others). Among terrestrial mammals reindeer, musk ox, hare and polar fox are frequently caught along with rock ptarmigan.

Greenland has a long tradition for seabird hunting and egg collection dating back hundreds of years. Today seabirds still play a key role in subsistence hunting. Human population growth, better guns and faster boats have increased the harvest efficiency. Exploitation of bird species is limited to around 20 species, where the most important are Brünnich's Guillemot, eider, king eider, little auk, and black-legged kittiwake. Brünnich's Guillemot is the most important species harvested.

Climate change

The projected changes in temperature will affect the biodiversity and nature in Greenland. The expected climate change would reduce the thickness of the ice in the fjords, and extend the ice-free period. As a result, more light would penetrate down in the water column, and this would stimulate biological production. Increased fresh water supply as a consequence of increased precipitation and melting of the ice cap in the inner parts of the fjords would increase the water exchange in the fjords and bring more nutritious water in from the open sea, thus contributing still further to increased primary production. Rising winter temperatures would mean that the ice will not reach the same thickness as today and could therefore break up more easily in spring.

Overall, the walrus would probably benefit from future climate change in high-Arctic Greenland. As the ice edge recedes further north during the summer new areas will be available for sub-arctic and migratory whales. Establishment of new feeding grounds will depend on the density of zooplankton, which is in turn influenced by climate-driven upwelling and sea-currents. Blue, fin, minke and humpback whales have already been observed at very high latitudes in East and West Greenland.

Based on a number of parameters such as population size, migration patterns, feeding habits and sensitivity to changes in the sea ice, the narwhal and the polar bear appear to be the marine mammal species most sensitive to climate change, followed by the hooded seal, the bowhead whale and the white whale. Globally, it is likely that polar bears will be lost from many areas where they are common today, and the remaining populations will become more fragmented and isolated. By the end of the 21st century, areas north of the Canadian Archipelago and northernmost Greenland will have the greatest likelihood of sustaining viable, albeit smaller, polar bear populations.

Many of Greenland's fish species are limited in their distribution by the cold seas off Greenland the Greenland coast, for example, cod, Norway haddock, striped catfish, halibut and herring, which have their northern limit here. Therefore, relatively small variations in the temperature of the sea could result in considerable fluctuations in the dispersal of many fish species. The trend in cod fishing largely follows the average sea temperature. In the last 30 years, cod and a number of other boreal fish species have largely disappeared as a consequence of a generally colder climate in south and west Greenland. Today, more cold-adapted populations of prawn, crab, and halibut constitute the main commercial fishing resources in Greenland. A change in sea currents and a rise in temperature as a consequence of the climate changes would probably improve the conditions for cod and some other commercially exploited fish species in these areas. Increased cod stocks, however, would have a negative effect of prawn stocks due to predation.

Other examples on species that will probably be negatively affected by climate change are the northeast population of musk ox *Ovibos moschatus* and caribou *Rangifer tarandus* that might be threatened by the climatic changes, while the population in South Greenland is likely to prosper from a more vigorous vegetation cover.

Mineral and hydrocarbon exploitation

Greenland has no exploitation of hydrocarbon resources today, but exploration is taking place in 13 offshore licence areas, including areas in the Davis Strait, Baffin Bay, west of Nuuk, south and west of Cape Farwell and and licens areas are being developed in Northeast Greenland. Exploration drilling is an extensive activity, which will probably take place during the summer months, using either a drilling ship or a drilling rig. Exploration drilling in the waters off West Greenland is expected to take place in 2010 to 2014.

Almost no wetlands in Greenland are threatened by habitatdeterioration. However with rising mineral exploitation interest this can be expected to be a challenge in the future. According to revised nature protection act protection of coastal lines, lakes, streams and springs are implemented.

Natural dispersion of (wild) alien/invasive species to Greenland have not been identified to cause major problems. To prevent and foresee the problems related to introduction of alien/invasive species in Greenland

relevant legislation is implemented in the nature protection act from 2003. According to this act animals, plants and microorganisms not native to Greenland may not be released or bred in the wild. Based on an assessment of the impacts on nature corresponding the Cabinet might permit such release and breeding. In connection with such permission the Cabinet may lay down conditions for the purpose of protecting nature.

Values for society and human well being

Fishing is the lifeline of Greenland and the primary industry in the country. 90 % of all export is derived from fishery. Main products include prawns, and Greenland halibut. Crab, cod, lump sucker, capelin and other mussel and fish species also have importance.

Locally, hunting is both economically and socially important, but hunting does not contribute extensively to the Greenland national economy. In a report on occupational hunting, the formal and informal value of hunting to the Greenland economy is estimated at € 52.200.000 annually, making up for less than 4 per cent of the Greenland GDP. Traditional hunting is, however, of significant socioeconomic importance and is central to the cultural identity of the people of Greenland and remains an important mean of supplying households with preferred meats. Many occupational hunters supplement their income with seasonal employment in other sectors, f. ex. tourism services, administration, construction or mining, recreational hunting. Hunting is regarded as the traditional way of life, it provide an opportunity for an independent lifestyle, it is a respected occupation, and serves to continue traditions and conserve inherited cultural values.

In Greenland there is broad political consensus to develop the mineral and hydro-carbon sector into one of the mainstays of the economy.

Chapter II. Current status of National Biodiversity Strategies and Action Plans (NBSAP)

In line with the requirements of Article 6 (a) of the Convention, Greenland has in the recent years paid attention to different actions to secure the implementation of the Convention and to the developing of a NBSAP.

In 1999, a comprehensive country report was compiled of Greenland's ecosystem by the Greenland Institute of Natural Resources, "The Biodiversity of Greenland – a country study". This document has been updated and translated into English Jensen & Christensen 2003.

In recent years special attention has been paid to the preparation of a Strategy and Action plan for biodiversity in Greenland. It is expected that this NBSAP will be adopted in 2009. The main objective is to support the Government of Greenland on its implementation of the Biodiversity Convention and other closely related international agreements. The NBSAP does include a number of recommendations and actions divided into two phases; the short term (1-2 years) and the long term (5 years). Each recommendation has been assigned one of three priority categories. This will provide a basis for prioritisation of available funds from the Government and external funding mechanisms.

The Strategy and Action plan is to be used directly by the central administration (The Greenland Government) but can also be used to initiate externally driven projects in relation to improved nature protection in Greenland.

Recommendations and actions concern nature protection, sustainability, monitoring, optimising administration and reporting procedures, information and outreach initiatives, capacity building, etc., which are all related to a number of articles in the Biodiversity Convention. Recommendations and actions are not only directed towards the main administrative body (Ministry of Domestic Affairs, Nature and Environment), but also other Ministries, municipalities, institutions etc. It is the intention to set up a steering committee chaired by the Ministry of Domestic Affairs, Nature and Environment with the aim of securing proper implementation of the Strategy and Action Plan.

Funding / resources

The Greenland Institute of Natural Resources (GINR) carry out research on biodiversity and living resources (utilised resources) and, provide biological advice (including recommended sustainable harvest levels) for the Government of Greenland, municipalities and others. By law, the purpose of the institute is among others to obtain the scientific basis for a sustainable exploitation of the nature resources as well for protecting the environment and biological diversity.

Funding for GINR research and monitoring activities are provided by yearly financial budget from the Government of Greenland supplemented with external funding mechanisms, including the Danish Environmental Support Programme for cooperation for environment in Arctic – DANCEA. DANCEA is an environmental funding mechanism that has now existed in more than 15 years. The funding support short term research and conservation projects related to prevention of pollution, climate research, protection and sustainable use of natural resources, health issues, indigenous peoples etc.

Public awareness

The aims for the GINR include the incorporation of local knowledge in the scientific work and an open dialogue with the Greenlandic community. This is achieved through community meetings, dialogue with relevant organisations and outreach through the media via publications, press releases and a website (www.natur.gl).

The Government of Greenland is periodically focusing on different targeted information initiatives related to nature protection and biodiversity. One example is a two-year campaign on sustainable use issues. This campaign was named Tuluqaq (The Raven). During 2002-2004 the promotion of Biodiversity related issues, with TV programs and radio programmes, broad covering in media and public meetings around Greenland.

An important element of the campaign was furthermore to involve hunters along the coast in the dialogue on and improvement of sustainable use of living resources. As part of the Tuluqaq campaign both folders and posters and a homepage with information on sustainable use of living resources was published, reaching out for both children and the general public.

Another example is the establishment of a system with nature interpreters (Rangers). This system has after a pilot period now started up in six Greenlandic towns. The overall purpose is to communicate the relationship between human, nature and sustainability. The system is targeted to children, but also other groups such as local people are relevant.

Finally the Management of *the Ramsar Site - Kitsissunnguit Islands* must be mentioned. The wetland is now protected by Home Rule executive order. In agreement with the local municipality an external funded implementation project is going on in these years. The project includes among others an information and outreach part, and an information strategy is under development. This strategy is meant to be used as inspiration for other protected areas in Greenland.

Chapter III – Sectoral and Cross-sectoral integration or mainstreaming of biodiversity considerations

Legal and institutional framework

The Danish nation consists of Denmark and the self-governing areas of Greenland and the Faeroe Islands. The Danish constitution applies to this whole region, but both self-governing areas has the right of self-determination over several sectors, while aspects such as foreign affairs, defence, and the judicial system are however shared with Denmark. The Government of Greenland has the overall management responsibility over several sectors including the right of self-determination over biodiversity and living resources. The ruling authority in Greenland is the Government with its parliament. The National Day the 21. of June 2009, Greenland had self-governance. The self-governance arrangement gives Greenland the opportunity to take over a series of areas of responsibility. Of special interest is the responsibility for mineral resources as the income could provide the basis for real independence in the future. The Self-governance agreement recognizes for the first time the inhabitants of Greenland as an autonomous people in relation to the UN. Some fields of responsibility will however still remain with the Danish Authorities. This includes foreign affairs, security and defence policy

The conservation of nature and biodiversity are shared between the Ministry of Domestic Affairs, Nature and Environment and the Ministry of Fisheries, Hunting and Agriculture within the Government of Greenland. The Ministry of Domestic Affairs, Nature and Environment is responsible for the overall international agreements and conventions regarding biodiversity (excl. IUCN) and overall nature conservation including coordination of the implementation of the Action Plan for Biodiversity as referred to in chapter II. Furthermore, the Ministry is responsible for the conservation of habitats and protected areas including the National Park in North East Greenland, The Ilulissat Icefjord World Heritage Site, The Ramsar sites and all protected areas in Greenland. The Ministry of Fisheries, Hunting and Agriculture, is responsible for the management of mammals, birds, fish and commercially exploited shellfish.

Nature protection is regulated in the Nature Protection Act (Landsting Act no 29 of 18 December 2003 on the Protection of Nature) that was adopted in 2003. The Act implements a number of obligations that can be derived from the Biodiversity Convention. The Act provides the framework for legislation related to nature protection. The overall objective of the law is to conserve biological diversity, including genes, habitats, species and ecosystems and to ensure sustainable exploitation of natural resources. The principle objective is to protect nature in Greenland on an ecologically sustainable basis in accordance with the precautionary principle and with due consideration for human conditions of life and the protection of fauna and flora. The act contains regulation on conservation of mammals, birds and other animals, plants, habitats, and description on how to conserve areas. Other paragraphs concerns protection of objects, protection lines, release, keeping, export, import and trade of species, protection of genetic resources, ownership of genetic resources, regulation of GMO, access to nature, nature restoration, and outdoor advertisement. In addition, the law sets up rules about Environmental Impact Assessments. The law is a framework law and must be followed up by necessary executive orders, management plans, procedures etc.

A series of executive orders protect concrete sites in Greenland is implemented. To support future site based protections a specific strategy for managing future site based preservations is under consideration. In addition a strategy for conserving Ramsar sites is under consideration.

Furthermore hunting is also regulated due to the Home Rule Act no. 12 of 29 October 1999 on hunting with later amendments, and hunting is also affected indirectly by other regulations, i.e. the Greenland Home Rule Act no. 25 of 18 December 2003 on Animal welfare.

Finally, several executive orders deal with protected areas, regulate the protection and hunting of individual species and issues such as hunting permits and reporting of catches.

Environmental impact assessments in Greenland

In connection with new licensing rounds and the opening of frontier areas with technologically challenging conditions the Bureau of Minerals and Petroleum carry out Strategic Environmental Impact Assessments (SEIA). An SEIA provides an overview of the environment in the licence area and adjacent areas, which may potentially be impacted by the hydrocarbon activities, and identifies major potential effects associated with future offshore hydrocarbon activities. Furthermore the SEIA identify gaps in knowledge and data, highlight issues of concern, make recommendations for mitigation and planning and identify general restrictive or mitigation measures, as well as monitoring requirements that must be dealt with by the companies applying for hydrocarbon licences.

An EIA is carried out for all extractive activities on non-living resources and major infrastructure projects. The EIA shall include the full lifecycle of activities: exploration, field development, production transport and decommissioning. The EIA must be updated and further developed when needed, e.g. when moving from the explorations to the production phase, or if there is a change in the plans presented in the EIA. The initial EIA related primarily to exploratory drilling shall focus on this activity, but must include assessment of scenarios of possible activities related to production, transport and decommissioning.

The Bureau of Minerals and Petroleum has developed guidelines for preparing an Environmental Impact Assessment. In developing these guidelines, information on the requirements to EIAs related to hydrocarbon and mineral exploration, development, production, decommissioning and transport in other Arctic countries has been studied. The guidelines are based on the Arctic Offshore Oil & Gas Guidelines issued by the Arctic Council, and on the OSPAR Guidelines for Monitoring the Environmental Impacts of Offshore Oil and Gas Activities.

Likewise EIA guidelines have been prepared for mining companies operating in Greenland. The Nature Protection Act - Landsting Act No. 29 of 18 December 2003 on the Protection of Nature. includes frames for EIA's as anyone planning to carry out large building and construction works or to establish business which may significantly change the character of the landscape or of fjord or sea areas or which may significantly affect nature, including the wild fauna and flora, shall carry out an assessment of the impacts on nature before the implementation of the project. The assessment shall describe the plans for the project and any implications that the project is believed to have on the areas of the fjords and the sea and on nature.

If projects are assumed to cause substantial damage to the landscape or nature, the Cabinet may decide that the project shall not be carried out.

In connection with mineral exploration EIA's must be carried out according to the exploration license terms.

It is considered how legal basis can be created for legislation considering terms and conditions on Strategic Environmental Assessments for mega-projects.

In connection to considerations of plans for an aluminium smelter and two - three hydroelectric plants a Strategic Environmental Assessment has been carried out to secure that aspects of environment and nature was included in the basis for decision regarding the decision of whether an aluminium smelter and hydroelectric plants should be established or not, and if so, where it should be placed.

The Ecosystem approach

At present, Greenland has not implemented ecosystem-based management. The wildlife management today focuses on harvest management of individual species. This, however, do involve some aspects of ecosystems based management through cross-sector involvement of relevant authorities and stakeholder consultation.

Obtaining biological knowledge on arctic animals distributed over vast areas, such as marine mammals, is generally difficult, expensive and dependent on long-term activities. In addition, extreme weather conditions, remote locations and expensive logistics and transportation may limit the biological knowledge obtained from a particular population. Thus, the combination of lack of data and use of precautionary principle often leads to scientific recommendations that are criticised by the hunters. Hunters have accumulated traditional ecological knowledge for decades and therefore often find it difficult to understand and accept the notion catches being limited due to lack of data. In order to ensure that a solid scientific advice is taken into consideration for a sustainable utilisation of the marine mammals, Greenland is represented in a number of international organizations.

International Conventions and Agreements

As mentioned above The Kingdom of Denmark has three parts: Denmark, The Faeroe Islands and Greenland. The Danish constitution applies to this whole region, but both self-governing areas has the right of self-determination over several aspects, but aspects such as foreign affairs, defence, and the judicial system are shared with Denmark. As the three parts of the Kingdom have the same foreign policy, international agreements are signed by Denmark, but according to the procedures currently in force, the kingdom sign with reservation for Greenland, unless the Greenland parliament has adopted the agreement. Greenland has adopted CBD and has thereby ratified CBD.

Since 1979 Greenland has had its own Home Rule Government, elected by the Greenland Parliament. This implies that the Greenland Home Rule Government can adopt legislation and administer its own affairs in relation to i.e. implementation of international environmental agreements. Therefore, if Greenland has ratified an international agreement it is Greenlands own responsibility to implement the agreement in own legislation and practises and at the National Day the 21. of June 2009, Greenland had self-governance. The self-governance arrangement gives Greenland the opportunity to take over a series of areas of responsibilities. Of special interest is the responsibility for mineral resources as the income could provide the basis for real independence in the future. The Self-governance agreement recognizes for the first time the inhabitants of Greenland as an autonomous people in relation to the UN. Some fields of responsibility will however still remain with the Danish Authorities. This includes foreign affairs, security and defence policy

Greenland has ratified some of the important international conventions concerning nature and biodiversity, including CBD, CITES and Ramsar-convention and has designated 11 Ramsar sites. Further Greenland is part of UNESCO with a World Heritage Site in West Greenland and a Man and Biosphere site in East Greenland (The worlds largest). Greenland is further an active member state in IUCN.

Greenland is represented in the International Whaling Commission - IWC - via the Kingdom of Denmark.

Greenland is not a signatory of the Bern Convention and the Bonn Convention.

It must further be mentioned that Greenland is represented/member in a number of regional, multi and bi-lateral agreements dealing with nature and biodiversity issues. These include:

The Nordic Council's work on biodiversity

Greenland takes part in the work carried out by the work done on biodiversity within the Nordic Council of Ministers. A on going project "Nordic Nature – trends towards 2010" lead by the Finnish Environment Insititute (SYKE) aim to identify trends and status of biological diversity in the Nordic countries towards 2010. Facts sheets on biodiversity are produced and published in all Nordic languages and in English.

Furthermore Greenland have taken part in the project "Nordic Nature Indicators of Climate Change Effects, NICC" that aimed to identify parameters and indicators to facilitate the monitoring of impacts of climate change on nature.

The Arctic Council's work on biodiversity

CAFF - *The Conservation of Arctic Flora and Fauna* – a working group within the Arctic Council, where Greenland is an active member and have from 2006-2009 served as the chair of this working group.

The Arctic Council is an intergovernmental forum for addressing many of the common concerns and challenges faced by the Arctic States; Canada, Denmark (including Greenland and the Faroe Islands), Finland, Iceland, Norway, the Russian Federation, Sweden and the United States.

CAFF can in many ways be regarded as a regional collaboration about implementation of CBD. Greenland regards CAFF and Arctic Council as a unique forum for co-operation between national governments and indigenous peoples on matters such as monitoring the sustainability, the environment, the biodiversity and assessing and preventing pollution in the Arctic, climate change, biodiversity conservation etc. in addition to the living conditions of the Arctic residents. CAFF in particular aims at promoting the conservation of biodiversity and the sustainable use of living resources. Greenland see CAFF as an important collaboration on conservation of many circumpolar species and other natural resources that requires close cooperation within the Arctic and with non-arctic states.

The eight arctic nations and the permanent participants within Arctic Council have agreed to let CAFF produce an *Arctic Biodiversity Assessment* with the purpose to synthesize and assess the status and trends of biological diversity in the Arctic. The work will be used to identify gaps in the data record, identify the main stressors, identify key mechanisms driving change and produce recommendations. Greenland priorities this task very high and choose to address many resources to this assessment. Until now, Greenland has together with Denmark offered a Chief scientist to the assessment and will contribute with national inputs. The kingdom further considers financing a project management role in the assessment, including support to outreach and presentation/side event of a trends report at the CBD COP. The trends report will be prepared as Arctic Councils contribution to the 2010 target. Greenland sees the whole work with the assessment as a direct follow up on the CBD obligations towards the 2010 goals.

The North Atlantic Marine Mammal Commission (NAMMCO):

Greenland, together with Norway, Iceland and the Faroe Islands, is a member of NAMMCO. NAMMCO works for regional protection, rational management and research on marine mammals in the North Atlantic. Canada is not a member of NAMMCO and it has therefore been necessary to establish forums for bilateral collaboration on shared populations of marine mammals, i.e. the Joint Committee for Narwhal and Beluga between Canada and Greenland and the working group for joint management of the polar bear.

The North Atlantic Marine Mammal Commission (NAMMCO): Greenland, together with Norway, Iceland and the Faroe Islands, is a member of NAMMCO. NAMMCO works for regional protection, rational management and research on marine mammals in the North Atlantic.

Canada/Greenland Joint Commission on the Conservation and Management of Narwhal and Beluga (JCNB): Formed by Canada and Greenland. The JCNB provides biological and management advice for shared populations of narwhal (*Monodon monoceros*) and beluga whale (*Delphinapterus leucas*) and other marine mammals in the sea between Greenland and Canada.

ICES/NAFO working group on harp and hooded seals (WGHARP): Formed by Canada, Greenland, Norway, Russia and the United States. The WGHARP considers recent research and provides catch advice on the North Atlantic stocks of harp seals and hooded seals.

Finally Greenland takes active part in "Northwest Atlantic Fisheries Organization" (NAFO) International Council for the Exploration of the Sea (ICES) and North East Atlantic Fisheries Commission (NEAFC)

Chapter III – Conclusions.

In 2003 a new Nature Protection Act (Landstings Act no 29 of 18 December 2003 on the Protection of Nature) was adopted. The Act implements a number of obligations that can be derived from the Biodiversity Convention. The overall objective of the law is to conserve biological diversity, including genes, habitats, species and ecosystems and to ensure sustainable exploitation of natural resources.

In line with the requirements of Article 6 (a) of the Convention, Greenland has in the recent years paid attention to different actions to secure the implementation of the Convention and to the developing of a National Biodiversity Strategy and Action Plan (NBSAP) for Greenland. It is expected that this NBSAP will be adopted in 2009. The main objective is to support the Government of Greenland on its implementation of the Biodiversity Convention and other closely related international agreements. The NBSAP does include a number of recommendations and actions divided into two phases; the short term and the long term. Each recommendation has been assigned one of three priority categories. This will provide a basis for prioritisation of available funds from the Government and external funding mechanisms.

Recommendations and actions concern nature protection, sustainability, monitoring, optimising administration and reporting procedures, information and outreach initiatives, capacity building, etc., which are all related to a number of articles in the Biodiversity Convention. Recommendations and actions are not only directed towards the main administrative body (Ministry of Domestic Affairs, Nature and Environment), but also other Ministries, municipalities, institutions etc. It is the intention to set up a steering committee chaired by the Ministry Domestic Affairs, Nature and Environment) of with the aim of securing proper implementation of the Strategy and Action Plan.

A series of executive orders protect concrete sites in Greenland and new ones are now implemented. To support future site based protections a specific strategy for managing future site based preservations is under consideration. In addition a strategy for conserving Ramsar sites is under consideration.

Furthermore hunting is also regulated due to the Home Rule Act no. 12 of 29 October 1999 on hunting with later amendments, and hunting is also affected indirectly by other regulations, i.e. the Greenland Home Rule Act no. 25 of 18 December 2003 on Animal welfare. During the last years efforts has been given to secure sustainable hunting following the scientific biological recommendation on the game species with a successful increase in some populations.

To conclude:

- Protection of biodiversity: There is a need for identifying conservation interests and ensure relevant protection of areas important for biodiversity. Greenland has initiated a project that will identify national conservation priorities, develop a national strategy for monitoring protected areas, develop management plans for specific area, focus on information dissemination initiatives, etc. Sustainable harvest: The harvest of many marine mammal species are regulated in executive orders and follow biological harvest advice on sustainable off-take. There is, however, a need to constantly monitor harvests of non-regulated species to assess whether regulation is needed.
- Monitoring and adaptation: Natural and human induced climate changes will be a future challenge. Consequences of climate change includes more open coastal waters and following increased human activities such as increasing tourism and mineral exploitation, which all may contribute to increased threats towards biodiversity, habitats, and ecosystems. Monitoring and adaptive management responses are therefore of prime importance for future management systems.
- Management plans and information dissemination: The development of management plans for protected areas and local awareness are given very high priority in Greenland.
- Resources: Lack of resources / and manpower are of major concern in relation to implementation of international agreements, development and implementation of comprehensive monitoring programmes for protected areas and resources etc..

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Post 2010- challenges and priorities

The target

Table xx. Progress towards the goals and objectives of the CBD focal area framework.

CBD Goals	Status 2010
Focal Area: Protect the components of biodiversity	
Goal 1. Promote the conservation of the biological diversity of ecosystems, habitats and biomes	Partly
Goal 2. Promote the conservation of species diversity	Partly
Goal 3. Promote the conservation of genetic diversity	Partly
Focal Area: Promote sustainable use	
Goal 4. Promote sustainable use and consumption.	Partly
Focal Area: Address threats to biodiversity	
Goal 5. Pressures from habitat loss, land use change and degradation, and unsustainable water use, reduced.	No
Goal 6. Control threats from invasive alien species.	No
Goal 7. Address challenges to biodiversity from climate change, and pollution.	Partly
Focal Area: Maintain goods and services from biodiversity to support human well-being	
Goal 8. Maintain capacity of ecosystems to deliver goods and services and support livelihoods	Partly
Focal Area: Protect traditional knowledge, innovations and practices	
Goal 9. Maintain socio-cultural diversity of indigenous and local communities	Partly
Focal Area: Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources	
Goal 10. Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources	Yes

Focal Area: Ensure provision of adequate resources

Goal 11: Parties have improved financial, human, scientific, technical and technological capacity to implement the Convention

No

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