V National Report to the Convention of Biological Diversity

TABLE OF CONTENTS

ACRONYMS 5

EXECUTIVE SUMMARY 7

1. BIODIVERSITY – CURRENT STATUS, DEVELOPMENT TRENDS AND THREATS 13

1.1 Introduction 13

1.2 Agricultural ecosystems 14
1.2.1 Question 1) Why is biodiversity important for the country? 14
1.2.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country? 15
1.2.3 Question 3) What are the main threats to biodiversity? 16
1.2.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts? 17
1.2.5 Optional question. What are possible future changes for biodiversity and their impacts? 17

1.3 Forests 17
1.3.1 Question 1) Why is biodiversity important for the country? 17
1.3.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country? 18
1.3.3 Question 3) What are the main threats to biodiversity? 19
1.3.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts? 20
1.3.5 Optional question. What are possible future changes for biodiversity and their impacts? 20

1.4 Mires 20
1.4.1 Question 1) Why is biodiversity important for the country? 20
1.4.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country? 21
1.4.3 Question 3) What are the main threats to biodiversity? 21
1.4.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts? 22
1.4.5 Optional question. What are possible future changes for biodiversity and their impacts? 22

1.5 Grasslands or semi-natural communities 22
1.5.1 Question 1) Why is biodiversity important for the country? 22
1.5.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country? 23
1.5.3 Question 3) What are the main threats to biodiversity? 23
1.5.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts? 24
1.5.5 Optional question. What are possible future changes for biodiversity and their impacts? 24

1.6 Internal bodies of water 24
1.6.1 Question 1) Why is biodiversity important for the country? 24
1.6.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country? 25
1.6.3 Question 3) What are the main threats to biodiversity? 27
1.6.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts? 28
1.6.5 Optional question. What are possible future changes for biodiversity and their impacts? 29

1.7 The sea and coastal regions 29
1.7.1 Question 1) Why is biodiversity important for the country? 29
1.7.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country? 29

1.7.3 Question 3) What are the main threats to biodiversity? 30
1.7.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts? 31
1.7.5 Optional question 5) What are possible future changes for biodiversity and their impacts? 31

1.8 Island ecosystems 32
1.8.1 Question 1) Why is biodiversity important for the country? 32
1.8.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country? 32
1.8.3 Question 3) What are the main threats to biodiversity? 32
1.8.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts? 33
1.8.5 Optional question. What are possible future changes for biodiversity and their impacts? 33

1.9 Urban ecosystems 33
1.9.1 Question 1) Why is biodiversity important for the country? 33
1.9.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country? 33
1.9.3 Question 3) What are the main threats to biodiversity? 34
1.9.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts? 34
1.9.5 Optional question. What are possible future changes for biodiversity and their impacts? 34

1.10 Landscapes 34
1.10.1 Question 1) Why is biodiversity important for the country? 34
1.10.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country? 34
1.10.3 Question 3) What are the main threats to biodiversity? 35
1.10.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts? 35
1.10.5 Optional question. What are possible future changes for biodiversity and their impacts? 35

2. CURRENT STATUS OF NATIONAL BIODIVERSITY STRATEGIES AND ACTION PLANS 36

2.1 QUESTION 5) What are the biodiversity targets set by the country? 36

2.2 Question 6) How has the NBSAP been updated to incorporate these targets and to serve as an effective instrument to mainstream biodiversity? 36
2.2.1 Are the problems specified in Part I of the report addressed in the amended Biodiversity Strategy? 36
2.2.2 Was the guidance provided in decision IX/8 taken into account when amending the biodiversity strategy? 39
2.2.3 How an updated NCDP could achieve the integration of biodiversity considerations into broader national plans, programmes and policies. 41

2.3 Question 7) *What actions has the country taken to implement the Convention since the IV report and what have been the outcomes of these actions?* 41
2.3.1 Strategies and development plans 41
2.3.2 Institutions 41
2.3.3 Legislation 41
2.3.4 Funding 42
2.3.5 Cooperation mechanisms 44
2.3.6 How the public activities have contributed to the implementation of the thematic programs and solving cross-cutting problems 45
2.3.7 Achievements in implementing the objectives of biodiversity 51
2.3.8 Obstacles to implementation 51

2.4 QUESTION 8) How effectively has biodiversity been mainstreamed into relevant sectoral and cross-sectoral strategies, plans and programmes? 52

2.4.1 How biodiversity is considered in poverty reduction strategies and other key cross-cutting policy instruments? 52
2.4.2 How preservation of biodiversity is integrated into different sectors? 53
2.4.3 How biodiversity is integrated into relevant planning processes? 53
2.4.4 Actions taken by each sector to implement biodiversity actions included in their respective strategies, plans and programmes 54
2.4.5 Outcomes achieved by each sector in mainstreaming biodiversity 56
2.4.6 Tools used for mainstreaming biodiversity 57
2.4.7 Synergies in implementation of related Conventions and agreements 57

2.5 Question 9) How fully has the NBSAP been implemented? 57

3. PROGRESS TOWARDS THE 2020 AICHI BIODIVERSITY TARGETS AND CONTRIBUTIONS TO THE RELEVANT 2015 TARGETS OF THE MILLENNIUM DEVELOPMENT GOALS 58

3.1 Question 10) What progress has been made by the country towards the implementation of the Strategic Plan for Biodiversity 2011–2020 and its Aichi Biodiversity Targets? 58
3.1.1 Examples to illustrate the progress 74

3.2 Question 11) What has been the contribution of actions to implement the Convention towards the achievement of the relevant 2015 targets of the Millennium Development Goals in the country? 76

3.3 Question 12) What lessons have been learned from the implementation of the Convention in the country? 76
3.3.1 Areas where achievements have been made 76
3.3.2 Areas where progress is lacking and where challenges are encountered 77
3.3.3 Gaps and future priorities including suggestions for actions at various levels 77

4. APPENDICES AND TABLES 78

4.1 Appendix 1. Information concerning reporting party 78
4.1.1 Reporting party 78
4.1.2 Process of preparation of national report 78

4.2 Appendix 2. References 79

4.3 Appendix 3. Implementation of the thematic programmes of work and cross-cutting issues (focus on those areas and issues of national importance and actions or activities suggested for Parties in relevant thematic programmes of work and COP decisions) 84

4.4 Appendix 4. Indicators of NCDP until 2020 85

ACRONYMS

CBD - Convention on Biological Diversity

CLC - Corine LandCover

EAFRD - European Agricultural Fund for Rural Development

EELIS - Estonian Nature Information System

EFF - European Fisheries Fund

EU - European Union

ERDF - European Regional Development Fund

ESF - European Social Fund

FAO - Food and Agriculture Organization of the United Nations

HELCOM - Baltic Marine Environment Protection Commission; also Helsinki Commission

EB – Environmental Board

KAUR - Environment Agency

EIC - Environmental Investment Centre

MoE - Ministry of Environment

EIA - Environmental Impact Assessment

SEA - Strategic Environmental Assessment

NCDP – Nature Conservation Development Plan for 2020

RDP - Estonian Rural Development Plan

Natura 2000 - Europe-wide network of habitats and bird sites

ODA - Official Development Assistance

PAF - Prioritised Action Frameworks for Natura 2000

SPS - Species Protection Site

SNC - Semi-natural Communities

MoA - Ministry of Agriculture

PRIA - Agricultural Registers and Information Board

SFMC - State Forest Management Centre

SEI – Sustainable Estonia Institute

Sesto - Nordic and Baltic countries as Internet-based database, which contains data on the economic characteristics of the local species.

GDP - Gross Domestic Product

SMI - Statistical Forest Inventory

WKH – Woodland Key Habitat

CF - Cohesion Fund

SESTO – Internet-based database on Nordic and Baltic countries, which contains data on the economic characteristics of the local species.

EXECUTIVE SUMMARY

Status, trends and threats of biodiversityand how it affects human well-being.

It is estimated that approximately 35,000 to 45,000 plant, animal and fungus species live in Estonia. So far, research has identified about 26,600 species. Based on the IUCN criteria the status of 4319 domestic species has been estimated. 1,314 (31%) species of the assessed species are in threatened or near threatened status.

As of the beginning of 2014, 18% of Estonia's terrestrial area (without Lakes Peipsi and Võrtsjärve) and 27% of the territorial sea (KAUR: Environmental Registry) were under the protection. Compared with 2007 the protected territory has increased by approximately 1%. 92.2% of terrestrial protected areas belong to the trans-European network of protected areas – Natura 2000. The number of protected species has remained unchanged (570 species) since 2007.

Alien species list includes 953 species, 63 of them are invasive and 73 potentially invasive species. Invasiveness category of most species is yet to be identified.

The priority activities in Estonian nature conservation in recent years have been related to the EU Natura 2000 network – taking under protection of the Natura 2000 network areas, preparing of management plans, assessment of habitat and species status, preparing of species conservation action plans. As of the beginning of 2014, 46.5% of the area of the Natura network SCIs are covered with management plans, and the rest of the management plans are being prepared. As of the beginning of 2014, 59 management plans for the protection, protection and control, or control of species have been prepared and 99 were under preparations (for more than 200 species)

For assessing the status of species, all species and habitats under protected category I and the majority of protected category II species are monitored. Around 70% of the 215 regularly breeding birds are monitored.

The status of species and habitats of the European Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) were assessed for the first time in 2007 and the second time in 2013. Based on the yearly report of 2013, the number of habitat types with an unknown status has decreased, and there has been a small improvement in the status of habitats. According to the monitoring report, 53% of the habitat types are in a favorable condition, 43% in insufficient status, 3% in bad status and 0% in unknown status (in 2007 the percentages were respectively 42%, 35%, 15% and 8%). The status of 52% species is favorable, 27% insufficient, 8% bad and 11% of unknown (in 2007 the percentages were respectively 24%, 43%, 7% and 26%).

The first monitoring report of the European Council Directive 79/409/EEC on the conservation of wild birds (Birds Directive) was completed at the end of 2013. According to the reports of the Birds Directive (2013) the short-term trend of population of 89 breeding bird species is stable, for 38 species it is improving, for 81 species it is decreasing and for 6 species it is variable. For overwintering species, the short-term trend of the population is stable for 12 species, improving for 15 species and deteriorating for 3 species.

Estonia's most important ecosystems in terms of species richness are forests, semi-natural communities, mires, inland bodies of water and the sea with its coastal areas. Regarding the ecosystem services, the island ecosystems, urban ecosystems and landscapes are discussed in the report. In relation to all of these ecosystems, the following important conclusions are presented.

Forest ecosystems. The Habitats Directive report of 2013 showed that in Estonia among the pan-European endangered habitat types, dune forests and klint forests are in good status, swamp woods, old natural

forests, herb-rich forests with *Picea abies* and bog-woodlands are in less favorable status. As of the beginning of 2014, 9% of the forests are strictly protected and 16% can be managed with different restrictions. Outside the protected areas, there are 9,414 ha of woodland key habitats (WKH); about 5% of WKHs are covered with a 20-year contract between the state and the forest owner, by which the state compensates for the loss of revenue to the owner.

The main pressuring features on biodiversity in forest ecosystems are non-sustainable forest management and forest drainage. Timber cutting has not exceeded the increment during the last 20 years, but has increased from 2008. There is a rejuvenation of forest ecosystems and decline in naturalness. Changes in forest ecosystems has affected a number of species, particularly those associated with old forests (for example flying squirrel, black stork, capercaillie, and lungwort).

Grasslands (semi-natural communities) – Estonia's semi-natural communities are habitats for nearly 700 plant species, and in terms of number of plant species growing on a small area, some of the most species-rich habitats in the world. The extensive agricultural activities have been replaced with intensive farming. As a result, a large number of grasslands is not in use or being cultured. It is necessary to manage semi-natural communities to ensure their preserving.

It is estimated that approximately 60,000 ha of semi-natural communities have been taken under protection. In 2013, 25,000 ha of semi-natural communities were being managed and 3,000 ha were being restored on protected areas. The goal is to increase the area of managed semi-natural communities to 45,000 ha by 2020.

As of 2000, subsidies have been paid for the management and restoration of semi-natural communities. Thanks to the restoration and management works, the status of alluvial meadows and coastal meadows has improved during the recent years. The action plan for the preservation of semi-natural communities has been drawn up (2013).

Mire ecosystems – based on the wetlands inventory of 2010, the proportion of mires is 5.5% (240 000 ha). Nearly 17% of the land area are rich paludified forests grasslands and degraded mires (all peat related areas). The main issues for the mire ecosystem are peat production and drainage combined with culturing. There are in total 10 000 ha of cut-over peat lands (peat lands abandoned after peat extraction and needing restoration). Nearly 90% of minerotrophic swamp forests have been influenced by drainage and/or culturing. Extensive drainage of areas that have not been drained yet is not done. 175 000 ha of mire ecosystems (mainly bogs) have been taken under protection, but about third of the protected communities are still under the influence of drainage and boundary ditches.

Based on the 2013 report of Habitats Directive the status of fens, spring fens, and springs with tufa formation has deteriorated; the status of bogs and transition mires is improving.

The restoration of cut-over peat lands and hydrogeological regime of damaged mires has been started. As of the beginning of 2014, more than 1,500 ha of hydrological regime of mires and about 200 ha of cut-over peat lands have been restored or under restoration. The goal is to restore at least 10 000 ha of natural hydrological regime of mire communities by 2020 (including species-rich fens and springfens and edging areas of bog massives)

Inland waters – the ecological status of most of the small lakes is good. The status of Lake Peipsi is poor, Lake Pihkva is bad and Võrtsjärve is good.

There has been a significant shift in the fish community of Lake Peipus (which is connected to Lake Pskov) from fish species who prefer clean and cold water (smelt, whitefish, whitefish, burbot) to fish species who prefer highly nutritional, warm and turbid water (perch, perch, bream,roach). Growth of cyanobacteria is

increasing. The pollution load and total phosphorus concentration of Lake Võrtsjärve is in the trend of improvement over the last 20 years. The lake's ecosystem is primarily sensitive to climate-related factors.

Considerable risk for the small water bodies are also alien species, such as Amur sleeper who was first discovered in 2005.

Around three-quarters of watercourses are in a good status, and approximately 20% are in a poor status. If previously the reason of poor status was mainly the impact of wastewater and diffuse pollution, then now 99.6 of water that needed cleaning is being purified and the main reasons of the poor status are barrier facilities and land improvement systems.

To achieve a good status of water bodies, opening of barriers (38 barriers open) and restoration of spawning areas for fish has been started. To increase the populations, Estonian rivers are populated with salmon juveniles and in smaller proportions with sea trout, asp, pike and crayfish juveniles

Illegal fishing and high fishing loads are still a problem. The combination of heat waves and eutrophication in Lakes Pihkva and Peipsi can result in unpredictable disturbances with extensive effects on fish. It is estimated that global warming may have both good and bad impacts on the Lake Peipsi, but the result is hard to predict.

Due to changes in fish species richness and abundance, the fishing quotas of commercially exploited fish species have been reduced in recent years and harvesting has greatly reduced.

Sea and coastal areas – the biggest ecological problem of the Baltic Sea is the eutrophication and hazardous substances that reach the marine environment. There are signs that the international cooperation has helped to stop the pollution of the Baltic Sea during the recent years. The pollutants reaching the Baltic Sea have decreased but there is no significant improvement in water quality.

Most of the Estonian coastal water bodies (16) are in moderate condition. Compared to 2007, the status of Tallinn, Pärnu and Narva Bay has improved. Haapsalu Bay is still in a bad status.

Economically more important fish species are the Baltic herring and sprat. International fishing quotas allocated to Estonia for both of the species have been significantly reduced. Due to sustainable fishing practices and administrative measures, the number of Baltic herring is increasing but the sprat stock is still decreasing.

The stocks of species important for coastal marine fishery (perch, pike, vimba, smelt) are mostly in poor status but the status of plaice is good. Stocks are affected by overfishing; at Väinameri also a big natural mortality due to the cormorant population (14,655 pairs) and, more recently, due to the increase in the number of gray seals.

Human activities that significantly influence the sea are in addition to overfishing also shipping and more recently energy-related activities (electricity cables, wind farms, gas piping)

As of 2012, 43% of fish stocks are in good status. Compared to the year 2006 the status of stocks has improved by 5%.

Agricultural ecosystems – biodiversity of agricultural ecosystems is (taking account the current market situation) dependent on the EU's Common Agricultural Policy, including the variety of environmental subsidies payable in the framework of RDP. Due to the various subsidies and naturally suitable grasslands, the farming of beef cattle, sheep and goats is increasing and mainly in the sector of organic farming. Dairy farming is decreasing. The share of organic farming has been steadily rising. In 2013, nearly 13% of agricultural land was used for organic farming; environmentally friendly management measures were implemented on 43% of agricultural land.

Estonia has officially recognized local breeds – Estonian Native cattle breed, Estonian horse, Estonian heavy draft horse, Tori horse (universal direction) and Estonian quail. Compared to the 2007, the population of the Estonian horse, Tori horse and Estonian heavy draft horse has increased and the population of Estonian native cattle breed has decreased.

The main threats to biodiversity in agricultural ecosystems is the regional intensification of agriculture, and the lack of environmental awareness.

According to the long-term monitoring data of farmland birds (1988–2011) the population of farmland birds has decreased by 11% and the population of overwintering farmland birds is in a weak downward trend (1986–2011). The status of birds is better in areas of organic farming.

Population of bumblebees is according to monitoring data (from 2006) generally in upward trend, except in field edges where pesticides are used.

Island ecosystems – during the recent years, a significant role in the economic model of the islands has been various subsidies, including subsidies for managing semi-natural communities and maintaining biodiversity on forest and agricultural lands on the Natura 2000 network.

As the Estonian islands are located fairly close to the mainland, there is only one known endemic species, Saaremaa yellow rattle (*Rhinanthus osiliensis*) and its status is stable.

West Estonian Archipelago Biosphere Reserve has been formed for the protection of nature on the Estonian islands and to value sustainable use of natural resources. Sustainable Development Programme 2013–2020 has been prepared for the area.

The only known population of the European mink living in the wild is on the island of Hiiumaa (Estonia's second largest island) and its population is growing.

Urban ecosystems – 70% of Estonian population lives in urban areas and cities. As Estonian cities are small, there are many garden city elements in the cities and the biodiversity in cities is quite high.

Urban biota has been studied only little, and generally in relation with protected natural objects and species. Most of the information on the biota of the city comes from random surveys (mostly bird surveys) and research on greenery of development areas.

The main problem regarding urban ecosystems are the development activities. In larger cities, especially in Tallinn, the area, cohesion and biodiversity of the green network is decreasing and the pressure on protected areas is increasing.

Landscapes – to protect the diversity of nature and maintain the favorable status of endangered species and habitats, 18% of the mainland area and 27% of the territorial sea has been taken under protection. In order to preserve the cohesion of green network and valuable agricultural land, a plan “Environmental conditions guiding the settlement and land use“ was prepared but its efficacy has remained low.

The current status of biodiversity strategies and action plans

In 2007, the Environmental Strategy until 2030 was established, which is in accordance with the overall objectives of the Convention on Biological Diversity. To implement the nature protection objectives of the environmental strategy, the Nature Conservation Development Plan (NCDP) 2020 was drawn up. When setting the goals for the Nature Conservation Development Plan and developing the measures and indicators the strategical and leading objectives of biodiversity (Aichi objectives) as well the objectives of the EU Biodiversity Strategy were taken into account. NCDP sets three strategic objectives for the conservation of biodiversity: 1) people feel and preserve the nature and can apply their knowledge in their everyday life; 2) the favorable conservation status of species and habitats and the diversity of landscapes

are secured and habitats act as an integral ecological network; 3) the long-term conservation of natural resources is ensured and ecosystem approach is taken into account when using them. Implementation plan of the NCDP is being prepared.

The biodiversity conservation in different sectors is integrated through strategies (Fisheries Strategy), development plans (Rural Development Plan, Forestry Development Plan, Hunting Development Plan, Recreational Fisheries Development Plan, Aquaculture Development Plan, Tourism Development Plan, Energy Management Development Plan, National Development Plan of Construction Mineral Resources, etc.) and their implementation planrs, in addition via EIA / SEA procedures, and if necessary through Natura assessment and the environmental charges system. The framework for the integration of natural values in different sectors is available, but substantial integration requires continuous reinforcement. Quality of impact assessments has improved compared to 2007, especially regarding the Natura assessment. The most important challenge is to change the perception, as if nature conservation measures limit the economic activities and nature conservation is only in the interest of a small interest group.

In terms of biodiversity, the most important legislative and institutional changes were made before 2007. Since the submitting of the previous report, there have been a number of minor changes in work organization in order to make operations more efficient and division of work clearer. In 2013, the new Hunting Act came into force, in 2013; amendments to the Nature Conservation Act and the Forest Act were adopted. Environmental Charges Act took force in 2006, but since it was not mentioned in the previous report, it is mentioned here. Environmental charges make 2.8 percent of GDP, making it larger than the EU average.

Biodiversity protection funding is primarily done via various EU structural funds, the Environmental Programme of the Environmental Investment Centre (EIC), and via the state budget. Financing of all these sources has increased significantly over the period 2007–2013. The biggest source of biodiversity funding was European Agricultural Rural Development Fund (EARDF), followed by the European Regional Development Fund (ERF), the Cohesion Fund (CF), EFF (European Fisheries Fund), LIFE +, INTERREG and others. The preservation of biodiversity was funded from different EU funds during the period of 2007–2013 in total of more than 168 million euros. Via the Environmental Programme of the EIC (financed from different environmental charges) ten environmental areas are supported. From the Nature Protection Programme directly related with biodiversity, 31 million euros were paid during the period of 2008–2013. Activities directly related with biodiversity were funded with 4.2 million euros from the state budget (in addition it was also funded indirectly). For example, the RDP budget is 25% state funded. Major supported activities were the management of semi-natural communities, Natura 2000 payments for private forest land and agricultural land management plans and action plans, nature conservation infrastructure development, investments in protected areas (including habitat restoration), ex-situ conservation, control of alien species, opening of watercourses for the free movement of fish, improvement of environmental monitoring and data management and applied research related to biodiversity .

Progress in implementing the objectives of biodiversity

Progress has been made primarily in the following areas:

- The management, visiting organization and infrastructure of protected areas has been improved.

- The status of habitats and species has been moderately improved. Management of semi-natural communities, restoration of habitats (mires, semi-natural communities, rivers), construction of compliant wastewater treatment plants have contributed to the improvement.

- For raising environmental awareness, several environmental education centers have been reconstructed, the Museum of Natural History was renovated, network of hiking trails was developed (State Forest Management Centre) and environmental education programs have been worked out and conducted.

- Ex-situ nature conservation organization has improved. The Recovery and Rehabilitation Centre of endangered specied has been established in Matsalu. Captive population of European mink is kept in Tallinn Zoo and the pan-European management EEP program of captive population is coordinated. The minks are a basis for repopulating the species in Estonia (Saaremaa and Hiiumaa) and elsewhere in Europe.

Challenges that persist or do not exist:

- Major focus should be placed on restoration and management of semi-natural communities, including the quality of the work.

- Restoration of mires and other endangered habitats should be continued.

- Improvement of the ecological status of salmon rivers but also other watercourses should be continued, including the opening of the rivers for moving upstream and downstream and restoration of old rivers should be continued.

- The nature conservation management plans for protected natural objects and species action plans have to be completed; the preparing of habitat action plans has to be continued.

- Development of infrastructures of protected areas and visiting organization should be continued.

- The raising of environmental awareness of people should be continued.

- Regarding the nationwide preparation process of county plans, the cohesion of green networks should be specified in accordance with the EU Green Infrastructure Strategy

- The inventories of marine habitats (and if required taking under protection) should be continued.

Prioritized fields for the future:

- Mapping and assessment of ecosystems and the services they provide, and the consequent analysis and amendment of the national reporting system.

- Research of climate change impacts and based on the results development of the climate change adaptation strategy development (started in 2014).

- Mapping of alien species and the implementation of measures to prevent their spread.

Obstacles for implementing the objectives of biodiversity are primarily related to the shortage of experts and the complexity for applying for funding. People are not satisfied with the Natura subsidies rates. Another problem is the lack of awareness of the ecosystem approach, understanding its benefits and taking into account when planning development activities and assessing impacts.

1. BIODIVERSITY – CURRENT STATUS, DEVELOPMENT TRENDS AND THREATS

1.1 INTRODUCTION

At the moment, there are approximately 35,000–45,000 species of plants, fungi and animals in Estonia. Surveys have managed to ascertain the presence of approximately 26,600 species. The distribution of birds, mammals and vascular plants has been mapped either totally or partially; research of other wildlife groups has been irregular.

The Convention on Biological Diversity has three main objectives. We shall now give a short overview of activities aimed at meeting those objectives, starting from the submitting of the fourth national report.

1) Preservation of biological diversity.

As at the beginning of 2014, 18% of our land territory (without Lake Peipus and Lake Võrtsjärv) and 27% of our territorial waters have been taken under protection (Environmental Agency: the environmental register). Compared to 2007, the protected territory has increased by approximately 1%.

As at the beginning of 2014, the pan-European Natura 2000 network consists of 542 sites of community importance and 66 bird sites in Estonia, totalling 1,283,143 ha. The network covers 16.6% of land and 27% of the territorial waters. Compared to 2007, the area covered by this network has increased by 0.6% (Environmental Agency: the environmental register). When comparing the results of the Habitats Directive reports from 2007 and 2013, we can see that the status of the following habitat types has improved: coastal meadows, rivers and brooks, slightly calcareous dry grasslands and alluvial meadows. The condition of Fennoscandian herb-rich forests with Picea abies has deteriorated, however. The condition of deciduous swamp woods is still critical. As to the species listed in the annexes of the Habitats Directive, the condition of the following three species has worsened: the slender naiad, the European crayfish and the natterjack toad – in case of the last two, in spite of the implemented measures. The condition of the European mink has improved as a result of consistent long-term efforts.

At the beginning of 2014, the number of protected species was 570 – the same as in 2007.

In recent years, the priorities of the Estonian conservation policies have been connected with the EU Natura 2000 network – the placement under protection of the areas of the Natura 2000 network, compilation of management plans, assessment of the condition of habitats and species, compilation of species conservation action plans. The creation of the Natura network has been completed. Sites of community importance make up 92.2% of our protected land territory.

As of 01.01.2014, 46.5% of the sites of community importance of the Natura 2000 network were covered with management plans, plans for the rest of the area are being compiled. We are planning to put together species conservation action plans for 155 species. As of 01.01.2014, action plans have been compiled for the conservation, conservation and management or management of 58 species.

There are 17 areas covered by the Ramsar Convention, 6 of them having been added after 2007. There are 9 HELCOM areas, 3 of which have been added after 2007.

In 2012, the Government approved the Nature Conservation Development Plan until 2020, which is consistent with the Global Strategic Plan for Biodiversity as well as the EU biodiversity strategy. The strategy stipulates that the condition of species and habitats in Estonia will be favourable by 2020, the versatility of natural landscapes will be ensured and habitats will be functioning as a holistic ecological network; natural resources will be sustained for a long period of time and their exploitation shall be based on the principles of the ecosystem approach; people will understand and protect nature and know how to use their knowledge in everyday life.

2) Sustainable use of the components of biological diversity.

The components of biological diversity are used in almost every area of life; however, due to the specifics of nature, they are the most obvious in forestry, fishery and hunting and territorial planning connecting these and all other areas of application spatially. The sustainable use of the components of biological diversity is based on data gathered about wildlife resources entered into the environmental register and spatial plans. Whereas the territorial plans of our land territory are being updated, reaching as far as the year 2030, the spatial planning of our marine territories has only just started. We do have a plan for the green network, which supports sustainable use. The plan is being reviewed at the moment as part of the process of reviewing the county-wide spatial plans and in accordance with the Green Infrastructure Strategy of the European Union. The most important principles of the sustainable use of the components of biological diversity have been included in several development plans, including the Nature Conservation Development Plan, the Forestry Development Plan, the Rural Development Plan and the Recreational Fishing Development Plan. The development plans are the basis for the planning of sectoral activities. Among other things, the compilers of the development plans take into consideration the data of the environmental register regarding the state and supply of our natural resources.

The sustainable use of the components of biological diversity is also supported by environmental impact assessments and strategic environmental assessments of all planned activities that might potentially have a substantial negative effect on the environment. If the planned activity may potentially have a harmful effect on the conservation objectives of the Natura network or the integrity of the site, it is necessary to carry out an appropriate assessment according to article 6 (3) of Council Directive 92/43/EEC as part of the environmental impact assessment or strategic environmental assessment. Compared to 2007, the quality of the assessments has improved – first, as to the assessment of possible impacts on the areas of the Natura network.

3) Fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

We are planning to ratify the Nagoya Protocol by 2015. The ratification process is already underway. The biological and economic qualities of specimens gathered from Estonia are being assessed, this is accompanied by phenological observations and laboratory analyses (including molecular analyses) – everything is done according to international standards and methodology. As of July 1, 2013, 2,960 specimens stored in Estonia had been entered into the joint data management system of the Nordic and Baltic countries (SESTO).

We shall now give an overview of the current status and development trends of and threats to biological diversity and the effect of biological diversity on human well-being, concentrating on the most important ecosystems: agricultural ecosystems, forests, mires, grasslands, internal bodies of water, the sea and coastal regions, islands, urban ecosystems and landscapes. We shall not talk about drylands, deserts or mountainous ecosystems, for there are none of those in Estonia.

1.2 AGRICULTURAL ECOSYSTEMS

1.2.1 Question 1) Why is biodiversity important for the country?

Agricultural ecosystems – which are secondary ecosystems, for they do not exist naturally but are man-made – are still crucial sources of food and other supplies. In Estonia, the biggest part of the agricultural land is covered with cereal grains, fodder crops and industrial crops. There are also many grasslands. Livestock farming, especially the rearing of bovine animals (dairy cattle), plays an important part as well.

In addition to land used directly for agricultural production, there are also other habitats – often secondary, having developed quite recently – connected with agricultural landscapes (field margins, ditches, edges of roads and forests, piles of stones, etc.), which play an important part at the protection of biological diversity in a situation where agricultural production is becoming more and more intense. Such natural habitats inside agricultural ecosystems also function as wildlife corridors.

Different cultural heritage objects (old farm sites, stone walls, memorial stones, holy trees) are part of agricultural landscapes as well, functioning as habitats or wildlife corridors for various species.

Semi-natural communities inside agricultural landscapes play an important role at the preservation of biological diversity – many of these communities have been excluded from agricultural use due to the intensification of agricultural production. The value of semi-natural communities mostly has to do with their biodiversity (see 1.5).

1.2.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country?

Agricultural land is a man-made ecosystem whose biodiversity remains below average. It is the main natural habitat for approximately 2% of wild species (30 species) and a potential habitat for approximately 3.8% of species (50 species). According to surveillance data gathered from 1988 to 2011, the common bird index of the 12 most common farmland birds in Estonia has dropped by approximately 11%. As to specific species, the development trends have been rather different, however: for example, the number of Northern Lapwings has increased, that of Eurasian Curlews, Sky Larks, Meadow Pipits and Yellowhammers decreased (Nellis, 2010). According to the Estonian Ornithological Society, there has been a slight downward trend in 1986–2011 in the bird index for 9 bird species living in farmlands or open fields and wintering here in Estonia[1]. The assessments of the Rural Development Plan reveal that the number of birds is the highest in agricultural areas under organic farming; at the same time, there were no significant differences between areas that did not receive support for environmentally-friendly management or rural development. The greater number of birds living in areas under organic farming is probably the result of the prohibition against mineral fertilizers and pesticides, which increases the birds' food resources[2]. National action plans aimed at improving the situation of the following bird species gathering food from agricultural land are being compiled or updated as we speak: the corn crake, the Eurasian curlew, the dunlin, the great snipe, the ortolan bunting, the red-backed shrike, the greater spotted eagle and the lesser spotted eagle.

The bumblebee monitoring programme (which started in 2006) shows a greater rise in the number and species diversity of bumblebees in areas under environmentally-friendly management; the same indicators have increased steadily in areas receiving support for organic farming and improved a bit even in areas not receiving such additional remuneration at all. The bumblebee monitoring programme shows that the number of bumblebees has dropped significantly in the margins of fields where farmers have used pesticides. This drop is probably caused by a decrease in the amount of nutrients in the soil, the repellent effect of pesticides or the poisoning of bumblebees.[1]

As of 2013, 943,577 ha of agricultural land is in use in Estonia (area covered by single area payments and support for the maintenance of semi-natural communities; 2013, PRIA). 65.8% of that area is made up by arable crops, 32.9% by permanent grasslands, 0.3% by permanent crops and 1% by unplanted fallow land. As to livestock farming, the importance of dairy cattle is reducing. As a result of different support systems and the availability of suitable natural grasslands, the importance of beef animals, sheep and goats is increasing, especially in organic farming. In order to promote environmentally sustainable agriculture, several agricultural environment measures have been incorporated into the Rural Development Plan, the most extensive of them being the support for environmentally friendly management. In order to develop organic farming, we have put together the Estonian Organic Farming Development Plan for 2007–2013 and are working on a new version for 2014–2020. The importance of organic farming is increasing steadily. In 2013, almost 13% of our agricultural land was used for organic farming; approximately 80% of the 13% was

[1] http://pmk.agri.ee/pkt/files/f32/PMK_pysihindamisaruanne_2012_kohta_030613_lisadega.pdf

[2] http://pmk.agri.ee/pkt/files/f32/PMK_pysihindamisaruanne_2012_kohta_030613_lisadega.pdf

covered by permanent and temporary grasslands. In recent years, the importance of unplanted fallow land has increased a little as well. The measures of environmentally friendly management were implemented on 43% of our agricultural land in 2013.

Considering the Estonian economic environment and production conditions, our local breeds and varieties are not able to compete with imported breeds and varieties; in order to preserve them, we need to implement additional support measures. There are five officially accepted local endangered breeds in Estonia: Estonian native cattle, Estonian native horse, Estonian heavy draught, Tori horse (universal type) and Estonian quail. Even though the first four have been supported via the Rural Development Plan since 2004 and 2005, they are still considered endangered species. According to the FAO classification, Estonian heavy draught belongs to the category of breeds in critical condition breeds. The number of Estonian native horse, Estonian heavy draught and Tori horse has increased since 2007, however. The number of Tori horses of the universal type has not changed, the number of Estonian native cattle has decreased. Within the framework of the Rural Development Plan, we have supported the preservation of the local rye variety "Sangaste", which is valuable for its cultural heritage and genetic diversity. In 2014–2020, we are going to support many other local varieties of arable crops, fruit and berries as well.

The preservation of the genetic diversity of agricultural crops is covered by the development plan "Collection and conservation of plant genetic resources for food and agriculture in 2007–2013" its successor for 2014–2020[3]. The genetic resource of agricultural crops encompasses the varieties, breeding material, species and forms of arable crops and horticultural plants. The economic qualities of the Estonian local varieties have been assessed according to international standards and methodology. During the implementation period of the development plan for 2007–2013, we switched over to Internet-based databases; this makes it easier to access information about the specimens and simplifies national as well as international cooperation. The general data and information concerning the storage and quality of specimens gathered from Estonia have been entered into the joint data management system of the Nordic and Baltic countries (SESTO); the data in different species-specific databases of Europe, which also includes information about the characteristics of the specimens, has been updated as well. As at July 1, 2013, the data management system SESTO contains information about 2,960 specimens stored in Estonia. The following institutions preserve the genetic resource of the Estonian agricultural crops: the Estonian Crop Research Institute, the Estonian University of Life Sciences Institute of Agricultural and Environmental Sciences Polli Horticultural Research Centre, the Botanical Garden of the University of Tartu and the Department of Gene Technology of Tallinn University of Technology.

The main threats to the biological diversity of agricultural ecosystems are the regional intensification of agriculture and insufficient environmental awareness. According to the assessments of the Rural Development Plan, the environmental awareness of farmers has improved in recent years. Intensive production increases the fragmentation and isolation of natural habitats (including semi-natural communities), changes the quality of the soil (soil fertility, bulk density, aerification, etc.), affects the quality of agroecosystems as habitats and is the main reason why local breeds and varieties become endangered.

1.2.3 Question 3) What are the main threats to biodiversity?

The Estonian agricultural producers have to compete with other producers in the EU receiving much larger subsidies, whereas our climatic conditions make production much more costly. A big portion of semi-natural communities that have always functioned as agricultural land are no longer used for farming, for their maintenance (mowing and grazing) is not profitable. The preservation of semi-natural communities relies heavily on subsidies. Whereas the current mass-oriented market situation gives significant competitive advantages to large manufacturers, it is very important to promote the operations of small producers when it comes to the preservation of biological diversity.

[3] http://www.agri.ee/public/juurkataloog/ARENDUSTEGEVUS/arengukava-gen-ressursid-2014.pdf

1.2.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts?

When the number of suitable natural feeding areas (mostly semi-natural communities but also field margins) reduces, birds turn to crops, especially young sprouts in early spring, bringing about substantial financial losses for the farmers. In some years, the damage has been considerable.

The aesthetic appearance of landscapes and diversity of cultural heritage plays an important role at the promotion of nature tourism. As a result of a reduction in the diversity of landscapes (simplification of landscapes), tourists can lose interest in rural areas, which in its turn damages the local businesses.

If the regional intensification of agriculture continues, the groundwater may become polluted, especially in parts of central Estonia, which are extremely susceptible to nitrates.

1.2.5 Optional question. What are possible future changes for biodiversity and their impacts?

In the current market situation, the biological diversity of agricultural ecosystems depends on the Common Agricultural Policy of the EU, which includes, among other things, different environmental subsidies distributed within the framework of the Rural Development Plan. The most important of those subsidies are the support for environmentally friendly management, support for organic production, support for the maintenance of semi-natural communities, support for keeping animals of local endangered breeds, support for growing plants of local varieties and Natura support for agricultural land.

1.3 FORESTS

1.3.1 Question 1) Why is biodiversity important for the country?

Forest ecosystems provide people with various services, the best known of them being the provision of timber.

The annual allowable cuts of timber (construction timber and firewood) have not exceeded the increment for the past 20 years. The annual allowable cuts have been increasing since 2008, however. According to the statistical forest inventory, 9.4 million cubic meters of trees were felled in 2012. The growing stock has remained at 450 million m^3 in recent years. As stated in the Forestry Development Plan, the sustainable long-term felling volume is 12–15 million m^3 a year.

One of the goals of the competitiveness strategy "Estonia 2020" is to increase the share of renewable energy to 25% of final consumption of energy. This goal was reached in 2011. An increased importance of timber plays an important part here. We shall continue to increase the share of renewable energy[4].

The number of people employed directly by the forest industry reaches approximately 30,000; the forest and timber industry mostly generates employment for people living in rural areas.

Climate regulation – Forests play an important part in climate regulation, for they absorb carbon.

Forestry products other than timber – Other forestry products, mostly berries and mushrooms, offer additional income to people living in poorer, peripheral regions of the country but are mostly collected for personal use.

Hunting – Hunting with its recreational, social as well as economic aspects relies heavily on forest ecosystems. There are approximately 4 million ha of hunting grounds and 15,620 hunters in Estonia. The most important wild game are moose, red deer, wild boar, roe deer, foxes and raccoon dogs.

[4] http://valitsus.ee/et/riigikantselei/eesti2020/eesti-2020-eesmargid/Keskkonnasobralik-majandus-ja-energeetika/taastuvenergia-osakaal-energia-lopptarbimisest

The populations of wolves, beavers and lynxes are in a favourable state; therefore, those animals can be hunted, as stated in the development plan. The number of bears can be regulated only in special circumstances and the European Commission has to be informed about such activity. The number of European hare and mountain hare is small and still decreasing; the population of the greylag goose has been diminishing for quite some time. Estonia has a hunting development plan for 2008–2013; a new Hunting Act entered into force in 2013; we adopted a plan for the protection and management of large game (wolves, bears and lynxes) in 2012.

Tourism/recreation – According to Statistics Estonia, 1/4 of all tourists participate in activities like hiking and spending time in nature. According to data presented in the Estonian nature tourism cluster strategy for 2011–2020, 56% of Finnish tourists were induced to come to Estonia by the local nature. According to the State Forest Management Centre (RMK), 1.7 million tourists visited the centre's protected areas and recreation sites in 2013, 75% of whom were local tourists (the estimate is based on indirect data).

Provision of habitats – Nearly half of the species living in Estonia dwell in forests. Our forests play an important part at the preservation of the human and natural environment.

Cultural heritage – The importance of forest-related cultural heritage has been acknowledged – 2011 saw the end of a project taking stock of 35,000 objects of cultural heritage. Several nature tourism enterprises are directly engaged in cultural heritage tourism. Nature and cultural heritage also have an indirect effect on the income of many entrepreneurs.

1.3.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country?

Almost half of the Estonian land territory is covered with forests, nearly half of the local species dwell in forests.

There are 10 forest habitat types in Estonia, which need to be protected at pan-European level (natural habitat types listed in annex I of the Habitats Directive). The reports on the implementation of the Habitats Directive issued in 2013 showed that dune forests and klint forests are in good status; the status of Fennoscandian deciduous swamp woods, western taigas, Fennoscandian herb-rich forests with *Picea abies* and bog woodlands is not as favourable, however.

Our goal is to place 10% of our forests under strict protection, aiming at preserving the age diversity and typological diversity of our woods. As of 01.01.2014, almost 9% of our forests had been placed under strict protection. In order to ensure species diversity, we are going to focus, first and foremost, on the additional protection of fresh boreal forests, fresh boreo-nemoral forests, herb-rich mixed forests and grass fen forests.

As to forest management, the status of our forests is good – only 11.1% of the trees are damaged, whereas 2/3 of those damages have been caused by fungi[5]. The volume of illegal logging has decreased significantly, making up less than 0.02% of the annual logging volume in 2012.

Outside of all protected areas, there were 4859 areas characterized as key habitats as at 01.01.2014, covering 9414 ha (Estonian Environmental Board, the environmental register). A bit less than half of those key habitats are on private land. Approximately 5% of all key habitats situated on private land are protected via 20-year contracts between the state and the landowners. See more about key habitats in 2.3.6.

In 2012, we compiled the Estonian Forestry Development Plan and an Implementation Plan until the year 2020. See more in 2.4.4.

The main pressures on the biodiversity of forest ecosystems lie in unsustainable forest management and forest drainage systems. To some extent, forest ecosystems are also influenced by the establishment of

[5] http://www.envir.ee/orb.aw/class=file/action=preview/id=1116453/Uuringud+%26%238222%3BEesti+metsade+ressursianal%FC%FCsi%26%238220%3B+tarbeks.pdf

infrastructures, forest fires and the climate.

The effect of logging can be seen not so much in the logging volumes as the age of the felled trees, the damage done to the naturalness of the structural elements of habitats and the destructive effect of regeneration cutting and logging roads. The main problem plaguing mature forests is the fact that all trees are approximately of the same age and there are very few large, older single trees, especially deciduous trees approaching the end of their growing stage[6].

Forest ecosystems are getting younger, their naturalness is reducing. The lessening of old forests has a negative effect on the biological diversity of forests (dead wood is of vital importance to invertebrates, fungi and lichens) and can affect the services of the ecosystem due to the deterioration of the food chain. The disappearance of old forests has reduced the numbers of several species typical to natural forest ecosystems (for example, the tree lungwort, the black stork, the western capercaillie, the Siberian flying squirrel, etc.).[7]

The reduction of areas covered by forest and fragmentation of habitats are also caused by the development of infrastructure and expansion of human settlements. In order to reduce the negative effects of the infrastructure, the first overpass meant for large wild animals was added to the Tallinn-Tartu road at the beginning of 2014; there are also 10 tunnels for smaller animals and 3 tunnels for amphibians.

The drainage of woodlands changes the natural irrigation regime of forests; natural bodies of water are slowly disappearing, the biological and species diversity of habitats are diminishing, the benefits offered by forest ecosystems can be damaged. The disappearance of small bodies of water from forests is especially harmful, for example, to amphibians. Approximately 30% of all forests are affected by excessive drainage.

Forests have become popular recreational venues, which puts additional pressure on protected forests as well. The number of people using the hiking trails of the State Forest Management Centre is increasing. 1.7 million people visited the trails in 2013.

Approximately 97% of forest fires are thought to be the result of human activity, either directly or indirectly. In 2008, the damage caused by forest fires was estimated at 14.2 million euros; in the following years, the damages have been rather modest thanks to rainy summers and the implementation of different preventive measures. However, forest fires can be considered an environmental disturbance playing an important role at the preservation of various species.

Forest soils do not always freeze in winter, which is thought to be connected with climate change. If the failure to freeze is accompanied by heavy vehicles transporting the logs out of the forest, the flora and soil biota are often severely damaged. Climate changes seem to be affecting the game as well. The abundance of pathogenic pests and fungi brought on by the infrequency or even total lack of cold winters is already apparent as well. Soft winters poor in snow and ice also lower the natural mortality rate of wild boar. The snowy winters and lengthy cold spells of recent years have had a negative effect on the number of roe deer. The formation of more extensive windfalls is also attributed to changes in the climate; when left unattended, such windfalls increase the number of noxious insects and seem to promote the invasion of alien species, whereas the effects are unpredictable.

1.3.3 Question 3) What are the main threats to biodiversity?

The economic interests of forest owners make it necessary to intensify the use of commercial forests and keep the level of annual allowable cuts high. The goal of increasing the share of renewable energy to 25% of the final consumption of energy by 2015 was already reached in 2011. This increase in the share of

[6] Lõhmus, A; Kraut, A. (2010). Stand structure of hemiboreal old-growth forests: Characteristic features, variation among site types, and a comparison with FSC-certified mature stands in Estonia. Forest Ecology and Management 260, 155-165

[7] Lõhmus, A. & Lõhmus, P. (2011). Old-forest species: the importance of specific substrata vs. Stand continuity in the case of calicioid fungi. Silva Fennica 45(5): 1015-1039.

renewable energy puts additional pressure on the diversity of the forest biota. Roughly three quarters of the Estonian forests are free of all economic constraints; the exploitation of approximately 16% of the forests is restricted due to different limitations but fundamentally allowed.

1.3.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts?

Changes in forest ecosystems have affected various species, especially those connected with old forests. The effects on human well-being are more of a local nature, mainly concerning the aesthetic or cultural benefits offered by forests. For example, if the logging site is situated near human dwellings, the houses may be left unprotected once the trees have been cut down. Forests forming an important part of our religious heritage have sometimes been severely damaged by logging, which has a direct negative effect on human well-being as well.

1.3.5 Optional question. What are possible future changes for biodiversity and their impacts?

The effects of negative changes in forest ecosystems on human well-being can only be assessed by future generations, for the immediate benefit of direct economic growth brought on by the increasing wood supply is usually in balance with long-term reductions in well-being caused by the diminishing quality or total disappearance of other benefits offered by the ecosystem.

Considering the objectives and planned measures of the Nature Conservation Development Plan, among other things, we may hope that the status of forests shall improve in time. We are aiming at placing 10% of our woods under strict protection, so that they would give a good overview of the different types of our forests.

1.4 MIRES

1.4.1 Question 1) Why is biodiversity important for the country?

In addition to preserving biological diversity, natural mire ecosystems are also important regulators of the carbon cycle and maintainers of pure air and water. Drained mires and abandoned peat bogs, on the other hand, are sources of greenhouse gases, increase the risk of fires and reduce biological and landscape diversity.

Estonian mires have a high recreational value. Boardwalks have been built in many bogs but also transition mires and fens in order to improve the accessibility and provide opportunities for outdoor learning. Considering the large number of our mires and the increasing international interest in our nature, nature tourism has the potential to improve the employment prospects of local people and boost the economy.

Berries picked from swamp woods and mires are quite an important source of income for people living in areas with a high unemployment rate.

Hunting – Mire ecosystems are the main or supporting habitats for wild game. Wild game often take refuge in big swamps when their usual habitats become temporarily unsuitable for living (for example, as a result of deforestation) and in case of bigger disturbances.

Extensive swamp meadows and coastal wetlands are also important because they absorb contaminants possibly leaching from agricultural land and slow down the eutrophication of different bodies of water.

Peat (for heating, bedding material, growing medium, and electricity) is one of the most important natural resources in Estonia. The peat resources are divided into moderately decomposed peat (approximately 15%), which is mostly used as a growing medium, and highly decomposed peat (approximately 85%) used as fuel. The annual allowable volume of peat extraction is approximately one million tons, which is usually not used up in full. The extraction and processing of peat is the main area of activity for 30 enterprises employing more than 1,000 people.

1.4.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country?

Even though it has been claimed and widely accepted that mires make up 22.3% (1,009,101 ha) of the total territory of Estonia, the data gathered during an inventory of wetlands in 2010 shows that the percentage of mires is actually only 5.5% or 240,000 ha. The remaining 17% is formed by swamp woods, grasslands and degraded mires – all areas connected with peat regardless of the thickness of the peat layer; it is also not important whether the accumulation of peat is actually continuing or reducing.

There are 8 mire habitat types and 3 swamp forest habitat types in Estonia, which need to be protected at pan-European level (natural habitat types listed in annex I of the Habitats Directive). The total area covered by mire habitat types specified in the Habitats Directive reaches approximately 335,000 ha in Estonia (swamp forests included. More than half (58%) of the territory is made up by bogs and nearly one third by transition mires and quaking bogs (16%) and rich fens (12%). According to the Habitats Directive report from 2013, the status of fens, spring fens and tufa-forming springs has deteriorated. The status of bogs and transition mires is improving, however.

Almost 90% of former fens have been cultivated or destroyed by extensive drainage. The situation is better with bogs, 70% of which have been preserved more or less in their natural state. 175,000 ha of mire communities have been placed under protection, most of them being bogs; however, roughly one third of the protected mire communities are still being affected by working drainage systems.

Even though mires with no drainage systems are not extensively drained at the moment either, the existing drainage and collecting ditches and the drainage of territories bordering the mires are still harming the status of our mires. In addition to peat extraction, the drainage of forests puts significant pressure on mires as well. The impacts of industry, pollution, urbanisation, fires and climate change are not as significant.

There are almost 10,000 ha of abandoned peat bogs that need to be restored.

1.4.3 Question 3) What are the main threats to biodiversity?

Drainage – The reasons behind draining are mainly industrial (mining) or related to forest management. As a result of draining, the naturalness of mires decreases, the formation of peat stops, the mineralization quickens; nitrogen starts leaching into bodies of water, CO_2 into air. The results of lowering the water table around the mires can only become apparent in the flora of the mires decades later. As a result, the original plant communities may be replaced by new, secondary plant communities, which have a simpler structure as a rule. This is why many types of natural communities but also plant and animal species have become vulnerable or endangered.

Peat extraction – The annual allowable volume of peat extraction is approximately one million tonnes at the moment.

Industry and pollution – Many mires in the northeastern part of Estonia have been destroyed by oil shale mining – in case of opencast mining, the whole surface layer of the soil is removed in order to reach the oil shale. The natural hydrological regime has also been spoiled in vast areas where oil shale is extracted via underground mining.

The alkaline air pollution caused in the past is still affecting an approximately 200,000 ha area within a 30 km radius of the power plants and Kunda cement factory. Atmospheric pollution caused by industry is reducing in the northeastern part of Estonia; it has been noted that peat mosses have returned to several bogs and are now covering a bigger area; the radial growth of bog pines has slowed down, the concentration of heavy metals in mosses has reduced. However, in bogs closer to the sources of pollution, there are still many species alien to the local bog communities preferring an alkaline environment.

Urbanisation – Urbanisation poses the biggest problem for mires close to Tallinn but the situation is not much better around many of the other Estonian towns (Tartu, Pärnu, etc.) either. Even though the effects that urban sprawl has on mires are usually of a local nature, there is definitely an increased danger of fires in drained bogs. Trampling can sometimes do damage as well.

Fires – The flora of bogs damaged by fire is characterized by various species otherwise alien to bog communities. It takes approximately 50–100 years for a burnt bog community to regain its previous state. Fires in bogs and transition mires are the most harmful to peat mosses.

Climate change – Mire ecosystems are susceptible to factors resulting from climate change. Some of the factors attributed co climate changes are the dissolving of organic carbon, the increased emission of greenhouse gases and changes in species composition. It has become a prevailing trend for the Estonian mires to turn into forests – mixotrophic grass mires are becoming mixotrophic bog forests or drained peatland forests, pines are spreading into otherwise treeless bogs. The reasons behind it are complex, encompassing the effects of climate changes, drainage, fires and an increased inflow of nitrogen. Changes in the structure of flora affect the whole ecosystem.

1.4.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts?

When the growth of peat mosses slows down or stops altogether, this has a direct effect on the formation of peat and the ability of mires to absorb carbon dioxide and generate oxygen. Draining ruins the natural hydrological regime of mires, which can take centuries to bounce back. Until then, the ability of mires to act as clean water reservoirs and cushion climate change is inhibited. Draining deprives the mires of the ability to absorb nutrients and cushion negative effects.

When mires get damaged, this also reduces their aesthetic, educational and recreational value, which in its turn affects the economy directly, decreasing the revenue produced by nature tourism among other things.

1.4.5 Optional question. What are possible future changes for biodiversity and their impacts?

Considering the objectives and planned measures of the Nature Conservation Development Plan, the status of mires is likely to improve in time. The regeneration of cutover peatlands and restoration of the hydrological hydrological regime of mires has already started. The following objectives have been established:

- avoiding additional drainage of natural peat bogs, preferring to continue peat extraction in territories already drained and damaged;

- regenerating 1000 ha of cutover peatlands by 2020;

- restoring the natural hydrological regime in 10,000 ha of mires by 2020.

1.5 GRASSLANDS OR SEMI-NATURAL COMMUNITIES

1.5.1 Question 1) Why is biodiversity important for the country?

The importance of semi-natural communities lies in the preservation of biological diversity, i.e. the genetic and species diversity. Semi-natural communities are important habitats for many types of organisms (see 1.5.2.).

Semi-natural communities that are in good status are attractive feeding and resting areas for migratory birds. This reduces the economic damage caused by birds feeding on young crops. Coastal and floodplain meadows are very important to migratory birds.

Semi-natural communities are important feeding areas for pollinators (for example, bumblebees); the successfulness of agricultural production relies heavily on the existence and diversity of pollinators.

Natural floodplains contribute directly to human well-being, helping to avoid flooding during high water periods and the resulting economic damage in residential areas.

The cost of the restoration and maintenance of semi-natural communities is mostly covered by different subsidies; the support paid for the maintenance of semi-natural communities is quite an important source of income.

Semi-natural communities have a huge aesthetic and recreational value. The Estonian natural landscapes embellished with well-cared-for semi-natural communities are often one of the reasons tourists come to Estonia.

By providing us with information about historical land use and ways of living, semi-natural communities have a high cultural value.

Semi-natural communities bordering intensely cultivated agricultural land are important wildlife corridors for different species.

1.5.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country?

Most of the Estonian meadows are semi-natural – that is, they have developed as a result of human activity (haymaking, herding, etc.). The Estonian semi-natural communities accommodate nearly 700 plant species; when it comes to the number of different plant species that can be found on small patches of land, our semi-natural communities are some of the most diverse habitats in the world. Great biological diversity is typical, first and foremost, to wooded meadows (the biggest number of plant species found on one cubic meter is 74) but also to alvars.

In order to preserve semi-natural communities, approximately 60,000 ha of them have been placed under protection. In 2013, 27,000 ha of the protected semi-natural communities were being properly maintained, 3000 ha of them were being restored. We are aiming at increasing the volume of properly maintained semi-natural communities to 45,000 ha by 2020; the protective measures of the remaining 15,000 ha of protected semi-natural communities need to be established by 2030.

Thanks to the restoration and maintenance measures, the status of coastal meadows and alluvial meadows has improved in recent years. We need to pay more attention to the quality of maintenance and the restoration and maintenance of wooded meadows and alvars. The vegetation of coastal meadows, alvars, wooded meadows and floodplain meadows is being monitored in the whole area of distribution within the framework of a national monitoring programme; there are also additional species monitoring programmes for semi-natural communities. Management plans have been established for semi-natural communities. In 2013, an action plan was put together for semi-natural communities for 2014–2020, mainly concentrating on the preservation of semi-natural communities and the species dependent on such communities.

The biggest pressure on the biological diversity of grasslands lies in the replacement of extensive farming with intensive farming. This is the main reason why many grasslands have been either abandoned or cultivated. Approximately 60% of the grasslands whose function has thus changed have been covered with woods or scrub growth, 20% have been cultivated, approximately 5% (most of them in the vicinity of cities) have been affected by construction activities.

The drainage systems constructed decades ago for land improvement purposes are still affecting the biological diversity of semi-natural communities.

Farmers have been receiving support for the maintenance of semi-natural communities since 2007. In order to measure the effects of such support, we have studied the impact of different maintenance measures on the biological diversity of semi-natural communities. The results prove that unsuitable maintenance methods can have a negative effect on biological diversity as well.

1.5.3 Question 3) What are the main threats to biodiversity?

There are different reasons why all semi-natural communities are not properly maintained, the most important of them being a lack of economic interest in the maintenance and inadequate knowledge of the conservation requirements and requirements regarding the maintenance of meadows; also, rural areas are sparsely populated, the maintenance work is complex and costly (the meadows are often situated in flooded areas or are difficult to access), people do not have the necessary tools nor the means to use the

hay cut from the meadows (in regions where the hay is not going to be used locally and the transportation is costly).

There are different support schemes for the restoration, maintenance and investments; however, people often tend to consider the application process too complex and decide not to apply for support at all, leaving the semi-natural communities unattended.

Unsuitable maintenance methods and the poor quality of maintenance are the reasons why the status of semi-natural communities has not yet improved in all maintained territories. The fact that the populations of several species connected with semi-natural communities (for example, the natterjack toad and Charadriiformes) have declined, even though the volume of maintained territories has increased, shows that we are indeed talking about unsuitable maintenance methods. Problems usually lie in unsuitable maintenance frequency or over-grazing, wrong technical methods (for example, chopping or crushing) or failure to collect the hay. Unsuitable maintenance methods pose huge problems in coastal meadows and floodplain meadows. A lack of proper maintenance after the restoration can be dangerous as well.

Draining jeopardizes coastal meadows, floodplain meadows and paludified meadows. Many meadows are drained deliberately (for example, coastal meadows); however, it can also be the side effect of the draining of agricultural land or forests or the result of certain development activities.

Cultivation poses problems outside the protected areas and mainly jeopardizes grasslands on mineral soil.

1.5.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts?

The destruction and deterioration of semi-natural communities mainly affects the genetic and species diversity whereas the actual results may only become apparent in the distant future. When grasslands, especially coastal meadows, grow over with scrubs, this can be harmful to the agricultural producers, for birds tend to turn to young crops when their natural feeding areas become unavailable. Semi-natural communities are important feeding areas for different pollinators; therefore, the status of those areas is in a direct connection with human well-being, for a reduction in the abundance of pollinators or even total lack thereof influences agricultural production as well.

When semi-natural communities grow over, they lose their aesthetic and recreational value, which can do significant damage to tourism in the long run.

When the function of the semi-natural communities of floodplains changes, this increases the risk of flooding in residential areas.

1.5.5 Optional question. What are possible future changes for biodiversity and their impacts?

The maintenance of semi-natural communities within Natura 2000 sites has picked up quite well thanks to different subsidies. Without those subsidies, interest in the maintenance of those areas is likely to decrease significantly, which would make the preservation of semi-natural communities highly questionable. When semi-natural communities grow over with shrubs, this decreases the quantity and quality of the benefits offered by those areas.

Even though the increasing of the area covered by properly maintained semi-natural communities is very important as well, we need to improve the quality of maintenance activities.

1.6 INTERNAL BODIES OF WATER

1.6.1 Question 1) Why is biodiversity important for the country?

The services provided by the ecosystems of internal bodies of water become apparent, first and foremost, in connection with the fish and crustacean resources of our rivers and lakes. Internal bodies of water are also used actively for relaxation and recreational sports. The role of internal bodies of water as regulators of the water and nutrient cycles and parts of the food chain is not as widely acknowledged, however.

Commercial fishing is limited to Lake Peipus and Lake Võrtsjärv; recreational fishing, however, also concerns smaller rivers and lakes in addition to our biggest lakes. There are more than 1,000 lakes bigger than 1 ha in Estonia, covering a total area of 2,130 km^2. More than 90% of the total area covered by lakes is made up by the part of Lake Peipus-Pskov belonging to Estonia, Võrtsjärv and the Narva reservoir.

Water bodies classified as being of importance to fisheries are the lakes of Kuremaa, Saadjärv, Võrtsjärv, Lake Peipus (together with Lake Lämmijärv and Lake Pskov) and Kaiavere in the East-Estonian river basin and the lakes of Ermistu and Sutlepa in the West-Estonian river basin. This classification is based on the potential social and environmental importance of those bodies of water.

In 2012, commercial fishermen caught more than 2,600 tons of fish from our internal bodies of water whereas the yields of Lake Peipus, Lake Lämmijärv and Lake Pskov exceeded 2,400 tons. The main species caught from our internal bodies of water are the European perch, the pike-perch, the common bream, the northern pike, the European river lamprey, the burbot, the roach and the European eel. In recent years, the main fish species caught from Lake Peipus, Lake Lämmijärv and Lake Pskov have been the European perch, the common bream, the pike-perch and the roach; from Lake Võrtsjärv the common bream, the pike-perch, the European eel and the northern pike. However, the uniqueness of Lake Võrtsjärv lies in the fact that it has been stocked with huge amounts of eel fry (and fry of the common carp to a smaller extent) in the last 50 years; therefore, the European eel has been the most important and valuable commercial fish species in Lake Võrtsjärv for several decades. Also, a management plan has been put together for our eel resources[8]. There are about 50 professional fishermen working on Lake Võrtsjärv. In addition to the species listed above, the roach, the European perch and the burbot are important for commercial fishing as well.

Recreational fishermen form a huge part of the people using the services offered by the ecosystems of our internal bodies of water; in 2012, the estimated number of recreational fishermen reached approximately 306,000, most of them (*ca* 90%) preferring internal bodies of water. The amount of fish caught by recreational fishermen reached approximately 6,000 tons in 2012. The biggest haul (1,800 tons) was provided by Lake Peipus. As to different species, the European perch made up the biggest portion of the haul – 2,000 tons. In 2012, the total expenditure on recreational fishing reached 77 million euros (33 million in 2010)[9]. During some periods and in certain areas, recreational fishing can become an important source of income for the locals and people providing different services aimed at recreational fishermen.

A development plan has been put together for recreational fishing for the period of 2010–2013, which includes perspectives until 2018. There are also several new mobile phone applications, which have been developed in order to educate fishermen and people interested in nature and explain different fishing regulations – for example, Kalamees (fisherman) and Kalamäng (fishing game). Applications meant for Android phones make it possible to identify the species of the caught fish with the help of pictures; read about the biology, distribution, capture and edibility of different species; pay for the right to fish for recreation; get acquainted with catch limitations and find information about the Estonian bodies of water.

In addition to their direct economic value, crayfish also play an important role in the ecosystems of our bodies of water.

1.6.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country?

Lakes

Based on data collected in 2007–2012, we can say that the ecological status of most of our smaller lakes is good. The status of Lake Peipus is poor, that of Lake Pskov bad; the status of the Narva reservoir is poor, that of Lake Võrtsjärv good. Differences between different parts of Lake Peipus have increased; the inflow of nutrients from Velikaja River has not decreased, massive blooms of blue-green algae are on the rise. The

[8] http://www.envir.ee/orb.aw/class=file/action=preview/id=1110097/kava+ja+heakskiitmise+otsus+03.12.2009.pdf

[9] http://www.envir.ee/orb.aw/class=file/action=preview/id=1201779/Harrastuskalapyyk_2012.pdf

concentration of phosphorus in the water of Lake Pskov has increased in recent years; this is attributed to phosphorus escaping from the bottom sediment. The ecological status of the Narva reservoir is improving thanks to improvements in the water of Plyussa River, which has a very strong effect on the status of the reservoir. The pollution load and levels of total phosphorus of Lake Võrtsjärv have been decreasing for the past 20 years.

The fish fauna of Lake Peipus is diverse. There are 37 species of fish living in Lake Peipus and the lower reaches of rivers and brooks flowing into the lake, about ten of them having an industrial and/or recreational value. The protected species include the grayling, the ordinary asp, the wels catfish, the spined loach, the European weatherfish and the bullhead. See more about fish species of importance to fisheries in question 1.

There has been an important shift in the fish community of Lake Peipus from species living in clean and cold water (the European smelt, the vendace, the lake whitefish and the burbot) to species preferring warm and muddy water full of nutrients, such as the pike-perch, the European perch, the common bream and the roach. The pike-perch resources are in good condition, those of the common bream, the roach and the northern pike in poor condition. The populations of cold-water species (the lake whitefish, the vendace) have been decreasing during the last decade due to unfavourable environmental conditions (absence or short duration of the ice season, excessive warming of the water in summer, etc.) and large numbers of predatory fish (the European smelt). Excessive blooms of blue-green algae have had the biggest effect on bottom-dwelling species (for example, the ruffe); the effect has been enhanced by the intensive use of trap nets in summer.

There are 31 fish species living in Lake Võrtsjärv and the estuaries of rivers and brooks running into the lake and one species of Cyclostomata (the European brook lamprey) that has found a more or less permanent home there. The protected species include the ordinary asp, the sheatfish, the spined loach and the European weatherfish. See more about industrial fish species in question 1. The supply of fish species of importance to fisheries is stable in Lake Võrtsjärv. The European eel resources, which depend directly on the number of fry brought into the lake, have diminished. The fish of Lake Võrtsjärv are in danger, first and foremost, when the spring high waters have failed to fill the lake properly, the hot and dry summer has lowered the water level further and is followed by a cold winter with no thaws. In winters like that the shallower parts of the lake can freeze to the bottom, which is fatal, first and foremost, to eels wintering in the bottom sediment. When the warming climate is accompanied by warmer winters and shorter ice seasons, the danger of anoxia decreases in Lake Võrtsjärv.

Alien species pose a serious threat to the biota of smaller bodies of water – for example, the Amur sleeper, which was found in 2005 in a pond near the Narva reservoir and has now spread to the Narva reservoir and two smaller bodies of water. The Amur sleeper tolerates extreme temperatures, digging into the bottom sediment and thus surviving even in completely frozen or dried up bodies of water. It is also able to cope with anoxia, for it can get oxygen from the air if needed. In order to prevent the sleeper from spreading, we are trying to remove it from the bodies of water and increase environmental awareness (for the species has reached our waters via ordinary people).

Running water

Considering the status of fish among other factors, about three thirds of the Estonian rivers are in good status and approximately 20% of them in poor status. Whereas the main reasons behind the poor status of our bodies of water used to be the negative effects of effluents and diffuse pollution, it is now caused by barrages and land improvement systems. 99.6% of effluents needing to be purified are indeed purified.

Thanks to the establishment and reconstruction of water purification systems in recent years, the average phosphorus concentration in our rivers has reduced by nearly a half. The concentration of nitrogen has generally decreased as well but there are slight increases in areas affected by intensive farming. The trophic state, which is the best indicator of the status of the benthic fauna, is either good or very good in 88% of our rivers. The status of macrophytes is either good or very good in 94% of our rivers (data available for approximately ¼ of the rivers).

The status of the benthic fauna is generally good or very good as well. The benthic fauna is susceptible, first and foremost, to organic pollution but also the morphological changes of the riverbed caused by land improvement and changes in the water levels caused by hydro-electric power plants.

In order to improve the status of our bodies of water, we have started opening the barrages (38 barrages have already been opened) and restoring the spawning grounds of fish. During the period of 2009–2012 we implemented the LIFE+ project "Saving life in meanders and oxbow lakes of Emajõgi River on Alam-Pedja NATURA 2000 area", restoring valuable water habitats. As a result of the project, 10 oxbow lakes were re-opened, 56 ha of spawning grounds were restored and cleaned.

In order to increase the populations, Estonian rivers have been stocked with young salmon and to some extent also with young brown trout, ordinary asps, northern pike and crayfish.

Our crayfish resources have been diminishing for quite some time. Even though the overall status of crayfish has been improving, the danger of the crayfish plague and alien species (the signal crayfish) is becoming increasingly more serious. The intensity of crayfish farming has been fluctuating over the years as well: 32,000 crayfish were added to the rivers in 2011 but none in 2013. An action plan has been put together for crayfish for the period of 2004–2010[10].

1.6.3 Question 3) What are the main threats to biodiversity?

Lakes

The biggest problem lies in overfishing. Our fish resources are managed in a way that does not treat the ecosystem as a whole and does not pay enough attention to factors affecting the fish populations directly as well as indirectly (for example, the cormorants, the beavers).

Illegal fishing is still a problem as well.

The huge numbers of predatory fish are presumably responsible, among other things, for decreases in the populations of the European smelt in Lake Peipus, Lake Pskov and Lake Lämmijärv.

The joint effects of heat waves and eutrophication can produce unpredictable disturbances in the ecosystems of Lake Pskov and Lake Peipus, which would have a vast impact on the fish populations. The estimated effects of global warming can be positive as well as negative when it comes to Lake Peipus and Lake Võrtsjärv but it is very difficult to predict the actual outcome.[11]

The spreading of the Amur sleeper, an invasive alien species, is thought to be the result of human activity – fishermen use the sleepers for bait.

Running water

Land improvement – 1/3 of the Estonian land territory has been drained for agricultural and forest management purposes. Land improvement has changed the shape (morphology) and flow regime (hydrology) of bodies of water. As a result of the straightening of rivers, some bodies of water have got either entirely or partially new beds and become shorter. Most of the land improvement systems have been built already in the first half of the 20th century and reconstructed later on. Due to drainage ditches, artificially drained catchment areas drain faster than they would naturally, the spring floods are shorter, the low water periods drier. As a result of artificial draining, the water levels of rivers and brooks have usually been lowered as well, making the flooding period of the riverside meadows very short or destroying the floodplains altogether. As a result, spawning fish become fewer in number (in case of the northern pike, etc.) or disappear altogether and many land-dwelling species (for example, the black stork) become endangered as well due to the destruction of the normal food chain.

[10] http://www.envir.ee/orb.aw/class=file/action=preview/id=1194715/Joevahi+tegevuskava+2004-2010.pdf

[11] http://www.envir.ee/orb.aw/class=file/action=preview/id=1181492/Kliimamuutuste+m%F5ju+vee%F6kos%FCsteemidele+ning+p%F5hjaveele+Eestis.pdf

Barrages – The barrages built on the Estonian rivers are mainly used for the production of hydroelectricity. According to the Environmental Agency, there are more than 1,000 barrages in Estonia, 300 should be opened in order to improve the status of the hosting body of water. We are aiming at opening 60 barrages on rivers or sections of rivers that are home to Salmonidae. The barrages shall presumably be opened by 2015 (the necessary funds have already been allocated). 38 barrages have been opened at the moment. The barrages inhibit the movement of fish, making it impossible for the fish to reach their spawning and nursery grounds; because of raised water levels the rapids and valuable habitats disappear, artificial reservoirs full of sediments lower the water quality. River barrages pose problems for migratory and semi-migratory fish species like salmon, brown trout, semi-migratory whitefish, European river lamprey, vimba, the European eel, etc.

Eutrophication of watercourses – Eutrophication has many reasons. Historically, the most important causes of eutrophication have been effluents (from settlements and individual households) and diffuse agricultural pollution. The general pollution load has decreased mainly thanks to the lessening of industrial production and pressure from diffuse agricultural sources but also thanks to substantial long-term investments into the management of the Estonian water economy. Today, the water treatment plants and sewage systems of almost all bigger settlements and most small settlements have been either reconstructed or replaced with new ones. By the beginning of 2014, 99.6% of all effluents needing to be purified were indeed purified. Organic pollution now poses problems for only a few smaller rivers and brooks. Increased pollution charges and stricter requirements for waste water treatment have also helped to decrease pollution loads caused by effluents.

The main reason behind the spread of crayfish plague is human activity – the use of contaminated equipment in bodies of water that had not been affected by the disease before. Alien species living in our neighbouring countries are also extremely dangerous. Signal crayfish have been found in the continental part of Estonia as well as our islands – this species spreads the crayfish plague but is immune to the disease. The signal crayfish is also more aggressive, taking over the habitats of the local crayfish and reproducing faster. In recent years, we have been trying to remove the signal crayfish from the bodies of water in the continental part of Estonia. Our crayfish resources are also damaged by spoiled habitats, water pollution, an abundance of species dangerous to crayfish, illegal trapping, etc.

Impact of climate change – The effects of climate change are indisputable; however, when analysing the results of different scientific surveys,[8] we can see that the effects of climate change cannot be distinguished from other anthropogenic factors.

1.6.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts?

Due to changes in the species diversity and abundance of fish, the catch quota of fish species affected by commercial fishing have been reduced in recent years and the total catch volume has lessened significantly.

From 01.01.2010, the use of entangling nets is forbidden on lakes smaller than 100 ha.

In addition to commercial fishing, the number and species diversity of fish also influences recreational fishing and benefits resulting from it. Changes in the abundance of one species can produce changes in the abundance of other species as well. For example, the declining smelt populations of Lake Peipus, Lake Lämmijärv and Lake Pskov have caused the populations of fish species feeding on the smelt (pike-perch and northern pike) to decrease as well.

The eutrophication of bodies of water accompanied by an abundance of reed and blooms of blue-green algae reduces the recreational value of the bodies of water.

1.6.5 Optional question. What are possible future changes for biodiversity and their impacts?

1.7 THE SEA AND COASTAL REGIONS

1.7.1 Question 1) Why is biodiversity important for the country?

We are compiling a socio-economic analysis of the Baltic Sea and taking the first steps towards assessing the qualitative and/or quantitative value of the Estonian maritime space as a provider of ecosystem services.

The sea and coastal regions provide people with food – mostly fish but also agar-agar. Economically speaking, the most important species caught from the Baltic Sea are the sprat and the Baltic herring followed by the European perch, the pike-perch, the smelt, the flounder, the garfish, the roach, the Prussian carp and the vimba.

Coastal fishing is practiced in the Gulf of Riga, Gulf of Finland and Väinameri. Fishing quotas have been established for the Baltic sprat, the Baltic herring, the Eastern Baltic cod and the salmon. Other species caught from those areas include, for example, the European perch, the roach, the vimba, the pike-perch, the flounder and the garfish. The most important fish species of our coastal waters are the European perch, the pike-perch and the smelt but also the flounder and the vimba.

There are more than 3,000 professional fishermen working on the Baltic Sea, *ca* 2,600 engaged in coastal fishing and *ca* 600 in trawl fishing. Our fish resources are also used by recreational fishermen – the total number of recreational fishermen working on our bodies of water reaches approximately 306,000.

In 2013, 45,000 tons of fish were caught on the basis of fishing vessels' fishing permits, which made up 80% of the total yields of commercial fishing in Estonia. Coastal fishermen working on the sea and internal bodies of water caught 11,500 tons of different fish species – 20% of the total yields of commercial fishing in Estonia. There were 904 fishing vessels working on the Baltic Sea in 2012.

Coastal regions also have an important recreational value.

Coastal ecosystems are important feeding and resting areas for migratory birds.

1.7.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country?

The maritime territory under the jurisdiction of Estonia is a bit smaller than the land territory, totalling 36,500 km^2. 25,000 km^2 of it is made up by the territorial sea, supplemented by 11,300 km^2 of exclusive economic zones. The length of the Estonian coastline is approximately 3,800 km.

The biggest problems of the Baltic Sea but also the maritime territory surrounding Estonia are eutrophication and hazardous substances seeping into the marine environment. The HELCOM Baltic Sea Action Plan (until 2020) has been put together in order to protect the environment of the Baltic Sea; Estonia has established an implementation plan for 2012–2015[12]. As a result of international cooperation, we have managed to put the breaks on the contamination of the Baltic Sea in recent years. There are certain indicators suggesting that the situation is improving – for instance, increases in the populations of some endangered species, decreases in the amounts of certain hazardous substances (DDT and heavy metals), lessening of nitrogen and phosphorus pollution. In spite of decreases in the concentration of contaminants, the water quality has not improved significantly. This is attributed to contaminants and nutrients that have been accumulating in the bottom sediment for several decades but also to climate change. Due to those factors, the condition of the local bays is not going to improve rapidly.

Most of the 16 water bodies of the Estonian coastal sea are in poor condition; two bodies of water lying to the west of our islands are in good status, one (the Haapsalu Bay) is in bad status. Compared to 2007, the

[12] http://www.helcom.fi/Lists/Publications/BSEP122.pdf

status of some other bays (the bays of Tallinn, Pärnu and Narva), which were in a bad ecological state, has improved. The overall status is worsened by phytoplankton and the poor quality of water. The status of macroinvertebrates is good throughout our coastal waters; the status of phytobenthos is poor in only two bodies of water (the Haapsalu Bay and the Narva-Kunda Bay) and good in the rest of them.

As a result of sustainable fishing and different administrative measures, the Baltic herring population is increasing. Our Baltic herring resources have been in good status in recent years, the sprat resources have diminished, however. The lessening of our sprat resources is attributed to changes in the ecosystem (increases in the population of the Eastern Baltic cod). The Eastern Baltic cod population has been in poor status for quite some time. This has been attributed to climate change and overfishing. In 2007, the Council of Europe adopted a management plan for the cod stocks, seeking to reduce the amount of cod caught from the Baltic Sea gradually. As a result, the cod population has been increasing in recent years, finally reaching its long-run average level. Our wild salmon resources are still in bad status. The main reasons behind this are the obstructions built on our rivers and brooks, which inhibit migration, and the decreased number of spawning grounds (see more in 1.4.3).

The stocks of fish species of importance to coastal fishing (the European perch, the pike-perch, the vimba, the smelt) are generally in a poor state; the status of our flounder resources is good, however. The stocks are damaged by overfishing; the mortality rate of fish living in Väinameri is quite high because of the local cormorant population (14,655 pairs) and, more recently, also the growing population of the grey seal. The abundance of grey seals (the species belongs to the third category of protected species and is listed in the second and fifth annexes of the Habitats Directive) has been increasing steadily throughout the Baltic Sea already for a decade, amounting to 37,000–50,000 individuals.

The shortening ice seasons of the Baltic Sea are dangerous, first and foremost, to the ringed seal (the species belongs to the second category of protected species and is listed in the second and fifth annexes of the Habitats Directive), for many newborn cubs die if the ice melts too quickly.

The European perch resources of the Pärnu Bay are probably affected by an alien species, the Harris mud crab, but there are no concrete surveys of the influence of this species. The round goby has reached the Estonian waters as well – their population has increased rapidly in the Muuga Bay.

The most important areas of human activity affecting the sea include overfishing, shipping and, more recently, activities connected with energy (e.g., electric cables, wind farms and gas pipes).

Coastal ecosystems are also still influenced by housing developments and the resulting reduction of the natural buffer zone.

The industrial and agricultural pressure on the environment has decreased due to the reduction of production. The substantial improvement of wastewater treatment and use of environment-friendly technologies have made the situation much better. As of 01.01.2013, 99.6% of the water that needs to be purified is indeed purified.

The restocking of salmon and sea trout is supported at the state level. In 2013, the sate decided to start supporting the restocking of the European sea sturgeon as well.

As of 01.01.2014, 27% of the Estonian territorial sea belongs to the Natura 2000 network. Judging by the Habitats Directive reports from 2007 and 2013, all protected sea habitats are in a favourable status.

1.7.3 Question 3) What are the main threats to biodiversity?

Overfishing – At the moment, the main reason behind the decreasing fish resources is overfishing; illegal fishing poses problems as well but mostly for internal bodies of water. However, there have been major changes in the way our fish resources are managed in recent years. Several electronic databases have been either established or improved: an electronic reporting system (ERS) for data connected with fishing; a vessel monitoring system (VMS) using satellites; a database system established by the Environmental Inspectorate for the inspection of different objects (OKAS). All of these databases make the monitoring and organisation of the realm more efficient. The ERS allows the captains of fishing vessels to forward their

fishing data electronically, straight from the ship. As a result, the transmission of data becomes faster, which helps to make the surveillance, inspection and monitoring activities significantly more efficient on land as well as at sea. There are also separate databases recording all fishing authorisations (professional as well as recreational) and the amount of fish caught.

Climate change – Based on a study from 2013[13], the impact of climate change is bigger than the effect produced by a decrease in the amount of nutrients – therefore, the transparency of the water is still reducing. Due to climate change, the direction and intensity of winds have changed; the mixing of the bottom layers of water has increased, as has the movement of nutrients and pollutants from the bottom sediment into the surface layers. A recent simulation shows that the water quality of the Baltic Sea will keep deteriorating if the concentration of nutrients remains at the current level. As the inflow of oxygen-rich salty water reduces, anoxia becomes more severe in the bottom layers, increasing the concentration of nutrients and the amount of phytoplankton in the surface layer of the sea. If we are able to implement the most important measures of the HELCOM Baltic Sea Action Plan meant to reduce the nutrient load, the water quality of the Baltic Sea shall improve by the end of this century and the water transparency shall increase to 1 m (max) in the middle regions of the Baltic Sea.

Without questioning the strong impact of climatic factors on changes in water ecosystems, the European Commission guidance on river basin management in a changing climate notes that the effects of climate change are so minor that it is very difficult to distinguish them conclusively from other anthropogenic influences.

Ship accidents – It is quite difficult to navigate on the Baltic Sea. Accidents with hazardous loads can destroy vulnerable coastal communities and biota.

1.7.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts?

The deterioration of the status of our fish resources and the continuing reduction of fishing opportunities are the main threats to the local fishing sector when it comes to the Baltic Sea. Compared to 2008, catch volumes have been steadily decreasing in Estonia. This mostly concerns the Baltic Sprat and Baltic herring due to a significant reduction of fishing opportunities allocated to Estonia.

Considering the status of our water bodies, we can expect extensive blooms of the blue-green algae, flourishing algal mats and the destruction of the biota due to a lack of oxygen in the following years as well.

In some regions, the coastal territories are harmed by intensive human activity in recreational areas – many sandy beaches are growing over with reed due to land-based diffuse pollution and the abundance of nutrients in seawater. Coastal meadows are growing over with scrubs and reed because they are not regularly grazed any more. There are also areas where the natural coastline has got in the way of housing developments. All those factors lower the quality of ecosystem services offered by coastal territories as natural recreational areas, and make the maintenance of the appropriate quality more expensive. Furthermore, the ability of the coastal ecosystems to buffer extreme weather conditions brought on by climate change is thus diminished as well.

1.7.5 Optional question 5) What are possible future changes for biodiversity and their impacts?

There is no reason to expect big and fast improvements in the water quality of the Baltic Sea. The eutrophication of the marine ecosystem is still causing the ecosystems of our coastal regions to deteriorate.

[13] http://www.envir.ee/orb.aw/class=file/action=preview/id=1181492/Kliimamuutuste+m%F5ju+vee%F6kos%FCsteemidele+ning+p%F5hjaveele+Eestis.pdf

1.8 ISLAND ECOSYSTEMS

1.8.1 Question 1) Why is biodiversity important for the country?

Historically speaking, people living on islands have depended mainly on fishing and livestock farming. Today, the economy of islands is mostly based on tourism and in case of bigger islands, also agriculture and forestry. Island landscapes are characterised by semi-natural communities.

In recent years, different subsidies have played an important part in the economic model of island communities, including support for the maintenance of semi-natural communities and preservation of the biological diversity of forests and agricultural land belonging to the Natura 2000 network.

1.8.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country?

The peculiarity of the Estonian islands lies in the fact that they are set on calcareous rock, are quite young and have formed in the midst of moderate yet constant human activity.

As a result of the agricultural and forestry-related activities of the last millennia, very little has remained of the purely natural vegetation of our Western-Estonian islands – instead, extensive agriculture has brought about extremely diverse semi-natural communities discussed in more detail in the chapter talking about grasslands. Approximately 8% of the total territory of our islands is covered with semi-natural communities. The most valuable semi-natural communities are coastal meadows, alvars and wooded meadows. The management of the semi-natural communities depends on subsidies. We are planning to launch an extensive LIFE project in order to restore, among other things, the semi-natural communities of our islands situated on private land.

Due to the fact that the Estonian islands lie quite close to the mainland, there are few endemic species typical to islands. Our biggest island, Saaremaa, is home to an endemic species, the Saaremaa yellow rattle (*Rhinanthus osiliensis*). The conservation needs of the Saaremaa yellow rattle were mapped in 2013. Even though the researchers were unable to find the species in 21 of the 77 recorded sites, they discovered 23 new habitat sites.

In order to protect and value the nature of our islands and promote sustainable nature management, Estonia has established the West Estonian Archipelago Biosphere Reserve. Also, a sustainable development programme has been put together for this reserve for the period of 2013–2020. The reserve incorporates the West Estonian islands (1,244 of them) and the sea surrounding them (totalling 4,038 km^2) – an area that makes up about one tenth of the Estonian territory. Our islands are important preservers of cultural diversity, for the local customs and traditions have often been preserved better than anywhere else in Estonia.

Hiiumaa, the second biggest island of Estonia, is home to the only known wild population of the European mink in Europe.

The main threats to our island ecosystems are changes in land use and the increasing pressure of human activity. Compared to the last reporting period, the danger is diminishing, however, thanks to the implementation of support schemes for the restoration and maintenance of semi-natural communities. The maintenance of semi-natural communities provides the locals with additional income.

1.8.3 Question 3) What are the main threats to biodiversity?

There are two main reasons behind changes in land use:

1) Semi-natural communities that are not properly managedd become overgrown with scrubs, then with forest.
2) Recreational pressure on coastal areas and small islands (summerhouses, tourism).

1.8.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts?

When semi-natural communities diminish and become fragmented, they become unsuitable for the long-term preservation of many species at some point, which means that the genetic diversity will diminish quickly.

If traditional landscapes and sceneries are destroyed (semi-natural communities that are not properly maintained disappear, coastal areas are covered with buildings), it is likely to have a negative effect on the tourism potential of the affected area.

1.8.5 Optional question. What are possible future changes for biodiversity and their impacts?

See section 1.5.5 for connections with semi-natural communities.

1.9 URBAN ECOSYSTEMS

1.9.1 Question 1) Why is biodiversity important for the country?

The importance of urban ecosystems becomes apparent, first and foremost, in connection with urban green spaces – they offer aesthetic pleasure, recreational activities, cleaner air, noise reduction, etc. Other aspects are not as clearly felt, however – for example, the role played by pollinators in the life cycle of fruit trees, the fact that green spaces help to prevent problems with rainwater and function as wildlife corridors, etc.

Environmental strategies have been established for two of our largest cities, Tallinn and Tartu. One of the most important objectives of the environmental strategy of Tallinn[14] is winning the title of the European Green Capital by 2018. Therefore, one of the goals of the strategy is to preserve and enhance biological diversity.

1.9.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country?

70% of the Estonian population lives in urban settlements and cities. The Estonian cities are small and have many elements typical to garden cities – therefore, their ecosystems are also quite diverse.

Urban biota has not been thoroughly researched – the surveys are usually limited to specific protected natural objects and species. Most of the information gathered about urban biota comes from random nature observations (mostly bird observations) and surveys of green areas in new developments. The biggest number of surveys and overviews is available for Tallinn but even that city has not been researched enough. The strategic analysis of the urban biota of Tallinn[15] was completed in 2010, becoming the basis for the Tallinn Environmental Strategy until 2030 and a new development plan.

According to the Tallinn Environmental Strategy, the areas of the green network are diminishing and becoming fragmented, biological diversity is decreasing, recreational pressure on protected areas increasing. The main reasons behind the negative changes are the increased pressure of development activities, insufficient attention paid to biological diversity during the planning stage and at the renovation/construction of energy-efficient houses, but also a limited knowledge of the essence of the urban ecosystem, its benefits and the necessary components for the proper functioning of the ecosystem.

During the last seven years, the territory covered by green areas has reduced by approximately 13.6 m^2 per resident in Tallinn but the aesthetic appearance of those areas has improved.

The abundance of species whose habitats are connected with buildings (for example, the house sparrow, the common swift and the house martin) is diminishing.

[14] https://oigusaktid.tallinn.ee/?id=3001&aktid=120867&fd=1&leht=1&q_sort=elex_akt.akt_vkp

[15] http://www.seit.ee/failid/686.pdf

1.9.3 Question 3) What are the main threats to biodiversity?

The city's green network needs to be made more efficient. Even though there is a thematic spatial plan titled "Environmental factors affecting the settlement patterns and land use", which lays down the green network of the city of Tallinn, the plan has not been adopted.

Comprehensive planning is usually changed via detailed planning. However, as the amount of available information regarding the biological diversity of the territory has remained rather limited during the compilation stage of the comprehensive spatial plan, there is also no information about whether the compilation of the detailed spatial plan requires additional surveys and no adopted spatial plan for the green network; therefore, the decisions are often based on incomplete information, increasing the fragmentation of the green network and worsening the status of the habitats in the area subject to planning.

Until recently, the popular building methods and materials enabled different species to inhabit the structures of buildings. However, as the building methods and materials become more energy-efficient, habitats suitable for urban biota disappear, resulting in the reduction of biological diversity.

1.9.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts?

Green areas are often placed far away from residential buildings; there are few green areas in bigger cities, the biological diversity of urban environments is steadily decreasing – all these factors contribute to urban sprawl and the problems resulting from it.

Natural areas disappear, the ground is covered with asphalt. This makes it harder to get rid of the rainwater, which is a problem plaguing some of the bigger cities.

1.9.5 Optional question. What are possible future changes for biodiversity and their impacts?

1.10 LANDSCAPES

1.10.1 Question 1) Why is biodiversity important for the country?

Our landscapes are one of the main riches of the Estonian nature. Vast mires and forests and hilly moraine landscapes are supplemented by extremely diverse and aesthetically pleasing coastal landscapes that have been shaped by the joint impact of Nature and man. According to a survey of nature tourism in Estonia, 56% of Finnish tourists, for example, are induced to come to Estonia by the local nature.

Landscapes "transcend" the ecosystems, being the joining link between the different types of ecosystems discussed in this report.

1.10.2 Question 2) What major changes have taken place in the status and trends of biodiversity in the country?

When it comes to biological diversity, the most important landscapes are those of national parks and landscape protection areas. In order to preserve biological diversity and ensure favourable conditions for endangered species and habitats, 18% of our land territory and 27% of our territorial sea has been placed under protection. See more about the division of the protected areas in chapter 2.3.6 g) Protected areas.

A thematic spatial plan titled "Environmental factors affecting the settlement patterns and land use" has been compiled in order to maintain the coherence of the green network and preserve valuable agricultural land; the actual effect of the plan has remained modest, however. The fragmentation of natural habitats is still causing problems. We have launched several practical studies aiming at assessing the efficiency of the green network at the preservation of different species.

The visual pollution of landscapes (abandoned buildings, agricultural and military structures), polarisation of land use (ruined wastelands, areas that are exploited too rigorously – for example, territories affected by

urban sprawl and constructional pressure or the increasing number of visitors in coastal areas) and scrub growth are causing problems as well.

1.10.3 Question 3) What are the main threats to biodiversity?

The visual pollution of landscapes – Abandoned buildings, agricultural and military structures (including sources of residual pollution) are mostly relics from the Soviet period. Even though the situation has improved significantly compared to the last reporting period, the problem still persists. Since 2012, the Environmental Investment Centre has funded the dismantling of buildings marring the landscapes with *ca* 2 million euros (60 projects).

Polarisation of landscapes – Some parts of the land have become ruined wastelands, other territories are exploited too rigorously – for example, territories affected by urban sprawl and constructional pressure or the increasing number of visitors in coastal areas. The latter two were especially problematic during the economic boom. The pressure seemed to be decreasing during the recession but has now started to increase once again. Ruined wastelands are now addressed systematically – in addition to other elements, the possibilities and effects of mine closure are analysed as well during the environmental impact assessment at the beginning of mining activities. Exhausted and abandoned peat fields, totalling almost 10,000 ha at the moment, are presenting problems as well.

Agricultural production is becoming more intensive in Estonia – due to that, the production has concentrated in more fertile territories whereas the areas that are not as fertile lie fallow and become overgrown with scrubs.

1.10.4 Question 4) What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts?

Even though the effects of the visual pollution of landscapes are indeed mostly visual, they are often accompanied by environmental pollution (water and soil pollution) as well (due to sources of residual pollution).

1.10.5 Optional question. What are possible future changes for biodiversity and their impacts?

2. CURRENT STATUS OF NATIONAL BIODIVERSITY STRATEGIES AND ACTION PLANS

2.1 QUESTION 5) WHAT ARE THE BIODIVERSITY TARGETS SET BY THE COUNTRY?

NCDP, which acts for Estonia also as a biodiversity strategy, sets three strategical biodiversity targets:

1) People are familiar with, appreciate and conserve nature and know how to use their knowledge in their daily lives;
2) The favourable conservation status of species and habitats and diversity of landscapes is ensured and habitats are functioning as a coherent ecological Network;
3) Long-term sustainability of natural resources is ensured and the principles of the ecosystem approach are followed in the use of natural resources.

To achieve the targets, defined measures/actions with the terms for the implementation of the terms and indicators of the objectives are set. Measures set out in NCDP are specified by the area-specific development plans (Annex X overview of development plans). For NCDP indicators, see Annex 4 and for measures, see Annex 5.

2.2 QUESTION 6) HOW HAS THE NBSAP BEEN UPDATED TO INCORPORATE THESE TARGETS AND TO SERVE AS AN EFFECTIVE INSTRUMENT TO MAINSTREAM BIODIVERSITY?

The Global Biodiversity Strategy targets are generally introduced in the Estonian Environmental Strategy 2030 that was approved in 2007 and its Action Plan for 2007–2013. The Environmental Strategy and Action Plan have not been amended since the last report.

For achieving the nature conservation objectives of the Environmental Strategy, NCDP was prepared in 2012 and strategic and guiding targets of global biodiversity (Aichi Biodiversity Targets) and the EU Biodiversity Strategy is the basis for setting targets and establishing measures and indicators. Regarding the Environmental Strategy targets, see the IV National Report; regarding the NCDP targets, see the answer for Question 5.

2.2.1 Are the problems specified in Part I of the report addressed in the amended Biodiversity Strategy?

NCDP takes into account the problems as specified in Part I. Table 1 gives an overview of the most important threats/pressure measures by ecosystems and sets out the key actions that NCDP foresees to deal with them. More detailed measures to deal with the threats are presented in sectoral strategies, development plans and implementation plans. Most important among them are the RDP, Forestry Development Plan, Fisheries Strategy, and the National Fisheries Management Plan.

Table 1. Overview of the most important measures in the 2020 NCDP regarding the main pressuring measures / threats to ecosystems.

Ecosystems	Main threats	What NCDP foresees for dealing with the threats

Agricultural ecosystems	• Agricultural intensification • Loss of local breeds and varieties	• Raising of Farmers' awareness (lectures, information days, materials). • Development and implementation of necessary economic measures to preserve the biodiversity: including favouring of environmental friendly agricultural methods; species conservation (corncrake, etc.), development and implementation of support measures. • Natura agricultural subsidies, and development and payment of subsidies for semi-natural communities. • Supporting of restoration and management of semi-natural communities. • Ensuring the genetic diversity of the species. • Ensuring soil biodiversity.
Forests	• Unsustainable forest management • Forest drainage • Climate Change • Habitat fragmentation • Visit pressure on protected forests	• Ecosystem conservation in commercial forests. • Development and implementation of necessary economic measures to preserve the biodiversity: including the development and implementation of the concept of high nature value areas and their support mechanisms. • Development and payment of Natura private forest subsidies. • Development of compensation measures for forestry restrictions on protected areas outside the Natura 2000 network. • Ensure sufficient representation of all forest habitat types and species on protected areas. • Analysis of Green Network performance and, if necessary, planning of further activities. • Prevention of habitat and track fragmentation (development and integrated implementation of prevention, mitigation and compensation measures). • Estimating the impact of climate change on the spread of alien species, sensitive species and habitat status and development and implementation of mitigation measures for the climate change impacts (preparing of strategy for climate change adaptation and implementation plan). • Improvement of nature tourism infrastructure.

Mires	• Drainage • Peat extraction • Industry and pollution • Climate change	• Restoration of hydrological regime of endangered mire habitats on protected areas. • Restoration of damaged ecosystems, including mires (prioritizing of the restored areas, preparing of plans for restoring cutover peat lands and improvement of implementation and restoration methodologies). • Drawing up of action plans for endangered habitat types (including mires). • Cleaning and restoration of abandoned extracting areas owned by private owners, and development and implementation of motivational mechanisms. • Development and implementation of methodologies to specify the rates of peat extraction, which is based on the concept of the resource of peat as a non-renewable resource.
Grasslands	• Change of traditional land use (ending of management) • Drainage	• Preparing of action plans for endangered habitats (prepared). • Restoration and management of semi-natural communities. • Improvement and payment of management subsidies. • Performance analysis of protected natural objects. • Prevention of fragmentation of habitats and pathways (development of prevention, mitigation and compensatory measures).
Inland waterways	• Great fishing effort • Illegal fishing • Climate change • Land improvement works • Barriers (dams) • Eutrophication • Alien species	• Drawing up of action plans for endangered habitats (including rivers and lakes). • Restoration of spawning grounds for fish and improvement of their quality, opening up of migration routes and restoration of favourable status of habitats. • Restoration of endangered species in fish farms until their natural reproduction is sufficient. • Prevention of getting the invasive alien species into the wild, development of the monitoring, development and implementation of control measures. • Clarification of the impact of climate change on invasive alien species, status of sensitive habitats and species, and the development and implementation of mitigation measures.

Sea and coastal areas	• Eutrophication • Overfishing • Ship accidents • Barriers to migration (highly migratory species) • Alien species • Climate Change	• Mapping of endangered sea habitat types and ensuring their protection. • Prevention of contamination during transport, including improving and keeping control readiness of maritime safety. • Drawing up of wildlife rescue plan and its integration in the national contingency plan • Identification and mitigation of the effects fracturing ship waves and moving sediments • Clarification of the impact of climate change on the spread of invasive species, sensitive habitats and status of species. • Measures to reduce agricultural diffuse and pollution are designated in RDP 2014–2020, to reduce residual contamination in the Waste Management Plan until 2030.
Islands	• Change of land use • Recreational pressure to coastal areas	• Preparation and implementation of the West-Estonian Archipelago Biosphere Site Program. • Restoration and management of semi-natural communities. • Analysis of efficiency of coastal and shore protection measures, implementation of additional measures, if necessary.
Cities	• Development • Planning	• Development of planning guidelines that take into account the diversity of city biota.
Landscapes	• Littered landscapes • Polarisation of land use (part of the land wasteland, part of it with high using intensity, part is not managed) • Landscape fragmentation	• Preservation of landscape heritage. • Ensuring the preservation of protected landscapes, including parks. • Cleaning of littered areas and liquidation of littering individual elements. • Analysis and development of ecological coherence of the habitat network. • Green Network performance analysis and planning of the additional actions if necessary.

2.2.2 Was the guidance provided in decision IX/8 taken into account when amending the biodiversity strategy?

It has been generally considered.

(a) NCDP is practical – it has targets, activities for achieving goals and deadlines. Specific yearly actions are set out in the implementation plan of NCDP.

(b) NCDP is consistent with the Rio Declaration.

(c) NCDP refers to the development plans, in the framework of which specific measures will be developed.

(d) NCDP does not address gender differences.

(e) NCDP engages indirectly to poverty reduction (subsidies, active measures to enhance biodiversity).

(f) NCDP sets three strategic targets on the compatibility with the BMK.

(g) NCDP sets the yearly development plans costs over the years. Resources are specifically addressed in the implementation plan and in different sub-action plans. For example, a detailed plan of priority actions in relation to the Natura 2000 network (it is also shown where it is possible to get financial cover for the planned activities) has been drawn up. Action plans for habitats are being drawn up. Action plan for semi-natural communities has been prepared and action plan for mires is under preparation.

(h) NCDP is based on ecosystem approach.

(i) NCDP discusses the ecosystem services that biodiversity provides. Human welfare and poverty reduction are less discussed. NCDP focuses on the problem of identification of issues and on the development of measures needed to solve the problems.

(j) NCDP focuses on measures that decrease biodiversity directly and indirectly, and on planning of activities that are necessary to eliminate them.

(k) NCDP refers to areas, with more specific objectives, as defined in the relevant development plans, such as in RDP, Forestry Development Plan.

(l) Monitoring report of implementation of Environmental Strategy 2030 is being prepared. After completion of the implementation plan of the NCDP, the implementation of NCDP will be monitored.

(m) Various interest groups, experts from universities and the business sector were participating in the drafting of the NCDP.

(n) Regarding the Convention, there are no indigenous and local communities in Estonia and that is why they could not be involved.

(o) It has been generally discussed in the NCDP how the NCDP monitoring will be carried out. Mechanisms for carrying out the monitoring are available. At the moment, the periodic monitoring of Environment is being carried out. The monitoring report is drafted every three years, and in the meanwhile an interim reports is also drafted.

(p) A separate NCDP communication strategy has not been drafted, but the document is made available and easily discoverable on the websites of the Ministry of Environment and Biodiversity Information Network; the completion of NCDP has been announced through the media and is referred to frequently.

(q) There is a strategy for sustainable development since 2005 - Sustainable Estonia 21, with four main targets: 1) Viability of Estonian culture; 2) Growth of well-being; 3) Cohesive society; 4) Ecological balance. For adaptation to climate change a strategy for climate change adaptation is being prepared, which was started in 2014 and should be completed in 2016.

(r) The EU has prepared its Biodiversity Strategy on the basis of a global strategy. NCDP has been drafted taking into account both the global and the EU biodiversity strategy.

(s) Drafting of a biodiversity strategy at the local level is not planned, but national Biodiversity Strategy targets and biodiversity values are taken into account in preparing county and general plans.

(t) Performance indicators for achieving the objectives are presented in the Estonian Environmental Action Plan for 2007–2013. NCDP sets performance indicators for three main targets. In addition, the indicators are set in sectoral development plans / strategies. Estonian environmental indicators have been developed based on local needs, they are not directly comparable to the EU or global indicators, and this is why it is difficult to monitor progress. An overview of Estonia's sustainable development indicators has been issued[16]. The last review of the year was completed in 2011.

(u) Biodiversity targets set in NCDP will be monitored after the completion of the implementation plan.

(v) NCDP can be found on Biodiversity Information Network home page.

2.2.3 How an updated NCDP could achieve the integration of biodiversity considerations into broader national plans, programmes and policies.

NCDP provides general trends and areas of action that need to be addressed in order to achieve the biodiversity targets. For areas that affect the biodiversity the most, sector-specific development plans are drawn up where the targets and measures for achieving the biodiversity objectives are specified. The most important area-specific development plans and programs are discussed under answer 10, for more information on strategies and development plans, see chapter 2.4. At least 63 strategic documents support Estonian development, most of them are for the period 2007–2013, and developments plans for the period 2014–2020 have been prepared or being prepared.

2.3 QUESTION 7) *WHAT ACTIONS HAS THE COUNTRY TAKEN TO IMPLEMENT THE CONVENTION SINCE THE LAST REPORT AND WHAT HAVE BEEN THE OUTCOMES OF THESE ACTIONS?*

2.3.1 Strategies and development plans

NCDP was approved in 2012. Review of development plans and other strategic documents that directly address the implementation of the strategy targets is given under response to question 10

2.3.2 Institutions

In 2009, the National Conservation Centre and local environmental services were connected and the The Environmental Board was formed; its main tasks include management of protected natural objects, including organization of activities resulting from the protection procedure and management plans, nature studies, introduction of objects and monitoring of compliance with the protection procedure.

Since 2009, State Forest Management Centre carries out practical nature conservation works.

In 2010, the Environmental Information Centre was established by joining the Environment Information Centre of Ministry of the Environment and of Centre of Forest Protection and Silviculture. In 2013, EMHI (Estonian Meteorological and Hydrological Institute) was also joined, and the institution was named the Environmental Agency. The main task of the institution is the national organization of monitoring and reporting and keeping of the environment register. Data collection has been systematized and data availability improved.

2.3.3 Legislation

The founding act of nature conservation is the Nature Conservation Act, approved in 2004. In 2013, an amendment to the Act came into force, according to which the state has 28 months left to decide whether the land, which has been proposed for taking under protection should be taken under protection or not. Suggestions, objections and decisions have to be better explained. In the amendment, the shore path was also specified better. With the consent of the local authority, the possessor of an immovable located on the

[16] http://www.csrway.ee/raport/saastva-arengu-naitajad/

shore or bank may restrict access to the shore path or bank path in the event of a reasoned need such as herding animals or drainage of land, but must make it possible to pass over or through the barrier for the purpose of moving along the shore path or bank path.

Amendment to the Act also applies to supplementary feeding of wild game in national parks, nature conservation areas and species protection sites, which requires the consent of the manager of the protected natural object. The purpose of the restriction is to reduce the damage caused by animals to protected endangered species.

In the autumn of 2013, an amendment to the Forest Act took effect; the purpose of the amendment was to make forest management more sustainable.

Since 2006, the Environmental Charges Act applies. The purpose of the implementation of environmental charges is to prevent or reduce possible damage arising from the use of natural resources, environmental pollutants and waste disposal. Environmental charges are paid according to statutory charge rates. In determining natural resource charges, resource status, location of use, quality, deficiency, and way of use, environmental hazards and the need for protection of other natural resources are taken into account. Pollution charge rates are established taking into account the sensitivity of the site of emissions, hazards of the pollutant and the use of BAT. Environmental charges shall be distributed to the extent provided by law between the state budget and the budgets of local governments of the environmental use. Environmental charges received to the state budget will be used to maintain the status of the environment, to restore natural resources and remedy environmental damage. Money received from the use of renewable natural resources (fish stocks, growing forest, and wild game) is directed to the restocking and protection of these resources.

The share of environmental charges amounted to 2.8 percent of GDP in 2012. Since 2008, the share of GDP of the environmental charges exceeds the EU average. More than three-quarters of the environmental charges are formed by fuel duty. Money received from electricity duty, and water, air and waste contamination taxes is a bit smaller. Other environmental charges (fee for cutting growing forest, mineral extraction charges, water abstraction charge, fishing charge, a charge for hunting rights) were smaller in comparison with fuel and electricity duty and pollution charges.

The new Hunting Act took effect in 2013. The purpose of the new Act is cooperation between hunters and landowners. The Act provides a basis for the hunting society and the landowner agree on what conditions, and how hunting is carried out on the landowner's land. One part of the agreement should also be how to prevent damage by wild game and how the damage is compensated. This is a flexible opportunity to submit demands to hunters on how to use the land. The Act also creates the possibility to replace the user of the hunting license. Under the Act, provincial hunting councils were created, consisting of hunters, landowners and state representatives.

2.3.4 Funding

Biodiversity conservation is mainly funded via different EU funds, the Environmental Investment Centre Environment Programme and the state budget.

Since 2007, the EU has significantly increased funding for biodiversity funding. The greatest biodiversity funders are the European Agricultural Fund for Rural Development (EAFRD), which finances the RDP measures. If under RDP 2004–2006 measures that were directly targeted for biodiversity were funded – to support areas with environmental restrictions in the sum of 0.8 million euros, then, in the framework of RDP 2007–2013, three measures that were directly aimed at conserving biodiversity were funded:

- The subsidy for the management of semi-natural communities paid for semi-natural communities located on Natura 2000 areas. This is an agro-environmental subsidy. Subsidy for the management of wooded meadows is 238 EUR/ha per year; for other semi-natural communities it is 186 EUR/ha per year. In case of subsidy for the management of semi-natural habitats for one site, other Common Agricultural Policy (CAP) area-based payments cannot be taken. In 2012, management

support for 25,000 ha was paid in total of 4.4 million euros. The total budget for 2007–2013 is 26.8 million euros.

- Natura 2000 subsidy for private forestland is paid to compensate for nature conservation restrictions of forest management for lost revenue. Subsidy rate is 110 EUR/ha per year, or 60 EUR/ha per year, depending on the extent of the restrictions. In 2012, subsidies were paid for 55,000 ha in total of 3.7 million euros. The total budget for 2007–2013 is 25.5 million euros.
- Natura 2000 subsidies for agricultural land are paid to compensate for nature conservation restrictions. Subsidy rate is 32 EUR/ha per year. In 2012 subsidies paid for 23,000 ha in 0.8 million euros. The total budget for 2007–2013 is 8.7 million euros, and it is paid in addition to other area-based CAP subsidies.

For endangered breeds of livestock a total of 0.4 million euros were paid for the period 2004–2006, for the period of 2007–2013, the total budget for endangered breeds of livestock and the cultivation of local varieties of plants was 4.4 million euros.
Environmental subsidies were paid in the sum of 80 million euros from the RDP budget during the period of 2004–2006. During the period of 2007–2013, the preservation of environment and locality was funded in the sum of 328 million euros (or 35%) from the RDP budget.

The European Regional Fund (ERF) funded biodiversity and landscape preservation in the sum of 1.5 million euros during the period 2004–2006. During the period 2007–2013, 22 million euros are planned for the preservation of biodiversity, drawing up of management and action plans, development of infrastructures and making investments in protected areas, including habitat restoration, habitat preservation required for maintenance of equipment and livestock acquisition, investments for Ex-situ species protection, control of alien species, restoring and reconstruction of protected parks and reconstruction of infrastructures for visitors.

During the period 2007–2013 improvement of watercourses, including inventory of barriers on waterways, removal of barriers, construction and reconstruction of fish passes, with the purpose of ensuring the free movement of fish in watercourses was in total of 23.6 million euros from the Cohesion Fund (CF).

The measure of environmental monitoring and data acquisition was funded from ERF (2007–2013) in the amount of 1.5 million euros. The purpose of the measure is to develop tools for management, using and publicising of monitoring data including monitoring data of wildlife.

The development of environmental education is also funded from the EU 2007–2013 funds. Infrastructure development of environmental education was funded in the sum of 23.9 million euros from the ERF, regional environmental education centres were built with the help of this subsidy. The development of environmental education was funded in the amount of 3 million euros from the European Social Fund (ESF).

The European Fisheries Fund (EFF) for the period 2007–2013 is funding activities supporting biodiversity, such as restoration, maintenance, extension and improvement of spawning grounds and establishment of artificial spawning grounds and fish introduction.

In the framework of the environmental protection and technology, and research and development program, (KESTA) (ERF) two biodiversity projects with a total budget of 1.1 million euros were funded: applied research of nature conservation and in the context of nature conservation of dynamics of living systems. Research is also funded under the Seventh Framework Programme.

As of 01/01/2014, 6 conservation project have been funded from the LIFE+ fund during the period 2017–2013, and 3 million euros have been allocated to the Estonian partners by the Life+ programme. In the framework of the projects Emajõe old rivers, spring fens, habitats of *Leucorrhinia pectoralis* and *Pelobates fuscus* have been restored or are under restoration; infrastructure for the sustainable management of Pärnu coastal meadow is under construction.

INTERREG has funded nature conservation projects in the period 2007–2013 for more than one million euros. In addition to this, nature conservation activities are funded from the Swiss Cooperation Programme and the financial mechanisms of the Norwegian and European Economic Area.

Through Environmental Investment Centre (EIC), subsidies are paid out from the national Environmental Programme, which collects money from environmental charges (part of the environmental charges are directed for paying environmental loans). According to the State Statistical Office, 484.3 million euros of environmental charges were collected to the state.

Since the implementation of the ecological tax reform in 2005, the share of the environmental taxes in gross domestic product has increased from 2.3% to 2.8% by 2012, exceeding the EU average share of environmental taxes in 2008.

The Environmental Programme supports 10 environmental areas. Nature Conservation Programme is directly related with biodiversity but also other programs have a greater or smaller impact on biodiversity – water management, waste management, environmental management, forestry, fisheries, environmental awareness, protection of atmospheric air, maritime and ground source programs. During 2008–2013, 234 million euros were allocated from the environmental program, 31 million euros of the amount was allocated via the Nature Conservation Programme. In 2013, 838 projects were supported for 37 million euros, including from the Nature Conservation Programme 141 applications for 5.9 million euros.

As of 25.09.2013, the EIC has given loans with an intended purpose for 113 clients, with the loan portfolio of 103 million euros. Loan focus has been directed at local authorities and water companies for the development of water management projects.

Monitoring, reporting, planning of conservation of wildlife, evaluation of protection performance, protection work, international cooperation, promotion of awareness of nature etc. is funded from the state budget. During 2007–2013, more than 4 million euros were allocated for these activities.

Woodland key habitats on private land are also funded from the state budget. A landowner can enter into a 20-year notarial agreement, under which the compensation is paid to the landowner for loss of earnings. As of 01.01.2014, the area of woodland key habitats on commercial forest area was 8,900 ha, about 5% of key habitats on private land were covered with key habitat protection agreements and payments were made for 148,000 euros (in 2007: 54,000 euros).

2.3.5 Cooperation mechanisms

International cooperation

Estonia has joined the following nature conservation agreements during the period 2007–2013:

1) The World Conservation Union - 2007;

2) African-Eurasian Migratory Water birds Protection Agreement (AEWA) - 2008;

3) The Convention on the Conservation of Migratory Species of Wild Animals (CMS) - 2008;

4) The International Convention for the Regulation of Whaling (IWC) - 2009;

Estonia is a member of the European Network of Wilderness Areas since 2009 - the PAN Parks network, with one area - Soomaa National Park.

Estonia is a member of the European Federation of National Parks and Protected Areas (Europarc Federation). The Environmental Board as the legal successor of the Lahemaa National Park administration is the representative of federation since 2009.

Biodiversity conservation co-operation is the closest with Latvia and Finland.

National cooperation

National co-operation is mainly done at the level of ministries in preparing strategies, plans and thematic programs. The Ministry of Environment for example has been involved in the drafting of the Transport Development Plan, Estonian Environmental Protection and Innovation Strategy and its Environmental and Technology Plan.

The public and the private sector cooperate in management of semi-natural communities. Regarding subsidies paid see section 2.3.4.

The Ministry of Environment and the Estonian Council of Environmental NGOs (EKO) regularly hold round tables.

2.3.6 How the public activities have contributed to the implementation of the thematic programs and solving cross-cutting problems?

a) Biodiversity supporting development

In response to question one, an overview of the most important benefits supporting development and provided by the ecosystems have been given.

b) Climate change and biodiversity

Climate change impacts on biodiversity are discussed in all major development plans/strategies that are associated with biodiversity - NCDP, Forestry Development Plan, Fisheries Development Plan.

Estonia has joined the Green Growth Group (group includes 13 countries) that attaches importance to the promotion of a green economy and combating climate change.

A literature review of the impact of climate change on aquatic ecosystems and groundwater in Estonia (2012)[17] was compiled, in order to assess the opportunities for water monitoring program to distinguish the impact of climate change and other human impacts.

Climate conference “Climate from the perspective of North and Baltic Countries” was held in Estonia.

In 2013, the Ministry of the Environment joined the ERA (European Research Area) voluntary water, climate and ocean joint initiative (Joint Programming Initiative, JPI), which gives the Estonian scientists the opportunity to get involved in solving International scientific problems of great societal importance. In December 2013, Water Conference was held within the framework of the initiative and the Climate Conference was held in February 2014.

In 2014, developmet of a strategy for adaptation to climate change, with the necessary research is started.

In all of the major public universities climate change studies are carried out, many of them are directly related to the clarification of the impact of climate change on biodiversity.

c) Communication, education and awareness

Nature Education and information is one of the three strategic targets of NCDP.

Environment theme is integrated into both the primary and secondary school national curriculum and national curriculum of pre-school institutions. Although environmental issues have been in the curriculum since 1996, their integration into studies has not been very efficient.

[17] http://www.envir.ee/orb.aw/class=file/action=preview/id=1181492/Kliimamuutuste+m%F5ju+vee%F6kos%FCsteemidele+ning+p%F5hjaveele+Eestis.pdf

The largest contributor to non-formal environmental education are the The Environmental Board, the State Forest Management Centre and the Estonian Museum of Natural History. Since 2011, the Environmental Board is carrying out a program "Development of Environmental Education".

Large investments have been made in infrastructure to improve the nature education, the most important being the new nature homes in Tartu and Pärnu, buying of a bus for environmental education for the Environmental Board, development of infrastructure of Environmental Education Centre at Tallinn Zoo and SFMC network of nature centers. It is worth noting that local governments have also contributed to the development of nature education infrastructure

In 2011, a total of 133,600 kindergarten and school children participated in various educational programs. In addition, in 2011, more than 100,000 nature lovers participated in various events. In 2013, the hiking trails that were managed by SFMC were visited 1.7 million times. The number of visitors has increased year by year.

Environmental education website (www.keskkonnaharidus.ee) has been made, and it is coordinated by the Environmental Board.

d) Economy, trade and supportive measures

Regarding paid subsidies see section 2.3.4.

Regarding Environmental Charges Act see section 2.3.4

Regarding sectoral development plans see section 2.4.

d) Ecosystem approach

The principle of the ecosystem approach has been introduced to all major national programs, strategies and development plans, but there is no methodology how it should work in practice. The planning is based directly on the law, or indirectly on the restrictions set for the nature protection. At the same time several system service evaluation and determination projects have been prepared or under preparation. The following gives an overview of them.

- Definition of the national territory of Estonia as a functioning ecosystem and its equilibrium based on ten measures/indicators (Tallinn University, Institute of Ecology, 2008).
- Ecosystem Services. Overview of the benefits provided by nature and their monetary value (SEIT, 2012)[18].
- The need for protected forests by Estonian working-age population (TUT, 2012)
- Overview of the ecosystem services of Estonian mires and assessment of their economic value (Kosk, 2011); Practical assessment of the economic value of Kuresoo mire ecosystem services (Kosk, A.; Lõhmus, A. 2012). (EULS, 2012).
- Overview of the Estonian forest ecosystem services and assessment of their economic value (Kosk, 2012); Assessment of the economic value of ecosystem services of Järvselja Nature Conservation Area (EULS, 2013).
- Valuation of public benefits created in agriculture (EULS, 2012)[19].
- A review based on the literature: Impact of climate change on aquatic ecosystems and groundwater in Estonia, and the arising possible developments of the water monitoring (EULS, 2012)[20].
- Development of methodology, development and coordination of terms of reference for the evaluation and determination of the status of wetlands (Tallinn University, Institute of Ecology, 2011)[21].

[18] http://www.seit.ee/failid/892.pdf

[19] http://www.envir.ee/orb.aw/class=file/action=preview/id=1194457/Avalike_Hyvede_l6pparuanne_2012.pdf

[20] http://www.envir.ee/orb.aw/class=file/action=preview/id=1181492/Kliimamuutuste+m%F5ju+vee%F6kos%FCsteemidele+ning+p%F5hjaveele+Eestis.pdf

[21] http://www.envir.ee/orb.aw/class=file/action=preview/id=1170070/2011.05.04+Koondaruanne.pdf

- Work on the land-use change and considering of ecosystem services and benefits in sustainable land use planning is under preparation (EULS, will be completed in 2015, a thesis on Lahemaa ecosystem services has been drawn up as part of the work).

- A socio-economic analysis of the Baltic Sea (SEIT) is under preparation, in which the first steps are made to evaluate the qualitative and / or quantitative value of Estonian marine ecosystem services.

- Assessment of the ecosystem services of the Baltic Sea and the coastal ecosystem is under preparation; in the framework of the work, a regional meeting was held in 2013. The outcomes of the meeting are gathered in a separate report (the report is still in a draft version).

- Regulating ecosystem services of lakes has been researched in the project "Food chain and carbon metabolism of lakes in carbonate catchment and climate gradient" (UT, Centre of Limnology).

- Methodology for assessment and mapping of water ecosystem services (sea, rivers, and lakes) and related pilot projects (started in Spring 2014) are being carried out.

- Master's thesis "Which ecosystem services are provided by Võrtsjärv" is under preparation (UT).

- Preferences and willingness of Estonians to pay for the Hiiumadalike Marine Reserve and/or establishment of an offshore wind farm (SEI).

- Willingness to pay to improve the environmental status of the maritime area of Estonia - oil spills, alien species, and reducing eutrophication (SEI).

- A research on the values of a cleaner Baltic Sea in all of the Baltic Sea countries, including Estonia (Tallinn SEI) was carried out.

- Opinion Poll "Baltic Survey". Its purpose was to research the use of the marine environment in leisure time and the attitude of people towards the sea. The study was the first part of analysis of the Baltic Sea environmental problems by clarifying the costs and the benefits, and it was coordinated by an international research network Baltic STERN.

e) Mires and biodiversity – see section 1.4.

f) Global plant protection strategy

Plant protection objectives of the strategy are addressed, and developments since the last report are discussed throughout the report. In addition to the above-mentioned Action Plan of Sustainable Use of Plant Protection Products for 2013–2014 action plan and its implementation plan[22] was approved in 2013.

g) Protected areas

Fot the preservation of biodiversity and ensuring the favourable conservation status of endangered species and habitats 18% of the land area (except Lakes Peipus and Võrtsjärv), and 27% of the territorial sea have been taken under protection.

As of 01.01.2014, there are 3,883 protected natural objects in Estonia: 5 national parks, 138 nature conservation areas, 151 landscape protection areas and specific types of landscape protection areas – 540 parks and woodlands, 111 areas with old protection (SSR) rules, 344 SCIs, 1,359 species protection sites, 21 natural object protected at the municipal level and 1,223 protected natural monuments, Compared to 2007 the protected area has increased by 8,481 ha.

The priority is to prepare conservation management plans for Natura 2000 network sites, which account for 92.2% of the protected land territory. As of 01.01.2014, 46.5% of SCIs have been covered with approved management plans (MoE data). Rest of the plans are under preparation.
Woodland key habitats (WKH) are up to 7-hectare areas in need of protection outside the protected natural objects, where there is a high likelihood of occurrence of narrowly adapted, endangered, vulnerable or rare species. As of 01.01.2014, 4,859 WKHs were registered with a total area of 9,414 ha. Approximately 5% of

[22] http://ec.europa.eu/food/plant/pesticides/sustainable_use_pesticides/docs/nap_estonia_et.pdf

the WKHs on private land were covered with 20-year contracts between the landowner and the state, with the purpose to protect biodiversity (KAUR: Environmental Registry). In return, the state compensates the loss of income to the owner.

Red List of the International Union for Conservation of Nature (IUCN)

As of 01.01.2013, according to IUCN criteria the status of 4,319 domestic species has been evaluated, 746 species were excluded from the assessment because they were either alien species or occasional guests. 1,354 (31%) of the assessed species are threatened or near threatened status. Compared to the 2007, this number has increased in most species groups. However, there has been more than a four-fold decrease in invertebrate animals (mostly, because most of them have been assessed). The big difference in data is because the methodology of the assessment has been changed – the previous reporting period (1998) data come from the time when system of the IUCN 1994 categories was used; now the amended IUCN 2003 version is being used.

Protected species

Compared to the previous reporting period, the total number of protected species has remained the same, but there have been changes in the protection categories. If during the previous reporting period, there were 63 species in protected category I (35 plants species, 18 animal species, 9 fungus species, and 1 lichen species), 262 species in protected category II and 244 species in protected category II, then during this period it is respectively: I - 66, II - 259 and III - 245 species.

Eagle owl and the dunlin have been moved from protected category II to I, as their population has decreased significantly.

The population of grey seal has increased in recent years and it has been transferred to the protected category III. As of 01.01.2014, there are 13 species action plans (crane, a small white-fronted goose, black stork, lesser spotted eagle, dunlin, ruff, natterjack toad, European mink, tundra swan, *Rhinanthus osiliensis*, sea eagle, golden eagle, osprey), 2 protection and control plans (large carnivores - bear, wolf and lynx; cormorant), 1 control plan (alien species of hogweed) in force. All plans in force were completed during the period 2008–2013. There are 45 plans that have been prepared but have not yet entered into force. In addition, 93 protection plans and one alien species control plan (Himalayan balsam) is being prepared, for more than 200 species.

Species and habitat types of the Natura 2000 network

Natura 2000 network is a Network of EU protected areas with the purpose to ensure or restore the favourable status of the EU endangered plant and animal species and endangered habitats. There are 60 habitats and 97 species of the Habitats Directive in Estonia.

As of 01.01.2014, the Natura 2000 network is comprised by 542 SCIs with a total area of 1,154,959 ha (compared to 2007, 32 areas were added and the whole area has grown by more than 99,000 ha), 66 SPAs with a total area of 1,265,792 ha (compared to 2007, the number of sites remained the same, but the area increased by 31,000 ha) and because of SPAs and SACs largely overlap, the total area of Natura 2000 network is 1,483,143 ha. Natura network covers 16.6% of the land area (excluding Lakes Peipus and Võrtsjärv) and 27% of the territorial sea.

Status of Natura 2000 habitats and species was first assessed in 2007 and for the second time in 2013. See results in Table 2 (habitat types) and Table 3 (species).

Compared to 2007, the status of the following habitats has improved: coastal meadows, rivers and streams and flooded meadows. The status of alvars, species-rich fens, herb-rich forests with Picea abies, bog woodlands is deteriorating. The status of swamp woods is still very critical. Regarding the species of Habitats Directive Annex II the status of three species has deteriorated: Najas flexilis, crayfih and the natterjack toad; the status of the European mink has improved.

Status of endangered bird species in Europe was assessed in 2004 by BirdLife International. 65% of bird species in Estonia were evaluated to be in good status. At the end of 2013, the first report of the Birds Directive was completed. According to the report, the short-term trend of population of 89 breeding bird species is stable, for 38 species it is improving, for 81 species it is decreasing and for 6 species it is variable. For overwintering species, the short-term trend of the population is stable for 12 species, improving for 15 species and deteriorating for 3 species.

Table 2. The EU Habitats Directive habitat status assessments according to reporting results of 2007 and 2013.

EU endangered habitats	**2007**	**2013**
Number of assessed habitats	60	60
Status favourable	42% (25 habitats)	53,3% (32 habitats)
Status insufficient	35% (21 habitats)	43,3% (26 habitats)
Status bad	15% (9 habitats)	3,3% (2 habitats)
Status unknown	8% (5 habitats)	0

Table 3. The EU Habitats Directive species status assessment according to reporting results of 2007 and 2013.

EU endangered plant and animal species **Number of assessed species**	**2007** 96	**2013** 99
Status favourable	24% (23 species)	53,5% (53 species)
Status insufficient	43% (41 species)	27,3% (27 species)
Status bad	7% (species)	8,1% (8 species)
Status unknown	26% (25 species)	11,1% (11 species)

Invasive alien species

Alien species list includes 953 species, 63 of them are invasive and 73 potentially invasive species. For most species, categories of invasiveness are yet to be identified. Among the alien species groups, the most abundant are vascular plants (729 species) and arthropods (129 species); also, among the invasive species, the most abundant are vascular plants (44) and arthropods (13).

Estonia has nationally repelled the alien species (Sosnovski, Giant and Persian hogweed) of hogweed. Hogweed has been repelled in Estonia since 2005. In 2013, 1976 ha of hogweed were being repelledd. Two main targets in hogweed control are to reduce the seed bank in soil and to prevent the creation of new seeds. Three control plans of hogweed have been drawn up; the latter was for the period 2011–2015[23]. 908,200 euros were allocated for controlling hogweed for the period 2013–2014. Monitoring of control

[23] http://www.envir.ee/orb.aw/class=file/action=preview/id=1159491/karuputk+173.pdf

performance has shown that a control cycle of at least 4–5 years is necessary, so that the plant density would decrease significantly as compared to the original status.

In addition to the above, the following activities have been carried out in controlling alien species: control plans of raccoon dogs and *Impatiens glandulifera Royle* have been prepared; *Pacifastacus leniusculus* is being actively fished from Riksu creek to prevent its further spreading in the area.

For raising people's awareness of alien species, several free books have been issued for distribution. In 2011 a guidebook about alien species in water and in 2013 a guidebook about alien species on land was issued.

Estonia has acceded the International Convention on the Control of Harmful Anti-Fouling Systems.

Accession with the Convention for the Control and Management of Ships' Ballast Water and Sediments is being prepared.

h) Protectedness of ecosystems

Taking into account all of the protected areas, including limited management zones and SCAs, all of the ecosystems are protected in the extent of more than 10%. If we take into account only the strictly protected nature reserves and conservation zones, 9% of the forests are under strict protection.
The plan "Environmental conditions directing the Settlement and Land Use" is supporting the coherence of the ecosystems.

i) Assessment of impacts - assessment of the impact of projects, plans and development is regulated by the Environmental Impact Assessment and Management Act since 2005. Activities, which may result in a negative impact on the conservation objectives of Natura 2000 network or integrity of the site, Natura 2000 impact assessment (EIA / SEA) in accordance with the Habitats Directive 92/43/EEC Article 6, paragraph 3. Analyses and guidelines for the assessment and improvement of the practice of assessment have been prepared.

Latest EIA, SEA and Natura assessment analyses based on the estimates of parties were completed in 2010 (SEIT[24] [25]). The conclusion of the assessment analysis is that the main problems have remained the same compared to five years earlier analysis. Different parties consider the initiation of the EIA/SEA through the discretion decision and its motivation.

In analysing Natura assessments, it was concluded that the assessment under Article 6 of the Habitats Directive has also improved: the quality of impact assessments has improved since 2007 mainly regarding the Natura assessment. Driven by the guide for assessing Natura impacts was amended in 2013 and this is expected to improve the quality of assessment even more.

Ministry of Environment as the EIA/ SEA supervisor estimates that the quality of the impact assessment has improved compared to 2007.

j) Monitoring, indicators and assessment

Protected categories I, II, and III, the Habitats Directive Annex I habitat types and Annex II species, and species of the Birds Directive (currently still partially), abundance of top predators and other economically important species of fish and wildlife are being monitored.

Biodiversity monitoring is organized at the national level by The Environment Agency (KAUR) based on national wildlife diversity and landscape monitoring program. KAUR also organizes national evaluation of the effectiveness of protection.

Environmental Board organizes the object-specific evaluation of the effectiveness of protection that is necessary for the conservation management of protected natural sites as the manager of the object.

[24] http://www.seit.ee/publications/4383.pdf

[25] http://seit.ee/publications/4353.pdf

Monitoring of Habitats Directive species and habitat is organized since 2014 by KAUR; until 2013, it was organized by the Environmental Board.

Agricultural Research Centre is the assessor of RDP agro-environmental impacts.

The monitoring indicators are outlined in Annex IV of the CBD national report.

There is an ongoing reviewing of environmental indicators, including biodiversity indicators.

k) Environmental damages procedure – liability for environmental damage is regulated by several laws. Environmental damage and threat, and the prevention and remedying of environmental damage is regulated by the Environmental Liability Act. The Environmental Inspectorate performs the environmental supervision. During the recent years, most breaches have been in the fisheries sector (about 20%). The number of violations in the forest sector has decreased to 0.02%.

l) The sustainable use of biodiversity – for planning the sustainable use of biodiversity plan sector specific development plans have been drawn up. For more detailed information see section 2.4.

m) Technology transfer and cooperation – the ratification process of Nagoya Protocol is underway. The assessment of accompanying impacts has been completed. Regarding conservation of genetic resources, see the answer to question two – "agricultural ecosystems".

n) Tourism and Biodiversity – Estonian National Tourism Development Plan for the years 2007–2013 and the following development plan until 2020 (see section 2.4.4 for an overview of the development plans) has been prepared. A study "Estonian Rural Tourism"[26] was prepared. In 2013, a review "Estonian Nature Tourism as an Economic Branch" was prepared, which points out that even if you take a conservative estimate, turnover generator by foreign tourism and nature tourism is significantly high, 36 million euros per year, but there is not enough information in order to evaluate the contribution of nature tourism to the economy objectively.

2.3.7 Achievements in implementing the objectives of biodiversity

Regarding main achievement see section 3.3.1

2.3.8 Obstacles to implementation

One major obstacle is the lack of experts. It can be seen especially when during a short period, it is necessary to prepare a large number of management plans and species action plans.

Another problem is the complexity of applying for subsidies and the accompanying bureaucracy.

People are also not satisfied with the RDP Natura rates, especially regarding the private forest payments for special management zones because they rely on average calculations and do not take into account the specific constraints imposed on the area. The protected private lands (semi-natural communities, coastal lagoons) are quite often hard to access and manage; and thus their maintenance is difficult and expensive; the paid subsidies do not always cover the expenses associated with the maintenance, and thus some of the protected areas are not managed.

An important problem is the lack of awareness of the ecosystem approach, the understanding of its benefits and taking into consideration when planning or assessing impacts.

[26] http://www.agri.ee/public/juurkataloog/UURINGUD/uuring_maaturism_2012.pdf

2.4 QUESTION 8) HOW EFFECTIVELY HAS BIODIVERSITY BEEN MAINSTREAMED INTO RELEVANT SECTORAL AND CROSS-SECTORAL STRATEGIES, PLANS AND PROGRAMMES?

2.4.1 How biodiversity is considered in poverty reduction strategies and other key cross-cutting policy instruments?

Based on the internationally accepted classification Estonia is considered to be among the developed countries, and this is why Estonia does not have a separate poverty reduction strategy. Poverty reduction has been discussed in the RDP 2014–2020. The target of priority No. 6 of RDP 2014–2020 is social inclusion, poverty reduction, and economic development in rural areas, but it is not directly associated with maintaining of the biodiversity.

The following is an overview of cross-cutting strategies that address biodiversity.

- **Estonian National Sustainable Development Strategy until 2030 "Sustainable Estonia 21" (approved 14.09.2005)**

Sustainable Estonia 21 determines the goals for development of Estonian state and society until 2030 and relates the developments in economic, social and environmental sectors to global (Agenda 21) and EU guidance documents.

- **Competiveness Plan "Estonia 2020" (approved 25.04.2013)[27]. Action plan for implementing Estonia 2020 for the years 2011–2015[28] (approved 25.04.2013)**

Strategy discusses the Government's key policy directions for energy saving and resource saving. Some of the important keywords in relation to resource saving and biodiversity include:

1) Increasing of the proportion of environmental charges and reducing of labour taxes;

2) Efficient use of money received from the environmental charges;

3) Developing of methods to evaluate ecosystem services.

The strategy aims to increase the share of renewable energy in final consumption by 25% by 2020. Based on the strategy also Biomass and Bioenergy Promotion Plan for the years 2007–2013, the Estonian Renewable Energy Development Plan until 2020[29], the Estonian Energy Conservation Program for 2007–2013 have been prepared.

- **Program of the Government Coalition**

The program includes, inter alia, a section on environmental policy "Beautiful and clean Estonia", which has seven distinct subchapters. In relation to biodiversity, the following subsections could be mentioned:

2 – Preservation of biodiversity necessary for a fulfilling life. Keywords: ecosystem approach; implementation of management plans for protected area; support for private owners who protect their own land and contribute to the preservation of heritage landscapes and communities with traditional management; ensuring the viability of traditional fishing rivers.

3 – Prudent management of Estonian mineral resources as of a national treasure. Keywords: rates of resource and environmental charges; extraction will be in agreement with the local communities.

---

[27] http://valitsus.ee/UserFiles/valitsus/et/riigikantselei/strateegia/_b_konkurentsivoime-kava_b_/_b_eesti-2020-strateegia/Eesti%202020%20(2013%20uuendamine)/Eesti2020.pdf

[28] http://valitsus.ee/UserFiles/valitsus/et/riigikantselei/strateegia/_b_konkurentsivoime-kava_b_/_b_eesti-2020-strateegia/Eesti%202020%20(2013%20uuendamine)/EE2020%20tegevuskava.pdf

[29] https://valitsus.ee/UserFiles/valitsus/et/valitsus/arengukavad/majandus-ja-kommunikatsiooniministeerium/Eesti_taastuvenergia_tegevuskava_aastani_2020.pdf

4 – Sustainable use of natural resources. Keywords: using of semi-used peat areas all the way; sustainable and profitable forest management; state forests remain in state ownership.

5 – Fighting for the clean and safe Baltic Sea. Keywords: good status of the Baltic Sea for the year 2020; keeping clean of the coastal sea; establishment of one system of environmental monitoring for the Baltic Sea countries, studies to identify and assess the status of marine areas (completed).

6 – Raising environmental awareness. Keywords: e-access to all environmental data held by the state; nature education programs; energy-efficient buildings in the public sector; procurement of public transport with higher environmental standards; maintaining access to the sea and waterways, and the state forest with its traditional opportunities.

- **Action Plan of the Government of the Republic for the years 2011–2015[30] (amended 25.04.2011)**

Among the detailed targets, implementation of NCDP is also mentioned.

- **State Budget Strategy 2011–2014. State Budget Strategy 2014–2017[31] (approved 25.04.2013) and principles for using the EU structure Funds.**

With regard to the nature conservation, the state budget prioritizes the protection of natural habitats and valuable landscapes and ecosystems as a whole. Protection of natural values, preservation and restoration of endangered species and habitats, management of semi-natural communities and control of alien and problematic species has to be ensured. The goal of 2014 is the preservation and improving of the status and getting a complete overview of the status of all species and habitats.

2.4.2 How preservation of biodiversity is integrated into different sectors?

Biodiversity conservation has been integrated into different sectors through integrated strategies, partly through the development plans and their action plans (see section 2.4.4). In addition through the EIA/SEA procedures, and if necessary through Natura assessment and the environmental charges system. The framework for the integration of natural values in different sectors is available, but substantial integration requires strengthening. The key challenge is to change the perception, as if nature conservation measures would limit the economic activities and nature protection is a private interest of a small interest group.

2.4.3 How biodiversity is integrated into relevant planning processes?

Biodiversity is a recurring theme at all levels in the planning stages. A plan „Environmental Conditions Directing Settlement and Land Use“ has been prepared as a theme plan of county plans. This plan defines the green network and valuable landscapes. General plan specifies the network if required. Strategic Planning assessment is carried out simultaneously with the Strategic Environmental Assessment, which is required to integrate biodiversity values into plan in the best possible way.

The necessary legal basis for biodiversity has been drafted, but the consideration of coherence has been limited because in some cases the plans determining the coherence of the green network have been advisory (not set).

In 2012 a new nationwide plan "Estonia 2030+" was drafted. It is a strategic document, which aims to achieve a rational use of space in Estonia as a whole, and set environmental spatial bases to form settlement, mobility, national technical infrastructure and regional development.

Plan has four main targets: 1) a balanced and sustainable development of settlement; 2) good and convenient options of mobility; 3) the supply of energy infrastructure; 4) the green network cohesion and

[30] http://valitsus.ee/et/valitsus/tegevusprogramm

[31] https://valitsus.ee/UserFiles/valitsus/et/uudised/Failid/2013/Riigi%20eelarvestrateegia%202014-2017%20l%C3%BChikokkuv%C3%B5te.pdf

retention of landscape values.[32] The plan emphasizes the importance of green infrastructure in the preparation of spatial measures.

In 2012, the first Estonian Marine Spatial Planning (on marine areas adjacent to Hiiumaa and Pärnu counties) was started. Planner with maritime planning methodology should be completed by 2015.

2.4.4 Actions taken by each sector to implement biodiversity actions included in their respective strategies, plans and programmes

The strategy targets have been introduced to various sectoral strategies and/or development plans and action plans. Review of documents is presented at the end of section 2.4.4.

Companies in different sectors are paying the environmental charges. The environmental charges are divided into the natural resource charges and the pollution charges. In 2010, the proportion of the environmental charges in tax revenue was 14% and 3.1% of GDP, thus being the average in the European Union. Money received from the environmental charges is invested back into the environment. Based on the impact analysis of environmental charges (2013)[33], the environmental charges have stimulated the using of more efficient and less polluting technologies and contributed to the increase in environmental awareness. Regarding Environmental Charges see section 2.4.6.

Any planning or development involving licensing is accompanied by the EIA/SEA if the proposed activity may have a significant negative impact on the environment, including biodiversity. If the negative impact of the proposed activities on the Natura network sites cannot be excluded, Natura assessment has to be carried out as a part of the EIA/SEA. The costs of EIA/SEA preparation and, if necessary, additional research is covered by the developer.

Review of strategic sectoral documents

- **Environmental Strategy until 2030 (approved 2007).** Reviewed in IV report.
- **Nature Conservation Development Plan until 2020.** See section 2.1, and Annexes 4 and 5.
- **Estonian Maritime Policy 2012–2020**[34]

Estonian Maritime Policy 2012–2020 sets out 5 priorities and 11 targets. One of them relates directly and indirectly to biodiversity. Priority 2 – Maritime affairs are safe and secure, and status of the marine environment has improved. Target 6 – Status of the marine environment has improved. As there is the HELCOM Baltic Sea Action Plan and its implementation plan for Estonia until 2011, the document does not address detailed activities and provides a general framework for the strategic planning for the protection of the marine environment, activities related to minimize the effects of the maritime industry and impact indicators. The objective has been to reduce the phosphorus content of by 220 tons, and the nitrogen content of by 900 tons by the year 2020; chemical status of coastal waters is in a good status by 2015 and maritime environmental status is good by 2020. Estonia's Implementation Plan of the Baltic Sea Action Plan for the years 2012–2015[35] was approved on 14 March 2013. The operational program addresses, inter alia, the activities to ensure the favourable conservation status of species and habitats, protection of landscapes, organization of protection on marine conservation areas and protected areas, assessment of marine ecosystem services etc.

[32] https://www.siseministeerium.ee/public/4_Eesti_2030_Rohetaristu_Kalev_Sepp.pdf

[33] http://www.seit.ee/publications/4447.pdf

[34] http://valitsus.ee/UserFiles/valitsus/et/valitsus/arengukavad/majandus-ja-kommunikatsiooniministeerium/Eesti%20merenduspoliitika%202012-2020.pdf

[35] http://www.envir.ee/orb.aw/class=file/action=preview/id=1196636/rakendusplaan_Allkirjaga.pdf

- **The Estonian National Tourism Development Plan for years 2007–2013 (approved 22.11.2006); The Estonian National Tourism Development Plan years 2014–2020[36] (approved 15.11.2013)**

There is a separate section "Development of Nature and Sea Tourism" in the development plan.

Main activities developing eco-tourism are as follows:

- Taking into account the visitors' needs and development of integral eco-tourism products and services and increasing of their supply

- In nature, development of means of movement taking account the needs of individual tourists, improving access to relevant information and directing the visitor load, without damaging vulnerable species and their habitats.

- Development of tourism opportunities on inland waterways.

- Raising of competency of nature tourism organizers, trip leaders, and nature guides.

- Raising of awareness of nature tourism products and service providers about the expectations of visitors and security requirements.

- Raising of awareness related to ecotourism businesses and raising of awareness on biodiversity and nature conservation.

- Acknowledgment of businesses implementing the principles of sustainable tourism.

- **Rural Development Plan 2007–2013 (reviewed in report IV). Rural Development Plan 2014–2020 (final stage)**

RDP 2014–2020 sets six priorities and actions to implement the objectives. The priority 4 (restoring, preserving and improving ecosystems related to agriculture) is directly related to biodiversity, Priority 5 (promoting resource efficiency and transferring to low CO2 emission and climate-resilient economy in agricultural, food and forestry sectors) is indirectly related to biodiversity. The following measures are directly related to biodiversity: subsidies for the management of semi-natural communities, Natura 2000 payments on agricultural land, the Natura 2000 subsidies for private forestland. The following benefits are directed for wider environmental perspectives: subsidies for organic farming, environmentally friendly management, regional soil protection subsidy, subsidy for environmentally friendly gardening. For the preservation of native species and breeds the following subsidies are paid: support for growing local varieties of plants, subsidies for endangered breeds of livestock.

- **The Estonian Fisheries Strategy 2007–2013 (discussed in IV National Report). The Estonian Fisheries Strategy 2014–2020[37] (approved 2 April 2013)**

Development plan discusses the situation of fishing in Estonia, coastal fishing and fishing in inland waters, trawling, recreational fishing, distance fishing, processing, marketing, aquaculture, fisheries management and monitoring, and research and development activities. Compared with the previous strategy more attention is paid to the research and development activities. The strategy provides a comprehensive overview of the situation and trends in the fisheries sector and identifies key areas for action.

Fisheries strategies are specified by different operational plans: European Fisheries Fund Implementation plan, Recreational Fisheries Development Plan, Restocking Plan of Fish Stocks and Protection of Endangered Species that need National Protection, National Fishing Management Plan (drawn up each year) and Estonian Aquaculture Sector Development Plan.

[36] https://www.riigiteataja.ee/aktilisa/3191/1201/3015/lisa.pdf

[37] http://www.agri.ee/public/juurkataloog/KALAMAJANDUS/EKS/2014-2020/strateegia-eks-2014.pdf

- **Forestry Development Plan 2020[38] (approved 15.02.2011). Implementation Plan of Forest Development Plan 2011–2020.**

The main objective of the development plan is to ensure the productivity, viability and and efficient use of forests. For this purpose timber is used in the extent of increment, reforestation works are carried out on at least half of the reproduction cutting area and at least 10% of the forest area will be taken under strict protection.

- **Hunting Development Plan 2008–2013 and its Implementation Plan [39]**

Hunting Development Plan has been prepared based on the principle that the primary purpose of hunting is conservation of game species and ecological balance of habitats and species, taking into account the expectations of various stakeholders and recreational, social and economic aspects.

- **National Development Plan of Energy Management until 2020 (development plan until 2030 is being drafted)[40]**

The development plan is the basis of the development plans in the sectors of electricity, oil shale, biomass and bio-energy and energy conservation program about energy saving. The objective is to increase the share of renewable energy to 25% of final energy consumption.

- **National Development Plan for Using Oil Shale 2008–2015 (Adopted 21.10.2008)[41]. National Development Plan for Using Oil Shale 2030 is being prepared[42].**

The development plan has three strategic objectives, one of the objectives relates directly to environmental protection – increasing the efficiency of oil shale mining and reducing negative environmental impacts. The objectives and policies of the development plan are set in the Environmental Strategy 2030. The national strategy of Sustainable Development "Sustainable Estonia 21" is the basis in drafting of the development plan. The objectives of the development plan and the objective of the NCDP to use natural resources efficiently and in a sustainable manner so that does not compromise the achievement of favourable conservation status of ecosystems are the same. The Ministry of Environment coordinates development plan.

- **Development plan of natural building material minerals 2011–2020[43]**

The main objective of the development plan is the to ensure the supply of natural building material minerals, taking into account their required quality, optimal price, the minimum possible transportation load and sustainable resource and environment use. The development plan has three strategic objectives; one of them is to reduce the environmental impacts of resource extraction and use. The development plan provides an overview of the most important effects of the reduction techniques. Among other things, it points out that mining should be done in locations where the impact is the smallest. For this, lists of deposits are amended, taking into account the nature and heritage conservation, restrictions arising from construction etc. Developer should restore damaged areas.

2.4.5 Outcomes achieved by each sector in mainstreaming biodiversity

Regarding most important outcomes, see section 3.1 table 4.

[38] http://www.envir.ee/orb.aw/class=file/action=preview/id=1160296/MAK2020vastuvoetud.pdf

[39] http://www.envir.ee/orb.aw/class=file/action=preview/id=1097632/Jahinduse+arengukava+aastateks+2008-2013.pdf

[40] http://www.mkm.ee/public/ENMAK.pdf

[41] http://www.envir.ee/orb.aw/class=file/action=preview/id=306730/P%D5KKi+kinnitamine.pdf

[42] http://www.envir.ee/1115002

[43] http://www.envir.ee/orb.aw/class=file/action=preview/id=1163577/Arengukava.pdf

2.4.6 Tools used for mainstreaming biodiversity

The most important tools are as follows:

1) Drafting of sector-specific strategies and development plans. See section 2.4.4.
2) EIA/SEA procedures with the Natura impact assessment where appropriate. See section 2.3.6 j).
3) Spacial Planning. See section 2.4.3.
4) The adoption of the Environmental Charges Act and directing the money from the environmental charges through the EIC Environmental Programme for improving environmental conditions. Regarding the Act see section 2.3.3.; regarding paid subsidies see section 2.3.4.
5) Funding of projects that support biodiversity. See section 2.3.4.
6) Drafting protection rules and management plans for protected natural objects. See section 2.3.6 g).
7) Preparing of species protection, protection and control plans. See section 2.3.6 f) *Protected species*.
8) Constant development of environmental monitoring system. See section 2.3.6 k).
9) Integration of environmental education to all kindergarten and school programs and The Environmental Board, State Forest Management Centre and Estonian Museum of Natural History educational programs for different target groups.

2.4.7 Synergies in implementation of related Conventions and agreements

Synergy is achieved through sectoral strategies and development plans. There are no strategies that would address only the objectives of the Convention. Several ministries are responsible for the implementation of several development plans. For example, responsibilites of the Ministry of Environment and the Ministry of Agriculture are set out in the Fisheries Strategy.

2.5 QUESTION 9) HOW FULLY HAS THE NBSAP BEEN IMPLEMENTED?

Estonia's first Biodiversity Strategy and Action Plan was completed in 1999 and was designed for the period of 1999–2005. This document was an advisory document.

The Estonian Environmental Strategy 2030 was approved in 2007; it gives general guidelines and priorities for environmental protection, including the diversity of species. Environment Strategy for the period 2007–2013 has been drawn up to implement the implementation plan – Estonian Environmental Action Plan 2007–2013 (approved 22 February 2007). For the implementation of the Environmental Action Plan, two reports have been prepared - 2007–2009 and 2010–2011, and they are the basis of the assessment of the implementation of the objectives of the strategy. These estimates are also used in giving points/estimation in the table.

NCDP was approved in 2012. Implementation plan of the development is under preparation.

Because biodiversity targets and indicators of the Environmental Strategy are set to 2030 and since 2012 there is NCDP, which is in line with the global and the EU Biodiversity Strategy, the estimation for the fulfilment of biodiversity strategy has been given as an answer to question 10 in column Overall assessment on a scale of 1-10.

3. PROGRESS TOWARDS THE 2020 AICHI BIODIVERSITY TARGETS AND CONTRIBUTIONS TO THE RELEVANT 2015 TARGETS OF THE MILLENNIUM DEVELOPMENT GOALS

3.1 QUESTION 10) WHAT PROGRESS HAS BEEN MADE BY THE COUNTRY TOWARDS THE IMPLEMENTATION OF THE STRATEGIC PLAN FOR BIODIVERSITY 2011–2020 AND ITS AICHI BIODIVERSITY TARGETS?

Table 4 gives an overview of the nationally and globally set targets and activities for achieving the EU biodiversity targets. What are the key activities to achieve the targets since 2007 and how far are we from achieving it. Assessment relies on monitoring data of environmental strategy and on other information that has become evident.

Table 4.

GL Str. Target/ Goal	EU Target	NCDP Target Measure Activity	National activities in the direction of global biodiversity targets since the last report.	Result	NCDP indicator	General rating on scale 1-10
A/1	1	1.1; 1,2; 2.4; 2.5; 2.7	- Academic programs supporting the national curriculum are carried out in environmental education centres, nature centres and in the centres of protected areas and national parks. - Infrastructures needed for nature education and visiting protected areas are being renovated. - There is also a new web application www.keskkonnaharidus.ee where it is possible to select existing study materials by target groups and topics. - There are also a variety of smart applications (to determine different species groups) in order to increase environmental awareness. - Internet-based applications to collect species survey data from voluntary people (nature observation database http://loodusvaatlused.eelis.ee, e-biodiversity http://elurikkus.ut.ee etc.) have been developed. - Development of Clearing-House Mechanism of Convention on Biological	- 85% of the population considers themselves as environmentally rather responsible. - 3/5 of the population considers other people to be environmentally rather responsible. (2012) 45 - The number of participants in nature education programmes has increased year by year. Total participants in various nature education programs are over 130,000 kindergarten and schoolchildren, in addition to this more than 100,000 nature hobbyists took part in different events. - For example: mushroom guide has been downloaded more than 10,000-50,000 times, animal track guide 5,000-10,000 times, winter garden bird guide 10,000-50,000 times.	2.3 1.1 1.2	6

			Diversity (CBD-CHM) website. http://btv.eelis.ee - Regarding the protected areas and their management plans, see target 11 and regarding species protection, see target 12 for additional information.			
A/2	6 (17)	3.1.1; 3.1.2; 3.1.3; 1.4.1/ 2.5.1	- The most important benefits of biodiversity (natural resources) are gathered in national registries and databases. - When preparing strategies, development plans and plannings (green network and valuable landscapes) biodiversity, and conservation requirements are taken into account. - Registers / databases (such as EELIS) have been developed and they are the the basis of paying different subsidies, planning activities and determining resource charges. - Regarding mapping and assessment of ecosystems see target 14, regarding resources to support biodiversity resources, see target 20, regarding genetic resources, see target 13.	- National registries / databases have a very good level of information available about the biodiversity and natural resources, such as forests, fish, wild game, ground water, surface water, semi-natural communities, non-renewable natural resources, SCIs and SPAs, species of the Habitats Directive Annex II and the Bird Directive, habitats of the Habitats Directive Annex I and nationally protected species and natural objects. - Information in registers is the basis for paying the subsidies.	3	6
A/3	6	2.7.	- Occurrence of subsidies harmful to biodiversity is analysed in SEA-s prepared for sectorial development plans and, if needed in EIA reports of planned activities. - Environmental charges and the environmental subsidies that are directed back to protect the biodiversity are expected to increase significantly from 2016. - During the period of 2014–2020 the amount of support from the EU funds to support biodiversity conversation will increase. - Regarding nationally paid biodiversity subsidies, see target 20.	- There are no subsidies that would damage biodiversity.		7
A/4	Cross-cutting issue: cooperati	3.2 3.3 3.7	- Public sector directs the production and consumption towards sustainability primarily through laws, policies, plans and contributions to environmental awareness. - Major cross-cutting laws are the Environmental Charges Act and the	<u>Game</u> - The population of large carnivores (bear, lynx and wolf) are managed within the limits set in the conversation and management plan to ensure the	3.3	5

	on for biodiversity		Environmental Impact Assessment and Environmental Management System Act. <u>Non-renewable mineral resources</u> - Sector-specific development plans, which are based on the principle of sustainable use of resources have been prepared or under preparation. <u>Game</u> - Game Management Plan for 2007–2013 was approved in 2008. - New Hunting Act took effect in 2013. See more detailed information regarding the Act in section 2.3.3 - Conservation and management plan for large carnivores (wolf, lynx and bear) 2012–2021 has been drawn up. - The use of lead shot was banned on June 1, 2013 - Before each hunting season maximum permitted hunting limits are developed, taking into account the specific goals set in the conservation and control plans of large carnivores and the outcomes of the monitoring 46. Regarding sustainable forest management, see target 7. Regarding the sustainable production and consumption of fish stocks, see target 6.	maintenance of viable populations. -The status of 2012 with 600-650 bears, 22 litters of wolf and 72 litters of lynx corresponds to a favourable status. Regarding the sustainable management of forests and fish stocks, see targets 7 and 6.		
B/5	3	2.7 2.2.1; 2.2.2; 2.2.3; 2.2.4; 2.2.5; 2.2.6; 2.2.7; 2.2.8;	<u>General techniques for the protection of habitats:</u> - For the purposes of habitat protection protected areas have been established and management plans have been prepared or being prepared. - State-regulated monitoring of species and their habitats is being carried out. - Restoration of favourable status of habitats is carried out via nationally and internationally funded projects. - Relevant activity plans are prepared for protecting the habitat types on	<u>The overall assessment of habitat status</u>. - All of the species of the protected category I and their habitats are monotored. Most species under category II ja III are monitored. 70% of the 215 regularly breeding birds are being monitored. - According to the reports of the Habitat Directive (2013) the number of habitats, which status is unknown, has decreased and in general, there has been a slight improvement in the situation.	2.5 2.6 2.7 2.8 2.9 2.10	7

		2.2.9; 2.3.4; 2.7.1; 2.7.3; 2.7.5; 3.3.1; 3.4.4; 4.4.4	national level. - Green Network planning has been drawn up. - Prioritised Action Frameworks (PAF) for Natura network has been prepared. - The impact of proposed activities, planning or development on habitats is assessed as a part of the EIA / SEA and the Natura assessment procedures and measures to mitigate the adverse effects are provided and if necessary mitigation measures are proposed. - Development plans and their strategies. RDP 2014–2020, Nature Conservation Development Plan, Forestry Development Plan 2010–2020, Estonian HELCOM Action Plan 2011–2015, Water Management Plans until 2015 for Estonia. <u>Forests:</u> - There is an area-based conservation. Forests are protected the in zones of strict economic constraints of the protected areas. - State forests are managed by RMK that has FSC and PEFC certificates. - 95% of state forests and 74% of private forests have been covered with timely inventory data. - Subsidies to Natura 2000 private forestlands are paid in the framework of NDP. - Woodland key habitats located in private forests are protected under the Forest Act through notarized voluntary agreements, which are the basis for the payments. - The protection of biodiversity in forests is regulated in addition to the Nature Conservation Act also by the Forest Act. Forest Act provides also the obligation to leave trees (to preserve the biodiversity) in case of the clear-cutting for the purposes of maintaining biodiversity; it is necessary to ensure that the total volume of at least 5 m3 of timber per hectare.	According to the data of 2013, 53% of the habitat types are in a favourable status and 3% in poor status (For additional information see section 2.3.5 table 2). - According to the reports of the Birds Directive (2013) the short-term trend of population of 89 breeding bird species is stable, for 38 species it is improving, for 81 species it is decreasing and for 6 species it is variable. For overwintering species, the short-term trend of the population is stable for 12 species, improving for 15 species and deteriorating for 3 species. <u>Forests</u> - About 9% of forests are under strict protection, 25.4% on protected areas. - To reduce habitat fragmentation the first ecoduct was built over the Tallinn-Tartu highway. More than 10 tunnels have been built for small game. - About 5% of woodland key habitats situated on private lands are protected with relevant agreements. Woodland key habitats on the state land are protected by the order of the Minister of the Environment.	3.2 3.5	

			Mires: - The location and status of mires is well-known - Restoration of natural hydrological regime of mires and cut-over peat lands is carried out. - Action plan of mires is under preparation. Semi-natural communities: - Communities have been mapped and their status has been assessed. - Action Plan for Semi-natural communities (2013) has been drawn up. - Different management instructions for semi-natural communities have been issued. - Management of semi-natural communities is supported in the framework of RDP. – It is possible to apply for subsidies for restoring semi-natural communities. - Information guides about the importance of semi-natural communities. Agricultural land - See target 7 - NDP has been drawn up and it provides measures to preserve and increase biodiversity in agricultural ecosystems. - Regarding the subsidies paid to maintain and restore biodiversity, see section 2.3.4. Inland water bodies - For achieving a good status of watercourses the fish migration routes of	Mires: - More than 1,600 ha of natural hydrological regime of mires has been restored or being restored. - About 200 ha of cut-over peatland have been restored. Semi-natural communities: - 25,000 ha of semi-natural communities are being managed. - 3,000 ha of semi-natural communities have been restored. Agricultural land: - Population of farmland birds has declined by 11% during the period 1988–2011. - Population of bumblebees is in a slight upward trend. Internal water bodies - By the end of 2015, when all of the funded project have been completed, 60 barriers will be opened (all rivers or river sections that are habitats of salmons). - Important old rivers have been restored on Emajõgi (58 ha) - As of 2012, 99.6% wastewater that need purification is purified.		

			rivers are opened. - River habitats (old rivers) are restored. - Renovation / building of wastewater treatment plants in compliance with the requirements. - Requirements for wastewater treatment have become stricter. - Stricter system of pollution charges. - Regarding fish and crayfish resources, see additionally target 6. <u>Sea and the coastal area</u> - HELCOM Estonia's Implementation plan until 2020 has been drawn up and HELCOM areas have been designated. - Regarding sustainable management of fish stocks, see target 6. - Regarding protected areas, see target 11.	<u>Sea and coastal area</u> - 6 HELCOM areas have been designated.		
B/6	4	2.2.4; 2.5.1; 3.1.3; 3.3.5; 3.3.6	- The European Fisheries Fund Implementation plan for Estonia 2007–2013 44 has been drawn up, to organize the sustainable management of the most important fish stocks. - Overview of internationally regulated fish stocks in the Baltic Sea on the basis of the recommendations of ICES 45(2012) has been drawn up. - Estonian Fisheries Strategy 2007–2013, the Estonian Fisheries Strategy 2014–2020 and its Implementation plan has been drawn up. - Recreational Fishing Development Plan for 2010–2013 has been drawn up. - Programme "Protection of fish species needing state protection and endangered species and restocking of fish resources 2002–2010 46 (2006)". In	- Good conditions have been established for achieving the goal. - Catch of fish stocks is in decline. - Endangered fish species are being reproduced in fish farms, but the recovery of the populations has not yet been achieved. - Salmon introductions has been successful. Introduced salmons have returned to Selja, Pirita, Purtse and Valgejõgi and spawned there, which shows that it is possible to restore the salmons there. Catch of introduced salmon at coastal fishing at the	3.4	6

44 http://www.agri.ee/public/juurkataloog/KALAMAJANDUS/EKF/EKF_rakenduskava_261107.pdf

45http://www.envir.ee/orb.aw/class=file/action=preview/id=1191961/I+vahearuanne+2012_Viimane_1.pdf

			2014 a new program with the perspective for eight years will be drawn up. - For every year, a plan for regulating fishing is prepared. - Atlantic sturgeon reproduction was started in 2013. - In 2012 a regulation “Temporary restrictions on fishing, recreational fishing charge, the maximum number of recreational fishing gear in 2012” 47 was adopted. - "Cormorant Conservation and Management Action Plan" was approved in 2008, and its objective was the prevention and reduction of damage caused by cormorants in fish farms and fishing gear, without endangering the cormorant population in the nature. - Great progress has been made in fishing management. - Fishing Act amendments that control illegal fishing. - Action Plan for crayfish for 2002–2010 and Eel Management Plan has been drawn up. - With the drawing up of Põlula Fish Farming Centre Development Plan for 2008–2011 the foundation for the systematic reproduction of fish resources was laid. Estonian rivers are populated every year with salmon and sea trout fish juveniles, inland bodies of water with eel, carp and crayfish juveniles. - National Eel Restoration Plan has been approved 48 . - Restoration of spawning areas and opening up of fish migration routes has been started in watercourses, which is the basis and prerequisite for the	Gulf of Finland has been in some areas more than 70% of the total catch. 49 - 50-80% of the total catch of eel (CITES species) is based on introduction. - As of the year 2012, 43% of fish stocks are in good condition. Improvement in comparison with 2006 is 5%.		

46http://www.envir.ee/orb.aw/class=file/action=preview/id=402882/taastootmiseprogramm+2006+uuendus.pdf

47 https://www.riigiteataja.ee/akt/106032012007

48 http://www.envir.ee/orb.aw/class=file/action=preview/id=1110096/ANGERJA+TAASTAMISKAVA+L%DCHIKOKKUV%D5TE.pdf

49 Kalakasvatuse veesaaste arvutusmetoodika välja arvutamine (2012) http://www.envir.ee/orb.aw/class=file/action=preview/id=1203397/Veesaaste_metoodika_uuring_aruanne_final.pdf

			restoration of fish resources.			
B/7	3, 4	2.7.3; 3.3.1	- For the direction of each of these sectors (agriculture, forestry and aquaculture) development plans have been prepared for 2020 and for the first two the Implementation plan have been prepared. <u>Agriculture</u> - RDP, which provides for measures to preserve and enhance biodiversity in agricultural ecosystems, has been drawn up. - The Action Plan for Sustainable Use of Plant Protection Products for 2013–2014 and its Implementation plan have been prepared 50. - Organic Farming Development Plan 2007–2013 and the Implementation plan have been prepared 51. - Regarding subsidies paid to maintain and restore biodiversity, see section 2.3.4. <u>Forest management</u> - As of01 January 2014, 75% of forests are managed forests. - The state supports the inventories of private forests and forest management plans at one time for 10 years at 100%. - In 2007, the Forest Register (system of sustainable forest monitoring) was launched. Forest register contains data about the status, location and entity of forests at the time of the inventory. The integral part of the Forest Register is the Forest Notifications Register. Forest Notifications Register data contain information about the planned activities of the forest owner, discovered forest damages and natural values and information concerning the notification processing information.	<u>Agriculture</u> - Population of farmland birds have declined by 11% during the period 1988–2011 - Population of bumblebees is in slight upward trend. - Share of organic farming is steadily rising. As of 01 January 2014, 12.5% of arable land was organic. 43% of agricultural land was covered with the environmentally friendly production support. <u>Forest management</u> - Cutting volumes have increased in recent years, but not exceeding the increment. According to SMI data 9.2 million cubic meters of timber was cut in 2012; according to the development plan the objective for the sustainable management of the forests is 12-15 cubic metres per year. - 9% of the forests are strictly protected; approximately 25.4% of forest is protected. - Illegal cutting of forests is below 0.02% of the annual cutting volume.		5

50 http://ec.europa.eu/food/plant/pesticides/sustainable_use_pesticides/docs/nap_estonia_et.pdf

51 http://www.agri.ee/public/juurkataloog/TAIMETERVIS/MAHE/MP-arenguk_2007-2013_Lisa_2011_rakendamine.pdf

			- On average 13 million plants of forest are planted every year. - Activities related with forest are regulated with the Forest Act, which among other things determines the requirements for maintaining forest biodiversity. In 2013 the Act was amended and the primary purpose of the amendment was to make forest management more sustainable. - In the framework of RDP and with the help of national subsidies about 100 projects for restoring damaged forests and preventing forest fires by the end of 2011. - Natura 2000 support to private forestland is paid in the framework of RDP. In 2013, subsidies were paid to 54,788 ha. - Major investments have been made to increase the awareness of responsible forest management for forest owners. - As of 01 January 2014, about 5% of woodland key habitats located in private forests are covered by an agreement, which the landlord undertakes to ensure the preservation of the woodland key habitat. In 2013, the compensation rates per hectare increased by 21%. <u>Aquaculture</u> - Estonia's Development Strategy for Aquaculture sector 2014–202052 has been drawn up. - Report on "Development of methodology of calculation of water pollution in fish farms "(2012) has been drawn up. - The use of environmentally friendly technologies is supported.			
B/8	2	2.3.3 3.4.1 3.4.2	- A large-scale renovation of the water supply and sewerage systems and wastewater treatment plants. - Bringing into conformity of agricultural production with the environmental	- The ecological status of most of the small lakes is good. The status of Lakes Peipsi and Pskov is poor, Lake		6

52 http://www.agri.ee/public/vesiviljelus_2020.pdf

		3.4.3	requirements enacted in Europe (primarily manure storage facilities). - Installation of air purifier equipment in Narva power plants - Adoption of Estonian Maritime Policy 2011–2020, one target of the policy is a safe, secure and improved environmental condition of Maritime Affairs. The goal is also to improve the environmental status of the Baltic Sea. - Adoption of the HELCOM Estonian Implementation plan until 2020. - Estonia has established seven areas for the protection of the Baltic sea (HELCOM areas) - Lahemaa, Väinameri, Hiiu madal, Vilsandi, Pakri, Kura kurk, Pärnu laht. - The National Oil Spill Contingency Plan was prepared in 2008. - Water Act and adoption of related amendments, which govern the use and protection of the marine environment (2011). The main objective of the amendment of the Act was to transpose two directives – the Marine Strategy Framework Directive (2008/56/EC) and the Directive (2009/123/EC) on ship-source Pollution. - In 2012, the maritime environmental status report was drawn up. As a result of large-scale marine expert collaboration, a review about the marine environment covering the entire sea area was drawn up. So far, the marine-related topics and areas were addressed case by case. - The National Waste Management Plan 2008–2013. National Waste Management Plan 2014–2020 is being prepared. - Residual contaminated sites have been mapped and inscribed in the Environmental Register and their liquidation is carried out according to the possibilities. The register has data on more than 300 objects, 75 of them are prioritized. During the period 2009–2014, residual contamination objects are liquidated. - Regarding the ecosystems mapping and assessment see target 14, regarding the relations between the climate and the state of the ecosystem see target 10	Pskov is bad and Võrtsjärve is good. - During the period of 2008–2013 sulphur dioxide (SO2) emissions decreased by 41%, the amount of volatile organic compounds decreased by 8%. - Groundwater status is mainly good. The content of nitrogen in Central Estonian intensive agricultural areas in nitrate vulnerable zones exceeds the limits in some places. Trend is variable and depends primarily on the weather - In 2012, 99.6% of the wastewater that needed purification was purified. - Effluents that reached into water bodies in 2012: 720 t BOD 7, COD, 7,171 t, 2,895 t suspended solids, 1,612 t of total nitrogen, 100 t of total phosphorus (MoE).		

			and regarding resilience of ecosystems see target 15.			
B/9	5	2.1.5; 3.5.1; 3.6.1	- Regarding invasive alien species see chapter 2.3.6. Invasive alien species.	- The list of alien species contains 953 species, 63 of them are invasive and 73 potentially invasive species 73. - In 2013, 1,976 ha of hogweed colonies were being controlled. Despite this their coverage increases (control in 2007 was 1,169 ha).	2.4	5
B/10	2, 4	2.2.3; 2.2.9; 2.6.1; 3.2.3; 3.5.1 3.5.2; 3.5.3	- Adaptation to climate change is discussed in small extent in the Development Strategy of Forestry 2020 and Fishing Strategy 2020. NCDP sets the goals in relation to necessary activities to clarify the effects of climate changes and develop the mitigation measures. - A literature-based review of the impact of climate change on aquatic ecosystems and groundwater in Estonia (2012) has been drawn up, in order to assess the possibilities of water monitoring program to distinguish it from human impact. - In 2014, the preparation of a strategy for adaptation to climate change was started; it is accompanied by a number of studies and their actual need will be clear during the preparation. - For activities that contribute indirectly to improving the situation of ecosystems that are vulnerable to climate change see: target 6 – sustainable management of fish and invertebrate stocks; target 7 – sustainable agriculture, forestry and aquaculture; target 8 – reducing the pollution load (mostly aquatic ecosystems); target 14 – mapping and assessment of ecosystems; target 15 – restoration of ecosystems.	- Climate change affects aquatic ecosystems, but the extent of the impact cannot be reliably distinguished from the effects of human 52. - Adaptation to climate change is done through resource use plans. Taking into account the objectives and results of the monitoring, the maximum permitted hunting limits and fishing management scheme is prepared.	3.5	6
C/11	1	2.2.2	- Amending the list of European network of SPAs and SCIs	- As of 01 January 2014, 18% of the land area (except	2.6	8

		2.2.5 2.2.8 2.3.4 2.3.1 2.3.2 2.3.4 2.4.1 2.4.2 2.4.3 2.4.1; 2.4.2; 2.4.3; 2.4.4	- Preparing of management plans for Natura SCIs. - Review and amendment of the Natura sites impact assessment guide. - To prioritize the activities necessary for maintaining and improving the status of Natura 2000 habitats and species status and to plan financing, the Prioritised Action Frameworks 2014–2020 (PAF) has been drawn up. - Specification of boundaries of protected areas and protective zones, renewal of protection rules. - Species protection sites and their management plans. Species protection sites are areas outside of a protected area to ensure the protection of the species through the preservation of their habitats. - Regarding the woodland key habitats, see target 5 and regarding protection of species on protected areas, see target 12.	large lakes) and 27% of the sea are under protection. - Natura network is almost ready. - 46.5% of Natura SCIs are covered with management plans that make 16.6% of the country's territory. (01 January 2014) - Taking into account all of the protected area, including limited management zones and special conservation areas are, more than 10% of the ecosystems are under protection.	2.4.1 2.4.3 2.4.4	
C/12	1	2.1.1; 2.1.2; 2.1.4	- The protection of endangered species is regulated by the Nature Conservation Act. The protection of all of the species in the protected category I, at least 50% of the species in the protected category II, and at least 10% of the species of the protected category III and the protection of known habitats by establishing protected areas, limited conservation areas or species protection sits. In the habitats of undefined species of protected category II and III, specimen protection applies. - Management plans are prepared for the protection of limited conversation areas, protection areas and species' protection sites. All protected species are in the management plans. - Drawing up of action plans for species. - Indirectly also drawing up of action plans for habitats. - To implement the activities necessary for maintaining and improving the status of Natura 2000 habitats and species status, the framework of priority	- Status of endangered species defined in the Habitats Directive based on the results of the monitoring in 2013: - 53% species were in favourable, 27% insufficient, 8% poor and 11% unknown (in 2007 the relevant numbers were 24%, 43%, 7%, 26%). - 58 species action plans, 2 protection and management plans and 1 management plan of alien species (01 January 2014) has been drawn up. - The only viable populations of European mink is located on Hiiumaa - More than 500 amphibian habitats have been restored.	2.1; 2.2 2.3	6

			actions 2014–2020 (PAF) has been drawn up. - Captive population of European mink is kept in Tallinn Zoo and the pan-European management EEP program of captive population is coordinated. These minks are a basis for repopulating the species in Estonia (Saaremaa and Hiiumaa) and elsewhere in Europe. - The habitats of natterjack toad, spadefoot toad, great crested newt and *Leucorrhinia* has been ameliorated. - Opening of the centre of endangered species in Matsalu - Regarding the protected natural objects, see target 11.	- Natterjack toad population status has not improved in spite of the measures. - Status of Flying squirrel population is deteriorating.		
C/13	3	2.1.7; 2.5.1; 2.5.2; 2.5.3	- Development plan "Collection and preservation of Plant Genetic Resource 2007–2013. Development plan for the period 2014–2020 has been drawn up. - International Treaty on Plant Genetic Resources, or the International Treaty on Plant Genetic Resources (International Treaty on Plant Genetic Resources for Food and Agriculture) - The transition to the use of Internet-based databases. - Cultivation of plant and animal species that are important for the cultural heritage and genetic resources are supported in the framework of RDP. - Participation in the European cooperative program of genetic resources of plants.	- Despite the subsidies paid in the framework of the RDP, the indigenous varieties and breeds are still in danger, but the target is being achieved. As of July 1, 2013 the data management system SESTO has stored information about 2,960 specimen.		6
D/14	2	2.1.3 2.2.1; 2.2.2; 2.2.3; 2.2.4; 2.2.9	- For the purposes of Convention there are no indigenous or local communities in Estonia, thus they are not shown separately when setting the targets. - Estonia has an environmental register, which compiles information about the Estonian nature and the environment at large scale. - Based on the basic map of Estonia, CLC database and different inventories there is an overview of the location of the ecosystems. - SEAs are drawn up for strategies and development plans and impact to biodiversity is assessed as one part of a SEA.	- Habitats Directive habitat types based on the 2013 Habitats Directive reporting - 53.3% of habitat types are in favourable status, 43.3% insufficient status, 3.3% deteriorated and 0% status is unknown.	3.1 3.3 3.4	6

			- Regarding the assessment of the ecosystem service, see section 2.3.6 (ecosystem approach). - Regarding restoring the ecosystems, see target 15; and regarding protected areas, see target 11.	- Also see results 11 and 15		
D/15	2	2.2.1; 2.2.3; 2.2.4; 2.2.9; 3.2.2; 3.2.3; 3.3.5	- There is a planning for the whole country. Settlement and land use are directed by environmental conditions. - Cut-over peat lands and hydrological regime of mires have been restored. - Action plan of semi-natural communities has been completed. Action plan of mires is being prepared. - In 2011 a regulation "List of abandoned peat extraction sites that have been damaged by extracting" was adopted that will allow to give the priority for mining the areas that are already damaged. - Regarding ecosystem mapping and assessment see also target 14, regarding the reducing of pollution see target 8, regarding the reduction of the influence of human activity on climate change see target 10, regarding the protected areas, see target 11 and regarding species protection, see target 12.	- About 3000 ha of semi-natural communities are being restored, about 25,000 ha are managed. - More than 1600 ha of natural hydrological regime of marshes and about 200 ha of cut-over peat land have been restored or being restored.	2.7 2.8 3.2 MeA	7
D/16	6	2.6.2; 2.1.7	- The protocol is being ratified. - For additional information see section 1.2.2; regarding agricultural crops and genetic resources of local breeds and regarding forestry crops seed orchards see section 1.3.2.	- As of July 1, 2013 the data management system SESTO has stored info about 2960 specimen.	2.6.2	5
E/17	6	-	- In 2012, NCDP was completed, which includes the Global Biodiversity Strategy objectives and objectives of EU biodiversity strategy that were prepared accordingly. - Several horizontal strategies and development plans relating to the objectives of the biodiversity strategy were renewed or being renewed, including the most important: RDP, Fisheries Strategy, recreational fisheries development	- There is a NCDP which includes the objectives of the Convention on Biodiversity and the goals of other conventions on biodiversity.		10

			plan, forestry development plan, the Estonian Research and Development and Innovation Strategy and the accompanying Estonian Environmental Protection and Technology Program, National Tourism Development Plan, National Waste Management Plan, Oil Shale Development Plan, Transport Development Plan (for additional information see 2.4.4.)			
E/18	Cross-cutting issue: Partner-ship for Biodiversi ty		This is not appropriate as there are indigenous and local communities in Estonia in terms of the Convention,			-
E/19	Cross-cutting issue: Building on biodiver-sity knowled-ge base	1.3 2.1.1 2.1.5 2.2.6 2.2.8 2.5 2.6.1 3.1 3.2.1 3.2.2 3.7.3	- Estonian Research and Development and Innovation Strategy "Knowledge-based Estonia" 2007–201315 and its sub-program for environmental protection and technology 2012-101353. The strategy for the period 2014–2020 is being prepared. - In 2012, Estonian Science Council began its work. - Excellence centre FIBIR (Frontiers in Biodiversity Research) was founded at Tartu University - The merging of larger biodiversity databases has begun – The National Environmental Register (register.keskkonnainfo.ee) EELIS (eelis.ee), e-Biodiversity (elurikkus.ut.ee) and the Natural surveys database (loodusvaatlused.eelis.ee). - Regarding the ecosystem services see target 14, regarding the studying of the effects of climate change and adaptation with it see target 10, regarding environmental awareness, see target 1.	- Biodiversity-related applied research capacity is rising. - In 2011, the cost of research and development studies increased in particular thanks to the private sector, by 2.41% of GDP, which is above the EU average, and is characteristic of the industrial countries.	1.4	7

53 https://valitsus.ee/UserFiles/valitsus/et/valitsus/arengukavad/haridus-ja-teadusministeerium/TAI%20lisa_KKTP%20programm.pdf

E/20	6		- The implementation of NCDP measures presumes the increasing of resources directed for the conservation of biodiversity resources. - Environmental Charges Act was adopted in 2006. - Various environmental subsidies are paid in the framework of RDP, some of which are designed to directly support biodiversity (Natura payments for private forestland, Natura payments for agricultural land, subsidies for the management of semi-natural habitats, subsidies for endangered breeds of livestock, subsidies for growing plants of local varieties). - Money from the environmental is directed back into the environment through the EIC. - The preservation of biodiversity is funded via different EU structural funds. - The protection of woodland key habitats on private land is funded from the state budget. In 2013. the amount of payment per hectare increased by 21%. - For the funding of the preservation of biodiversity see chapter 2.3.4. - Preservation of biodiversity is also funded through other funds, such as LIFE, LIFE+, INTERREG, EMP etc.	- Since 2008 Natura payments have increased 6.7 times (payments for private forest land were added) - Payments for semi-natural habitats management have increased 1.6 times since 2008 due to the increase of the managed area. - During the period 2008–2013 different environmental subsidies amounted to 35% of financing under the RDP. - Compared to 2008 the environmental subsidies payable under the MAK have increased 1.3 times. - Environmental charges make 2.8 percent of GDP.		7

3.1.1 Examples to illustrate the progress

Restoration of habitats of amphibians

Ministry of Environment and the Environmental Board and NGO Põhjakonn (that aggregates most herpetologists in Estonia) are dealing with the protection of amphibians. EU LIFE programme has had an essential role. It has funded four projects that are partially or fully oriented to the protection of amphibians - LIFE00NAT/EE/7083 and LIFE00NAT/EE/7082 (natterjack toad), LIFE04NAT/EE/000070 (great crested newt), LIFE08NAT / EE/000257 (mud frog). In the framework of the LIFE projects, several action plans have been prepared and these plans are the basis for the consistent protection of these species.

The most important threat for amphibians in Estonia it the loss of small water bodies suitable for reproduction and their surrounding terrestrial habitats, mainly due to excessive reed and brushwood. Consequently, the main protection activities of management are the restoration of small water bodies and cleaning of terrestrial habitats. Because different species have very specific requirements for the spawning water bodies, the identification of criteria always precedes the restoration of water bodies. Due to this, the results have been very successful.

249 habitats were restored for the great crested newt during 2004–2011 and 209 (84%) of the habitats have been inhabited. Thanks to this, a rare endangered species has become common and abundant in many areas. The great crested newt LIFE project was also mentioned among the best LIFE projects.

Spadefoot toad has inhabited 89 ponds out of 189 (49%) during the same period. It must be taken into account the abundance of the species is significantly lower than the one of the crested newt. Of the 189 ponds, most were made for the great crested newt, and are therefore located farther away from the spadefoot toad habitats.

The conservation of the natterjack toad has lately been based on the complex conservation of habitats, e.g. widespread restoration of the habitats that surround lakes. The abundance trends has been rising in all of the five restored habitats. In addition, supportive breeding of natterjack toad was started. In 2013, 2,174 young natterjack toads were let into the wild. Supportive breeding is carried out in cooperation with the Copenhagen Zoo and the project is scheduled to continue for at least five years. In 2013, Endangered Species Centre was opened in Matsalu national park. One of the most important functions of the centre is the growing of spawn of natterjack toads taken from the wild and supportive growing of tadpoles, and restocking of donor population that makes the survival of young individuals more probable. A future target of the centre is to achieve the supportive breeding of the Natterjack toads.

Restoration of old rivers of Emajõgi

Emajõgi and its catchment area accounts for one fifth of the total area of Estonia. The area is also very rich in species: at least 35 species of fish, 196 species of birds, including 153 species of breeding birds and 43 species of mammals are living here. It is estimated that 50% of insect species are represented at the Alam-Pedja Natura 2000 site. Unfortunately, some of the flood plains have overgrown and there is no traditional management of the land. This brings the disappearance of the species that are traditionally using the meadows. The estuaries of old rivers have been closed with sediments, and the constant connection with the river has been disappeared. Thus, the species that used to inhabit the old rivers cannot use them anymore.

In the framework of a LIFE Project, more than 55 ha of meadows were restored or managed at Alam-Pedja Natura 2000 site Emajõe. This created a suitable breeding ground for the fish and the birds. The restored meadows are now under regular management. Estuaries of old rivers were opened in ten places, which opened about 15 km waterways, allowing the fish of Emajõgi to use these areas again. Already the first years showed that the opened old rivers compared to the unopened old rivers have a higher oxygen content and higher fish species richness, abundance and yield. Many positive changes occur over a longer period, and their careful monitoring will continue even after the project has been completed.

The project also focused on the research and monitoring of protected fish species. For Asp, a significant migration research was conducted. This is as a basis for an improved organization of conservation. In addition, it was started

with the supportive breeding for the first time, and after that 53,000 Asps were populated in Emajõgi. Wormtail monitoring showed that species abundance in the old rivers that were opened two years was four times higher than in the old rivers without open estuaries.

Keeping open of the estuaries of old rivers and mowing of meadows are activities with a long tradition in Estonia, and the species riches communities were formed because of these activities. By ensuring the traditional activities also, the preservation of these valuable areas will be ensured.[54]

Restoration of natural hydrological regime of Kuresoo bog

Approximately 80 ha of the Kuresoo bog (one of the largest mire massifs in Europe with an area of approximately 11,000 ha) were ditched in 1970s. As a result, nearly 300 ha of the natural mire regime were damaged. Because of the ditching, the area's water level dropped, resulting in a changed vegetation, faster growth of forest and bushes, and reduced coverage and growth of Sphagnum.

The idea for restoring the hydrological regime and development of the construction Project came from the Estonian Fund for Nature. The cost of preliminary works was 66,370 euros, 75% of the sum was covered by INTERREG III. A recovery plan was prepared as a part of the preliminary work. After coordination with the Environmental Board, the recovery plan was implemented by the State Forest Management Centre during 2010–2013. The cost of the restoration works was 161,000 euros. The restoration works were funded by the European Regional Development Fund.

For restoring the hydrological regime of mires, first, the forest that grew as a result of the drainage was cut (a total of approximately 27 ha, 14.3 ha of clear-cutting) and peat mounds along ditch banks were levelled. To stop the draining of water from the bog and for restoring the hydrological regime, dams made from wood and peat were constructed. Finally, the roadside ditch was cleaned and old broken culver was replaced, so that the water that drains naturally from the bog could drain away.

The effectiveness of restoration work was supervised by the Environmental Board. As a result of the restoration eorks, the natural regime of the bog should stabilize. As a result, the flooding in adjacent areas should decrease. It is possible to monitor the effectiveness of different restoration measures and the rate of ecosystem recovery. This a valuable experience for compilers of similar restoration projects because it is possible to evaluate the efficiency and performance of wooden and peat dams of different construction and this enables to plan the restoring cheaper and more effectively.

Restoration and management of semi-natural communities

The main threat for the preservation of the semi-natural communities is mainly afforestation and land-use intensification (fertilizing, ploughing) or alteration (construction, agriculture etc.) due to lack of management.

To improve the status of semi-natural communities, a nationwide mapping, inventories and making of databases was carried out in Estonia during the period of 1999–2004. Since 2004, it is possible to apply for a subsidy to restore semi-natural communities. The most common restoration measures were removal of junipers/brushwood, control of reed, thinning of tree layer and construction of fences to start grazing.

Since 2007, an effective support system for the management of semi-natural habitats exists. Traditional management methods needed for maintaining the semi-natural communities are supported: grazing on meadows and alvars, mowing meadows and wooded meadows. In addition, purchase of cattle is supported and it is, on one hand, necessary for the management of semi-natural communities and on the other hand an essential support for the rural population. Guidelines have been compiled for the management of different types of semi-natural communities.

The area of managed meadows has been growing: if in 2007 15,000 ha were managed, then in 2013 the managed area was already 27,000 hectare. The managed semi-natural communities were as follows: 9,200 ha of coastal meadows, 7,000 ha of floodplain meadows, 2,500 ha of alvars, 3,000 ha of grasslands on mineral soil and 650 ha

[54] http://www.loodushoid.ee/HAPPYFISH_LIFE_project_Saving__19.htm

of wooded meadows.

Approximately 8,000 ha has been restored and 3,000 ha are being restored. The goal is to increase the area of semi-natural communities to 45,000 ha by 2020 and to 60,000 ha by 2030.

The basis for organizing and planning national restoration and management of semi-natural communities during the years 2014–2020 an action plan for semi-natural communities has been prepared. Management and restoration is carried out in cooperation with the private sector and seven state agencies. Almost half of semi-natural communities are located on private land. Semi-natural communities are mainly managed by self-employed people and limited liability companies (OÜ, AS) and they are managing around 75% of the managed land. Individuals are managing 22% and non-profit organization 6% of the managed land. There are approximately 1,000 managers of the semi-natural communities. Various trainings has helped to raise the awareness about nature values and the importance of semi-natural communities of officials, managers and the wider public.

Creation of natural population of European mink

European mink is endangered due to extensive hunting, invasion of the American mink and loss of habitats suitable for the species. Conservation activities of the European mink were already started in the 1980s. In 1992, an European Endangered Species Programme (EEP) was launched. There is a breeding centre of European mink in Tallinn Zoo, which is the basis of reproducing minks in Estonia and elsewhere in Europe. The goal was to keep 200 specimen in the Tallinn Zoo and creating of vible populations for two larger island in Estonia (Saaremaa and Hiiumaa). A viable populations of European mink has been established on Hiiumaa and Saaremaa. After a number of tests it was found that the most effective way of returning minks back into the wild in the so-called “soft-release” – letting the young minks into the wild during the emancipation period. It has been found that the population of Europan mink has grown from 20 to 35 individuals after winter and even up to 60 individuals by autumn (2010). Based on experience, it can be said that a complex approach is required for the recovery of the wild population. For restoration of the mink population, first, suitable river habitats were taken under protection, watercourses habitats were restored and drainage systems were changed, thus creating a suitable habitat for the European mink. In addition, artificial water bodies and sediment ponds were made to watercourses and nearshore clearcutting was largely replaced with selection cutting. With amphibians in mind, ponds as suitable spawning areas for amphibians were created. These are also an important habitat for the European mink.

Taking into the wild of the mink population have had an important role in the conservation of the species, but it has also contributed significantly to the improvement of people's environmental awareness. According to a survey conducted in 2004, 97% of the local population was well aware of the project and 85% of the people had a positive opinion about it.

3.2 Question 11) What has been the contribution of actions to implement the Convention towards the achievement of the relevant 2015 targets of the Millennium Development Goals in the country?

Regarding the implementation of the Convention the global target No. 7 has been in focus, which aims to ensure environmental sustainability. Regarding the achievement of target, see the answer to question 10.

3.3 Question 12) What lessons have been learned from the implementation of the Convention in the country?

3.3.1 Areas where achievements have been made

- Management of protected areas has improved, management plans and the species action plans have been drawn up; prioritised Action Frameworks (PAF) for Natura network has been prepared, legislation has been amended; cooperation between organizations has been improved; and visitor management and infrastructure of protected areas has been improved.

- Based on the monitoring report of the Habitats Directive the status of habitats and species has moderately improved. Management of semi-natural communities, restoration of habitats (mires, semi-natural communities, rivers), and compliant wastewater treatment plants has contributed to the improvement. Support schemes for the management of semi-natural communities and compensation for loss of income on the agricultural and private forestlands of the Natura network area have been developed and implemented. Action plan of semi-natural communities has been completed.

- For raising environmental awareness, several environmental education centres have been reconstructed, the Museum of Natural History was renovated, network of hiking trails was developed (by State Forest Management Centre) and environmental education programs have been worked out and conducted.

- Organization of ex-situ conservation has improved. Rehabilitation and Recovery Centre for Endangered Species was established in Matsalu. Captive population of European mink is kept in Tallinn Zoo and the pan-European management EEP program of captive population is coordinated. These minks are a basis for repopulating the species in Estonia (Saaremaa and Hiiumaa) and elsewhere in Europe.

.

3.3.2 Areas where progress is lacking and where challenges are encountered

- Major focus on the restoration and management of semi-natural communities should be continued.

- Restoration of to mires and other endangered habitats should be continued.

- Improvement of salmon rivers but also the improvement of the ecological status of other watercourses, including opening of the rivers for moving upstream and downstream and restoration of old rivers should be continued.

- Preparing of management plans for natural objects and action species for species has to be completed, and preparing of action plans for habitats should be continued.

- Development of infrastructures of protected areas and visitor management should be continued.

- Environmental awareness of natural population should be continuously raised.

- In relation to the ongoing nationwide process of preparation of county plans, coherence of green networks and compliance with the EU Green Infrastructure Strategy should be specified.

- Inventories of marine habitats, and if necessary, taking under protection should be continued.

3.3.3 Gaps and future priorities including suggestions for actions at various levels

- The mapping and assessment of ecosystems and their services, and consequently analysis of national reporting, and amendment.

- Research of climate change impacts and based on the results development of the strategy on climate change adaptation (started in 2014).

- Mapping of routes of alien species mapping and implementation of measures to prevent their spread.

4. APPENDICES AND TABLES

4.1 APPENDIX 1. INFORMATION CONCERNING REPORTING PARTY

4.1.1 Reporting party

Reporting Party	Estonia
	National focal point
Full name of the institution	Ministry of the Environment Republic of Estonia
Name and title of contact officer	Kadri Auväärt Chief specialist Nature Conservation Department Ministry of the Environment
Mailing address Telephone	Narva mnt 7A 15172 Tallinn Estonia +372 6262875
Fax	+372 6262901
E-mail	Kadri.Auvaart@envir.ee
	Submission
Signature of officer responsible for submitting national report	
Date of submission	

4.1.2 Process of preparation of national report

The first version of the report was compiled by the contact person of the Convention in the Ministry of the Environment, Kadri Auväärt. Version 1 was submitted to the workers of Nature Conservation Department staff of the Ministry of Environment for comments.

In order to give a general evaluation on the implementation of targets of biodiversity strategy (question 10) an expert group of the specialist of the Nature Conservation Department of the Ministry was established.

Version 2 of the report was sent for comment to other departments of the Ministry, specialists of subdivisions of the Ministry, environmental organizations, and other potentially interested parties. Based on the suggestions and comments the final version of the report was prepared.

4.2 APPENDIX 2. REFERENCES

1. Aastaraamat Mets 2011/Yearbook Forest 2011 http://www.keskkonnainfo.ee/failid/aastaraamat_METS_2011.pdf
2. Ajutised püügikitsendused, harrastuspüügiõiguse tasu, püügivahnedite piirarv harrastuslikul kalapüügil 2012 aastal https://www.riigiteataja.ee/akt/106032012007
3. Angerjavarude majandamisekava http://www.envir.ee/orb.aw/class=file/action=preview/id=1110097/kava+ja+heakskiitmise+otsus+03.12.2009.pdf
4. Bioloogilise mitmekesisuse konventsiooni täitmise Eesti aruanne (inglise keeles) http://cdr.eionet.europa.eu/ee/eu/bap/envtcd28w/CPEE_Final.pdf
5. CMS national report 2011 (Rändliikide konventsiooni Eesti aruanne) http://loodus.keskkonnainfo.ee:88/convention/cbd_govreport/1312435888
6. Estonian environmental indicators 2009 http://www.keskkonnainfo.ee/publications/4271_PDF.pdf
7. Estonian environmental indicators 2012 http://www.keskkonnainfo.ee/failid/KTK_indicators_2012.pdf
8. Estonian Forestry 2009 http://www.keskkonnainfo.ee/failid/forestry2009/EstonianForestry.swf
9. Estonian Forestry 2011 http://www.keskkonnainfo.ee/failid/forestry2011/EstonianForestry.swf
10. Eesti keskkonnanäitajad 2012 http://www.keskkonnainfo.ee/failid/kk_naitajad2012.pdf
11. Eesti keskkonnaseisundi näitajad 2009 http://www.keskkonnainfo.ee/publications/4247_PDF.pdf
12. Eesti looduse kaitse aastal 2011 http://www.keskkonnainfo.ee/publications/lka_uus12.pdf
13. Eesti metsandus 2009 http://www.keskkonnainfo.ee/failid/eestimetsandus2009/EstonianForestry.swf
14. Eesti metsandus 2011 http://www.keskkonnainfo.ee/failid/mets2011/EestiMetsandus.swf
15. Estonian environmental review 2009 http://www.keskkonnainfo.ee/publications/4263_PDF.pdf
16. Estonian Nature Conservation in 2011 http://www.keskkonnainfo.ee/publications/ELK_2011_eng.pdf
17. Eesti keskkonnaseire 2007–2010 http://www.keskkonnainfo.ee/failid/kks0710.pdf
18. Eesti keskkonnaseire 2012 http://www.keskkonnainfo.ee/failid/keskkonnaseire%202012_03.02.2013.pdf
19. Eesti keskkonnaseire 2011 http://www.keskkonnainfo.ee/failid/Keskkonnaseire2011_02_01_13.pdf
20. Eesti keskkonnaseire 2009 http://www.keskkonnainfo.ee/publications/16325_Keskkonnaseire2009.pdf

21. Eesti keskkonnaseire 2008 http://www.keskkonnainfo.ee/publications/4268_PDF.pdf

22. European Commission Biodiversity Knowledge Page. Country profile Estonia http://loodus.keskkonnainfo.ee:88/convention/cbd_govreport/1279689783

23. Eesti keskkonnastrateegia http://www.envir.ee/orb.aw/class=file/action=preview/id=388732/KS_loplil_riigikokku_pdf.pdf

24. Eesti keskkonnategevuskava aastateks 2007–2013 http://www.envir.ee/orb.aw/class=file/action=preview/id=1131705/Keskkonnategevuskava_2007–2013_uuendatud.pdf

25. Eesti keskkonnategeuvskava aastateks 2007–2013 täitmisest perioodil 2010–2011 http://www.envir.ee/orb.aw/class=file/action=preview/id=1194300/KTK+aruanne+2010–2011+v9+16.12.2012.pdf

26. Eesti metsanduse arengukava aastnai 2010 http://www.keskkonnainfo.ee/publications/16286_PDF.pdf

27. Eesti metsanduse arengukava aastani 2020 https://www.riigiteataja.ee/aktilisa/3180/2201/1003/Eesti_%20metsanduse_arengukava.pdf

28. Eesti eelarvestrateegia 2014–2017 lühikokkuvõte https://valitsus.ee/UserFiles/valitsus/et/uudised/Failid/2013/Riigi%20eelarvestrateegia%202014–2017%20l%C3%BChikokkuv%C3%B5te.pdf

29. Ettekanne „Rohetaristu arengutrendide ja tulevikusuunad“ https://www.siseministeerium.ee/public/4_Eesti_2030_Rohetaristu_Kalev_Sepp.pdf

30. Eesti merenduspoliitika 2012–2020 http://valitsus.ee/UserFiles/valitsus/et/valitsus/arengukavad/majandus-ja-kommunikatsiooniministeerium/Eesti%20merenduspoliitika%202012–2020.pdf

31. Eesti riiklik turismiarenguakva 2014–2020 https://www.riigiteataja.ee/aktilisa/3191/1201/3015/lisa.pdf

32. Eesti kalanduse strateegia 2014–2020 http://www.agri.ee/public/juurkataloog/KALAMAJANDUS/EKS/2014–2020/strateegia-eks–2014.pdf

33. Eesti metsanduse arengukava aastani 2020 http://www.envir.ee/orb.aw/class=file/action=preview/id=1160296/MAK2020vastuvoetud.pdf

34. Eesti jahinduse arengukava aastateks 2008–2013 http://www.envir.ee/orb.aw/class=file/action=preview/id=1097632/Jahinduse+arengukava+aastateks+2008–2013.pdf

35. Eesti taastuvenergia tegevuskava aastani 2020 https://valitsus.ee/UserFiles/valitsus/et/valitsus/arengukavad/majandus-ja-kommunikatsiooniministeerium/Eesti_taastuvenergia_tegevuskava_aastani_2020.pdf

36. Eesti teadus- ja arengustegevuse ja innovatsiooni strateegia 2007–2013 https://valitsus.ee/UserFiles/valitsus/et/valitsus/arengukavad/haridus-ja-teadusministeerium/Teadmistep%C3%B5hine+Eesti+2007–2013%5B1%5D.pdf

37. Eesti teadus- ja arengustegevuse ja innovatsiooni strateegia 2007–2013. Eesti keskkonnakaitse ja

–tehnoloogia programme 2012–2013
https://valitsus.ee/UserFiles/valitsus/et/valitsus/arengukavad/haridus-ja-teadusministeerium/TAI%20lisa_KKTP%20programm.pdf

38. Energiamajanduse riiklik arengukava aastani 2020 http://www.mkm.ee/public/ENMAK.pdf
39. Eesti vesiviljeluse sektori arengustrateegia 2014–2020
http://www.agri.ee/public/vesiviljelus_2020.pdf
40. Eesti mereala keskkonnaseisundi esialgne hindamine
http://www.envir.ee/orb.aw/class=file/action=preview/id=1185031/Eesti+mereala+keskkonnaseisundi+esialgne+hindamine.pdf
41. Ehitusmaavaade kasutamise riiklik arenguakva
http://www.envir.ee/orb.aw/class=file/action=preview/id=1163577/Arengukava.pdf
42. Eesti elanike keskkonnateadlikkus (2012)
http://www.envir.ee/orb.aw/class=file/action=preview/id=1187006/Eesti+elanike+keskkonnateadlikkus2012aruanne.pdf
43. Euroopa kalandusfondi rakenduskava 2007–2013
http://www.agri.ee/public/juurkataloog/KALAMAJANDUS/EKF/EKF_rakenduskava_261107.pdf
44. Eesti keskkonnategevuskava aastateks 2007–2013 täitmisest perioodil 2009–2009. Monitooriguaruanne.
http://www.envir.ee/orb.aw/class=file/action=preview/id=1131709/KTK+aruanne+2007–2009+v5+8.06.2010.pdf
45. Eesti metsade ressursianalüüs (Metsakaitse- ja Metsauuenduskeskus, 2010)
http://www.envir.ee/orb.aw/class=file/action=preview/id=1116453/Uuringud+%26%238222%3BEesti+metsade+ressursianal%FC%FCsi%26%238220%3B+tarbeks.pdf
46. HELCOMI Läänemere tegevuskava Eesti rakendusplaan aastateks 2012–2015
http://www.envir.ee/orb.aw/class=file/action=preview/id=1196636/rakendusplaan_Allkirjaga.pdf
47. Jahiulukuite küttimine Eestis 2012/2013 aasta jahihooajal
http://www.keskkonnainfo.ee/failid/Jahiulukite_kyttimine_2012_2013%20jahihooajal.pdf
48. Liigitegevuskavad http://www.envir.ee/1688
49. Keskkonnaülevaade 2013 http://www.keskkonnainfo.ee/main/index.php/et/vaeljaanded-ja-uelevaated/vaeljaanded-ja-uelevaated
50. Keskkonnaülevaade 2009 http://www.keskkonnainfo.ee/publications/4245_PDF.pdf
51. Keskkonnatasude mõjuanalüüs (SEIT, TÜ 2013) http://www.seit.ee/publications/4447.pdf
52. Kliimamuutuste mõju veeökosüsteemidele põhjaveele Eestis ja sellest tulenevad veeseireprogrammi võimalikud arengusuunad Eestis (EMÜ, 2012)
http://www.envir.ee/orb.aw/class=file/action=preview/id=1181492/Kliimamuutuste+m%F5ju+vee%F6kos%FCsteemidele+ning+p%F5hjaveele+Eestis.pdf
53. Eesti soode seisund ja kaitse (Leibak & Paal, 2013)
54. Kuues Euroopa keskkonnaalane tegevusprogramm

http://www.envir.ee/orb.aw/class=file/action=preview/id=1183174/6.+EAP+LexUriServ.pdf

55. Kuuenda Euroopa keskkonnaalase tegevusprogrammi lõpphinnang http://www.envir.ee/orb.aw/class=file/action=preview/id=1184191/COM_2011_531_ET_ACTE_f+Komisjoni+hinnang.pdf

56. Kuresoo raba ökosüsteemiteenuste majandusliku väärtuse praktiline hindamine (EMÜ, 2012) http://www.eau.ee/~akosk/Tudengitele/TLU%20tudengid/Aruanne_04112012.pdf

57. Kalaasvatusliku taastoomitse programme 2002–2010 http://www.envir.ee/orb.aw/class=file/action=preview/id=402882/taastootmiseprogramm+2006+uuendus.pdf

58. Kalasvatuse veesaaste arvutusmetoodika välja töötamine http://www.envir.ee/orb.aw/class=file/action=preview/id=1203397/Veesaaste_metoodika_uuring_aruanne_final.pdf

59. Lõhmus, A; Kraut, A. (2010). Stand structure of hemiboreal old-growth forests: Characteristic features, variation among site types, and a comparison with FSC-certified mature stands in Estonia. Forest Ecology and Management 260, 155-165

60. Lõhmus, A. & Lõhmus, P. (2011). Old-forest species: the importance of specific substrata vs. Stand continuity in the case of calicioid fungi. Silva Fennica 45(5): 1015-1039.

61. Maaelu arengukava 2007–2013 http://www.agri.ee/mak/

62. Maaelu arengukava 2014–2020 (eelnõu) http://www.agri.ee/public/18.11.2013.pdf

63. Maaelu arengukava KSH araunne http://www.agri.ee/public/MAK_KSH_aruanne_heakskiidetud_29_01_14.pdf

64. Maaelu arengukava 2007–2013 toetused http://www.agri.ee/maki-toetused/, sh keskkonnatoetused http://www.agri.ee/keskkonnatoetused/

65. Maaelu arengukava seire- ja hindamissüsteem http://www.agri.ee/mak–2007–2013-seire-ja-hindamine/

66. Metoodika väljatöötamine ja lähteülesande kooskõlastamine märgalade seisundi hindamiseks ja määramiseks (TÜÖI, 2011) http://www.envir.ee/orb.aw/class=file/action=preview/id=1170070/2011.05.04+Koondaruanne.pdf

67. Maaelu arengukava 2007–2013 edulood http://www.agri.ee/mak-i-edulood/

68. Maaelu arengukava seirearuanded http://www.agri.ee/seirearuanded/

69. Maaelu arengukava 2007–2013 2. telje püsihindamisaraunne 2012. aasta kohta http://pmk.agri.ee/pkt/files/f32/PMK_pysihindamisaruanne_2012_kohta_030613_lisadega.pdf

70. Mahepõllumajanduse arengukava aastateks 2007–2013 http://www.agri.ee/public/juurkataloog/TAIMETERVIS/MAHE/MP-arenguk_2007–2013_Lisa_2011_rakendamine.pdf

71. Maaturismi uuring (OÜ Eesti Uuringukeskus, 2012) http://www.agri.ee/public/juurkataloog/UURINGUD/uuring_maaturism_2012.pdf

72. 2010. aasta hinnang Euroopa Liidu bioloogilise mitmekesisuse tegevuskava rakendamisele

http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/bap_2010/1_ET_ACT_part1_v1.pdf

73. Looduskaitse arengukava aastani 2020
http://www.envir.ee/orb.aw/class=file/action=preview/id=1186984/NCDP_lop.pdf

74. Põllumajanduskultuuride geentilise ressurssi kogumine ja säilitamine aastatel 2014–2020
http://www.agri.ee/public/juurkataloog/ARENDUSTEGEVUS/arengukava-gen-ressursid–2014.pdf

75. Põlevkivi kasutamise riiklik arengukava 2008–2015
http://www.envir.ee/orb.aw/class=file/action=preview/id=306730/P%D5KKi+kinnitamine.pdf

76. Paiksetest saasteallikatest välisõhku eraldunud saasteainete heitkogused aastail 2008–2010
http://www.keskkonnainfo.ee/publications/paiksed_3.pdf

77. Põllumajanduse poolt loodud avalike hüvede hindamine Eestis
http://www.envir.ee/orb.aw/class=file/action=preview/id=1194457/Avalike_Hyvede_l6pparuanne_2012.pdf

78. Rahvusliku kalanduse andmekogumise programmi täitmine (vahearuanne 2012)
http://www.envir.ee/orb.aw/class=file/action=preview/id=1191961/I+vahearuanne+2012_Viimane_1.pdf

79. Tallinna keskkonnastrateegia aastani 2030
(https://oigusaktid.tallinn.ee/?id=3001&aktid=120867&fd=1&leht=1&q_sort=elex_akt.akt_vkp

80. Tallinna linnaelustiku strateegiline analüüs ja soovitused elustiku säilitamiseks (SEIT 2010)
http://www.seit.ee/failid/686.pdf

81. Taimekaitsevahendite säästva kasutamise tegevuskava aastateks 2013–2017 ja selle rakendusplaan
http://ec.europa.eu/food/plant/pesticides/sustainable_use_pesticides/docs/nap_estonia_et.pdf

82. Ökosüsteemiteenused. Ülevaade looduse pakutavatest hüvedest ja nende rahalisest väärtusest (SEIT, 2012) http://www.seit.ee/failid/892.pdf

83. Ülevaade Eesti rabade ökosüsteemiteenustest ja nende majandusliku väärtuse hindamisest (EMÜ 2011)
http://www.envir.ee/orb.aw/class=file/action=preview/id=1184503/RabadeOkosTeenustMajVaartusteHind_TeooriaOsa_AijaKosk.pdf.pdf

84. Ulukiasurkodandade seisund ja küttimissoovitus 2013 / Status of game population in Estonia and proposal for hunting 2013 http://www.keskkonnainfo.ee/failid/SEIREARUANNE_2013.pdf

85. Valitsuse tegevusprogramm http://valitsus.ee/et/valitsus/tegevusprogramm

4.3 APPENDIX 3. IMPLEMENTATION OF THE THEMATIC PROGRAMMES OF WORK AND CROSS-CUTTING ISSUES (FOCUS ON THOSE AREAS AND ISSUES OF NATIONAL IMPORTANCE AND ACTIONS OR ACTIVITIES SUGGESTED FOR PARTIES IN RELEVANT THEMATIC PROGRAMMES OF WORK AND COP DECISIONS)

The objectives of the Convention are integrated into NCDP. Objectives and measures for their implementation have been amended in sectoral strategies and development plans (rural, forestry, fisheries, tourism, and to a lesser extent, a number of others). Separate thematic work programs to implement the objectives of the Convention have not been not prepared.

Overview of the most important activities that have contributed to the cross-cutting issues and thematic programs are given as a response to the question 2.3.7. Assessment of the implementation of the objectives of the Convention are given in response to the question in the scale of 1-10.

4.4 APPENDIX 4. INDICATORS OF NCDP UNTIL 2020

Goal 1. People are familiar with, appreciate and conserve nature and know how use their knowledge in their everyday lives.		
Indicator	Base level in 2011	Level achieved by 2020
Percentage of people in Estonia who regard their daily behaviour as environmentally aware[55]	22%	35%
Number of nature education programmes taught in schools and nursery schools	270	340
Number of people who have completed an environmental education programme	133,000	Level achieved by 2014: 145,000 Level achieved by 2020: 175,000
Number of disciplines incorporated into a conservation research programme	0	6
Number of visitors to nature trails	1.55 million	1.75 million

Goal 2. The favourable conservation status of species and habitats and diversity of landscapes is ensured, habitats function as a coherent ecological network.		
Indicator	Base level in 2011	Level achieved by 2020
Number of species of the Habitats Directive with improved conservation status	Favourable status – 23; inadequate status – 41; bad status – 7; unknown status – 25 species[56]	The conservation status of 28 species has improved, the status of all species is known
Percentage of species in a good conservation status among the species of the Birds Directive	65%[57]	80%
Number of species with appropriate conservation guidelines	45	155
Number of new invasive alien species in Estonia per year	2...3	0...1
Area of maintained semi-natural communities	25,000 ha	45,000 ha

[55] Eesti elanikkonna keskkonnateadlikkuse hindamiseks korraldatakse perioodiliselt uuringuid (vt http://www.envir.ee/378516).

[56] Report on the implementation of the Habitats Directive (2007): http://bd.eionet.europa.eu/article17/speciesreport.

[57] Birds in Europe (2004): http://www.birdlife.org/action/science/species/birds_in_europe/index.html.

Percentage of strictly protected typologically representative forests in total forest land	8.7%	10%
Area of mire communities with a restored natural hydrological regime	100 ha	10,000 ha
Number of habitat types endangered at the European level whose conservation status has improved	Favourable status – 25; inadequate status – 21; bad status – 9; unknown status – 5 habitat types[65]	Conservation status of 14 habitat types (incl. their ecological coherence) has improved, the status assessment of all habitat types is known
Number of monitored species and habitat types	Monitored species of the Habitats Directive – 74 Monitored species of the Birds Directive – 120 Monitored habitat types – 26 Monitored Category I species – 54	Monitored species of the Habitats Directive – 96 Monitored species of the Birds Directive – 221 Monitored habitat types 60 All Category I species are being monitored
Number of indicator species indicating the coherence of the ecological network	0	15

Goal 3. Long-term sustainability of natural resources, and the preconditions for this, are ensured and the principles of the ecosystem approach are followed in the use of natural resources.		
Indicator	Base level in 2011	Level achieved by 2020
Number of habitat type groups (mires, forests, meadows, etc.) whose ecosystem services have been assessed	0	6
Area of rehabilitated cut-over peat lands[58]	0 ha	1000 ha
Size of selected game populations	Wolf 200, lynx 700	Wolf 200, lynx 700
Share of fish stocks in a good status in the total stocks of economically important fish species	41%	60%
Number of functioning ecoducts and small game tunnels	0 10	Ecoducts 4 Small game tunnels 20

[58] Peatlands which were exploited during the period of the ESSR but are now abandoned.