

Fourth National Report 2005-2008

B U L G A R I A



**CONVENTION ON BIOLOGICAL
DIVERSITY**

**REPUBLIC OF BULGARIA
*MINISTRY OF ENVIRONMENT AND WATER***



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Executive Summary

The present report presents the enforcement of Convention on Biological Diversity by Republic of Bulgaria for the period 2005-2008.

Chapter 1 provides general information about the biodiversity in the country and its status. On a territory of 111 000 sq. km. parts of 3 bio-geographic regions with different natural conditions are situated. This determines the rich species diversity, populations and natural habitats with high percentage of endemism. Bulgarian flora counts about 3900 vascular plants and 1300 lower plants; the fungi are around 5300 species, the lichens -709 species. 30369 animal species have been found. The vertebral fauna is represented by 210 fish species and sub-species, 18 species of amphibians, 37 species of reptiles, 428 bird species and 95 mammal species. The habitat diversity includes 977 habitat types at all hierarchy levels.

At the end of 2008, the protected areas comprise 5.2 %, and the Ecological network NATURA 2000 comprises 33.89 % of the state territory, including 114 Special Protection Areas (SPA) in accordance with Bird Directive (20,3%) and 228 Sites of Community Importance (SCI) in accordance with Habitat Directive (29,5%).

Chapter 2 provides an overview for National Strategy and National Biodiversity Conservation Plan (2005-2010). Long-term Strategic Goal and Strategic Target are presented, as well as Operative Targets and Priorities of the National BD Plan. The Plan includes 157 activities directed toward achievement of the said targets in the following directions: Working out of the biodiversity conservation legislative basis; National Strategies, Plans, Programmes and Methods; Increase of Capacity of the National Biodiversity Conservation Plan Enforcement; Development and Control of the National Ecological Network; Biodiversity Monitoring; Development of the Scientific Basis for the Biodiversity Conservation; Restoration and Maintenance Activities; Training and Public Informativeness Enhancement; Information Systems and Data Bases
The most important results, difficulties and obstacles under the fulfilment of the plan are presented.

Chapter 3 describes Sectorial and Cross-sectorial Integration. The frame of the policy for biodiversity protection is presented, as well as the contribution of the sectorial policies for decreasing the adverse impact from the human activities and sustainable management of the biological resources on the forestry, fishery, game, agriculture, transport, energetic, tourism and also the role of the science and education for creation of argumentation and scientific base for management decisions and practical actions and for nature protection education and capacity building. The major strategic documents are considered, which are on the basis of the corresponding policies.

Chapter 4, first part provides an overview for Progress towards the Goal 2010 and Implementation of the Strategic Plan, Protection of the components of biodiversity on the ecosystem, habitat and biome level, Species conservation, Conservation of genetic diversity, Promotion of sustainable use and consumption, Species endangered by international trade, Threats to the biodiversity, including habitat loss, land use change and degradation, and unsustainable water use, invasive alien species, Challenges for biodiversity from climate change and pollution, ecosystem services, Protection of traditional knowledge, innovations and practices, Sharing benefit and financial resources.

The second part of the chapter reviews Progress towards the Goals and Objectives of the Strategic Plan of the Convention made by Bulgaria, including the role of the CBD in biodiversity issues,

The Cartagena Protocol on Biosafety, international collaboration and cooperation, Improvement of financial, human, scientific, technical and technological capacity for implementation of the Convention, strategies and action plan, Communication, education, and public awareness.

After the report, **appendices** are presented with:

- Appendix I: Party and Report contact information;
- Appendix II: Progress in Global Strategy for Plant Conservation and Programme of Work on Protected Areas;
- Appendix III: List of contributing partners;
- Appendix IV: Further sources of information.
- Appendix V: Information on National biodiversity monitoring system and application of Streamlining the European Biodiversity Indicators (SEBI 2010)

Chapter 1 - Overview of the Biodiversity - Status, Trends, Threats

1.1. General data

Bulgaria is located in the southeast part of Europe and it is placed in the central part of Balkan Peninsula. Bulgaria borders on Romania, Serbia, Macedonia, Greece, Turkey and Black sea. Although with small area of 110 910 sq. km. the territory of the country comprises parts of 3 biogeographic regions - alp, Black sea and continental. The various relief, geology, specific microclimatic conditions and the millennial human activity on the territory of the country determine the rich diversity of species, populations and natural habitats, many of which are with conservation significance. Considering the richness of the biodiversity, the country ranks among the first places in Europe.

1.1.1. Flora

The richness of Bulgarian phytogen-fund, related to the relatively small territory of the country is rather significant. At present the Bulgarian vascular flora amounts approx. 3900 species, 906 genera and 159 families. The moss species are 760, fern species - 45, gymnospermous - 17 species, angiospermous - approx. 3820. The lower plant species are approx. 1300, fungi - about 5300 and lichens - 709 species.

Over the last years new populations have been registered of more than 450 vascular plants. The new discovered for the flora species are 67, from 9 genera and 2 families. Approx. 50 % of the species in the Bulgarian flora are broadly spread in the country.

The number of relicts is also significant - about 300 species (8%) and the endemics - 186 Bulgarian endemics (4.8 %) and 312 species (8 %) Balkan endemics from the total number vascular plants in the country.

The Biodiversity Act regulates the protection of 595 species in their native habitats. In the Red Data Book of the Republic of Bulgaria(1984) 158 endangered species and 574 rare species have been registered. 31 species are considered extinct, and over the last years some of them are recuperated for the Bulgarian flora. A new edition of the Red data book will come out soon. 810 plant species, 288 animal species and 159 types of natural habitats will be included therein.

1.1.2. Fauna

About 30369 animal species are registered in Bulgaria. The vertebrate fauna is represented by 210 species and sub-species of fish, 18 amphibious species, 37 reptile species, 428 bird species (252 species are nidification birds) and 95 mammal species. During last 10 years the number of the known taxons in Bulgaria has grown by approx. 1380 species. The fauna includes 3 zoo-geographical complexes and about 20 faunistic elements. The endemits are about 1300, the relicts which are not endemics - about 300 and the rare species - about 2690. 112 species are included in the international registers for endangered taxons.

Both migration routs pass through the country: Via Pontica, passing the west coast of Black sea and Via Aristotelis - along the Struma valley. From all 29 registered in Europe worldwide endangered bird species, 16 species nidificate in Bulgaria. The bat richness is also large - 33 of all 35 European species range in Bulgaria. In the Red Data Book of the Republic of Bulgaria: Volume 2, Animals (1985): 41 fish species; 2 amphibious species; 9 reptile species; 100 of the registered in the country birds and 19 mammal species.

1.1.3. Areas protection

The habitat diversity numbers 977 habitat types from all hierarchical levels. Ninety six habitats are found only on the territory of Bulgaria.

National Ecological Network

The assurance of area protection of the habitats types and the habitats of species with national and European significance is realized by establishment of National Ecological Network. Protected areas are included therein, declared in compliance with the Bulgarian specialized legislation as well as protected sites, part of the European Ecological Network NATURA 2000 (see Appendix III).

Information on the protected areas is available on the following websites:

<http://chm.moew.government.bg>

<http://eea.government.bg/zpo/index.jsp>

nfp-bg.eionet.eu.int/bul/index.html

www.bg-parks.net

<http://www.bulgariannationalparks.org/bg/index.phtml>

bgprirodniparkove.start.bg/

Protected areas - present state, legislative and administrative regulation

Bulgaria has long - standing traditions on the domain of the protected areas. The commencement of the environmental activity started already in the beginning of last century. In 1934 the first People's park on the Balkan Peninsula has been declared - this is the present Vitosha Nature Park.

The specialized legislation on the domain of protected areas includes the Protected Areas Act(1988) which regulates all matter related to management, ownership, declaration and amendment and changes in the areas and the regimes of the protected areas. The Act introduces classification of the protected areas in compliance with the requirements of the International Union for Conservation of Nature (IUCN).

There are 6 categories protected areas in Bulgaria:

- **Reserves** – Protected areas with strongest regime of protection. Natural systems are protected therein with large diversity of plant and animal species. All human activities are prohibited excluding their security, visits along traced tracks, determined by order of the minister, scientific and educational visits. (corresponding to the category I of IUCN)

- **National Parks** – Territories with area greater than 1500 ha. They are strict state property. There are no settlements and settlement structures there. Management plans are elaborated accordingly zoning the territory and different regimes are determined depending on their conservation significance. (corresponding to the category II according IUCN)

- **Nature Monuments** – Typical and unique natural objects are declared as nature monuments such as: rocky formations, caves, sandy dunes, waterfalls etc. Only human activities are permissible which are in accordance with the regime of use, determined by the declaration order.(corresponding to the category III of IUCN).

- **Managed Reserves** – Like reserves they are with very strict conservation regime. The difference is that despite the security, visits with scientific and educational objective, also maintaining and recuperative measures are permissible.(corresponding to the category IV of IUCN).

- **Nature Parks** – Large areas aiming biodiversity protection and achievement sustainable development. Unlike the National parks, settlements and settlement structures are permissible if they are not a part of the nature parks. A zoning of the territory is carried out for the nature parks and concrete regimes are determined depending on the their conservation significance.(corresponding to the category V of IUCN).

- **Protected Sites** – Habitats of valuable and endangered species are declared as protected sites, as well as remarkable landscapes. Human activities are only permissible if they are in compliance with the regimes regulated in their declaration orders.(corresponding the category VI of IUCN).

At the end of 2008 the number of the protected areas is 950 with total area 581736 ha (5.2% of

the state territory). The distribution of the protected areas by their number in different categories is the following: national parks - 3; nature parks - 11; reserves - 55; managed reserves - 35; protected sites – 501 and nature monuments - 345.

The country conducts a policy for broadening the network of protected areas. Generally, this network will be broadened by declaration of protected areas in categories "protected sites" and "nature monument".

The dominant part of the protected areas are included into the NATURA 2000 network, which proves their conservation significance and their effective contribution to the biodiversity protection.

In compliance with the agreements undertaken in the accession process to EU, Bulgaria has submitted to the EC a list of territories, which are supposed to become a part of the NATURA 2000 Ecological Network, in accordance with the requirements of the Habitat Directive 92/43/ European Economic Community (EEC) and Bird Directive 79/409/EEC. The Bulgarian part of the NATURA 2000 European Ecological Network amounts to 33.89 % of the state territory and is one of the highest percentage in European Union.

1.1.4. Important Biological Resources

More than 200 species of eatable fungi in Bulgaria are of economic importance, 10 of which are of industrial or trade importance. About 750 plants of the Bulgarian flora are utilized as medicinal herbs. More than 250 of them are considered to be economically valuable species. The Bulgarian annual exportation of medicinal herbs amounts to approximately 15,5 thousand tones delineating an obvious tendency to increase the said quantity.

The forest wood resources surpass 520.000.000 m³ at an annual growth of about 12.000.000 m³. The participation percentage of the principal forest wood resources is as follows: Oak trees (*Quercus spp.*) - 23%; Beech-tree (*Fagus spp.*) - 17%; White pine tree (*Pinus sylvestris*)- 16%; Turkey Oak (*Quercus cerris*) – 9%; Black pine tree (*Pinus nigra*) – 9%; Spruce (*Picea excelsa*) – 4%; and Other species – 22%. The forests average age at present is 50 years. The wood utilization and the special functions of the forests are of particular importance especially for the occupation of the population located in the mountain and semi-mountain native areas.

More than 20 Black Sea and freshwater fish species are of great importance for the economic fishery and amateur fishing as well.

During the last decade there is a tendency for lasting decrease of the number of the principal game species (red deer, deer, stag of a fallow deer, small game). The population of the wild boar (*Sus scrofa*) is stable, becoming more and more the principal native hunting type. The pheasant and the chukar (*Alectoris chukar*) are rather rarely found.

1.1.5. Genetic resources

The genetic vegetal and animal resources of Bulgaria are of substantial economic, cultural and biological importance. The Bulgarian flora comprises wild and semiwild forms and cultural plant wild relatives as well. There is a great diversity of wild and semiwild forms and cultural plant wild relatives of the fruit-tree and walnut-tree species.

There are about 60 animal breeds identified in Bulgaria and the majority of them are very close relatives to their wild predecessors. 38 of the native breeds are endangered ones.

The genetic resources of wild animal and plant species are conserved by two principal methods. Plants and animal carrier of those resources are kept in their natural environment (*in situ*) or under controlled conditions (*ex situ*), e.g. in vivariums, zoological or botanical gardens,

dendrariums, live collections, creating banks of seeds, pollen, gametes, embryos, tissue and cell cultures as well.

1.2. Threats to the Biodiversity in Bulgaria

The rich biological diversity in Bulgaria is subject to impact of a large spectrum of threats as a result of human activity and due to natural processes running in the ecosystems. The threats, independently or in combination, affect at different degree the separate native organism groups and habitats. They could influence directly the different species, communities and natural habitats or have an indirect impact on them as well.

The principal threats to the biological diversity in Bulgaria are as detailed below:

1. Degradation, Fragmentations and Habitat Loss due to Human Activities

The destruction of the habitats represents a serious threat to the biological diversity in the country. It affects the water, as well as the terrestrial habitats, and is due to activities in various sectors of economy. The construction activities and the infrastructure projects cause serious damages to the habitats. They include the transport corridor constructions – highways, gas pipelines, Danube deepening for transport purposes; the construction of large touristic complexes and facilities on the Black Sea seaside and in the high mountains; the incorrect management of the wetlands areas; the extraction of inert material from the river beds, the bed correction as well as the construction of hydroelectric power plants and wind power generators; in the agricultural field the intensification as well as the extensification of the agricultural activities; the illegal logging; the forest conflagration; improper change the status of the lands; breaking up of the meadows and grasslands; the illegal bottom trawling in the Black see leading to lasting destruction of the Black sea *floor habitats* and destruction of the natural populations of the Black see ecosystem.

2. Environment Pollution

The environment pollution leads to degradation and loss of habitats and could be considered as a part of this global threat.

The biological diversity in Bulgaria has been affected at a different degree by different forms of pollution – e.g. soil pollution due to agricultural and industrial activity; ground water pollution (pesticides and chemical pollution; industrial pollution, oil spill, etc.), domestic solid waste pollution. Here it must be mentioned the anthropogenic eutrophication of the Black sea seaside, resulting in structural changes in the zooplankton communities, damage the aquatic food chain and decreasing the fish resources.

3. Direct Extermination and Exploitation

The direct extermination of animals and plants in the most cases is a result of the direct exploitation of the biological resources, affecting at in a different extent ecosystems, habitats and taxons.

In this category enters the excessive and/or irregular collection of medicinal plants, ornamental plants, eatable fungi, snails, forest fruits; the excessive fishing of economically precious fish species in the Black Sea; the poaching and the sport hunting causing strongest impact on the populations of the large mammals and birds; illegal sale and exportation of rare plants, birds, amphibians and reptiles.

4. Genetic Erosion and the Introduction of Invasive Species

In Bulgaria in a natural way and/or as a result of human activity have been spread and are being spread alien species and thus they have become a serious threat to the genetic purity of the local populations and/or have deteriorated the characteristics of the natural habitats. Even though this problem has already been identified, it still remains not sufficiently studied concerning the

animal as well as the plant species. The impact of the alien species is especially strong in Black sea, where the processes are most clearly expressed and the effect is most visible.

5. Global Climate Changes

The air pollution and the global climate change effect have been registered also on the territory of Bulgaria. The country belongs to the drought area. The total rainfall quantity and the *river-outflow* decrease showing typical minimums every 4-5 years, especially well expressed in the Black Sea Basin Directorate. This fact has an adverse impact on the hygrophilic plants, aquatic and ombrogenous animals and as whole on the habitats at the riversides, lakesides, peat sites, swamp areas and other wetlands. The changes in the plant cover structure are most clearly expressed, manifested by markedly increase of the areas of drought-resistant species.

6. Natural Vulnerability of Species and Habitats

The group of threats to the biological diversity includes some natural processes which in several cases lead to the loss of species populations, communities and habitats, restricted opportunities for spread and colonization; poor reproductiveness; high mortality rate among young individuals; inbreeding; natural disasters, etc.

7. Insufficiently Effective Enforcement of the Nature Protection Legislation and inclusion of the Biodiversity Conservation to the Sector Policies, deficiency of qualified staff

The insufficiently good coordination between the sectors under the strategic planning leads to negative consequences on the biodiversity under the application of the corresponding policies. The most heavy consequences experience the regional development, the energetic and the tourism.

8. Problems under the enforcement of preventive instruments aiming biological diversity protection

The incorrect interpretation of the legislative texts, the ineffective enforcement of the legislation, the insufficient control on its observation and the inadequate sanctions are precondition for insufficient respective role on the infringements.

As a result of the analysis, the major challenges have been outlined, which are to be solved by the country during the following years, namely: reduction and prevention the consequences from the climatic changes and adaptation of the country toward the climatic changes; more sustainable production and consumption; assuring of sufficient quantity and quality of the water supply; changing the adjustment, the attitude and the behavior of the society toward the environment and the sustainable development; providing monitoring of higher quality as well as information concerning the environment. For resolving of these challenges the development of new models of consumption and production is to be done, as well as introduction of good practices, eco-innovations and new, sparing the environment technologies and all groups of the society should become active participants in this process.

CHAPTER 2: Current Status of National Biodiversity Strategies and Action Plans

The *National Biodiversity Conservation Strategy* and the *National Biodiversity Conservation Plan* (<http://www.moew.government.bg/>) determine the political and the legal frame, the goals and the priorities for biodiversity conservation, the development of the institutional capacity, development of protection area systems and the national ecological network, recuperation and maintenance of biodiversity and eco-systems, strengthening the scientific base for biodiversity conservation, development of the ecological education, upbringing and enhancement of the public acquaintance, as well as the financial frame for fulfillment the action plan and implementation of the policy.

The National Biodiversity Conservation Plan (2006-2010) determines the following goals, priority trends, measures and activities for protection and sustainable use of the biodiversity and bio-resources:

National Biodiversity Conservation Plan Goals

Long-term Strategic Goal

Conservation, restoration and sustainable management of the native biological diversity aiming the establishment of optimal conditions, surroundings and prospects for the people's life.

Strategic Target of the Plan

Diminution of the biodiversity loss until 2010.

Operative Targets:

1. Preservation and restoration of the Species, Habitats, Ecosystems and Landscapes. Biodiversity Conservation.
2. Maximal Integration of the Biodiversity Problems in the National Ecological and Sector Legislation and the National Policies and Programmes.
3. Sustainable Utilization of the Biological Resources. Integration of the Biodiversity Problems in the Agricultural Sector.
 - Biodiversity Conservation through Sustainable Forest Control
 - Fish Resources Preservation and Sustainable Utilization
 - Optimization of the Bulgarian Policy of with regard to the International Trade with Biological Resources
 - Sustainable Development of Tourism
4. Prevention and/or Decrease of the Negative Impact on the Biodiversity due to the Climate Change and Adaptation to it.

National Plan Priorities

1. Gathering of information, establishment and use of fundamental measures, approaches and systems for the conservation, preservation, maintenance and sustainable management of the biological diversity and the natural resources
2. Improvement, strengthening and optimization of the normative basis and capacity of the institutions establishing it
3. Conservation of the biological diversity through long-term observation and assessment of change tendencies for the adoption of preventive measures
4. Working out and enlargement of mechanisms, instruments and measures of control
5. Establishment of good informational and scientific basis for the effective biological diversity management
6. Enhancement the public informativeness and involvement in the decision making process

The National Biodiversity Conservation Plan includes the goals, thematic operative plans and the intersectional directions of the Convention on Biological Diversity.

The main sector administrations take responsibilities on the fulfillment of the National Plan in partnership with a broad circle of scientific institutions, NGOs and local authorities. The plan includes 157 activities directed toward achievement of the said targets in the following directions:

1. Working out of the biodiversity conservation legislative basis
2. National Strategies, Plans, Programmes and Methods
3. Increase of Capacity of the National Biodiversity Conservation Plan Enforcement
4. Development and Control of the National Ecological Network
5. Biodiversity Monitoring
6. Development of the Scientific Basis for the Biodiversity Conservation
7. Restoration and Maintenance Activities
8. Training and Public Informativeness Enhancement
9. Information Systems and Data Bases

The following are the most important results from the National Biodiversity Conservation Plan:

- Completing the national legislation on the domain of environment and its harmonization with the European directives in the Nature area
- A substantial advancement has been reached under integration of the biodiversity protection policy in the corresponding sector policies and strategic documents
- Institutional strengthening of the biodiversity units and the institutions on fulfillment of the National Biodiversity Conservation Plan - appointment of personnel and capacity building in Ministry of Environment and Water, National Forestry Agency and their regional structures; carrying out a training for the local authorities, sector ministries, medias, strengthening of the scientific institutions and NGOs active on the biodiversity domain
- Development the system of protected areas up to 5% of the state territory and improvement their management by application of management plans, establishment of partnerships on local level and with NGOs for sustainable development of the areas around
- Establishment the Bulgarian part of the NATURA 2000 Ecological Network for conservation the habitats and species of European significance, which takes 33.89% of the state territory
- A successful collaboration with all neighbor countries has been established for biodiversity conservation in the trans-border areas – Green Belt, joint projects under EU INTERREGIO Program; management of populations of Large carnivores and migrating species
- Development and improvement of systems for biodiversity monitoring and for monitoring and assessment of the polluted air impact on the forest ecosystems; application of the indicators SEBI 2010, aiming harmonization of the data, dedicated for reporting the results from the biodiversity monitoring (see Appendix IV)
- Development of the scientific potential and strengthening of the scientific basis for biodiversity protection and as a result of which an inventory has been carried out of number of protected areas and areas with large biodiversity; the scientific basis has been elaborated for establishment the NATURA 2000 Ecological Network; Red Lists of vascular plants and fungi have been elaborated and a new edition of the Bulgarian Red data book has been prepared; an inventory of the alien and invasive species in the Bulgarian flora and fauna has been accomplished, the penetration way has been tracked, the threat has been assessed along with the necessary measures concerning the most dangerous aliens and the most-endangered ecosystems; the Bulgarian scientists

successfully have been integrated into the European scientific area by their experience and their contribution for exploration and conservation the biodiversity in the country and the region.

- Creation and maintenance of in-situ and ex-situ collections of plant genetic resources (wood species, medical plants, endangered species, as well as agricultural varieties and wild predecessors – in frame of the National Program for plant Genetic resources, coordinated by FAO)
- Improvement the status of endangered species and habitats by implementation of maintenance and recuperative activities and applications of good practices for management, incl. wetlands, flooded forest, meadows, pastures; some species rapacious and wetland birds, tortoises, chamois, bear, Acipenseriformes; operation of Wildlife Rescue Centers for disastrous and confiscated endangered species.
- Increasing the public knowledge and education concerning biodiversity by carrying out periodic media campaigns, celebrations and thematic activities; publishing of educational and informative materials; establishment and maintenance of information and visitoring centers; carrying out of specialized and out-of-curriculum education
- An information system has been built about the species and habitats from the NATURA 2000 Ecological Network; there exist also many thematic databases concerning different biodiversity components - genetic resources, marine biodiversity, invasive species, vascular plants and fungi, some animal groups.
- Capacity building and acquiring experience for attracting and management of financial means from the EC funds and donor programs for biodiversity protection

Difficulties and Obstacles

- It is necessary to improve the coordination on all levels and between all interested parties for achievement the goals and the priorities on the environmental domain and in particular taking on the responsibilities and engagements from the business side
- Still the biodiversity is not sufficiently valued as a decisive factor for achievement sustainable development and as a main criteria for wealth and development of the society, as a result of which in some regions of the country significant damages have been caused and special efforts will be necessary for recuperation
- Insufficiently effective application of the good practices and experience on the domain of preventive instruments for biodiversity protection
- Insufficient human potential for fulfillment the activities under the National Plan in all envisaged directions
- Lack of sufficient national financial resources for fulfillment the National Plan, and the access to the EC funds is expected to improve the situation
- In scientific aspect a certain potential is supposed to be redirected toward newer and more actual trends of the policy on the biodiversity domain such as: evaluation of the ecosystem services, economical aspects of the biodiversity, adaptations to the climatic changes
- Insufficiently developed system for periodic control and assessment of the effectiveness of the policy and the achieved results.

CHAPTER 3: Sectorial and Cross-sectorial Integration or Mainstreaming of Biodiversity

The country successfully harmonizes the legislation in sector Environment with the European legislation, which includes about 130 directives and regulations, and it is one of the most difficult for enforcement, and it takes substantial financial support. The frame acts as well as the regulations have been elaborated and passed, which regulate the rules for ecological behavior under the water management, as well as waste, chemicals, protected areas, noise, the preventive instruments etc.

As a whole, the structures for enforcement this legislation have been established on national level and the administrative capacity continuously advances.

The achievement of the objectives and the priorities in the environmental policy, assures decrease and prevention of the risks for the human health and the nature from environment pollution as well as improvement the social status of the population. Waste waters purification stations and drain collectors are built, as well as waste depots, air purification installations etc. financially supported by the pre-joining foundations of the EC funds and the budget.

Variety of measures have been realized for achievement a good quality of the water basins, improvement the purity of the atmospheric air in the cities, protection the rich country biodiversity and the management of the waste, application of preventive instruments and advance of the ecological consciousness, culture and the information of the general public. Sector and municipal programs connected with the environment are implemented.

The environmental quality will improve also as a result of the start of Operative Program Environment 2007 – 2013 as well as the remaining operative programs, financially supported by the Structural Fund, Cohesion Fund, European Agricultural Fund for Development the Rural Regions of EU and the European Fishery Fund, wherein measures for sustainable environment are introduced.

As a result of the realized policy, a tendency is observed toward improvement the quality of the surface and underground water. The emissions of greenhouse gases in the different economy sectors decrease by participation of Bulgaria in the European Union Emission Trading System (EUETS) and by using the mechanism Joint Fulfillment. Reduction of some monitored emissions in the air is observable (lead, sulfur dioxide and dust from the energetic, solutions from the pharmaceutical production etc). The beginning of establishment of National system for waste management has started.

The policy for soil protection and their sustainable use has been integrated in a larger extend in the other sector and inter-sector policies.

3.1. FORESTRY

The forests in Bulgaria occupy approximately 36 % of the country's territory. The area they cover up to the year 2008 amounts to 4 114 552 ha. The table illustrates the tendency of gradually increase of forest area.

1991	1992	1993	1994	1995	1996
3 873 543	3 872 938	3 897 384	3 675 786	3 876 272	3 878 405
1997	1998	1999	2000	2001	2002
3 878 794	3 899 655	3 794 797	3 914 355	3 980 032	4 003 755
2003	2004	2005	2006	2007	2008
4 015 236	4 063 555	4 076 464	4 089 762	4 108 494	4 114 552

Tab. 1. Information of distribution of country's forest area by years (ha)

Source: State Forest Agency

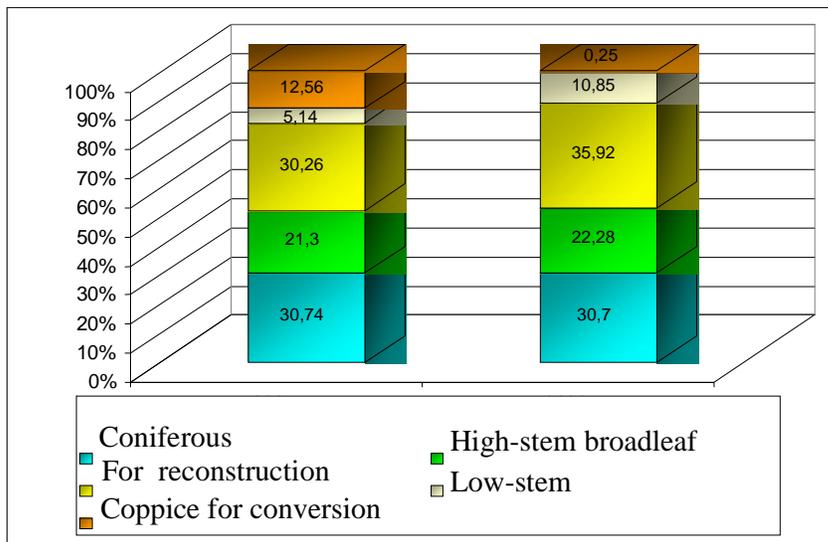


Fig. 1. Distribution of total forest area by types of forests, %

Source: Executive Forest Agency

Total area of broadleaf is 2 565 571 ha (69,7 %), and of coniferous – 1 114 813 ha (30,3 %). Native forests occupy 2 844 668 ha (73.4 % of afforested area), of which coniferous are 15.25 %. Affected by erosion in the year 2008 are approximately 7% of the total forest area.

In total, bulgarian forests comprise 290 native tree and bush species and their number is 110 and 180 respectively. The researches, regarding biodiversity on level of 32 tree species, with high economic importance, show presence of 50 ecotypes, 80 varieties and 360 forms .

Forest territories preserve above 80 % of the protected plants and above 60 % of the threatened of extinction animal species in the country , above 60 % of the priority protected types of habitats , the population of 43 world threatened species. Forests provide approximately 85% of water outflow in the country, or approximately 3,6 milliard m³ of the resource of drinking water; play significant role in reduction of green-house emission in the atmosphere; They have soil protection and anti-erosion function; create healthy and attractive environment for the development of tourism and recreation activity.

Approximately 10 % of the bulgarian forests are protected areas – national and nature parks , reserves, protected sites and nature monuments. In the ecological network NATURE 2000 are included 45,2% of the forest lands .

Afforestation

In the last 50 years in Bulgaria were planted 1,5 mil. ha forest cultures. The goals of afforestation are to increase the area of forests and their productivity and also to undertake measures to prevent soil erosion . Planting native species, creation of forests, rich in biodiversity, applying of proper management facilitate natural recovery and formation of multy-layer stands. Created in this way forest cultures are more valuable of ecological point of view. The total afforested area in the year 2008 is 3645,5 ha, including 2400,3 ha new afforestation and u 580,1 ha for recovery of burned forest area.

Forest health status

The impact of natural and antropogenic stress factors on the health and vitality status of Bulgarian forests is assessed by applying of harmonized methodology, adopted by International Co-operative Programme Forests. The programme operates under the UNECE CLRTAP. Legal

basis for the development of forest monitoring in European Union is LIFE+Regulation (EC No 614/2007).

The summarized results for the period 1994-2008 show positive statistical trend for 45,15% of the observed trees, worsening is registered for 40,29% and 14,56% are retaining steady quality.

Forest fires

Forest fires are vast source of CO₂ emission in the atmosphere, causing climate change. In the last 10-12 years the number of forest fires in Bulgaria, and on the world level is much more increased. Regarding forest fire, Bulgaria is a part of the traditional risky Mediterranean region. The social and economic losses amount 13 millions lv. annually.

In the year 2008 arose 582 forest fire on the territory of 5 289,2 ha. Compared to 2007 the number of the registered forest fires is 1 479 and burned area is 42 999 ha .

Protection of the forests: Policy, Management, Strategies

National forest policy and strategy are based on the main principles, adopted by FAO, IPF/ IFF and MCPFE. The following principles have the definitive role: active participation of the stakeholders, intersectoral approach , compliance with national law, integration with National plan of economic development , compliance with international agreements and conventions, partnership, promotion of the public engagement. The main goals of the national strategy are:

- Sustainable and multifunctional management of the forests, aiming at vital forest sector with important economic and social value, including rural development;
- Better coordination and collaboration between national policy and all relevant international criteria and agreements;
- Identifying and assessing the options for utilization of national and EU funding resources to support the forest sector.

In the last decades the forest economy in Bulgaria encountered a number of structural and economic changes. More attention is paid on sustainable use and protection of forest biodiversity. Main focus of management is ecological function of forests, including sustainable cultivation, water protection, acknowledging the role of forests in carbon sequestration and recreation. Pursuing forest policy with regard to higher level of protection and preservation of the very rich bio- and landscape diversity of Bulgarian forests.

The increase of protected areas and zones, integration of conservation goals into forestry and consideration the role of biodiversity, reflect the better understanding of the ecological benefits of the forests.

It is expected to be improved the role of forests in the mitigation of the impact of climate change through enhancement of carbon storage in the existent and new created forests.

Afforestation with native species, cultivation of forests, rich in biodiversity and also performing forestry to maintain natural forest recovery and heterogeneity are of key importance for forest ecosystems to fulfill its multiple function.

The draft of **National Strategy for Sustainable Development of Forest Sector (2006–2015)** <http://www.nug.bg/> has been worked out, which incorporate the goals and means for achieving of multifunctional management of the forest sector in accordance with international forest-related commitments and criteria.

Furthermore, **Strategic plan for development of forest sector (2007–2011)** <http://www.nug.bg/> is elaborated in order to describe the measures for improving the function of forest economy branch . This plan is harmonised with Forest Action plan of European Commission , which aims

at establishment of coordinated framework of action on level of European union, including member states.

National programme Recovery and protection of Bulgarian forest <http://www.nug.bg/> - precondition for realization of the programme is increased number of forest fires in the last 15 years (up to 2007 г.) as a consequence are destroyed 42 997 ha of the country's forest fund. The main goal of the programme is to ensure labour for unemployed persons to take part in the recovery of burned forest areas .

Important documents, connected with forestry in Bulgaria are:

National action plan on climate change, National strategy and Action plan for protection of biodiversity and National strategy for environment and Action plan, National strategy for development and management of water sector (all on

<http://www.moew.government.bg/>) *National strategy for regional development and National strategic plan for rural development*

www.mzh.government.bg/.../NSRDP_draft633518227577343750.pdf *National programme for combating of desertification* <http://www.chm.moew.government.bg/SLM/files/3-leaflet.pdf>

As a part of Pan-European process of protection of forests, UNFCCC (Kyoto Protocol resp.) the decisions of the World summit for sustainable development (Johannesburg), Bulgaria specified the accents of the national forest policy and one of them is namely the use of bio-energy, including increase in efficiency of biomass production and the creation of new forests on the burned areas and abandoned land. The whole implementation of the National action plan of climate change is crucial and is very relevant the realization of two pilot projects for use of wood biomass with financial support of Japan and World Bank .

Sustainable Forest Management

The striving is as many as possible of forest ecosystems, with high conservation value, to be included in the NATURA 2000 network.

Main problems

Some of the challenges for sustainable use of forest resource are connected with poaching, illegal logging, corruption, anthropogenic activity.

Others threats are production of paper and wood coal, forest fires, progressive decrease in game stock and continued process of withering in coniferous cultures and oak forests.

Problems related to insufficient administrative capacity in the system of State Forestry Agency, have been identified. The establishment of good coordination and effective communication with the local structures, municipalities and potential beneficiaries in non-state forestry sector, remains a challenge.

In the draft of the National Strategy for Sustainable Development of Forestry sector in Bulgaria (2006-2015), was identified that the lack of an integrated national information system on forests and forestry sector, as well as the lack of modern computers and software in the forestry management structures, are among the factors, which hinder the effective management of the forest resources.

3.2. GAME MANAGEMENT AND HUNTING

Geographical location, relief, climate, water resources and other natural conditions are favourable for the rich game diversity in Bulgaria. The country is famous for developing modern hunting tourism and game management.

In the last 12 years is observed negative trend in the number of main game species (red deer, roe deer, fallow deer, small game). Due to the number of the wild boar is stable it is the main

hunnable species. More of the game farms work with 15 – 20 % of its capacity and as a consequence of that, the population of pheasant and thrasian rock partridge is not numerous. The number of the rest small game is diminished too.

The main problems and challenges are related with surmounting of the common trend to change for the worse the games and the fish state and decreasing its stocks in results of poaching and ineffective management and conservancy. The change for the worse of possibilities for natural spreading of the native fish species and artificial fish breeding ignore decreased the fish stocks. It is necessary to be taken adequate measures for improving game population condition, which is of high importance for sustainable development of forest sector, rural and mountain regions.

3.3. AGRICULTURE

The agriculture is one of the economical sectors, which are exercising most important effect on the landscape, biodiversity and biological resources. For this reason, the appliance of appropriate politics, measures and approaches can significantly contribute for their preservation, maintenance and management.

State

As whole, the changes in Bulgarian agriculture, for the last 15 years, brought along decrease in usage of chemicals and fertilizers, fragmentation of the farms and restoration of some parts of the natural elements of the agricultural landscapes, which to a great extend brought positive effect on the biodiversity in the agricultural lands, covering 50.7% of the country's territory.

Contribution to preservation of the biodiversity

As exceptionally important for biodiversity conservation is considered the preservation of **High nature value farmlands (HNVF)**. *Those are territories, in which farming is main or predominant way of land usage and the agricultural activity supports or is connected with high diversity of species and /or habitats from European conservation importance.* HNV farmlands have an even distribution throughout the country – from the lowlands to the mountains peaks covering area of 1 603035 ha.

Permanent grasslands, most of which are semi-natural, in 2004 cover 34% of all usable agricultural areas. **Semi-natural grasslands** are one of the most valued ecosystems in the agricultural landscape. They are result of long standing agricultural practices in usage of the grasslands for pasture, hay gathering, or mixed usage. The semi-natural habitats in Bulgaria turned out to be under pressure, which leads to decreasing of the biodiversity in them:

- During the last 20 years many of the pastures with high natural value have been abandoned and not fully grazed up, which leads to their coverage with aggressive grasses, bushes and trees.
- Opposite to this process is the overgrazing, followed up by soil erosion and loss of the natural value of the lands;
- Big part of the grasslands has been transformed in arable lands or is build up, causing in this way loss of habitats for many plant and animal species.
- When the seminatural grasslands are public property and are located near by settlements, they are usually used for pasture from the local stock breeder.

For the needs of the Rural Development Program, 2007-2013, (RDP), to give an opportunity for the farmers, using High natural value farmlands (HNVF), to be financially supported for the sustainable usage of them, an inventory and mapping have been made for those lands.

The methods for **biological production** of vegetation and animal products and the appliance of environmental friendly practices are taking up much bigger place in the agriculture and

consumption, even though in 2007 the share of lands for biological vegetation production is barely 11 807.46ha (0.4% of all rural lands). Together with the biologically managed meadows and pastures, areas for gathering of biological herbs, forest fruits and fallow lands the acreage reaches up to 412 081.62 ha. Total of 3145 rural animals and 35747 beehives have been breed up through biological method in 2007.

Strategic documents

National Strategic Plan for Agricultural and Rural Development (2007-2013)

<http://prsr.government.bg/>

The main goal within the framework of the National Strategic Plan for Agricultural and Rural Development 2007-2013, that assures integrated approach for sustainable management of the lands, is “The protection of the natural resources and conservation of environment in the rural areas” That goal is orientated toward better land management and have for an objective to implement the National Agricultural Environmental Program and other already undertaken international obligations like Kyoto Protocol, UN Convention to combat desertification, as well as other conventions on the field of biodiversity protection.

National Agro ecological Program (2007-2013), as a part of the Rural Development Program.

The main goals of the Program are the introduction and usage of ecological methods in agricultural production, which can conserve or improve the environment and can contribute in achieving sustainable model of land management and conservation of Bulgaria’s natural resources. Within the frameworks of the Program, mechanisms for conservation of soil and water resources are foreseen according to the national targets and obligations toward EU, assuring compensatory payments for the farmers and the other lands users, which in own free will manage their lands in environmentally friendly manner.

Rural Development Program (2007-2013) www.mzh.government.bg/Article.aspx?...

The measures in the Program are separated in four axes. In each of them are foreseen possibilities for environmental conservation and support of sustainable rural development.

Axis 1 – Improving of competitiveness in agricultural and forest sectors - Bonuses are foreseen, under the form of partial restoration of the investments for manure-gathering depot in nitrate vulnerable areas, support for producers of biological agricultural products; farmers within Natura 2000 sites or those who cultivate lands in not-favoured regions.

Axis 2 – Improvement of the environment and rural nature is aimed toward the conservation of rural nature and sustainable development. The measures in Axis 2 are separated in 2 directions: for sustainable land management and sustainable forest management. One of the main tools for conservation of the biodiversity and the development of extensive agricultural practices is **measure Agricultural-environmental payments**

- **Sub-measure Biological agriculture** aims to urge the farmers in development of biological agriculture. The candidates under the sub-measure are obliged to apply extensive environmentally friendly agricultural practices, for which they will get compensatory payments.

- **Sub-measure Management of High natural value farmlands**- Extensive agricultural practices are supported in lands, defined like High natural value farmlands. Most of these lands are constant grasslands. The farmers are obliged to execute adequate activities, to maintain these lands in good agricultural and environmental state. Farmers that cultivate the High natural value farmlands are required to implement activities, which help for the conservation of endangered bird species.

- **Sub-measure Conservation of traditional landscape characteristics** gives an opportunity for conservation of valuable habitats and their habitants, located in the farmlands.

- **Sub-measure Traditional animal husbandry** stimulates breeding of endangered local breed farm animals, also the maintenance of the mountain pastures in to the national parks, through support of pastoralism.

- **Sub-measure Conservation of the soil and water** requires execution of anti erosion actions and introduction of crop rotation, which can help for preservation of soil fertility and protect water against contamination with nitrates from agricultural activities.

Measures Payments for natural limitations of farmers in the mountain regions and Payments for farmers in regions with limits, different from the mountain regions

The measures are directed toward farmers cultivating lands in so called not favoured regions and aim to protect the biodiversity, applying of traditional agricultural practices and to decreasing depopulation of these regions.

Measures Payments for Natura 2000 and payments, related to Directive 2000/60/ EU and Payments for Natura 2000 – for forests

The measures aim to compensate farmers, in connection with limitations put for the conservation of species and habitats included in Natura 2000 network.

Axis 4 – Leader local strategies with integrated measures for environmental conservation and sustainable development are encouraged.

National Action Program on Sustainable Land Management and Combating Desertification in Bulgaria - 2007-2013

<http://chm.moew.government.bg/SLM/files/3-leaflet.pdf>

The National Action Program is developed according to the requirements of the UN Convention to Combat Desertification. Main strategic objective of the Program is limitation of the land degradation and combating desertification for preservation and development of the capacity of the eco-systems towards a clean, safe and attractive environment, long-term economic stability and better quality of live.

National Action Plan for management on persistent organic pollutants 2006 (appliace of the Stockholm convention)

Series of activities have been planned, referring to the management of unsold and unfit for use products for plant protection.

National Development Plan for the biological agriculture in Bulgaria, 2007-2013

http://www.mzh.government.bg/Articles/661/Files/NOFAP_FINAL_en%5B1%5D633523253955781250.pdf

Proposes a system of measures, which aim to lead to stabilization of the ecosystems, conservation and recovery of the natural resources, development of the rural regions and stopping the process of land abandoning.

Following strategic objective are defined in the plan:

- Development of biological product market;
- Management of et least 8% of the used agricultural land, by the methods of biological production towards 2013;
- Establishment of effective normative frame, to support the development of the biological agriculture towards 2007;
- Orientation of the scientific researches toward biological agriculture to the practice, development of educational system, training and consultation in the field of the biological agriculture towards 2010;

- Establishment of an effective system for control and certification of the biological products;

3.4. FISHERY

Operative program for development of the Fishery Sector /2007-2013/

<http://www.mzh.government.bg/Article.aspx?lang=1&rmid=366&id=366&lmid=0>

The ichthyofauna of Bulgaria comprises 218 species, 107 of which inhabit freshwater and semi-briny waters and 111 inhabit the sea, 193 species are local and 6 of them are Balkan endemics, 51 species are included in the Red Data Book of the endangered species, and 24 of them are protected under the Bulgarian legislation.

Threats and problems

One of the major problems for decreasing the resources of sturgeon (*Accipenser sturio*) in Danube river since 1993 is the construction of the Zhelezni vrati hydro-technical junction in Serbia, the water pollution, lack of spawning sites, as well as the construction of dikes along the Danube riverbanks. The downstream hydro-meliorative constructions belong to the important impacts on the ichthyofauna of the rivers mouthing into Black sea, which disturbs the natural condition of the fish populations - change of the river beds, construction of meliorative systems, construction of small and large water basins, the use of the water for industrial and domestic purposes etc. Other adverse factors are the overexploitation of the fish resources and the adverse impact due to the tourist and industrial development. The pollution, due to the pesticides used in the agriculture, domestic and industrial waste and waste waters is a problem for some riverside regions.

Situation in the fishery sector in Bulgaria

Marine fishery The bigger part of the marine fishery is concentrated in territorial waters (within 12 miles). Totally 125 species live in Black sea /26 of them are of economic importance/.

Most frequently a fishery object in Black sea are the small fish species: European sprat (*Sprattus sprattus sulinus*), Anchovy (*Engraulis encrasicolus ponticus*), Mediterranean horse mackerel (*Trachurus mediterraneus ponticus*), Whiting (*Merlangius merlangus euxinus*). Other fishes are represented with smaller quantities in the fish yield: Grey mullet (*Mugil cephalus*), Picked dogfish (*Squalus acanthias*) and Turbot (*Psetta maxima maeotica*). Bulgaria attempts to add to the yield of these species also the yield of Black Sea - rapana (*Rapana thomassiana*).

Inland Fishery The total length of the rivers for inland fishery is 20 231 km with water area of 15 000 ha. The diversity of the species, inhabiting the inland basins, lakes and rivers numbers about 80 species.

The inland fishery in Danube river, the other rivers, lakes and dams is 10% of the total yield. The average quantity of the yield varies between 1500 - 2000 t.

Still some types of fishing business take place in some large dams. These activities gradually vanish and the dams more and more are used for angling, aquaculture or other additional activities such as fishing tourism and ecotourism.

Fishery in Danube river The total yield in Danube river over the last years was between 300 and 500 t annually. The populations of the most important and valuable Danube river species are not stable, the yield is not guaranteed and it cannot be planned in advance. The population of sturgeon species and especially the populations of Beluga (*Huso huso*) are steadily decreasing and are under special protection and regulation of their use.

Aquacultures Water area appropriate for aquacultures in Bulgaria is approx. 65 000 ha. The total water area used for fish farming at the moment is 9178 ha. The size of the fish farms in Bulgaria is rather small: 29 % of the farms has an area smaller then 1 ha; 42 % take area between 1 and 10 ha; only 34 aquaculture objects occupy area greater than 20 ha.

Tendencies and practices Over the last years a tendency is observed toward decreasing of the yield quantity in the inland water basins of the country including Danube river. Contrary, at this expense the aquaculture production steadily increases. The increasing of the aquaculture production can contribute for decreasing the fishery press on the fish resources in the natural water basins.

The aquaculture production and the catch for the period 2004 - 2007 are presented in the Fig.2-4. The only species for the moment in marine farms is the black mussel (*Mytilus galloprovincialis*). From the figure illustrating the yield in the Black sea it is seen that the catch increases during the last years and this increasing entirely is at expense of two species - Black Sea -rapana (*Rapana thomassiana*) with relatively largest part of the catch and the European sprat (*Sprattus sprattus sulinus*). The Turbot (*Psetta maxima*) is a quota object.

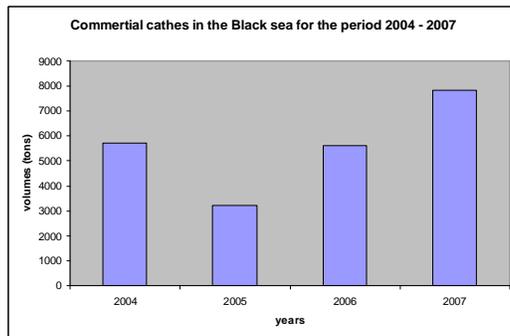


Fig. 2 Commercial catches in the Black Sea 2004-2007

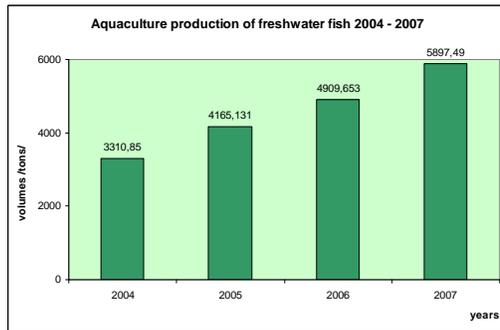


Fig. 3 Aquaculture production of freshwater fish 2004-2007

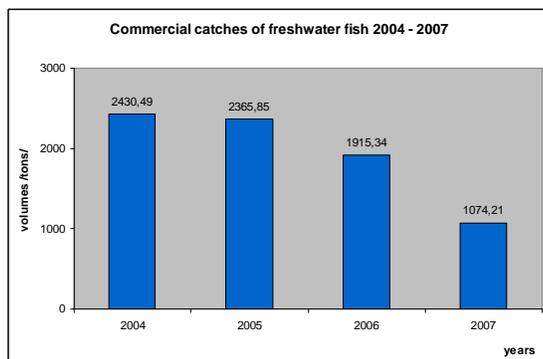


Fig. 4 Commercial catches of freshwater fish 2004-2007

Artificially fish planting measures

Since 2002 the National Agency of Fisheries and Aquaculture (NAFA) elaborate yearly the **National Program for fish planting in Danube river and the inland water basins** because the tendency for decreasing the fish resources, the change in the age structure of the populations and the ratio between different fish species.

The artificial fish planting in the inland water basins is an annual procedure. This way the resources, populations and the biodiversity are conserved. A breeding of the main significant species is done: Cyprinidae, Salmonids (Salmonidae) as well as some species which are subject of angling hobby: Common carp (*Cyprinus carpio*), brown trout (*Salmo trutta*), wels catfish (*Silurus glanis*).

Species	2005		2006		2007	
	Number	Total weight /kg/	Number	Total weight /kg/	Number	Total weight /kg/
<i>Cyprinus carpio</i>	114 780	2 313	697 000	2 090	500 000	1 000
<i>Cyprinus carpio</i>	757 000	2 076				
<i>Ctenopharyngodon idella</i>	50 000	200				
<i>Hypophthalmichthys molitrix</i>	170 000	2 570				
<i>Silurus glanis</i>	1 530	75				
<i>Salmo trutta fario</i>			167 500	1 000	175 500	1 865
<i>Salmo trutta fario</i> Brown trout	16 270	814				
<i>Acipenser gueldenstaedtii</i>			2 000	9,6		

Tab. 2. Breeding of the inland water basins 2005 - 2007.

Policy and goals for the Environment Protection

On Bulgaria's accessing process to the EU, the country has undertaken engagements, which have outlined the priorities for development of the Fishery Sector connected with acceptance the achievements of the European legislation /*acquis communautaire*/ and the requirements of The internal market of the European Union for effective introduction the mechanisms of the Common Fisheries Policy (CFP) of the European Union, as well as introduction of the methodics of EUROSTAT's fishery statistics. Bulgaria fulfills the engagements, undertaken under Chapter 8 Fishery, the country observes the policies and the principals of the Common Fisheries Policy of EU, the FAO Code of Conduct for Responsible Fisheries, as well as the Convention on International Trade in Endangered Species (CITES).

The main goal of the policy on fishery is to assure fishery management, which in turn to assure sustainable ecological, economic and social conditions.

The applied measures aim to assure:

- Responsible and sustainable fishery and aquaculture activity, which should fully assure a healthy marine ecosystem;
- Economic vital and competitive industry, which should be of use to the consumers;
- Formation of better living standard for the dependants on the Fishery Sector.

In the strategic documents on the domain of the fishery the following key principles have been grounded, connected with the environmental and the biodiversity protection.

- Conservation of the water ecosystems;
- Encouragement the quality, diversity and the availability of the fishery resources;

- Preservation from over-exploitation and over-fishery excess capacity;
- Use of the most reliable scientific facts;
- Introduction of more selective and environmentally protecting fishery tools and practices;
- Protection of the endangered fish habitats in the marine and freshwater ecosystems;
- Monitoring and control on the operating activity of the fishery vessels;
- Assurance of safe, healthy and good labor and living conditions.
- Support for the aquacultures as a means for assuring diversity of incomes and foods.

3.5. WATER SECTOR

Inland Water Basins

National Strategy for Development and Management of the Water Sector 2004-2015 is a frame for integrated water management in the spirit of the Frame Directive of EC for the policy of the European Union on the domain of the water.

The water management is carried out based on basin principle, thus based on developed plans for management of river basins, wherein programs of measures for protection and improvement of the water status are envisaged. The management plans and the programs of measures are prepared by the basin directorates. The objective is by water protection and by application of the programs of measures to reach the goals of environment protection and assuring a good condition of the surface and underground water and a good ecological potential of the artificial water basins, including as habitats of plant and animal species.

The surface waters in Bulgaria as whole are in a good condition. The impact of the transition toward open market economy over the industry and agriculture and the collapse of the production have led to decrease of the mouth pollutions in the waters, including decrease of the major biogenic (nitrogen, phosphor). As a result approx. 75 % of the length of the rivers in the country meets the weighted indicators for good quality of the surface waters.

Main problems

- The global climate changes and the situation of the country in the draught zone;
- High expenditures under the undertaken engagements in connection with the enforcement of European legislation;
- Lack of national policy for construction of small Water Power Plants

Main obstacles

- Bulgaria is relatively poorly provided with water resources in comparison with the European countries.
- The distribution of the water resources in the different river beds over the territory of the country is irregular either in season or in annual aspect.
- The pollution of the sea waters in a large extend is due to construction initiatives non conforming with the capacity of the existing infrastructure.
- Part of the constructed Waste water treatment plant operate with non sufficient capacity and purification effect, due to need of broadening and modernization.

The Marine and the Coast Environment

The marine and the coast environment is a live important resource. On one side they are sources of services and resources from the ecosystems for number of main economic activities, and from other side they play the role of climate change regulators and for the security of the foods, they have also cultural importance, assuring possibility for recreation and relaxation, and they favor the creation of biological habitats. All this shows that the changes which occur in the marine and the coast environment as a result of pollution and extinction have significant social and economic consequences.

In the period 1998 - 2004 it has been registered an improvement of the Black sea ecological condition as a result of decreasing the quantity of biogenic substances as well as rise the diversity of phytoplankton species, benthos species and the fishes, gradually recuperation the populations of typical for the sea crab species, fishes and dolphins.

The fulfillment of the Water Framework Directive is supposed to contribute for achievement the goals of the Convention on Biological Diversity regarding the marine and the coastal biodiversity. This is realized by number of common and concrete goals and activities, aiming to break the biodiversity losses in national and world scale and to guarantee the capability of the marine ecosystem to ensure the provision of products and services. Also, there is a program for work in protected areas aiming creation and maintenance the ecologically representative systems of marine protected areas until 2012. Same Directive is supposed to contribute to the fulfillment the engagements under the Convention on the Protection of the Black Sea Against Pollution.

Main problems

- Insufficient representativeness of the marine and coastal ecosystems of Black sea in the existing network of protected areas;
- Lack of measures for reducing the penetration of invasive species;
- Increasing the anthropogenic pressure on the marine and coastal areas as a result of the priority of the tourism development in this part of the country;
- Lack of real integrated management of the coastal areas.

Main obstacles

- Worsening the parameters of the marine and coastal environment as a result of the climate change and the eutrophication of the sea water
- Pollution with Noxious Substances as a result of the industrial development, agriculture and the marine transport;
- Spreading of the invasive species, leading to changes in the genetic purity on eco-system level and to damages on the quality of the nature habitats;
- Direct destruction of the marine flora and fauna as a result of over of economically significant fish species in Black sea and the intensive development of the marine tourism

3.6. ECONOMY, ENERGETICS, TRANSPORT, REGIONAL DEVELOPMENT

Economy, energetics, territorial planning, transport and communications exert significant influence on the biodiversity. In order to prevent and reduce the negative consequences under their development, a general approach is applied, taking into account the specific peculiarities of each of them. That is why they will be considered in common.

In compliance with the Environment protection act and the special legislation, under the territorial planning, as well as under construction and enlargement of investment objects or planning and realization of activities in frame of the aforementioned sectors, preventive instruments are applied for averting, reduction and mitigation the impact on the biodiversity by using Environmental Impact Assessment and Strategy Environmental Assessment procedures, and for the NATURA 2000 network – also Assessment for compatibility with the protection goals of the corresponding areas. Obligatory conditions are imposed for biodiversity conservation, including habitats, migration corridors, populations of rare and endangered species, as well as for mitigation the impact of the activities and projects on them. The significance of the area for the biodiversity is taken into account, as well as the necessity of specific restrictions, norms and requirements, which are to facilitate an ultimate conservation of the environment and its inhabitants. Besides preventive instruments, specific approaches, measures and activities in the corresponding sectors are also applied such as:

- Conservation in ultimate extend the environment and specific components under territorial planning
- Design of constructions for migration (overpass) of wild animals under building objects from the transport infrastructure and energetics, aiming defragmentation of the habitats and free migration.
- Realization of ornithological monitoring before construction and during exploitation of wind parks
- Prevention from invasive species
- Anti-erosion measures and recuperation of affected terrains
- Application of contemporary technical solutions for safety power lines, aiming reduction the risk for birds
- Safety measures for stork nests on the power network

On the domain of the environment over the last years, fundamental documents have been elaborated and adopted introducing principles of the sustainable development regarding the industrial and energetics sector. Eleven fundamental strategic documents (strategies, programs and plans) have been elaborated and adopted, incorporating principles of enhancement the energetic effectiveness, optimal measures for saving energy and encouragement the use of renewable energy sources, biomass and biofuel. Under development are being the projects of Strategy for sustainable development of Bulgaria (http://www.moew.government.bg/strateg_plans/index.html) and Energy strategy of Bulgaria (http://www.mee.government.bg/iko/Proekt_En_Strategy.pdf)

The present energy policy of Bulgaria is oriented toward reaching sustainable development by using system of mechanisms for encouragement the consumption of less energy and cleaner energy, thus promoting conditions for reduction the impact from the energetic branch on the environment. Bulgarian energetic and industrial installations are participants in the European Union Emission Trading Scheme for greenhouse gas, which is the main instrument for reduction the emissions in frame of EC. The EU ETS started in Bulgaria after the approvment of the National plan for distribution the emission quotas of greenhouse gas for 2007 from the European Commission.

In the context of the environment conservation, the accent is set on stimulation the use of renewable energy sources for power generation. **National Long-term Program for Encouragement the Use of Renewable Energy Sources (2005-2015)** has been elaborated. (http://www.seea.government.bg/documents/DPVEI_final_25_09_06.doc)

The said program formulates measures and policies for encouragement the use of renewable energy sources into the energetic balance of the country. In fulfillment the obligations on the energetic effectiveness the First National Action Plan for Energy Efficiency 2008-2010 has been adopted. (http://www.mee.government.bg/ind/doc_inov/bulgaria_bg-posleden-variant-Action-Plan.pdf)

Couple of strategies and programs are in action in the **Transport Sector**, which mostly are direct oriented toward enhancement the energy efficiency and reduction the energetic capacity. This is a key element for decreasing the emission of greenhouse gas, ozone precursors and fine dust particles.

The main program in this aspect is Operational Programme on Transport 2007-2013 (<http://www.optransport.bg/>) which realization will ensure modernization of the road- and railway-infrastructure, optimization of the traffic speed in the automobile and railway transport and reduction the adverse gas emissions per unit transport production.

The following program is also in application :

Program for Enhancement the Energy Efficiency in Transport Sector by Application Measures for Energy Saving 2006-2008.

(http://www.mee.government.bg/ind/doc_inov/MT.doc)

National Long-term Program for Encouragement Consumption of Biofuels in the Transport Sector 2008-2020

(<http://www.mtitc.government.bg/text/page.php?category=451&id=2901>)

Specific for the particular kind of transport are the following:

Strategy for Improvement the Safety of the Traffic on the Roads of Bulgaria 2007-2010

(http://bezopasnost.bg/upload/docs/01_nac_strategy_bezopasnost.pdf),

National Program for Development the Harbors for Public Transport 2006-2015

(<http://www.mtitc.government.bg/page.php?category=451&id=1786>)

Project of new Strategy Plan for Protection and Recuperation of Black sea

(http://www.mzh.government.bg/Articles/366/Files/1_NSPRA_f%20010507633474138438437500.pdf).

In the sector **Regional Development** the following plans are in application:

National Strategy for Regional Development 2005-2015

(<http://www.mrrb.government.bg/index.php?lang=bg&do=law&type=4&id=221>), elaborated on the base of integral approach of the policy of regional development with the policy for spatial development.

Operative Program Regional Development

(<http://www.europedirect-kn.info/docs/oprr.pdf>) elaborated in compliance with the principles for sustainable development. The realized by the support of the said program actions are oriented toward priorities, which stimulate the economy growth and opening new jobs. They include support for fulfillment of consecutive joined strategies, enhancement of the state management and introduction of integrative approaches aiming encouragement of balanced development and sustainable social communities.

3.7. TOURISM

http://bulgariatravel.org/eng/view_rubric.php?r=tour

The tourism is one of the main branches in the economic of Bulgaria. The politic goals in this sphere are, regain of the markets and positions of the country, development and quality of the tourist product, while applying the principle of sustainability.

Indicators for sustainability are achievement of good economical index, while maintaining balance and harmony with natural and cultural resources of tourism.

Characteristics of the sector:

During the last years the investments in tourism have increased significantly, but the new development is with concentration mainly in already developed resorts, territories and cities. In the rest regions of the country, the development of tourism is slower. Besides territorial irregularity, seasonality is other characteristic of the Bulgarian tourism, especially expressed in international tourism.

For achieving sustainability in tourism sector is relied on the development of tendencies with relatively small impact on the nature and other resources like eco-tourism, rural tourism, cultural, congress and balneotourism.

Existing National Strategies and Action Plans for them

Project of National Strategy for Sustainable Development of tourism in Republic of Bulgaria for the period 2008-2013, and Action Plan

The National strategy grounds the necessity of sustainable development of Bulgarian tourism, as well as expedience and controlled use of the natural, geographical, socioeconomical and other resources of the country. In the frame of the defined priorities and goals, actions for environment protection and the biodiversity are foreseen. Such actions are:

Introduction of ecological standards and integrated management systems for the quality and environment protection in tourism;

- applying of the European standards for quality, schemes for management of the environment and auditing (EMAS), eco-labels, eco-marks and other schemes for quality;
- introduction of good practices and investment projects for energy and ecologic management;
- introduction of energy saving and ecological technologies and processes for the management of tourist sites/attractions;
- use and appliance of environmentally friendly technologies and systems;
- water and air quality control, effective management of the sewerage systems and wastes;
- use of conserving wild nature for sustainable development of tourism;
- development of natural, cultural and historical attractions;
- support of activities for tourists environmental culture raising and environmental protection;
- Encouragement for the development of eco and rural tourism through elaboration and adopting of **Program and Action Plan for the development of eco-tourism in Republic of Bulgaria** and **Program and Action Plan for the development of rural tourism in Republic of Bulgaria**;
- public information and informational services, orientated towards natural and cultural heritage;
- development of tourist infrastructure and construction of appurtenances for the disabled and elder visitors;
- elaboration of normative document regarding; territories, where different forms of alternative tourism can be developed

The project of National Strategy and the Action Plan for it are presented on the internet site of the State tourism Agency:

http://www.tourism.government.bg/bg/tourism_politic.php?menuid=51&id=58

Project of National Strategy and Action Plan for the Development of Ecotourism in Bulgaria

The Project of National Strategy and Action Plan for the Development of Ecotourism in Bulgaria are worked out during 2004. In spite of that the document was not officially adopted at national level, it came in useful as a base for the development of the regional tourism politics. Many municipal plans for development of ecotourism were adopted. In this process local associations, local businesses, local and regional authorities were involved. Targeted funding was directed toward the sector. Thanks to this, a great number of projects were accomplished, mainly situated in the mountain and the semi-mountain regions of the country, in the territory around and in the National and Nature Parks and along the Danube River. In addition to evaluation and reconsideration of resources for development of ecological forms of tourism, this process helped to improve the vision of the sustainability of the sector.

Main problems

Overbuilding of the Black sea coast and some of the mountain resorts, poor space planning, infrastructure and public utilities, amortization of water supply networks, the insufficient capacity of treatment plants, lack of facilities for storage and processing of solid waste, low energetic efficiency and yet low use of alternative energy sources, etc., have lead to negative consequences both for the environment and for the long-term development of the sector itself. Some of the consequences are:

- Destruction of valuable natural and geographical resources (building up on sand dunes, camping sites, green areas, beaches, etc.);
- Destruction of valuable cultural and historical resources (loss of original identity, traditional atmosphere and landscape characteristics);
- Air, soil, and water pollution (including sea water);
- Inefficient use of valuable nature resources (mineral and drinking water);
- Significant reduction of the aesthetic landscape value, and others.

Main obstacles

Some of the main obstacles for reporting of the impact of tourism on biological diversity, and for measuring the share of sustainable tourism in the overall tourist product of the country are:

- Lack of uniform methodology and system for monitoring of the tourists flow into the protected territories and zones;
- Lack of indicators/standards for admissible pressure exercised on the natural territories and zones, and limit of admissible change;
- Lack of mechanisms for statistical reading of the number of people admiring the natural tourism;

3.8. SCIENCE AND EDUCATION

The integration of the biodiversity in the domain of Science and Education takes important place in the National Strategy and the National Action Plan for Biodiversity Conservation.

The following institutions participate in the consolidation of the scientific basis of the biodiversity – from Bulgarian Academy of Sciences – Institute of Botany, Institute of Zoology, Institute of Forestry, Institute of Oceanology, National Museum of Nature History, Botanical Garden, Central Laboratory on General Ecology, Institute of Plant Physiology, Institute of Genetic; from Universities – Faculties of Biology at Sofia University St. Kl. Ohridski and Plovdiv University St. P. Hilendarski, as well as Agrarian University-Plovdiv, Institute for fisheries Resources-Varna, Institute of Plant Genetic Resources-Sadovo. They participate in international and national projects and they integrate successfully in the European research area.

Large number of NGOs also accomplish projects for biodiversity investigation, conservation and management.

In the period 2002-2007 a project for creation of National Bioplatform has been accomplished, aiming creation of network of scientists and policy makers, working in related to the biodiversity and its conservation areas, as a part of European Platform for Biodiversity Research Strategy (EPBRS), <http://bioplatform.hit.bg/index.htm>.

The financial means for projects, related to the biodiversity are funded by the state budget, Enterprise for Management of Environmental Protection Activities, National Scientific Research Fund, international programs and projects, including EC funds and bilateral partner agreements.

The education on biodiversity covers all Bulgarian school levels by the syllabus and by application of extracurricular activities for providing knowledge and skills. The process is supported by NGOs too in the frame of developed by them projects. Specialized education on biology/ecology/sustainable development is provided in the university syllabus. Programs for biodiversity conservation with practical orientation are realized in the frame of the National

Program for Rural Development at the Ministry of Agriculture and Forestry. They are directed to the farmers, who apply ecological measures for management of agricultural lands.

The museums also give their contribution to the scientific investigation, biodiversity conservation and to popularize knowledge among the public. By their departments Nature they organize expositions, lectures, talks and variety of activities, where by attractive contemporary multimedia means they represent the wealth of the alive organisms and the role of the ecosystems and organisms and also the importance of their conservation.

CHAPTER 4 - Conclusions: Progress towards the 2010 Target and Implementation of the Strategic Plan

4.1 Progress towards the 2010 Target

Protect the components of biodiversity

Goal 1. Promote the conservation of the biological diversity of ecosystems, habitats and biomes

Target 1.1: At least 10% of each of the world's ecological regions effectively conserved

Bulgarian territory situates over three bio-geographical regions - Continental, Alpine and Black sea region. The territories with protection regime, dedicated to protect species, habitats, populations and eco-systems, constitute the National ecological network, which includes the system of protected areas and NATURA 2000 sites. The National ecological network aims: long term protection of the biological, geological and landscape diversity, assurance of sufficiently by area and by quality sites for feeding, breeding and rest, including on migrations, creation of conditions for genetic exchange between separated populations and species, participation of the country in international ecological networks, reducing the adverse anthropogenic impact on the protected areas.

At the end of 2008, the protected areas comprise 5.2 %, and the Ecological network NATURA 2000 comprises 33.89 % of the state territory, including 114 Special Protection Areas (SPA) in accordance with Bird Directive (20,3%) and 228 Sites of Community Importance (SCI) in accordance with Habitat Directive (29,5%).

The regimes of the protected areas and NATURA 2000 sites are conformed with their specific peculiarities and aims and the subject of protection. For effective conservation and management of the protected areas, plans for management are elaborated and implemented. They are obligatory for the national and nature parks, reserves and managed reserves. Simultaneously with the process of establishment of NATURA 2000 in Bulgaria, a development of Management plans of the included therein zones is foreseen. Bulgaria has acquired significant experience in the management of protected areas, nevertheless a deficiency of capacitive and financial resource is felt. Detailed information is seen in Appendix III.

Target 1.2. Areas of particular importance to biodiversity protection

CORINE sites, Ramsar sites, ornithologically important sites and important for the plants sites are included with priority in the National ecological network. The aforementioned priority for conservation areas comprise etalon eco-systems, habitats of rare and endangered species, territories with rich biodiversity being of scientific significance, territories with regional and trans-boundary significance for biodiversity protection.

At the moment there are: 10 Ramsar sites (всички са защитени територии), 16 biosphere reserves, 2 objects of UNESCO World Heritage Sites – Pirin National Park and Srebarna Manegeed Reserve. During 2008 Nature park Belasica has been declared as a part of trans-boundary Bulgarian - Greek protected area.

Goal 2. Promote the conservation of species diversity

Target 2.1: Restore, maintain, or reduce the decline of populations of species of selected taxonomic groups.

In compliance with Bulgarian legislation, biological resources including forests, game and fishes, some invertebrates (two species of snails, crabs), as well as medicinal plants, and also species, which populations are in unfavourable status are object of management and implementation of maintaining and recuperative measures. Ten- year projects are elaborated for the forests. For the game species, fish and invertebrates in the frame of the sectorial policies, a period is determined, within which the use is allowed and specific measures are implemented for recuperation of the resources. For the medicinal plants with limited resources a regime for protection and use is implemented, along with determination of permitted quantities and regions for use and recuperation periods.

Target 2.2: Status of threatened species improved.

The Biodiversity Act determines as strictly protected 480 animal and 595 plant species, for which a ban is imposed for any form of catch, killing, pick up, destruction of samples and species habitats, disturbance, egg collection, possession and trade. Totally 29 plant species and 54 animal species have been set under regime of protection and regulative use.

The elaboration of the Red lists of vascular plants and fungi has been completed in 2004. The IUCN Red List Categories and Criteria have been implemented for the species status assessment and classification. On this basis the preparation of new Red Data Book of Bulgaria in three volume edition - plants, animals and habitats with electronic version has started (See Appendix III).

An object of support and recuperation are the populations and habitats of endangered bird species, including storks, raptors, water birds, as well as concrete species like *Crex crex*. Measures for recuperation are implemented for *Rupicapra rupicapra*, *Sideritis taurica*, *Aldrovanda vesiculosa*, *Salix pentandra*, *Populus nigra*. Activities concerning recuperation and management of habitats are implemented in some wetlands along the riverside of Danube (Kalimok-Brushlen Protected Site, Srebarna Maintained Reserve), as well as in Ramsar sites along Black Sea coast.

A National system for bio-monitoring aiming to determine the trends in the development and the status of species and habitats, the improvement of their management and the implementation of conservative measures (See Appendix) has been elaborated and its implementation has started. Besides monitoring of indicative species, monitoring is also carried out on the migrating and the common bird species, as well as on some endangered animal and plant species. For realization of the monitoring a methodic base has been elaborated and accepted, nevertheless a keen deficiency of human and financial resources is felt.

For some endangered species - tortoises, bear, wild goat, wildcat, as well as for 7 plant species, action plans have been elaborated, aiming implementation of relevant measures for improvement their status.

In the frames of projects on the biodiversity conservation and the elaboration of management plans for protected areas an inventory is carried out on the flora and fauna and actual data acquisition is carried out concerning their status.

Goal 3. Promote the conservation of genetic diversity

Target 3.1: Genetic diversity of crops, livestock, and of harvested species of trees, fish and wildlife and other valuable species conserved, and associated indigenous and local knowledge maintained.

See text of Appendix III, Target 9.

Promote sustainable use

Goal 4. Promote sustainable use and consumption

The industry development under management of the resources in a sustainable way is a significant opportunity for contribution toward the biodiversity conservation. Despite that the industry is already legally committed to the ecological norms and standards, practically the requirements for biodiversity conservation still are not sufficiently implemented in the development process of the national economy.

By implementation of the preventive regulative mechanisms (EIA, EA, Assessment for compatibility), the goal is to assess at the earliest stage the effect of the development of a certain activity and measures for reducing eventual adverse consequences are to be foreseen. The legislation enables also a temporary interruption and suspension of activities, which are not in conformity with the technological norms and the requirements of the environment protection.

Over the last years, more and more attention is paid to business practices, which reduce the adverse impact of the industry on the environment, contribute to the nature protection efforts and improve the ecological image of the companies using these practices. The “Green business” and the “Green technologies” enter increasingly on the industrial policy and practice.

Target 4.1: Biodiversity-based products derived from sources that are sustainably managed, and production areas managed consistent with the conservation of biodiversity.

The production by using technologies sparing the environment or from areas managed in a sustainable way, increases in the total part of the production. The biological products, the certified lands and forests, the implementation of measures against degradation of the soils as well as activities and services on the domain of biodiversity and environment, aiming achievement of development by using models for sustainable consumption are included therein. More detailed information is represented in Chapter 3, in the frame of the sectorial policies and their impact on the biodiversity.

The difficulties, connected with achievement of the goals for sustainable development are related to the pursuit of maximal profit, insufficiently advanced public ecological awareness and the insufficient financial resources for production and consumption of that production, which is more expensive than the conventional one.

Target 4.2. Unsustainable consumption, of biological resources, or that impacts upon biodiversity, reduced.

The corporative interests, the neglecting of the principles and the requirements for sustainable use of the nature resources aiming high profit, are among the factors leading to biodiversity loss in the country. For reducing the unsustainable consumption a complex of legislative measures, planning management and enhanced control are implemented on the side of the competent authorities in the sectors, making impact on the biodiversity. Important instrument for reducing the unsustainable use is the implementation of development plans for bio-resource management in the forestry, hunting and fishery industry. By implementation of complex of activities, specialized measures and relevant practices determined with these documents, the goals of the sustainable management in the aforementioned sector policies are achieved. Relevant documents are the management plans of the protected areas, which complement or entirely substitute the development plans for the goals of conservation and sustainable use of the resources in the protected areas.

Target 4.3: No species of wild flora or fauna endangered by international trade.

Republic of Bulgaria is a party under the CITES convention since 1990. A Management Authority on the convention implementation is the Ministry of Environment and Water. Bulgarian Academy of Science together with its specialized institutes, scientific staff and associated experts is a consultative body under the implementation of the convention, respectively Regulation 338/97 of the Council of EU on the protection of species of wild fauna and flora by regulating trade therein.

In this connection, a list with scientific experts has been determined, which personally participate under the identification of the species and provide scientific stand points; the customs checkpoints are determined for realization of import/export/re-export of CITES specimens and rescue centers for accommodation of detained alive specimens, an organization has been established for registry and monitoring of samples of species object of the convention inside the country. MOEW realizes collaboration with the customs, veterinarian and phyto-sanitarian authorities during the control, organizes seminars for training of the staff and provides methodic assistance on the convention implementation. Exchange of operative information is realized between the competent authorities, consultations are carried out. As a result, the capacity has been increased significantly and the organization has been improved under the control of the trade with endangered animal and plant species.

Address threats to biodiversity

Goal 5. Pressures from habitat loss, land use change and degradation, and unsustainable water use, reduced.

Target 5.1. Rate of loss and degradation of natural habitats decreased.

The ***National Biodiversity Conservation Strategy*** and the National Biodiversity Conservation Action Plan consider the reduction of the nature habitats degradation and the enhancement of their condition among the main goals related to the biodiversity conservation. In this connection, purposeful activities are carried out under variety of projects.

Exemple: Bulgaria: Wetland Restoration and Pollution Reduction Project - component of Danube/Black Sea Strategic Partnership: Nutrient Reduction Investment Fund
www.iwlearn.net/iw-projects/Fsp.../view

Goal 6. Control threats from invasive alien species

Target 6.1. Pathways for major potential alien invasive species controlled.

The invasive species are considered as one of the great contemporary threads for the biodiversity. Despite of that so far their impact on the native ecosystems of the country is assessed of being in the frame of the registered one in the European continental regions, Bulgaria assesses this thread and the imposed challenges in ecological, economic and social aspect as rather serious.

At present the activities concerning the alien invasive species are concentrated on increasing of the public information, building of scientific capacity and preparation for completion of the legislative measures and elaboration of strategic document concerning the policy toward the invasive species. At the same time some special measures are implemented mainly towards invasive species with detrimental economical consequences. They are connected with a research of the biology and the ecology of the species, their natural enemies and the methods and the means for diminution of their populations as well as reducing of their harmful impact on the

technological processes. It can be indicated as examples *Dreissena polymorpha*, *Rapana tomasiana*, *Cameraria ochridella* etc.

The introduction of non-native and non-typical for the corresponding region species is banned in the protected natural territories – national and nature parks, reserves and protected sites. It is envisaged in the management plans of some protected areas a limiting and reducing of the spreading of invasive plant species such as *Amorpha fruticosa*, *Fallopia japonica* etc. Such kind of measures are implemented in some sensitive territories along Danube river and the Black sea coast.

Results from the Estimation of the non-native species in the Bulgarian nature

A scientific examination commissioned by the Ministry of Environment and Water has been completed in 2007 in order to determine the distribution of the non-native plant and animal species into the Bulgarian nature and their impact on the eco-systems and the native species.

Plants and Fungi

One hundred sixty of vascular plant species and 20 of fungus species has been investigated, almost exceptionally neo-biotes. It has been ascertained that during the last 10 years around 20 alien plant species settled in natural habitats have been registered. According their invasive status, the species are divided as it follows: invasive – 20 %, potentially invasive – 12%, noninvasive – 68%. All investigated fungus species are parasitic and classified as invasive. Most of the alien species have an origin from North America, followed by those from Asia, South America and Mediterranean.

The most vulnerable habitats in Bulgaria, in which invasive species has settled, are riverside habitats, damaged habitats around country roads, railways, abandoned agricultural lands, urbanized locations, dunghills.

More than half of the species, imported mainly as decorative plants or for food have been intentionally introduced by the human, the introduction of 44 % has been unintentionally and for 2 % of the species the reasons for the introduction are unknown.

Animals

The alien animal species have been assessed in the Black sea along the Bulgarian coast, in the fresh water basins, in the forest and agro-eco-systems (mainly insects), as well as alien bird and mammal species.

The most endangered habitats are the aquatic-habitats, where the distribution of the alien species is relative easy and the threads for the native species are the highest. It has been realized 3-fold increment of the introduced in the Black sea species in the period 1990-2002 in comparison with the previous 10 years. The main ways for invasion of the alien species in the Black sea are by shipping and ballast waters, but also by unintentionally imported by the human species for cultivation in maricultures (around 1/3 of the acclimatized earlier species).

Attention must be paid to the insects as real and potentially invasive species. They conquer easy new territories, they are flexible and their impact on the native species some times is significant. Finally, it should be noticed also the thread coming from species breded as pets.

Carrying out of two meetings on invasive alien species is envisaged in 2007 in Bulgaria:

- Scientific Conference “Alien Artropods in South East Europe – crossroad of three continents” - 19-21 September, Sofia
- National seminar “Alien Species in Bulgaria” – in October 2007 – as a part of the preparation for elaboration of the National strategy for invasive species.

Target 6. 2. Management plans in place for major alien species that threaten ecosystems, habitats or species.

Along with the development of the economic and the transport connections, the ongoing climatic changes and the increasing of the anthropogenic impact on the nature, it is expected enhancement of the adverse effect of the alien species. In compliance with the European policy

regarding the invasive alien species, the future activities have to be prioritatively directed towards strengthen of the prevention, support for the logistic, implementation of control and monitoring on the ways of invasion, support for the administrative mechanisms and reduction in the impact of already introduced species.

At the present time it is not Management plans for alien species introduced in the Bulgarian nature.

Goal 7. Address challenges to biodiversity from climate change, and pollution

Target 7.1. Maintain and enhance resilience of the components of biodiversity to adapt to climate change

Bulgaria is a party under the United Nations Framework Convention on Climate Change. The Second National Action Plan on Climate Change 2005-2008 (http://www.moew.government.bg/strateg_plans/index.html), includes obligations of the Ministry of agriculture and forests concerning the policies and the measures on the domain of agriculture and forest management in the lights of global climate change adaptation. Also scientific investigations are envisaged directed toward assessment of Bulgarian vulnerability to the climate change and possible adaptation measures. The National Action Plan for Biodiversity Conservation 2005-2010 also considers the climatic change adaptation as a priority.

The envisaged measures are complex and comprise trends for future policy and strategy regarding both the *agriculture* (new zoning, sustainable varieties optimization of the soil cultivation and agri-technical activities, adaptive phytosanitarian measures) and the *forestry* (biodiversity conservation, sustainability of the ecosystems, multifunctional management, system of protected nature areas, assessment of species proper for afforestation).

Target 7.2. Reduce pollution and its impacts on biodiversity.

During the economical decrease in the transition period, the pollution of the environment essentially decreased. The necessity to reach the EC ecological norms concerning the air, water, and soils has led to introduction of new standards and measures undertaken for their achievement. The biggest industrial pollution generators have undertaken reconstructions, improvement of the obsolete technologies, filter system installation for filtration of the adverse emissions and implementation of own ecological monitoring. The reduction of the environment pollution is a main goal of the sector policies on the domain of economy and transport and it is their most important contribution for creation favorable conditions for the biodiversity.

The quality of the environment are under registration by the Executive Agency for Environment in the frame of National system for Monitoring on the Environment. A specialized monitoring is carried out on the forestry ecosystems too, which duration is already over than 20 years.

The introduced monitoring and control systems on the pollution of the environment have contributed for decreasing its adverse impact on the biodiversity and the human.

Maintain goods and services from biodiversity to support human well-being

Goal 8. Maintain capacity of ecosystems to deliver goods and services and support livelihoods

Target 8.1. Capacity of the ecosystems to deliver goods and services maintained

Under the management of the forests the principle of sustainability is applied by methods and approaches which assure the ecological functions and services, good adaptation and flexibility toward the nature risks, including the climate change. The good European practices and successful models of management and multifunctional use of Bulgarian forests are introduced. In this relation a concept for financial programs and mechanisms is developed, enabling compensation to the forest owners for specific services and benefits provided to the consumers of

the forests, including for the quantity and quality of the water resources, for recreative functions and possibilities for tourism development.

Target 8.2. Biological resources that support sustainable livelihoods, local food security and health care, especially of poor people maintained.

The forests in Bulgaria traditionally are used as a source of wood and non-wooden resources, which have important role for the economy and the social sphere. Especially large is their role in the mountain and semi-mountain regions, where the gathering of wild mushrooms, herbs and berries is part of the livelihood of the population and significantly contribute to the well-being of the local communities. An additional advantage is the possibility for obtaining biological and certified production with guaranteed origin and quality.

Protect traditional knowledge, innovations and practices

Goal 9 Maintain socio-cultural diversity of indigenous and local communities

Target 9.1. Protect traditional knowledge, innovations and practices.

Conservation of native sorts of agricultural cultures

Traditional cultivation of native sorts in the personal farms and gardens in Bulgaria, is a precondition for conservation of vast variety of old primitive sorts (people's selection), native populations and forms of them. In the collections of the Institute of Plant Genetic Resources – Sadovo are kept count of 2900 grain cultures, 410 grain-bean and 2150 vegetable cultures, gathered from different regions of the country, and need special care for conservation.

The aborigine breeds of farm animals, traditionally bred in Bulgaria, are adapted to the local conditions and are resistant to diseases. That's why they are preferred for animal biological breeding. During the last couple decades, in result of the human activity, all of the 37 typical breeds of domestic animals in Bulgaria are endangered, 6 of them are already extinct, 12 are about extinction, 16 are endangered and 3 are potentially endangered from extinction. The loss of populations of native breeds is in contrary to the principles for sustainable development in the agriculture and with the good management of the genetic resources, that's why an effort for their recovery and sustain/support are made.

Target 9.2. Protect the rights of indigenous and local communities over their traditional knowledge, innovations and practices, including their rights to benefit-sharing.

The traditional knowledge and practices are important characteristic of the national identity. They are element of the culture of the local communities and they are conserved in their style of living and traditions. Their conservation is stimulated as a part of the national diversity and originality and as a precondition for development of cultural and nature tourism. The development of local practices, based on traditional use of the nature is an object of financial support in the frame of programs related to culture, agriculture, tourism and environment. As a result attractive products and services are created as a part of the local economy, leading to generation of income and raising the wealth.

Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources

Goal 10. Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources

Target 10.1. All access to genetic resources is in the line with the Convention of Biological Diversity and its relevant provisions

In accordance to the Biological Diversity Act:

Art. 66. (1) The state is owner of the genetic resources of the natural flora and fauna of the Republic of Bulgaria.

(2) The access to the resources shall be possible in compliance of the provisions of this law, and when they are protected by a patent or other rights of intellectual property - of the special legislation in this sphere as well.

(3) The genetic resources can be submitted for using by other countries on the grounds of preliminary agreement in writing on the conditions and the way of distribution of the benefits from it under mutually profitable conditions including:

1. quoting the natural origin of the material;

2. submitting by the user state scientific results and technologies related to or engendered by them;

3. return of a part of the resources obtained by using the material, as well as of products or tests related to it for commercial purpose;

4. participation in joint scientific studies.

(4) The agreement can stipulate gratuitous submitting of genetic resources when they are designated for non-profit purposes: scientific research, education, preservation of the biological diversity or of the public health.

(5) The submission of the materials for using by third persons shall be carried out upon a written consent of the owner by observing the provisions of Para 2, 3 and 4.

Target 10.2. Benefits arising from the commercial and other utilization of genetic resources shared in a fair and equitable way with the countries providing such resources in line with the Convention on Biological Diversity and its relevant provisions

See text of Target 10.1 above.

Ensure provision of adequate resources

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

Target 11.1. New and additional financial resources are transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with Article 20.

See Progress towards the Goals and Objectives of the Strategic Plan, Goal 2.2, below.

Target 11.2. Technology is transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with its Article 20, paragraph 4.

Bulgaria actively participates in the international processes, programs and projects, connected with the environment protection, biodiversity and the sustainable development, which contributes for application of good international ecological practices in the country.

In this connection, the country has signed large number of bilateral and multilateral contracts for collaboration with countries from Europe, Asia, Africa, in the frame of which partnership programs and projects are realized for biodiversity protection, transfer of experience, fulfillment common programs on the scientific domain, the monitoring, biological resources (incl. genetic resources, aquatic, forest, meadows and grass lands etc.) and sustainable development (especially in and around the protected areas and the trans-boarder regions).

4.2. Progress towards the Goals and Objectives of the Strategic Plan of the Convention

<p>Goal 1: The convention is fulfilling its leadership role in international biodiversity issues</p>
<p>1.1 The Convention is setting the global biodiversity agenda</p>
<p>Bulgaria signed the Convention in year 1992 and fulfils all commitments at international level which relate to protection and sustainable development of biodiversity.</p> <p>The provisions of the Convention have been introduced into Bulgarian legislation by the Biodiversity Act, Protected Areas Act, Medicinal Plants Act, Forestry Act, Law for Hunting and Protection of the Game, Fisheries and Aquaculture Act and the sublegislative acts therein, as well as the corresponding regulations of EC, acting for Bulgaria since 1.01.2007.</p>
<p>1.2 The Convention is promoting cooperation between all relevant international instruments and processes to enhance policy coherence</p>
<p>Bulgaria is an active member of 9 international conventions and 6 agreements on the domain of nature protection.</p>
<p>1.3 Other international processes are actively supporting implementation of the Convention, in a manner consistent with their respective frameworks</p>
<p>As a member state of the aforementioned conventions, the country actively fulfills all undertaken obligations. The processes of collaboration and interaction between those international instruments, passing over the last years contribute to the coordination of the biodiversity policies and enhance their effectiveness. Another important instrument for realization of the CBD goals is the coordination of the policies in the frame of EU for implementation equal approaches and achievement coherency on the territory of the all 27 member states.</p>
<p>1.4 The Cartagena Protocol on Biosafety is widely implemented</p>
<p>The Cartagena Protocol has been ratified by Bulgaria in year 2000. The regulations therein have been introduced into the national legislation by virtue of Genetically Modified Organisms Act (GMO Act), Food and Feed Acts and the sub-legislative acts therein.</p> <p>The relevant EC legislation includes Directive 90/219/EEC on the contained use of GMMs, Directive 2001/18/EC on the deliberate release and placing on the market of GMOs, Regulation 1829/2003 on GM food and feed and Regulation 1946/2003 on transboundary movements of GMOs.</p> <p>The obligations under the Cartagena Protocol on Biosafety are shared between the Ministry of Environment and Water, the Ministry of Agriculture and Food and the Ministry of Health, according to their competences. In all three administrations, relevant structures have been established for management and control. During the period under review, special projects have been fulfilled for enhancement and strengthen the capacity of the administration on the domain of the biosafety.</p> <p>A Consultative Commission on GMO at the Minister of environment and water has been established. Main information is public accessible at the web site of Ministry of Environment and Water.</p>
<p>1.5 Biodiversity concerns are being integrated into relevant sectoral or cross-sectoral plans, programmes and policies at the regional and global levels</p>
<p>The integration of the biodiversity concerns in the sectoral and cross-sectoral policies is an important mechanism for effectiveness achievement under its protection. This approach has been introduced by the National Biodiversity Conservation Strategy and the Action Plans therein. More or less significant results have been reached, and the biggest difficulties are in the economic sectors, which development is connected with use of nature/biological resources. For more detailed information see Chapter 3.</p>

<p>1.6 Parties are collaborating at the regional and sub-regional levels to implement the Convention</p>
<p>Bulgaria participate in the bilateral and multilateral collaboration on the domain of nature protection, on the base of international agreements/memorandums with large number of countries from Europe, Africa, Asia, America. In the frame of this collaboration variety of projects are carried out, administrative and scientific contacts have been established, know- how exchange is realized.</p>
<p>Goal 2: Parties have improved financial, human, scientific, technical and technological capacity to implementation the Convention</p>
<p>2.1 All Parties have adequate capacity for implementation of priority actions in national biodiversity strategies and action plans</p>
<p>The National Biodiversity Conservation Strategy has been elaborated in year 1995 and it is one of the first strategy of European country under the convention implementation. The elaboration process has been carried out on a broad base by participation of representatives from the corresponding ministries, scientific and NGOs. The strategy and later the Action Plans on its implementation have become the fundamental documents for planning the policies and the fulfillment of the actions on their realization. Important element of these strategic documents is the building and the development of relevant administrative and scientific capacity for achievement the goals of the convention. This has enabled that the country follows the determined priorities in more or less favorable economic and politic conditions over the last years.</p>
<p>2.2 Developing country Parties, in particular the least developed and the small Island developing States amongst them, and other Parties with economies in transition, have sufficient resources available to implement the three objectives of the Convention</p>
<p>In the period 2005-2008 as a country with economy in transition, Bulgaria used different approaches for achievement the goals of the Biodiversity Convention in addition to the national financial resources and capacity, by realization of projects in collaboration with countries-donors, by utilization of financial means from the EU pre-accession financial instruments and funds, by exchange and transfer of know-how, as well as by implementation the national experience and good practices, which enabled the country nowadays to be one of the states with richest and good conserved biodiversity in Europe.</p>
<p>2.3 Developing country Parties in particular the least developed and small Island developing States amongst them, and other Parties with economies in transition, have increased resources and technology transfer available to implement the Cartagena Protocol on Biodiversity</p>
<p>Between 2005 - 2006 the main legislation has been adopted on the biological safety. In connection with capacity building and coordination under enforcement the legislation on the domain of GMO, an international project has been accomplished for <i>Transposition and Implementation of the Environmental Acquis on GMOs at National Level</i> with partners Germany and Austria. In the frame of the project over the years, seminars and workshops have been carried out for preparation and carrying out of campaign for enhancement the public knowledge, creation of relevant information infrastructure, carrying out of inspective procedures, harmonization of Bulgarian legislation on GMO domain with those of EC by elaboration project of amendment of the GMO Act and elaboration of sub-legislative acts.</p>
<p>2.4 All Parties have adequate capacity to implement the Cartagena Protocol on Biodiversity</p>
<p>GMO Sector in the frame of National Nature Protection Service Department at the MOEW coordinates at national level the Cartagena Protocol. During the period under review, a capacity has been built as at central as well as at regional level. Significant support has been given in the frame of tuning project <i>Transposition and Implementation of the Environmental Acquis on GMOs at national Level</i> (see item 2.3.)</p>

<p>2.5 Technical and scientific cooperation is making a significant contribution to building capacity</p>
<p>The MOEW is responsible for coordination and application of the Biodiversity Convention in Bulgaria. In this connection a national coordinator and coordinators on some of the thematic programmes and cross-cutting issues of the convention have been determined. In 2008 a working group on the convention implementation has been established, including representatives of all interested parties - from the administration, NGO sector and the scientific society. By establishment of thematically oriented groups (by invasive alien species, climatic changes, forests, agriculture) a coordination of the work on the main cross-sectorial directions of the convention is realized.</p>
<p>Goal 3: National biodiversity strategies and action plans and the integration of biodiversity concerns into relevant sectors serve as an effective framework for the implementation of the objectives of the Convention</p>
<p>3.1 Every Party effective national strategies, plans and programmes in place to provide a national framework for implementing the three objectives of the Convention and to set clear national priorities</p>
<p>The main document on the protection and the sustainable use of the biodiversity in Bulgaria is the National Biodiversity Conservation Strategy, elaborated in 1994. It is a frame document, which determines the goals, tasks, threats and the major activities, which are in the foundations of the country policy on the domain of the biodiversity conservation. Two Action Plans with five year realization term (2001-2005 and 2006-2010) have been elaborated for fulfillment the National Biodiversity Conservation Strategy.</p> <p>The major priorities and measures in the National Biodiversity Conservation Strategy are the following:</p> <ul style="list-style-type: none"> • Legislative initiatives • Expanding and strengthening the protected areas network • Strengthening the scientific basis for conservation • Cooperative extension/ Sectorial policies • Environmental education • Developing and implementing of sustainable tourism policy • Stimulating conservation in the Black sea basin • Stimulating conservation in Balkan Peninsula
<p>3.2 Every Party to the Cartagena Protocol on Biosafety has a regulatory framework in place and functioning to implement the Protocol</p>
<p>See the text in item 1.4. above.</p>
<p>3.3 Biodiversity concerns are being integrated into relevant national sectoral and cross-sectoral plans, programmes and policies</p>
<p>Policies for biodiversity protection and sustainable development are implemented in the different sectors of the economy such as agriculture, forestry, fishery, regional development and energy, tourism. Preventive instruments are implemented (such as EIA, EA and Specific Impact Assessment of the NATURA 2000 sites), which is aiming at the earliest possible stage to foresee the possible adverse impacts of the economic development on the biodiversity and to implement the relevant measures for their prevention or reduction.</p>
<p>3.4 The priorities in national biodiversity strategies and action plans are being actively implemented, as a means to achieve national implementation of the Convention, and as a significant contribution towards the global biodiversity agenda</p>
<p>The priorities in the National Biodiversity Conservation Strategy have been mentioned above in item 3.1. These priorities have been concretized in the acting National Biodiversity Action Plan, 2006-2010 and they are directed toward achievement the actual goals of the convention (see Chapter 2).</p>
<p>Goal 4: There is a better understanding of the importance of biodiversity and of the</p>

<p>Convention, and this has led to broader engagement across society in implementation</p>
<p>4.1 All Parties are implementing a communication, education, and public awareness strategy and promoting public participation in support of the Convention</p>
<p>The biodiversity is included in a proper way at all level of Bulgarian education system - pre-school, Primary School, Secondary School, Higher Education as well as in the specialized and outdoor education forms. Variety of projects are implemented, thematic campaigns are carried out, exhibitions, competitions, movies, radio- and TV broadcasting, edition of booklets and posters. Large number of interpretive centers, dedicated to the nature conservation is operating in the country, being situated into and around the protected areas or into the sites with high biodiversity.</p> <p>Training is given systematically to the administrative staff working on the domain of nature protection. In connection with the enhancement of the capacity for implementation of Rio Conventions, a special project, financed by UNDP is fulfilled in the Ministry of Regional Development and Public Works in the period 2006-2010. Expected Project Outcomes are</p> <ul style="list-style-type: none"> • Accredited training program on the integration of environment into regional development and spatial planning established. Key decision makers trained to integrate biodiversity, climate change and land degradation objectives into their activities related to regional development planning, implementation and evaluation. • Set of uniform indicators and guidance for application are established for measuring the contribution of regional development policy and spatial planning to meeting global environmental objectives. • A portal website dedicated to integration of biodiversity, climate change and land degradation issues into development planning is created. • Knowledge materials developed with extensive information on practices from Bulgaria, neighboring countries, EU and other regions. • Institutional improvements introduced at relevant ministries to sustain the capacities developed through the training program. • One regional development plan and one municipal-level spatial development plan are revised to integrate global environmental objectives in a pilot region or group of municipalities through application of capacities developed above. <p>Requirements for acquiring training on biodiversity protection in farmlands, forests, pastoralism, ecological management and bio-agriculture have been grounded in the prerequisites for obtaining compensations and subsidies from the agricultural funds of EU.</p> <p>The enhancement of the ecological knowledge, the formation of ecological public awareness, the education and the training on this domain are among the priorities of National BD Action Plan, where a broad section with large number of measures and activities is dedicated to this topic.</p>
<p>4.2 Every Party to the Cartagena Protocol on Biosafety is promoting and facilitating public awareness, education and participation in support of the Protocol</p>
<p>GMO and the bio-safety are among the topics, on which Bulgarian society reveals keen interest and sensitivity and they are periodically discussed. The complete information is available on the site of MOEW concerning the legislation on the GMO domain, the procedures and the required registers.</p>
<p>4.3 Indigenous and local communities are effectively involved in implementation and in the processes of the Convention, at national, regional and international levels</p>
<p>The local communities are involved into the convention implementation mainly by the policies for sustainable development at local level, by variety of projects for development of ecologically conformable business and agriculture, as well as by the aforementioned practices for ecologically conformable management, required under the agriculture funds of EU. The</p>

trans-boundary projects for common sustainable development with the neighbour countries include as a significant element the cooperation for biodiversity protection and the implementation of ecologically conformable approaches under the development of the territories.

The national traditions on the domain of nature protection and implementation of relevant management forms of the forests, which have long history for decades are a good base for public and administrative support under the convention implementation in Bulgaria.

4.4 Key actors and stakeholders, including the private sector, are engaged in partnership to implement the Convention and are integrating biodiversity concerns into their relevant sectoral and cross-sectoral plans, programmes and policies

The integration of the biodiversity concerns and the sustainable development into the sector strategies and programs is a state policy. In this way the necessary sector interactions and partnerships are built. NGOs have their significant position in the realization of self-dependent projects for species and habitats protection, development and implementation of sustainable practices, enhancement of the public awareness and understanding the biodiversity. Good relationships have been built betwin the NGO sector and the state administration.

The partnerships with the business are realized mainly on the domain of the ecologically conformable business and technologies and the ecological management in the agriculture. In a broader aspect, as partnerships could be considered not only those with direct effect on the biodiversity but also those directed toward improvement the environment quality (water, air, soils, waste management), as far as they have impact on the biodiversity. Since an important condition for these partnerships is the economic interest, they still are not at the necessary level, taking into account the economic conditions in the country.

4.3. Conclusions

The biodiversity is an important component of the environment. Over the years more and more attention is paid to its significance as an environment-forming and economy factor, but also as an indicator for the condition and the changes in our surrounding world.

One of the most important achievements during the period under review (2005-2008) is the development of a system of protected areas, determination of the zones from the NATURA 2000 Ecological Network and the starting process of its practical establishment; the enhanced requirements toward application of preventive mechanisms for protection of species and habitats being an object of protection in the network; gaining experience and capacity building for its management.

Concerning the protection of the species and the habitats significant achievements have been realized on the domain of enhancement the biodiversity knowledge and the scientific basis for its protection; the assessment of threat degree and the role of the alien and invasive species and application of monitoring systems and practical conservation approaches.

The inter-institutional connections and the coordination for biodiversity protection have been significantly improved, which presents increasingly in the strategies and the sector policies. Major role in this process plays the Ministry of Environment and Water, but also the increasingly advancing civil society in the country, which is enhancing its participation and expertise capacity.

The main difficulties and reasons for diminishing the success of the ecological policy have been connected with insufficiently understanding the problems on the side of the business and the

local authorities in some regions of the country, object of strong anthropogenic pressure in the conditions of enhanced economy development.

The participation of the country in EU along with the related common requirements and obligations therein on the environment protection domain have revealed a positive effect on the management of the processes in this sphere. The financial support for the biodiversity has increased as well as the integration of Bulgarian science and administration into the European space. On the other hand, the country has added its contribution to the broadening of the bio-richness and biodiversity of species and habitats in the frame of EU.

By its national policy and contribution to the common ecological EU policy, Bulgaria has joined the common endeavors for reaching goal 2010 - halting the biodiversity loss. The assessment of the results, including in the present report shows that despite of the advance, the levels of achievement of the goal remains unsatisfactorily.

In this connection it is necessary in the future to mobilize all potential for the biodiversity protection by closer connection and increasing the responsibilities of the sector partners, involving the business, developing the scientific knowledge in conservation aspect, concentration the efforts toward the actual directions related to the ecosystem services, climate changes and the marine protected areas as well as development and enhancement the preventive protection, advancement whole coordination, increasing the public knowledge and the public participation in the realization of the ecological policy.

Appendix I - Information concerning reporting Party and preparation of national report

1. Reporting Party

Contracting Party	BULGARIA
NATIONAL FOCAL POINT	
Full name of the institution	<i>Ministry of Environment and Water</i>
Name and title of contact officer	<i>Mrs. Kalina Stoyanova CBD NFP</i>
Mailing address	<i>22, Maria Luisa Blvd., 1000 Sofia</i>
Telephone	<i>+359 2 940 6113</i>
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CONTACT OFFICER FOR NATIONAL REPORT (IF DIFFERENT FROM ABOVE)	
Full name of the institution	<i>Ministry of Environment and Water</i>
Name and title of contact officer	<i>Mrs. Rayna Hardalova, Head of Biodiversity Department</i>
Mailing address	<i>22, Maria Luisa Blvd., 1000 Sofia</i>
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SUBMISSION	
Signature of officer responsible for submitting national report	
Date of submission	<i>September 2010</i>

Appendix II - Progress towards the Targets of the Global Strategy for Plant Conservation and the Programme of Work on Protected Areas

1. PROGRESS TOWARDS TARGETS OF THE GLOBAL STRATEGY FOR PLANT CONSERVATION (2005-2008)

Target 1: A widely accessible working list of known plant species, as a step towards a complete world flora

The taxonomic and bio-systematic investigations on Bulgarian flora, fulfilled in the period 2005-2008 by the institutes of Bulgarian Academy of Science (BAS), Sofia University, Plovdiv University, University of Forestry and the Agricultural University are significant contribution to the exploration of the plant diversity of the country and the region.

During the inventory process of the plant diversity, the following more significant results have been achieved:

- new habitats of rare and endangered species have been discovered
- new for Bulgaria flora species have been discovered
- the spreading of species, considered extinct over the country has been confirmed
- new for the science species have been described
- volume II of the multi-volume edition "Bulgarian Flora" and volumes 5-10 of the monographic series "Fungi in Bulgaria"

The Institute of Botany of BAS has won recognition as a contemporary center for conservation and data exchange of plant, fungus and habitat diversity in Bulgaria and as a methodic consultant for their preservation and monitoring.

The collections of the institute contain:

- 163406 herbarium specimens including type collection with 262 specimens, cyto-taxonomic collection with 3967 specimens, and hemo-taxonomic collection with 1160 specimens
- The Bryological collection pertained to the herbarium includes about 15 530 specimens (9200 Bulgarian moss flora and 6330 are alien – Europe, North and South America, Antarctica).
- Micological collection (SOMF) preserves 26 200 specimens
- Paleo-botanic collection contains about 15 500 specimens or fossil plants.

The following databases have been created and maintained in Institute of Botany – BAS

- Database and information system for Bulgarian vascular plant flora
- Database for biodiversity of musci in Bulgaria and mapping of their distribution
- Database for macrophytus in Bulgaria

The floristic, habitat and plant diversity in the forests is a research object on the side of the Institute of Forestry, BAS, and University of Forestry. As a result:

- An inventory has been taken of the intra-species diversity of the forestry species having most significant economic importance
- Floristic investigations have been carried out on rare and endangered species in the forest habitats
- The forests of high conservation status have been determined
- Determination and mapping of the forest habitats and the plant species in the areas of ecological network NATURA 2000 has been carried out

Target 2: A preliminary assessment of the conservation status of all known plant species, at national, regional and international levels

- In connection with the assessment of the conservation status of the plant species of Bulgarian flora and micota **Red lists of the vascular plants and fungi** have been elaborated and in this regard totally **1416** species have been assessed including **215** fungus species, **297** moss species, **18** species of Pteridophyta and **886** vascular plant species, having given corresponding category according to the criteria of IUCN. This elaboration has underlain into the preparation of the new **Red Data Book of Republic of Bulgaria, Vol. I Plants and fungi**, which edition is forthcoming and it contains information, illustrations and maps of 805 plant and music species.
- Investigation has been carried out on the status of rare and of conservation significance species of mosses, ferns and vascular plants
- Investigations have been carried out for determination the favourable protection status of plant species and natural habitats, which are part of the ecological network NATURA 2000 in Bulgaria.

Target 3: Development of models with protocols for plant conservation and sustainable use, based on research and practical experience

Many investigations during the period 2005-2008 are related to the creation of models and practices for sustainable management and plant usage, including:

- The investigations of genetic resources of the main local and introduced forest species continue aiming establishment of models and practices for sustainable management of the forests and achieving maximal goods from the ecosystem services they offer.
- Investigations have been carried out, related to the management of the highland coniferous forests.
- A model has been adapted for monitoring of the dynamics of the forest resources at different management regimes.
- In frames of a project connected with the mutability and adaptivity of forest species towards climatic changes, investigations are carried out on local and introduced species, related to spreading, diversity, ecological requirements, health status, physiological and biochemical adaptive reactions at different environmental conditions. Databases have been created. The environmental regimes have been modeled and optimized as well as parameters related to the stability of the ecosystems, aiming increasing of their adaptation towards climatic changes.
- A project - Expected Climate Changes and Options for European Sylviculture//COST Action FP 07003 started in 2008 with the participation of 25 European countries, related to the forests management and possibilities for *in situ* and *ex situ* protection of their biodiversity expecting climatic changes.
- Paleobotanical investigations related to the climatic changes in the frames of projects "Climatic evolution in Eurasia in Neogene" and "The climate, vegetation and burnings in South-West of Bulgaria during the last 15000 years".
- Biological monitoring of the windthrow spot on the territory of reserve "Bistrishko Branishte" and the adjacent territories.
- Monitoring of plants - *Adiantum capillus-veneris*, *Leucjum aestivum*, *Juniperus sp.*.
- Intensive investigations are carried out on the health status and the pests in the forests. They are focused on determination of the species structure, ecology and biology of the pests, the damages provoked by them, the recuperation of the affected ecosystems, the influence of the factors of the environment and the stress, the trends due to the climatic changes, the spreading of the invasive alien species as wreckers in the forests.
- The phytofagies are investigated and their role for the degradation processes in the forest ecosystems
- An Forest Protection Manual has been edited.
- A patent has been defended related to methods and devices for control of wreckers.

- Atmospheric pollution assessed by using mosses in South of Bulgaria and North of Greece; contribution to UNECE ICP bio-monitoring program.
- European project: UN/ECE ICP Vegetation – The metals in the European atmosphere by using mosses
- Integrated Environmental Diagnosis and Assessment of Ecological Systems at risk in Bulgaria (Sweden-Bulgarian project)

Target 4: At least 10 % of each of the world’s ecological regions effectively conserved in situ

Three of the biogeographic regions of European continent are represented in Bulgaria - Continental, Alpine and Black one. The territories of highest natural value are protected in the system of Protected Areas and the National Ecological Network.

Representative types of habitats and ecosystems are included into the system of protected areas, comprising 5 % of the territory of the country. It consist of 6 categories of protected areas - nature reserves, managed reserves, national and nature parks, protected sites and nature monuments.

The purpose of the system of protected areas is to protect representative natural territories and to assure conditions for sustainable development, recreation and tourism. The nature protection is guaranteed by the regimes of the protected areas and the management plans. By the management plans a zonation of the territory is done and activities are foreseen, compatible with the conservative aims and aiming most effective nature protection. Detailed information is presented in the report for fulfillment of CBD Working Program for Protected Areas (See below).

The national ecological network, which is a part of the European ecological network NATURA 2000 is built of habitat types and habitats of species of European significance, according Habitats Directive and Birds Directive of EC. The national ecological network comprises the protected areas as well as not included there territories significant for the nature protection. By the creation of the national ecological network comprising 33.89 % of the territory of the country, Bulgaria contributes for the protection of the European ecological regions and those of the world. (<http://www.natura2000bg.org/> and <http://www.moew.government.bg/>).

Target 5: Protection of 50 % of the most important areas for plant diversity assured

The Bulgarian plant biodiversity is preserved in a system of protected areas and national ecological network. They include the regions of highest biodiversity incl. representative ecosystems, deciduous and coniferous forests, meadows and grasslands, 3/4 of the wild forests of Bulgaria, significant parts of the mountains Rila, Pirin, Stara Planina, Rhodope, Strandja, Belasica, wherein are the regions of highest plant endemism (called Fireplaces of endemism), wetlands along the riverside of the large rivers (Danube, Maritza, Tundja) and Black sea coast as well as fragmented populations and habitats of rare, endangered endemic and relict species are situated.

Bulgaria participates in the international initiative **for Assessment and choice of important plant areas**. As a result of the project 126 sites have been determined, selected on the base of conservative significant habitats and species. They comprise 1/3 of the area of NATURA 2000 zones in Bulgaria. <http://www.plantlife.org.uk/international/plantlife-ipas-euro-bulgaria.htm>

Target 6: At least 30 % of production lands managed consistent with the conservation of plant diversity

In the frame of the project “Inventory and strategy for sustainable management of the wild forests in Bulgaria” a concept for strategy on the preservation and wise management of the wild forests in Bulgaria has been elaborated. They cover an area of 103356,1 ha (2,9% of the total forest area of the country). 25% of the wildlife forest is without any legal protection. It is proposed that they should be included into the natural protected areas of the country, and by that time a moratorium must be imposed on their use.

In connection with the assessment of the forest ecosystem goods and services a project is elaborated for multifunctional management of the low-stemmed forests in Southeast Europe (<http://cforzee.bocu.ac.at>).

The health status of the main forest ecosystems in Bulgaria under the Program IPC Forest has been ascertained. A database has been created, including climatic changes by regions, entomologic, phytopathologic and abiotic damages, chemicalization of the forest soils, incl. toxic microelements and their impact on the tree, shrub and grass vegetation. A monitoring program related to the forest pests is carried out.

The international cooperative program “Assessment and monitoring on the impact of the polluted air on the forest ecosystems” is carried out since 1986. An international methodic is applied as well as some methodic approaches, related to the specific forest conditions in Bulgaria. Monitoring on the floristic diversity over test areas is also carried out. A monograph has been published containing data results over investigation period of 20 years.

Target 7: 60 % of the world’s threatened species conserved in situ

The protection *In situ* of the endangered plant species is carried out by inclusion of their populations into protected areas and ecological network NATURA 2000 in Bulgaria, as well as by application of relevant management. Unlike *ex situ*, the protection *in situ* is closely related to the land usage and its realization depends on the possibilities for combination of the practical activities with those of conservation character.

In the period 2005-2008 new protected areas of 36 012ha have been declared and large part of them include plant populations of broad diversity, and some other are specially dedicated to protect plant populations of rare and endangered plants.

Up to now specific Action Plans for endangered plant species have been elaborated among them *Ligularia sibirica*, *Laserpitium archangelica*, *Osmunda regalis*, *Tulipa urumoffii*, *Tulipa rhodopaea*, *Lilium rhodopaeum*, *Viola pumila*, *Fritillaria meleagroides* etc.

Target 8: 60 % of threatened plant species in accessible ex situ collections, preferably in the country of origin, and 10 % of them included in recovery and restoration programmes

The activities on ex situ protection of the genetic resources are envisaged in the National Strategy for biodiversity protection (1994) and the elaborated National Plans for biodiversity protection (2000-2005, 2006-2010).

There are alive and seed collection banks of endangered plant species in the specialized scientific departments and botanic gardens. Contemporary biotechnological methods are also implemented for the conservation of rare and endangered plants, medical plants and forest genetic resources of economically valuable species.

The Bulgarian scientists work on the following projects:

- ENSCONET (European Native Seed Conservation Network) (VI Frame Program)
- Collection of plant seeds from the native flora of Bulgaria for *ex situ* conservation in Millenium Seed bank (Kew Gardens, UK)
- Maintainance of alive collection of wildlife and cultivated samples *Leucojum aestivum* L.
- Protection of endangered and rare medical plants in *ex-situ* collection.
- Creation and maintainance of *ex situ* collection *Galanthus nivalis* and *Galanthus elvesii*, spread in Bulgaria.

Activities for maintainance and recuperation of rare plant species in the nature are carried out in the frames of conservation projects (*Clematis aplina*, *Aldrovanda vesiculosa*, *Tulipa urumofii*), and the trend is towards increasing the number of species included in such programs.

Target 9: 70 % of the genetic diversity of crops and other major socioeconomically valuable plant species conserved, and associated indigenous and local knowledge maintained

Program on Plant genetic resources and National Genetic Bank - Institute for Plant Genetic Resources, Sadovo

The activities on identification, conservation and sustainable usage of the plant genetic resources in the country are coordinated on national level by the Institute for plant genetic resources, Sadovo under program approved in 1977.

In the frame of the institute since 1984 a National genetic bank operates, which bears the responsibility for conservation of the plant genetic resources on a long term, mainly of the specimens and cultures of Bulgarian origin. Materials have been conserved, having been collected since 1951 till now. The total number of the registered in the National genetic bank specimens is over than 56 000. The type of the materials based on the National Inventory includes all significant and known in the country culture species and their wildlife relatives, represented now or in the past in selection programs. 25 % of the registered specimens comprise species of wildlife origin: medical, spices, ornamental plants, as well as some forgotten small cultures, and not too large number of protected species from our flora. The results concerning the Plant Genetic Resources from National Inventory correspond with all scientific aims on the domain of agriculture and biodiversity protection in Bulgaria. Part of the National Inventory on the Plant Genetic Resources in Bulgaria is available on the website <http://www.genebank.hit.bg/> and European electronic catalog <http://eurisco.ecpgr.org/>

There exist a good coordination between the Institute for Plant Genetic Resources as a national coordinator on Plant Genetic Resources and the *Biodiversity International*. Bulgaria is a member of European Co-operative Programme for Crop Genetic Resources. The program on Plant Genetic Resources is nominated to participate in the workshops of ECP/GR of 8 groups by cultures (Cereals-wheat, barley, oats; Grain legumes; Forages; Oil and industrial crops; Horticultures; Ornamental and medicinal plants; Peanut and sesamum) and by database documentation. Five times over the last years the Institute for Plant Genetic Resources, Sadovo has been a host of workshops on ECP/GR. The program on Plant Genetic Resources carries the responsibility for completion the European database for peanuts and genus *Agropyron*, as it disposes of the richest collections in Europe of these species.

The National genetic bank of the Institute for Plant Genetic Resources, Sadovo is nominated by the European program on Plant Genetic Resources as a "responsible center" (*focal point*) for Bulgaria. Thereby the right for participation in the European electronic catalog of the other institutes in the country has been granted, so they can joint the system by the nominated already center.

The program of the Institute for Plant Genetic Resources, Sadovo on conservation and reasonable use of the Plant Genetic Resources includes two main directions:

- Protection of the wildlife relatives of the cultivated plants - *ex situ* and *in situ*; Monitoring and regulations *in situ* are still not available, excluding those species, which are in natural reserves or in the schemes of the agro-ecosystems of NATURA 2000.
- Conservation of Plant Genetic Resources – old sorts, populations, ecotypes - *ex situ* and *on farm*; *Ex situ* regulations are available as well as some quantity *on farm* of local forms of vegetable cultures, beans, spices, fruits.

The program on Plant Genetic Resources at the Institute for Plant Genetic Resources, Sadovo carries the responsibility for the conservation, documentation, assessment, use and inventory of the Plant Genetic Resources for livelihood and agriculture in the country. Eight groups are organized by cultures (included in the collection): frumentatious - cereals, frumentatious - leguminous, vegetables, technical (oleaginous, fibrous, beetroot), forages, ornamentales and medicals, potatos, south cultures(peanuts, sesame, rise):

- **ex situ conservation** of seminal-reproductive species: the number of the specimens is approx. 88 317, 25% of which are wildlife relatives of the cultivated plants. At this moment there is available database in electronic format for about 70% of the samples by culture groups.

- **in vitro conservation** of vegetative-reproductive species – 170 potato specimens, including old and contemporary sorts and specimens of landrace; 40 specimens of medical species (*Mentha, Lavandula, Glycyrrhiza, Belladonna*); 20 specimens of ornamental species; 9 specimens of hops; 103 Bulgarian sorts of grape-vine are conserved in the Laboratory for Tissue Cultures at the Institute for Plant Genetic Resources, Sadovo .

- **in situ съхранение:** Couple of projects have been realized, connected with the conservation - *in situ* of the wildlife relatives of the cultivated plants from the country flora such as: frumentaceous - cereals, frumentaceous - leguminous, technical, forages, medical species.

Main activities:

- Collection, assessment, use and conservation of the culture genetic-plasma;
- Identification of the culture plants and their wildlife relatives according their economic importance and the thread of genetic - plasma losses.
- Documentation: All collected or acquired specimens are registered in the electronic database of the Institute for Plant Genetic Resources under the standards of *Biodiversity International* (project EURISCO: <http://eurisco.ecpgr.org/>).

The activity on *ex situ* conservation guarantees:

- Long - term use of Plant Genetic Resources on national and international level;
- Maintenance the species diversity in the timeframe and space;
- Future development of agricultural and ecological balance in case of eventual climate changes.

Three collection types for different purpose are maintained in the National genetic bank of the Institute for Plant Genetic Resources, Sadovo.

- *Working collection* – all new-registered specimens are conserved therein, after having been enumerated for temporary registration in the National register for the period they undergoes quarantine (introduced specimens) and initial assessment. Short - term conservation of the seeds is guaranteed from 3 to 10 years at +6°C, 50%RH (averaged conditions);

- *Base collection* – the seeds (priority is given to the Bulgarian origin) are conserved at conditions for long - term conservation in hermetic proof jars or in vacuum packages of laminated aluminium folio at –18°C;

- *Exchange collection* – Specimens of the genetic fund are conserved, intended for free exchange with other genetic banks and partners in the national and international exchange system for genetic material for research purposes. The materials requested from abroad are accompanied by Material Transfer Agreement endorsed by the corresponding countries in order to guarantee their sustainable use.

The activity on the plant genetic fund protection by *ex situ* conservation in the genetic bank successfully is combined with the assessment and the maintenance of the field collections on the experimental field of the Institute for Plant Genetic Resources, and *in vivo* collection of the Botany garden under the program Plant Genetic Resources / Institute for Plant Genetic Resources - Sadovo (in 2002).

As a coordinator under the Program for Plant Genetic Resources at FAO, the Institute for Plant Genetic Resources - Sadovo ensures for the Bulgarian partners the possibility of free exchange of genetic plasma, registry and *ex situ* conservation of plant specimens (old sorts, local forms, contemporary sorts and selection lines, wildlife fruits).

The National genetic bank in the Institute for Plant Genetic Resources – Sadovo participates in program of Food and Agriculture Organization of United Nations (FAO) in frame of UNDP, such as: TCP/BUL/77; TCP/BUL/2252(A). In a broader sense the National genetic bank represents a subject in the international system of national, regional and international centers for plant diversity protection and as a such it is controlled by the experts of *Bioversity International* (IPGRI) and by the European program for plant genetic resources (ECP/GR). The third largest collection of mild wheat in Europe is conserved in the genetic bank (after Gatersleben, Germany and N.I.Vavilov Institute of Plant Industry(VIR), Russia). The European collection of mild wheat (*Triticum aestivum*) is 112 412, and the hard wheat (*Triticum durum*) – 14325. Totally 12 408 specimens of genus *Triticum* have been registered in the Institute for Plant Genetic Resources – Sadovo: *Triticum aestivum* – 9454 specimens, 1051 of which are of Bulgarian origin; *Triticum durum* – 2163 specimens, 1166 of which are of Bulgarian origin. About 300 specimens of the species of genus *Aegilops* (9 species) of Bulgarian origin (collected in the period 1988 – 1992, 4 expeditions) – wildlife relatives of the wheat, belong also to the collection. The interest toward the species of genus *Aegilops* is based on the possibility to use them with a view to enlarge the genetic base of the hard and mild wheat.

The responsibilities for Plant Genetic Resources of fruits have been taken by the Fruit Growing Institute, Plovdiv, and for local and wildlife grape forms – The Institute for viticulture and wine production, Pleven.

The genetic resources necessary for the purposes of the forest science and practice are controlled and managed by the National Forestry Board by seed-controlling stations. They determine the base sources for forest reproductive materials, they accomplish selection and seed-production activities, they create and maintain collections, build dendrariums and vegetative seed-production gardens, they do research and experiments. Traditional as well as the latest contemporary methods are implemented in the activities on the conservation of the forest resources such as cryo-preservation of plant material for long – term conservation of embryo-plasma.

Target 10: Management plans in place for at least 100 major alien species that threaten plants, plant communities and associated habitats and ecosystems

The invasive species are determined by the National Strategy and Action Plan for biodiversity protection as one of the large contemporary threads to the biodiversity. At present stage their impact on the natural eco-systems of the country is assessed of being in the frame of the ascertained for the continental European regions.

Bulgarian scientists work on projects for exploration of the invasive species on national and international level, the more important among them follow below:

- Project DAISIE
- The determination of the top 10 most invasive species in Europe.
- Development of the European indicators for biodiversity for achievement the goal 2010. Expert group 5: “Tendency in the alien invasive species”
- Exploration and control of the populations of the allergising species of genus *Ambrosia* (Asteraceae) in Bulgaria.
- Assessment of the alien for Bulgarian flora and mycota species and measures for reducing their impact on the natural eco-systems and local species.

An Inventory has been carried out of the alien and invasive species from Bulgarian flora.

In 2008 a seminar has been carried out on Invasive alien species as a part of the National Strategy for Invasive Species preparation.

Activities for reducing invasive plant species are carried out in threatened habitats or such one that is rich in biodiversity.

Target 11: No species of wild flora endangered by international trade

- CITES

As a member of the convention CITES, Bulgaria carries out the envisaged therein procedures and issues permits and certificates, in compliance with the requirements of EC Regulation 338/97 for international trade control with rare and endangered species from the wild fauna and flora. Bulgarian representatives participate in the Scientific Committee and in the Standing Committee of the Convention.

The data shows that at present the species from the wild country flora, listed in the convention, are not a subject of international trade, and in this sense they cannot be considered as a real thread.

- Internal mechanisms – special regime for the medical plants

Concerning the medical plants of limited in the nature reserves, a mechanism has been elaborated for control on the collected therein herbs. It includes determination of regions and permissible for collection quantities and the consequent control by the competent authorities. As far as a large part of the herbs are intended for consumption in other countries, including those in the frame of EU, this mechanism reveals an indirect relationship toward the international trade with plant resources.

Target 12: 30 % of plant-based products derived from sources that are sustainably managed

In the frame of the Common Agricultural Policy (CAP) and the Forest Management Policy of EU, certification schemes are implemented in Bulgaria, which are bound to the sustainable development of the resources.

Besides the certificated forests and agricultural land wherein biological production is produced, in many cases the distribution of the financial resources from European Funds needs sustainable management of the lands, which are used for plant crop production. This is mostly referred to the implementation of agro - ecological schemes, wherein it is obligatory for the owners to foresee and to implement measures for biodiversity protection in the lands, which are subsidized.

In this connection over the last years, the part of the territories sustainably managed rises more and more in Bulgaria as well as the production yield therein.

Target 13: The decline of plant resources, and associated indigenous and local knowledge, innovations and practises that support sustainable livelihoods, local food security and health care, halted

An important part of the plant resources of Bulgaria are medical plants. They are used in the traditional medicine, pharmacy and cosmetic. The business reveals a large interest toward the wildlife resources of medical plants. The collection of medical plants for business purposes is an important source of incomes for a large number of the population. The annual consumption of medical plants is about 17 000 t, and approx. half of this quantity originate from natural populations. Therefore, they are an important part of the National Plant Conservation Policy and object of the National Strategy for Biodiversity Conservation, the National Biodiversity Conservation Plan, the Medicinal Plants Act and other legal and sub-legal documents, regulating the protection and the rules for use of these resources. In this connection the sustainable models for management and application of good yield practices are stimulated. For those areas, wherein herbs are collected, programs for assessment and resource management as well as for utilization control are elaborated. For species of limited in the nature reserves a special regime for protection and use has been established, which includes annual determination of the permissible for collection quantities and regions, accomplishing monitoring and strengthened control.

An important element of the national policy concerning the medicinal plants is the increasing of the herbs quantities, yielded from cultivated medicinal plants, as this approach is the most effective way to reduce the consumption from the nature and to assure plant resources of high quality. In this connection the creation of cultures of medicinal plants is a subject of financial

support under variable programs on the domain of agriculture, environment and social policy. In addition, training is given, educational programs, scientific projects and research are financially managed.

Over the last years increasingly attention is paid to the production growth of herbs, meeting the requirements for biological (organic) production. This fact also contributes to the protection of the wildlife medicinal plants, as one of the major requirements is to apply sustainable yield practices and protection of the populations and habitats wherein they are yielded.

Aiming the protection of the medicinal plants, alternative methods are developed for bio-production of biologically active substances, as well as *In vitro* cultivation of rare and protected medicinal plants from Bulgarian flora (*Ruscus aculeatus*,, *R. hypoglossum*, *Leucojum aestivum*). Many projects are directed toward assessment and exploration of perspective species in order to acquire information, development of technologies for cultivation, creation of databases (by using GIS-technologies) and sustainable management.

Ex-situ collections of medicinal plants have been established, maintained and enriched in different scientific institutions, incl. *in vitro*-, alive and seed collections (see above).

Another important resource are the wildlife mushrooms. They are used for private ends as well as for manufacturing and export. A control over their use and habitat protection is carried out as far as it is possible, explorations on their economic significance, resources, diversity, biology and ecology are also carried out.

Target 14: The importance of plant diversity and the need for its conservation incorporated into communication, educational and public – awareness programmes

The thematic of the biodiversity significance and the necessity of its protection is included into the syllabus and educational programs on all levels in Bulgarian school and the corresponding university courses. It finds expression also in the extracurricular educational forms in the schools such as green schools, as well as in the training process of the environmental and educational centers, founded in and around the most significant areas with high nature value.

Teachers, university professors and the whole environmental society are involved into the popularization of the biodiversity concerns. The plant diversity is represented professionally, but in a simple way, programs and projects are elaborated for education among the nature, as well as cognitive routes, expositions, posters, booklets, books, guides to plants.

In the frame of the state policy for sustainable management of the forests and the farmlands, the training concerning the biodiversity significance incl. the plant diversity is an obligatory element for the owners involved into the corresponding schemes. Under variety of other projects and programs, activities also are carried out aiming information and increasing the public knowledge and the qualification of the local specialists and rendering methodic help. Specialized training, meetings, seminars are carried out, educational materials are edited. This process is managed very actively by the public sector by using projects of the NGO. The thematic is varied and includes ecological and social aspects of the sustainable management of the forest and farmland territories, multifunctional management of the forests, dynamics and monitoring of the forest resources, management of meadows and grasslands, protection of concrete species and populations, incl. rare and endangered ones.

Target 15: The number of trained people working with appropriate facilities in plant conservation increased, according to national needs, to achieve the targets of this Strategy

No relative information.

Target 16: Networks for plant conservation activities established or strengthened at national, regional and international levels

The scientific institutions in Bulgaria participate in the realization of number of national and European projects, connected with exploration of plant biodiversity conservation and management of protected areas and plant genetic resources, including forestry resources, such as

DAISIE, Bioplatform, EUFORGEN, Millenium Seed bank, EURISCO, TCP/BUL77, TCP/BUL/2252(A), etc. (See above).

2. TARGETS PROGRAMME OF WORK ON PROTECTED AREAS

The major strategic documents on national level, determining the policy on the biodiversity domain and protected areas are as it follows: National Strategy for Environment, National Action Plan 2000 - 2006, National Biodiversity Conservation Strategy and both National Biodiversity Conservation Plans (1999-2004 и 2005-2010). On the domain of the protected areas there are three more documents: National Plan of Priority Actions in the Most Important Wetlands in Bulgaria, Strategic Framework for Floodplain Forests Protection and Restoration on the Danube Islands (2001) and Action Plan for the Protection and Restoration of Floodplain Forests on the Bulgarian Danube Islands (2003-2007)

<http://www.moew.government.bg/>

<http://chm.moew.government.bg/IndexDetails.cfm?vID=11&vPage=1>

Programming element 1:

Target 1.1. To establish and strengthen national and regional systems of protected areas integrated into a global network as a contribution to globally agreed goals

In compliance with the national legislation, a National Ecology Network is built, comprising protected areas, declared on the Bulgarian special legislation and special areas of conservation as a part of the European Ecological Network NATURA 2000.

In late 2008 the number of the protected areas is 950 with total area of 581736 ha (5,2% of the state territory). The development of the protection area system and the distribution by categories is represented in Table 1 (the categories correspond with IUCN) and the area change in Fig.1.

Tab.3. Distribution of the number and the area of the protected areas by categories

Categories protected areas	Number by 31.12.				Area/ha/ by 31.12.			
	2005	2006	2007	2008	2005	2006	2007 г.	2008 г.
Reserves	55	55	55	55	76 979,0	76 979,0	77 011,1	77 014,2
National Parks	3	3	3	3	150362,3	150 362,3	150 362,3	150 362,3
Nature Monuments	346	348	346	345	16 546,7	16 737,7	16 693,4	16 707,0
Managed Reserves	35	35	35	35	4 517,1	4 517,1	4 510,8	4 515,1
Nature Parks	10	10	10	11	244723,3	244 723,3	244 723,3	256 455,7
Protected Sites	419	430	492	501	52 595,8	53 465,9	73 400,4	76 681,6
Total protected areas	868	881	941	950	545724,2	546 785,3	566 701,2	581 736,0

Източник: МОСВ - НСЗП

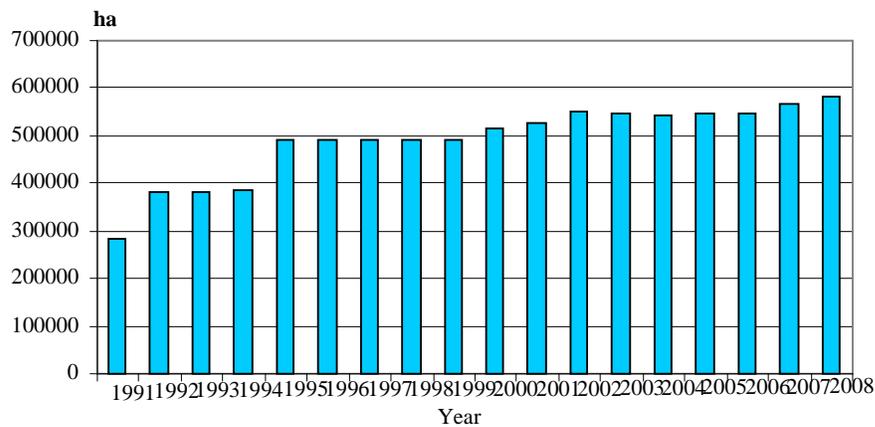


Fig. 5. Change in the area of the protected areas for the period 1991 – 2008, ha
 Source: MOEW – National Nature Protection Service

As a whole a tendency is observed toward increasing the protection areas, and for the period 1991- 2008 it has been approx. doubled.

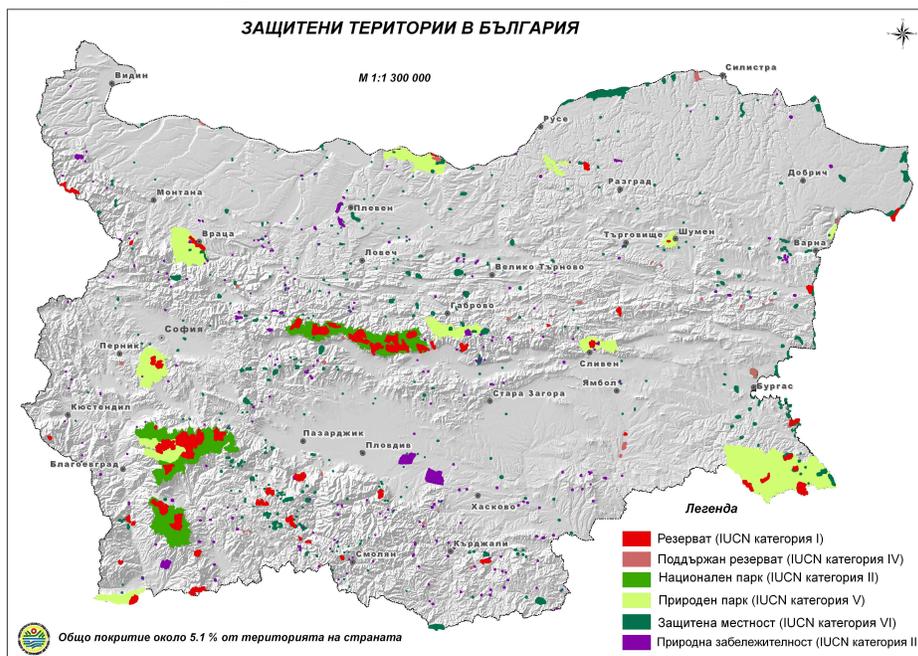


Fig. 6. Map of Protected Areas in Bulgaria

The build process of NATURA 2000 ecological network in Bulgaria has started in 2002 by determination of sites, meeting the requirements of the EU Directives. In 2003 67 NATURA 2000 potential sites have been identified with total area 360 000 ha. In 2004 86 NATURA 2000 potential sites have been inventoried. In 2005 new 244 NATURA 2000 potential sites have been inventoried. In 2006 proposals for 114 NATURA 2000 potential candidates have been submitted to the MOEW under the Bird Directive, comprising approx. 23.6 % of the state territory and 225 NATURA 2000 potential sites under the Habitat Directive, comprising approx. 30 % of the state territory. By 2008, a list with 332 areas aiming inclusion to NATURA 2000 network have been submitted to the Council of Ministers of the Republic of Bulgaria, comprising 33.89 % of the state territory.

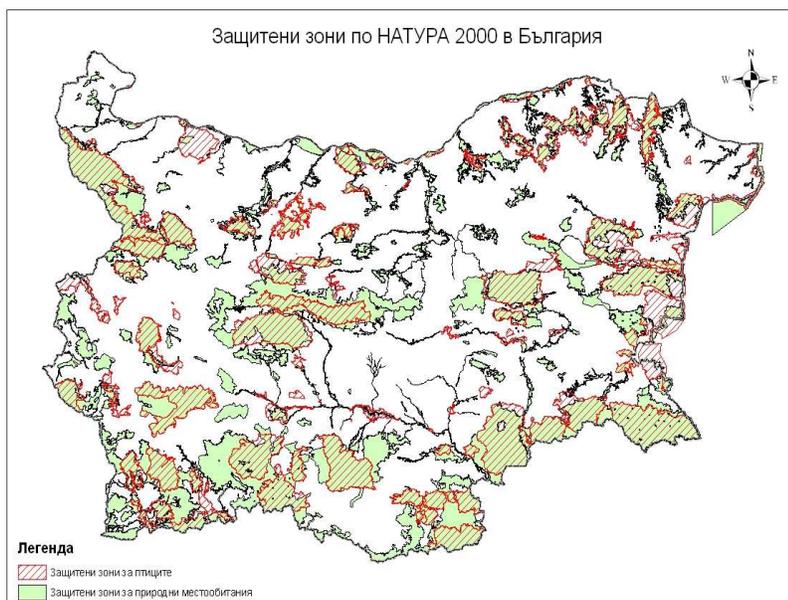


Fig. 7. Map of NATURA 2000 network in Bulgaria

Building ecologically representative national network of protected areas and protected sites and its effective management is a priority mission of the Ministry of Environment and Water. The representativeness of the network is thereby determined, that the protected areas are determined and declared on the base of scientific criteria aiming inclusion of representative natural habitats and habitats of species of high priority. This approach for building the network of protected areas has been legislative determined by the regulations of the Biodiversity Act. The following approaches have been formulated regarding the establishment of the National Ecological Network in the National Biodiversity Conservation Plan.

- Development and maintenance of the protected areas network, including declaration of Marine Protected Areas.
- Establishment and maintenance of protected areas system, meeting the criteria of the Habitat Directive and the Bird Directive as a national part of the European Ecological network NATURA 2000.
- Protection, regulation and management of the biological resources in the protected areas and sites by elaboration of management plans of protected areas and sites and fulfillment the activities envisaged therein.
- Strengthening, capitalization and development of the fund "Protected Areas" at the National Trust Eco-fund.

At the moment there are: 10 Ramsar sites, 16 biosphere reserves, 2 objects of UNESCO World Heritage Sites - Pirin National Park and Srebarna Managed Reserve.

Target 1.2. Integration into the wider landscape and other sectors, connectivity

The integration of the protected area and sites network in the sector policies and the establishment of relevant environment for their management and protection is realized by several instruments.

Important instrument in this domain is the EIA (*Environmental Impact Assessment*) procedure - under the approval of the realization of investment activities and the Ecologic Assessment (*Strategic Environmental Assessment*) - under the affirmation of the plans and programs. Thereby it is estimated whether the forecasts are admissible in respect to the legislative regulated regimes of activities in the protected areas and what will be the impact on the environment, including in the boundaries of the protected areas. In case of thread of adverse impact, obligatory measures are determined for their prevention and reduction. Under the establishment of the

protected area network by the national legislation an additional assessment has been introduced, required by the EU - environmental impact assessment on the subject and the aims of the protection in the NATURA 2000 sites. This assessment aims to assure compatibility between the planned and the envisaged activities therein or in the vicinity of the protected areas and the protection of the habitats and the species in their boundaries.

Special attention is paid to the integration of the protection sites management in the agricultural and forestry economy. A National agro-ecological program has been elaborated, which will be applied in the frames of Program for development of rural regions by the measure "Agro-ecological Payments". Under this measure payments will be available for those farmers, who cultivate their farmlands by way protecting the environmental value. It has been differentiated also a sub-measure "Management of high nature value farmlands", which is aiming to contribute for successful management and protection of the favourable conservation status of the habitats and the species, subject to the protection by the National Ecological Network.

Target 1.3. Establish and strengthen regional networks and transboundary protected areas

Bulgaria participate in the initiative European Green Belt, which is aiming to contribute for protection of valuable natural territories at the borders and to stimulate their connection into an ecological network. In connection with this initiative the Nature Park "Belasica" has been declared with area of 11 700 ha in the mountain Belasica, situated in the border region in the south-west part of the country.

The country participates also in the international initiative " Lower Danube Green Corridor", aiming protection and recuperation of wetlands of European significance. In fulfillment of this initiative it is envisaged establishment of appropriate network of already existing and new protected nature territories.

In the region of Strandja, where the largest nature park of Bulgaria – Strandja NP is situated, a trans-boundary project is realized: „Conservation and sustainable use of biodiversity in Stranica(Yıldız)/Strandzha Mountain – challenges and opportunities for promotion and implementation of the Transboundary Biosphere Reserve concept”. One of the major aims of the project is to encourage the collaboration between the scientists, local authorities and local people, local business, NGO and other interested parties on the domain of protection and sustainable biodiversity use.

Targets 1.4. Effective management of all protected areas and 1.5. Prevent and mitigate key threats

A major tool for achievement effective management of the protected areas and prevention from the main threads is to elaborate management plans.

Under the elaboration of the plans a description and assessment of the protected area is carried out regarding the ecological as well as socio-economic aspects. The general and the operative aims of the management are formulated and the activities for their achievement are determined.

Management plans make functional zoning of the corresponding territory and determine the regimes for each of the zones depending on their conservation significance. Management plans are elaborated based on the detailed scientific and socio-economic information, data about the infrastructure therein and around the protected area, data concerning the use of the object by the local population etc.

By using management plans it becomes feasible to identify the major threads for a certain protected area, as well as the necessary approaches to avoid or to minimize the adverse impact.

The following Management Plans have been elaborated: in 2002 - 9, in 2003 - 5, in 2004 - 6, in 2005 - 2, in 2006 -6, in 2007 - NA and in 2008 - 3. Totally 38 Management plans for significant protected areas are being elaborated.

Programming element 2:

Targets 2.1. Promote equity and benefit sharing

and 2.2. Enhance and secure involvement of indigenous people, local communities and relevant stakeholders

The achievement of both aims is envisaged to be realized by the mechanism and the procedures under the elaboration of management plans of the protected areas.

The broad public - the interested governmental institutions, municipalities, scientific and NGO also stakeholders are involved into the procedure on the elaboration of the management plans by their participation in the public discussions during the procedure on the elaboration of management plans concerning the national parks and the managed reserves. In this way they fulfill the role of agreement between the interested parties, namely those which realize the management of the corresponding protected area and the local population.

The participation of the interested parties in the process of planning supports also realization of the principal, namely the protected areas management plans to envisage activities wherein the nature protection to be combined with economical goods for the local communities – for example building infrastructure for development of ecological tourism. All this contributes to the realization of effective management, conformable to the concrete conditions and aiming to assure goods on a local level from the protected areas.

Programming element 3:

Target 3.1. Review and revise policies to provide an enabling environment for protected areas

Over the last years the activity of MOEW is directed toward improvement of the legal regulations, personnel and financial security of the structures; elaboration and application of the management plans.

Changes have been repeatedly done in the Protected Areas Act, directed toward improvement the regulations on this domain. There exist a special regulation, which regulates the order for elaboration of the management plans of the protected areas. There are rules for assignment activities in the protected areas – public state property. These legal sub-regulations are directed toward regulation of the practical activity of the regional bodies of MOEW on the domain of the protected areas.

Target 3.2. Capacity for the planning, establishment and management of protected areas,

Between 2002 – 2004 a project has been realized in Bulgaria entitled “National self-assessment of the potentialities of Bulgaria for global environmental management”. The National self-assessment especially has identified the need of development the national capacity for inclusion ecological aims into the process of regional development and has underlined the necessity of better coordination in this domain between the institutions on national and local level.

As a result, in 2007 a project has started entitled “Integration of the global environmental problems in the process of the regional development in Bulgaria”. The project supports the integration of the aims of the all three conventions from Rio into the development plans and in the regional - development planning in Bulgaria, including by building capacity in the corresponding institutions. Building capacity and adoption technologies and innovative approaches for biodiversity protection, including by building and management of the protected area system are subject also of other projects under the line of international collaboration, realized or being realized in different regions in the country.

Administrative capacity for management and control of the protected area.

Department “National nature protection service” in the frame of MOEW assures the management and the control of the protected areas on national level. On the territories of the country there are 16 Regional environmental inspections and 3 of the national park directorates.

There exist specialized administrations for the nature parks – Nature Park Directorates, which are structures at the National Forestry Board.

Over the last years a priority is the strengthening of the institutional capacity on national and regional level. In the major direction of MOEW, taking into account the variety new functions,

originating from the adopted European legislation, the tendency to increase the staff working in the sector “Nature protection” has continued. For improvement of the work organization and the enforcement of the different laws, in “National Nature Protection Service” there has been differentiated three Departments: Protected areas, Biodiversity with sector Genetically Modified Organisms and NATURA 2000 Department. The technical equipment of the expert staff significantly has been improved.

Over the years a strengthening is observed and also improvement the effectiveness of the control on the conservation of the protected areas and the enforcement of the Protection Area Act on all levels. Yearly MOEW and in particular National Nature Conservation Service organizes trainings and seminars for the sections in the MOEW regional structures, involved into the management and the control of the protected areas. This is done aiming acquiring better professional qualification and assuring methodic guidance regarding the executive functions and the enforcement of the specialized Bulgarian and international legislation.

Target3.3. Technology transfer

In the frame of the National ecological network, including the protected areas and the network NATURA 2000, the application of sustainable agricultural and forestry practices for agricultural production and forests management, as well as the development of sustainable forms of economic activity (cognitive, ecological and rural tourism). It is stimulated the development of bio-production, the application of ecological schemes and sparing practices for management of high natural value lands, maintenance and protection of typical habitats and elements of the landscape significant for the biodiversity (meadows, field-boundaries, wetlands). These requirements are grounded as conditions for subsidizing the farmers from the European agricultural funds.

Target 3.4. Financial sustainability

The financial support of the protected areas is provided by the financial instruments of the *state budget, specialized funds and external sources*. The concrete financial needs for protected areas are determined by their management plans, containing financial assessment of the envisaged necessary activities.

The activities, realized by the Directorates of the national and natural parks are financially managed by the state budget, as well as some activities in the other categories protected areas.

By the financial means of the Enterprise for Management of Environmental Protection Activities (EMEPA) at MOEW activities are financially managed, connected with the exploration and the declaration of protected areas and realizing activities envisaged in the protected area management plans.

Activities in the protected areas are financially managed also under the line of international projects and programs. After having joined the EU, financial means in the domain of biodiversity protection and the management of the National ecological network can be assured by the corresponding funds and financial mechanisms of the European Union, including Operational program Environment, EC Financial mechanism LIFE+, etc.

Target 3.5. CEPA

Information on the biodiversity actual questions and the protected area system is broadly available by the website of Clearing House Mechanism (CHM):

<http://chm.moew.government.bg> , as well as the specialized websites:

<http://eea.government.bg/zpo/index.jsp>

nfp-bg.eionet.eu.int/bul/index.html

www.bg-parks.net

<http://www.bulgariannationalparks.org/bg/index.phtml>

bgprirodniparkove.start.bg/

By the protected area management plans it is envisaged educational and informative campaigns, oriented towards the broad public. Most frequently in these campaigns, the emphasis is on the work with the pupils. The goal of the information campaigns is to make acquaint the public with the aims of the protected areas, the peculiarities and the resources of the environment, the use of the protected areas.

In some protected areas visitor information centers also have been established and operate. In the process of informing the public, very actively NGO are involved as partners of the governmental institutions. Booklets, posters, movies and other educational materials are edited and specialized out-of-class education is also carried out.

Targets 4.1. *Minimum standards and best practices;*

In compliance with the Bulgarian legislation and practices under the selection of areas foreseen to be declared protected, international and national criteria are applied, determining the natural value of the area, its category and regimes. Such as criteria are the criteria of IUCN, the requirements of the conventions toward the protection of rare and endangered species, habitats, breeding and migration areas, wetlands. Under protection are also ornithological spots (Important Bird Areas), significant for plants, insects, reptiles, bats and other groups; typical landscapes and natural forms; populations of endemic and relict species; areas - being boundaries of regions (areal), as well as such with high recreative and scientific values.

The inclusion of protected areas into international projects and initiatives, requiring meeting of certain standards and implementation of certain management practices can be considered as a successful instrument for adaptation of standard and good practices under the management of the protected areas, such as for example: The European National Park Network (PAN Parks), wherein 2 Bulgarian National Parks participate - Central Balkan NP and Rila NP.

**Targets 4.2. *Effectiveness of PA management;*
and 4.3. *Assessment and monitoring PA status and trends***

There is no specially established system for assessment the management effectiveness. Such an assessment is done under the evaluation of the results of fulfillment of the management plans or the effectiveness of the implemented measures for supporting and recuperation of certain habitats and species in the boundaries of the protected areas.

In 2004 the Program for ecological monitoring in the national parks has started. The program realizes monitoring of the biodiversity in the three national parks by observation of selected indicators and conservative significant plant and animal species.

Target 4.4. *Scientific knowledge*

The scientific investigations have their place in the establishment and management of the National ecological network. Scientific investigations are realized in the course of the initial exploration and the elaboration of the necessary documentation for declaration of the protected areas and protected zones. The results from the scientific investigations are used also under the elaboration of the management plans, for identification of the operative objectives and formulation the necessary activities under the protected areas management. The management of the protected areas themselves include also carrying out scientific investigations on their territory, which despite the scientific have also practical value for determination of the most relevant methods for biodiversity protection.

Appendix III - List of contributing partners

Ministry of Environment and Water

<http://www.moew.government.bg/>

<http://chm.moew.government.bg/indexE.cfm>

Ministry of Agriculture and Foods

www.mzh.government.bg

Ministry of Transport

www.mt.government.bg

Executive Environment Agency

<http://nfp-bg.eionet.eu.int/>

State Tourism Agency

<http://www.tourism.government.bg/bg/index.php>

State Forestry Agency

<http://www.nug.bg/>

Executive Agency for Fishery and Aquaculture

<http://iara.government.bg/>

Institut of Botany, BAS

<http://www.bio.bas.bg/botany/>

Institut of Zoology, BAS

<http://www.institutezoology.com/>

Institut of Forestry, BAS

<http://www.fribas.org/>

Institut of Oceanology, BAS

<http://www.io-bas.bg/>

Institut of Fishing Resources, Varna

http://www.ifrvarna.com/site/?page_id=307

Institut of Plant Genetic Resources, Sadovo

<http://www.genebank.hit.bg/>

National Museum of Nature History

<http://www.nmnhs.com/>

Central Laboratory for General Ecology

<http://www.ecolab.bas.bg/>

University of Forestry

<http://www.ltu.bg/>

Rio Conventions Project

<http://www.rioconventions.org/en/>

Rhodope Project

<http://www.rhodope.org/en/>

Wetland Restoration and Pollution Reduction Project
http://82.147.142.34/wetlands/home_en.html

Appendix IV – Further sources of information

Strategy for sustainable development of Bulgaria

http://www.moew.government.bg/strateg_plans/index.html

National strategy for environment and Action plan

<http://www.moew.government.bg/>

National Biodiversity Conservation Strategy and the the National Biodiversity Conservation Plan (2005-2010) <http://www.moew.government.bg/>

National strategy for development and management of water sector

<http://www.moew.government.bg/>

The Second National Action Plan on Climate Change 2005-2008

(http://www.moew.government.bg/strateg_plans/index.html)

NATURA 2000

(<http://www.natura2000bg.org/> and <http://www.moew.government.bg/>)

Information on the protected areas:

<http://chm.moew.government.bg>

<http://eea.government.bg/zpo/index.jsp>

nfp-bg.eionet.eu.int/bul/index.html

www.bg-parks.net

<http://www.bulgariannationalparks.org/bg/index.phtml>

bgprirodniparkove.start.bg/

National Plan of Priority Actions in the Most Important Wetlands in Bulgaria

<http://www.moew.government.bg/>

Strategic Framework for Floodplain Forests Protection and Restoration on the Danube Islands (2001)

<http://www.moew.government.bg/>

Action Plan for the Protection and Restoration of Floodplain Forests on the Bulgarian Danube Islands (2003-2007)

<http://www.moew.government.bg/>

The National Biodiversity Monitoring System

<http://nfp-bg.eionet.eu.int/bul/NSMOS/Biodiversity/index.html>

European electronic catalog <http://eurisco.ecpgr.org/>

National programme for combating of desertification <http://www.chm.moew.government.bg/SLM/files/3-leaflet.pdf>

National Action Program on Sustainable Land Management and Combating Desertification in Bulgaria - 2007-2013

<http://chm.moew.government.bg/SLM/files/3-leaflet.pdf>

<http://chm.moew.government.bg/IndexDetails.cfm?vID=11&vPage=1>

National strategy for regional development and National strategic plan for rural development

www.mzh.government.bg/.../NSRDP_draft633518227577343750.pdf

Rural Development Program (2007-2013)

www.mzh.government.bg/Article.aspx

Operative program for development of the Fishery Sector /2007-2013/
<http://www.mzh.government.bg/Article.aspx?lang=1&rmid=366&id=366&lmid=0>

National Strategic Plan for Agricultural and Rural Development (2007-2013)
<http://prsr.government.bg/>

National Strategy for Sustainable Development of Forest Sector (2006–2015)
<http://www.nug.bg/>

National programme Recovery and protection of Bulgarian forest
<http://www.nug.bg/>

Strategic plan for development of forest sector (2007–2011)
<http://www.nug.bg/>

(<http://www.mrrb.government.bg/index.php?lang=bg&do=law&type=4&id=221>)

Project of new Strategy Plan for Protection and Recuperation of Black see
(http://www.mzh.government.bg/Articles/366/Files/1_NSPRA_f%20010507633474138438437500.pdf).

Operative Program Regional Developmen
(<http://www.europedirect-kn.info/docs/oprr.pdf>)

Project of National Strategy and Action Plan for the Development of Ecotourism in Bulgaria
<http://www.moew.government.bg/>

Project of National Strategy for Sustainable Development of tourism in Republic of Bulgaria for the period 2008-2013, and Action Plan
http://www.tourism.government.bg/bg/tourism_politic.php?menuid=51&id=58
http://bulgariatravel.org/eng/view_rubric.php?r=tour

Energy strategy of Bulgaria
http://www.mee.government.bg/iko/Proekt_En_Strategy.pdf

National Long-term Program for Encouragement the Use of Renewable Energy Sources (2005-2015)
http://www.seea.government.bg/documents/DPVEI_final_25_09_06.doc

First National Action Plan for Energy Efficiency 2008-2010
http://www.mee.government.bg/ind/doc_inov/bulgaria_bg-posleden-variant-Action-Plan.pdf

Operational Programme on Transport 2007-2013
<http://www.optransport.bg/>

Program for Enhancement the Energy Efficiency in Transport Sector by Application Measures for Energy Saving 2006-2008.
http://www.mee.government.bg/ind/doc_inov/MT.doc

National Long-term Program for Encouragement Consumption of Biofuels in the Transport Sector 2008-2020
<http://www.mtitc.government.bg/text/page.php?category=451&id=2901>

Bulgaria: Wetland Restoration and Pollution Reduction Project - component of Danube/Black Sea Strategic Partnership: Nutrient Reduction Investment Fund
www.iwlearn.net/iw-projects/Fsp.../view

European Platform for Biodiversity Research Strategy (EPBRS)

<http://bioplatform.hit.bg/index.htm>

Important Plant Areas Project

<http://www.plantlife.org.uk/international/plantlife-ipas-euro-bulgaria.htm>

National Inventory on the Plant Genetic Resources in Bulgaria

<http://www.genebank.hit.bg/>

Bulgarian Society for the Protection of Birds

http://bspb.org/article_files/121304579013.pdf

http://www.lepidopterology.com/butterfly_areas_bg/index_bg.htm

Appendix V - Information on National biodiversity monitoring system and application of Streamlining the European Biodiversity Indicators (SEBI 2010)

The National Biodiversity Monitoring System (NBMS) has been approved and has started operating since 2007. NBMS is a complex mechanism for tracing and summarizing the changes in the biodiversity of Bulgaria on a long term. The main objective is to assure information base in order to implement effective national nature protection policy.

The national biodiversity monitoring system comprises: monitoring objects; monitoring schemes; indicators for biological diversity; information system.

The objects envisaged for monitoring in the frame of NBMS are determined on three levels of biological organization - genetic, species and habitat/ecosystems. The indicators detect the changes, measured in the time and/or in the space compared to the preliminary determined initial state or controlled measurement (MOEW,2006).

<http://nfp-bg.eionet.eu.int/bul/NSMOS/Biodiversity/index.html>

The objects proposed for monitoring in the frame of NBMS are as follows:

Invertebrate animals – 252 species 74 of which are of priority

Fishes – 51 species, 16 of which are of priority

Amphibious and reptiles – 21 species, 13 of which are of priority

Birds – 310 species (they are observed by different monitoring techniques, covering significant number of species; a 7-grade priority scale is established for the birds;

Mammals (without bats) – 18 species 10 of which are of priority

Bats – 13 species, 9 of which are of priority

Fungi – 16 species of priority (and additional observation on other species based on the principles of selected test grounds on the territory of whole country)

Mosses – 13 species, 5 of which are of priority

Habitats – 65 types under the Habitat Directive and also 17 types under the Palearctic Habitat Classification, which are not in conformity with the codes under the Habitat Directive

After the establishment of NBMS, a process on its strengthening and development has started. Methodic provision, testing, strengthening of the potential for its development and broadening the scope of observation are carried out. In 2008 a monitoring on 147 bird species (under the survey methodic of Bird Life International) and 35 fungus species, plants and vertebrate animals from 7 systematic groups.

Since 1986 an **International Co-operative Programme Assessment and Monitoring of Air Pollution Effects on Forests** operates in Bulgaria. The observations are carried out in an international 16/16 km network and in the national networks, consistent with the specific peculiarities of the forest lands in the different European countries; **intensive monitoring and ecological** monitoring. The objective is that on limited number test areas to investigate the interrelation between the different forest ecosystem components and to determine their reaction toward the air pollution.

In the frames of number of projects, a specialized monitoring on the species and habitats in connection with their protection and management is carried out.

Indicators

Streamlining the European Biodiversity Indicators (SEBI 2010) is the European framework for developing biodiversity indicators. The European Commission uses the SEBI 2010 indicators as part of the 2008 mid-term evaluation of progress towards the 2010 targets (see <http://biodiversity-chm.eea.europa.eu/information/indicator/F1090245995/fo1591978>)

Information is represented below for implementation of these indicators in Bulgaria. There is no authorized institution in Bulgaria for coordination and data processing on the implementation of

the indicators and the assessment thereon. Nevertheless, there is advance on the implementation of some of them. Regarding the others, additional efforts are necessary for coordination between the different institutions in order to summarize the different type information and to find means for activities on acquisition of additional information.

1) Abundance and distribution of selected species

a) Birds: In frame of 4 years (2004-2007) a Monitoring on the ordinary birds in Bulgaria has been carried out, which represents the state of the most frequently ranged birds. The monitoring is carried out by the *Bulgarian Society for the Protection of Birds* (http://bspb.org/article_files/121304579013.pdf). The data is used for assessment under the index of birds, populating the agricultural regions in Bulgaria (*Common Bird Index*).

b) Butterflies - As a result of the work of scientists from the National Museum of Natural History, BAS the most important for butterflies in Bulgaria areas have been identified and described. The results from the projects have been published on the website:

http://www.lepidopterology.com/butterfly_areas_bg/index_bg.htm

2) Red List Index for European Species

The indicator has been elaborated based on the lists of plants, animals and types natural habitats which are part of the new Red Data Book of Bulgaria, (in press). The red lists of Bulgaria have been compiled in correspondence with the IUCN criteria.

3) Species of European interest

The criteria for monitoring and assessment the favorable conservation status of the species of European interest, subject to protection under Habitat Directive and Bird Directive and listed in the ecological network NASTURA 2000 have been elaborated (<http://natura2000bg.org>). Responsible institution for data collection and reporting is MOEW/ Executive Environmental Agency.

4) Ecosystem coverage

The data for this indicator are available on national level in the frame of Data Base of the project CORINE Land Cover (CLC). The Data Base is updated regularly as follows - for years 1990, 2000 and 2006. In the frames of project CLC 2006, 36 classes ground coverage (of all 44 classes for Europe) which are differentiated in ecosystem types, have been determined for Bulgaria. Data are available for the mentioned periods concerning the changes for all classes of grounds. (<http://nfp-bg.eionet.eu.int/ncsd/bul/K.Z.P/ind.html>). The data is still no used in connection with goal 2010.

5) Habitats of European interest

The criteria for monitoring and assessment the favorable conservation status of the species of European interest, subject to protection under Habitat Directive and listed in the ecological network NASTURA 2000 have been elaborated (<http://natura2000bg.org>). The total coverage is 33.4 % of the state territory of Bulgaria. The total number of type natural habitats of European interest is 87. Responsible institution for data collection and reporting is MOEW/ Executive Environmental Agency.

6) Livestock genetic diversity

The data are available on national level. Responsible institution for data collection and elaboration of assessment is the Ministry of Agriculture and Food. The data is included in the annual report about the state and the development of the agriculture (Agriculture report, part Farming) (<http://www.mzh.government.bg/Article.aspx?lang=1&lmid=407&id=407&rmid=0>)

7) Nationally designated protected areas

The Ministry of Environment and Water maintains National *Register of Protected Areas* (<http://eea.government.bg/zpo/index.jsp>). Data is sent also to the European Environment Agency for inclusion into the European Common Database (<http://cdr.eionet.europa.eu/bg/eea/cdda1>)

8) Sites designated under the EU Habitats and Birds Directive

The data is available. Responsible institution for implementation of EU Habitats (92/43/EEC) and Birds (79/409/EEC) Directives is MOEW (<http://natura2000bg.org>).

9) Critical load excess for nitrogen

Data about critical loads of sulfur, nitrogen, acidity and heavy metals in the forest ecosystems of Bulgaria is available also in Executive Environmental Agency. The data is published annually under the form of reports on (<http://www.mnp.nl>). The report about Bulgaria for 2007 is published on website (http://www.mnp.nl/images/CCE08_Country_Bulgaria_tcm61-41913.pdf.)

10) Invasive alien species in Europe

As a result of two projects, realized by the Institute of Botany and the Institute of Zoology, at the BAS, the most problematic for the biodiversity invasive species have been determined. 45 animal and 50 plant and fungous invasive species have been described. In October, 2008, MOEW/EEA has filled in and sent to CHM/EC and EEA a questionnaire concerning establishment of early warning system for invasive species.

11) Occurrence of temperature-sensitive species –

Up to now this indicator is not applied in Bulgaria

12) Marine Trophic Index of European seas –

No data available.

13) Fragmentation of natural and semi-natural areas –

Data is available on national level at CLC database

<http://terrestrial.eionet.europa.eu/CLC2000/countries/bg/full>

14) Fragmentation of river systems –

Data are available in the annual reports of the country to EEA (concerning the state of the surface water and ground water)

<http://cdr.eionet.europa.eu/bg/eu/wfdart8>

<http://cdr.eionet.europa.eu/bg/eu/wfdart5>

15) Nutrients in transitional, coastal and marine waters –

Available data (<http://cdr.eionet.europa.eu/bg/eea/me1/envsqbva>)

16) Freshwater quality –

Available data (http://cdr.eionet.europa.eu/bg/eea/colp_luna).

17) Forest: growing stock, increment and felling –

The data on national level is available. It is updated annually. Responsible institution is the National Forestry Board.

18) Forest: deadwood –

The data on national level is available. It is updated annually. Responsible institution is the National Forestry Board.

19) Agriculture: nitrogen balance –

Available data:

http://81.0.228.70/attachments/Zem_2006.pdf, <http://www.eea.europa.eu/themes/agriculture>.

20) Agriculture: area under management practices potentially supporting biodiversity.

The data related to the agro-ecological measures is maintained by the Ministry of Agriculture and Food.

21) Fisheries: European commercial fish stocks –

The indicator is applicable for Bulgaria. The data is acquired and maintained by the Executive Agency for Fisheries and Aquaculture (EAFA).

22) Aquaculture: effluent water quality from fishing farms

This indicator still is not applied.

23) Ecological Footprint of European countries –

This indicator still is not applied.

24) Patent applications based on genetic resources –

This indicator still is not applied.

25) Financing biodiversity management –

No available data.

26) Public awareness –

No available data