



Sectoral Integration of Biodiversity in Bulgaria

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1. Introduction

Bulgaria reported¹ that 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.

¹ Bulgaria (2010). Fourth National Report 2005-2008, Ministry of Environment and Water, September 2010, 70 pp.

2. Forestry

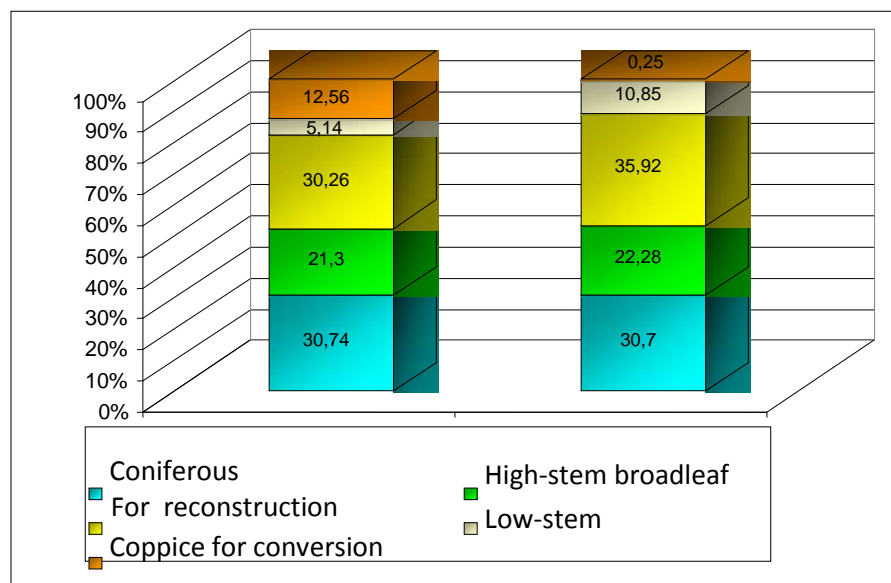
The forests in Bulgaria occupy approximately 36 % of the country's territory. The area they cover up to the year 2008 amounts to 4 114 552 ha. The table illustrates the tendency of gradually increase of forest area.

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

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

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 multi-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 1245,2 ha for recovery of burned forest area.

Forest health status

The impact of natural and anthropogenic 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 r.) 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. 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 huntable species. More of the game farms work with 15 – 20 % of its capacity and as a consequence of that, the population of pheasant and thracian 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.

4. 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 1 603 035 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 (appliance 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 at 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;

5. 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.

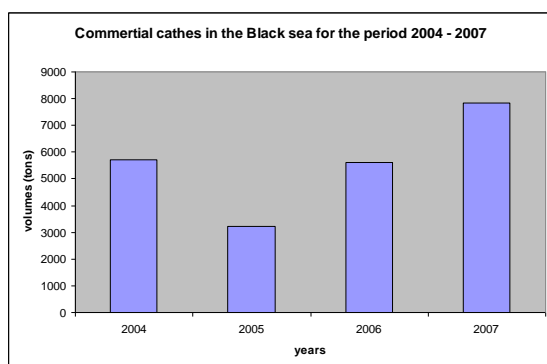


Fig. 2 Commercial catches in the Black Sea 2004-2007

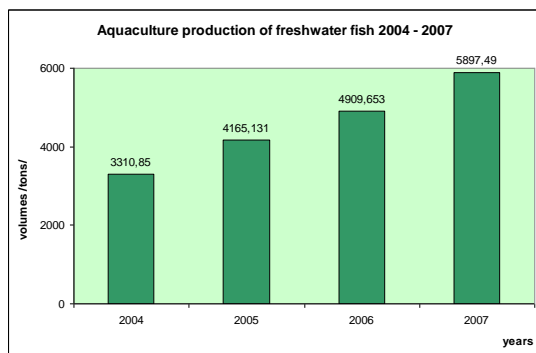


Fig. 3 Aquaculture production of freshwater fish 2004-2007

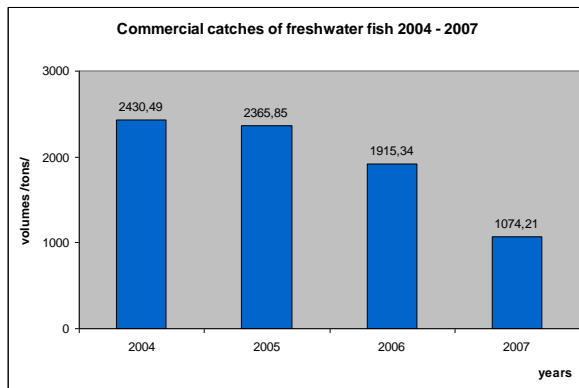


Fig. 4 Commercial catches of freshwater fish 2004-2007

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.

6. 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

7. 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 see

(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.

8. 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;

9. 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.