

Fourth National Report to the United Nations Convention on Biological Diversity Romania

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Fourth National Report to the United Nations Convention on Biological Diversity Romania

The present report covers a period of four years from 2004 to 2008, while the Third National Report ended in 2004.

The methodology used in preparing the report consisted in collecting all data included in public documents: strategies, sectoral and intersectoral programs, plans and action plans, legislation (laws, government decisions, ordinances, orders, decisions) and from studies (synthesis, reports, scientific publications, presentations at scientific meetings and symposia).

Specialists and decision-makers from central administration and institutions involved in the conservation and sustainable use of biodiversity were consulted.

The interviews added new information to the one obtained from the public documents.

More details were gathered during a workshop including specialists from the Ministry of Foreign Affairs, Ministry of Environment, National Environmental Agency, Administration of the Environmental Fund, Institute of Forestry Research, Academy of Agriculture Sciences and Forestry, Botanical Garden-Bucharest, Romanian Ornithological Society, Romanian Herpethological Society environmental NGOs, Regional Environmental Agencies, Local Administration of Bucharest, Ministry of Agriculture Forests and Rural Development, National Laboratory for Phytosanitary Quarantine.

CHAPTER 1 - Overview of Biodiversity Status, Trends and Threats

Romania is situated in the geographic center of Europe, half the distance between the Atlantic Ocean and the Ural Mountains, in and outside the Carpathians arch, in the lower basin of the Danube, having a gateway to the Black Sea.

The Romanian territory (238,391 km²), is between 43°37'07" and 48°15'06" northern latitude and between 20°15'44" and 29°41' 24" eastern longitude. The data defining the geographical position of Romania are shown in Table 1

Table 1 Geographical position of Romania

Extreme point	County	Eastern longitude¹⁾	Northern latitude
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North	Horodiștea Village	Botoșani	26042'05"	48015'06"
South	Zimnicea City	Teleorman	25023'32"	43037'07"
East	Sulina City	Tulcea	29041'24"	45009'36"
West	Beba Veche Commune	Timiș	20015'44"	46007'27"

Romania is neighbouring with Bulgaria, Serbia, Hungary, Ukraine and Republic of Moldova and has a gateway to the Black Sea.

The Romanian seaside of the Black Sea measures 245 km, between the borders with Ukraine and the border with Bulgaria.

The total area of the country is 23,839,100 ha. This includes 31% mountains, 36% hills and plateaus and 33% plains and meadows.

The main characteristic of these relief components is their proportional distribution in form of an amphitheatre.

As a consequence of its geographical location, Romania is a country with unique and high ecosystems, species and genetic diversity, with extensive unspoiled forests and alpine habitats associated with the Carpathians mountain chain.

Romania has the most number of EU bio-geographic regions in Europe (5) (2 of them only present in Romania) and great species diversity with about 3,700 species of flora and 33,800 species of fauna, including significant populations of large mammals, such as bear, wolf and lynx.

Romania is rich in freshwater and coastal resources, including the Danube Delta Biosphere Reserve, the 22nd largest protected area in the world and the 3rd largest in Europe.

The hydrological network has a total length of 65,000 km.

The natural and semi-natural ecosystems are covering approximately 47% of Romania's territory. Agricultural lands are covering some 30% of the country. Native steppe and steppe-associated wet meadows have been systematically converted to cropland and pastures.

Forests cover about 30% of the country. Romanian forests face a serious challenge in the immediate future as approximately 30% of standing forests are slated to be restituted to families of former land owners.

Mountainous, grassland and deltaic ecosystems dominate Romania's landscape. In the central and western parts of the country, mountainous areas comprise some 28% of total land area, dominated by vast tracts of relatively undisturbed forest in the U-shaped Carpathian Mountains.

Around the mountains, forests gradually give way to grasslands, which have been predominantly converted, to agricultural use.

To the east, the Danube River completes its 2,850 km course through 13 countries as it discharges into the biologically rich Danube Delta. The Delta, one quarter of which is shared with Ukraine, covers approximately 580,000 hectares [1 ha = 0.01 km² = 2.47 acres].

The extent of loss of steppe is not thoroughly documented, but less than 10% remains of some types of grassland and shallow marsh ecosystems that were once common in Romania.

Draining of wetlands, elimination of native riparian vegetation, impoundment and channelling of streams and rivers have all taken a serious toll on local aquatic resources in Romania.

These activities have had greatest impact on the lower Danube River, the Danube Delta and on the Black Sea coastal ecosystem.

Romania has a comprehensive legal framework directly or indirectly concerned with environmental protection.

Recent legislation is derived from the new Romanian Constitution, international treaties and the requirements of the EU membership. Convention on Biological Diversity was ratified by the Romanian Government and enforced through Law no. 58 of 1994.

Romania has benefited before from GEF technical and financial assistance for enabling activities.

There were two UNDP implemented projects:

- The project Romania's National Capacity Self Assessment was implemented during 2004-2005.
- Three thematic reports and a cross cutting report has been developed for all three Rio Conventions: CBD, UNCCD, UNFCCC. The main result of the NCSA project was the National Report and the Action Plan. Both documents were endorsed by the Ministry of Environment and Sustainable Development and consequently they formed the foundation of other official documents such as the National Communication to UNFCCC. For developing the 3rd National Report to the CBD Romania benefited financially in 2005.

1.1 Features of biodiversity

Biodiversity, ecosystems, ecosystem services and climate change are closely linked. Changes in ecosystem composition, in ecosystem structure and function, in many cases have important implications for the interactions between the biosphere and the climate system, as well as for the ecosystem services on which society depends.

The EU CORINE Biotope Program has identified 783 habitat types in 261 areas throughout the country. Among the 783 habitat types, 94 have been designated as special conservation areas, while 25 of these are priority habitat types.

There is growing evidence that, for the proper functioning of ecosystems and the delivery of ecosystem services, the interaction of their individual components – the biodiversity present – is essential.

The juridical acts for regulate the nature conservation are the Treaties, the Conventions and the International Agreements.

In the field of nature conservation, are in force the following treaties/conventions/agreements:

- The Treaty on Antarctica (Washington 1959), ratified by Decree 255/1971, is a legal instrument establishing the action way, by which the contracting parts can used the Antarctica, exclusive in peaceful purposes including the measures for protection of the flora and fauna. One principle of this treaty is

the ensuring the freedom scientific research in the frame of the international cooperation, including the participation of the international organizations.

- The Convention concerning the protection of the world cultural and natural heritage, accepted by Decree 187/1990, whilst fully respecting the sovereignty of the state on whose territory the cultural and/or natural heritage is situated, as well the property right provided by national legislation. The States Parties to this convention recognize that such heritage constitutes the world heritage, for whose protection it is the duty of the international community as a whole to cooperate. On the “World Heritage List”, Romania was put down with approximately 75% of the Danube Delta (360.000 ha).
- The Convention on wetlands of international importance especially as waterfowl habitat, ratified by Law 5/1999. The purpose of this convention is designate, by the Contracting Parties, of the wetlands of international significance in terms of ecology, botany, zoology, limnology or hydrology and ensuring the appropriate state of the conservation for these areas. The Danube Delta was declared Ramsar Site.
- The Convention on the conservation of European wildlife and natural heritage (Berna, 1979), whose Romania was accepted by Law 13/1993. The purpose of this convention is ensuring the conservation of the wild flora and fauna and their natural habitats, in particular those species and habitats whose requires the cooperation of several states.
- Convention on biological diversity (Rio de Janeiro, 1994) ratified by Law 58/1994. The objectives of this convention are the conservation of the biological diversity and the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resource, especially by appropriate access to these resources and by appropriate transfer of relevant technologies. The main measures set out for biodiversity conservation and sustainable use of its components are develop national strategies, plans or programs or adapt for this purpose existing strategies, plans or programs, as well integrate as far as possible and as appropriate the conservation and sustainable use of biological diversity into relevant sector or cross-sector plans, programs or policies.
- A. The Convention on international trade with endangered species of flora and fauna (Washington, 1973), whose Romania was accepted by Law 69/1994 ensuring the protection of the endangered species by regulating the trade with their.
- B. The Convention on conservation of migratory species of wild animals (Bonn, 1979), ratified by Law 13/1998, is a universal instrument, developed following Recommendation 32 from the Action Plan elaborated by the Stockholm

Conference. This Convention recognize that the management for efficacy conservation of the migratory species require both the states cooperation and commune actions within the national territory in relation to migration routes, as wintering, staging, feeding, breeding areas.

- C. The Agreement on the conservation of African-Eurasian migratory water birds, ratified by Law 89/2000, aiming coordination of measures to maintain migratory waterfowls in a favorable conservation status or to restore them to such a status.
- D. The Agreement on the conservation of bats in Europe (London, 1991), accepted by Law 90/2000, is the first international agreement devoted to the conservation of bats and the first of its kind under Art. IV of the Bonn Convention.
- E. The Agreement on the conservation of cetaceans in the Black Sea, Mediterranean Sea and contiguous Atlantic area, ratified by Law 91/2000, having as purpose to reduce the treat to cetaceans and improve the knowledge of these animals.

In the field of nature conservation, are in force the following internal laws:

- ❖ Law 82/1993 on setting up the Biosphere Reserve “Danube Delta” has at purpose the setting up the Reserve Administration as public institution with a legal identity, under the Ministry of Environment. The Reserve Administration is lead by a Scientific Council at their order is the Executive Boards, as body for enforcing the decisions of Scientific Council. The Scientific Council including the local persons proposed by County Council. The Governor and members of the Scientific Council are appointed by the Government on the recommendation of the Ministry of Environment, with the approval of the Romanian Academy.
- ❖ Government Decision no. 1143/2007 regarding the establishment of new protected areas;
- ❖ Government Decision no. 1284/2007 regarding special protected areas designation, as a constitutive part of Nature 2000 Ecological Network in Romania;
- ❖ Minister Order no. 1710/2007 regarding the approval of necessary documentation for setting up the regime of natural protected area of national interest;
- ❖ Minister Order no. 539/2008 for declaring day of 1 September „The Day of Danube Delta Biosphere Reserve” ;
- ❖ Minister Order no. 1964/2007 regarding the establishment of natural protected areas regime for sites with community importance, as a constitutive part of Nature 2000 ecological network in Romania;
- ❖ Government Decision no. 2151/2005 regarding the establishment of new protected areas;

- ❖ Government Decision no. 1.586/ 2006 regarding the including of some natural protected areas in wetlands included in the international importance category;
- ❖ Government Decision no. 1581/2005 regarding the establishment of new protected areas;
- ❖ Minister Order no. 604/2005 for the approval of caves and cave sectors classification – natural protected areas;
- ❖ Minister Order no. 1533/ 2008 regarding the approval of methodology for assigning the management of natural protected areas which are requiring the establishment of management structures and of methodology for assigning the custody for natural protected areas which don't need the establishment of management structures;
- ❖ Minister Order no. 610/2009 for the approval of the fees for activities carried out by Danube Delta Biosphere Reserve Authority, requested by legal and natural person;
- ❖ Government Decision no. 1320/2008 regarding the organising and functioning of National Agency for Protected Areas;
- ❖ Law no. 69/1994 on ratification of the Convention on International Trade in Endangered Species of Wild Fauna and Flora;
- ❖ Law no. 265/2006 for approving the emergency Governmental;
- ❖ Ordinance no. 195/2005 of environmental protection;
- ❖ Governmental Ordinance no.164/2008 for amending the Governmental Ordinance no. 195/2005 of environmental protection;
- ❖ Order of the Ministry of Environment and Sustainable Development no. 255/2007 adopting the measures for enforcement of EU Regulations on trade of wild species and approves new form for CITES EU-documents;
- ❖ Governmental Ordinance no. 57/2007 regarding protected areas, conservation of natural habitats and wild flora and fauna;
- ❖ Governmental Ordinance no.154/2008 for amending the Governmental Ordinance no. 57/2007 regarding protected areas, conservation of natural habitats and wild flora and fauna and of Law no. 407/2006 on hunting and game protection;
- ❖ Governmental Ordinance no. 23/2008 regarding fishery and aquaculture;
- ❖ Minister Order no. 410/2008 for approving the authorization procedure of the harvesting, capture and/or acquisition activities and commercialization on internal market and export of minerals samples, of plants and vertebrates and invertebrate fossils, and of wild specimens of flora and fauna and also their import;
- ❖ Law no. 407/2006 on hunting and game protection with modifications and completions;
- ❖ Minister Order of the Minister of Environment and the Ministry of Agriculture no. 203/14/2009 regarding the procedure for establishing the derogations from the measures of protection of wild flora and fauna;
- ❖ Minister Order no. 1798/2007 for approving the procedure for issuing the environment authorization; Annex no. 5 Specific requests for authorization of Zoos, public aquariums and rehabilitation centers.

The annual Orders for establishing the prohibition period for fishing, issued by Ministry of Agriculture and Ministry of Environment – the regulation is updated annually. This law establishes the activities that are prohibited and are considered contravention/penal responsibility and, also, the sanctions according to case.

Implementation modalities related with the above mentioned principle are:

- To adopt the environmental policies, harmonized with the development programs;
- To enforce the obligatory character of the environmental impact assessment in the initial phase of the projects, programs or activities, including those which change the natural frame of a zone, the trade with wild flora and fauna species etc., to have in view the technical solutions for maintain the natural habitats, for conservation of the ecosystems functions;
- To correlate the environmental planning with the territorial planning use and urbanism;
- To solve, on competency levels, the environmental problems, according to their degree;
- To introduce the economic instruments as incentives or as means of correction;
- To promote the basic and applicable research in the environmental protection field;
- To train and educate the population, as well Non-Governmental Organizations participation at the decision making process.

The environmental protection is an obligation for the central and local public administration authorities, as well as for the natural or juridical persons, and the responsibility concerning the environmental protection falls under the central authority for the environmental protection and its territorial agencies.

Based of this law, the central authority for the environmental protection, consulting the central specialized authority responsible elaborates the technical regulations on the biological diversity protection and conservation and for sustainable use of the natural resources.

The holders, with any title, who apply the conservation measures established by the central authority for the environmental protection, are tax exempt; the private holders are compensated, according with the value of the restoration works done.

The protection of the wild species or natural habitats and setting-up the protected areas, as well as the measures established by the environmental protection authorities, are priorities in respect with other interests.

For the conservation of the natural habitats, of the biological diversity which defines the bio-geographical frame of the country, as well as the natural structures and formations with ecological, scientific and landscape value, the national network of protected areas constitute an ongoing process.

The protected areas are declared through acts or regulations with normative feature, including the forest planning;

The local public administration authorities, based on the documentation approved by the Romanian Academy, can put under provisional protection, with the aim of declared protected areas or natural monuments.

Plant gathering and trades, trapping through any means, holding and trade animals declared as natural monuments, as well as dislocation, holding, and trade of minerals, speologic and paleologic pieces from places declared natural monuments are forbidden.

Further this provisions, are stipulate the prerogatives, the responsibilities and the sanctions attracts, according to case

The conservation of the biological diversity and of the woodland scenery are insured mainly by the constitution of national parks and other protected areas in the forest fund and in the forest vegetation outside it. Their constitution is made at the proposal of the specialized institutes and or other scientific bodies on the basis of researches undertaken to these and shall be approved by law.

Violations of the provisions of the Forest Code involve disciplinary, material, civil, contravention or criminal responsibilities according to the law.

1.2. Status of threatened wildlife

Many of species and ecosystems threatened in Romania are under siege throughout their range; some are threatened with extinction from pollution and habitat encroachment. Invasive species, a growing problem in some natural systems, have a negative impact on agriculture, forests and fisheries.

Romania belongs, from the bio-geographical point of view, to the temperate European region and is a meeting point between eleven bio-geographic regions - arctic, alpine, west and central European, pannonic, pontic, balkanic, submediterranean and even eastern colchic, caucasian and turanic-iranian.

The country's geographic position, in conjunction with topographic variation and the Danube Delta has resulted in a high level of bio-geographic diversity.

High level of diversity of habitats reflects also a high diversity of flora and fauna species. Thus, there were identified:

3700 species of plants, of which 23 species have been declared natural monuments, 74 species are extinct, 39 species are endangered, 171 species are vulnerable and 1253 species are rare.

The characteristic grassland species represent approximately 37% of those which are in Romania.

There are also 600 species of algae and over 700 species of marine and coastal plants. The endemic species represent 4%. It was identified a total number of 57 endemic taxa (species and subspecies) and 171 under-endemic taxa. 33,802 species of animals in which 33085 invertebrates and 717 vertebrates.

Among vertebrates, it was identified 191 species of fish (9 endangered species), 20 species of amphibians (9 endangered species), 30 species of reptiles (6

species), 364 species of birds (including 312 migratory species) and 102 species of mammals.

Romanian Ornithological Society, with the support of Birdlife International Organization, has also identified over 44 avifauna areas, covering 3% of total country area, in accordance with the provisions of the Directive 409/79/CEE regarding the conservation of wild birds. It has not been established until now a system for biodiversity monitoring, but some of wild species and habitats are included in programs and research projects of universities, museums, research institutes and some NGOs.

Despite existing databases for biodiversity there is no coordination point to provide for integrated data and information management system for biodiversity conservation in Romania.

The existing efforts are important but not consolidate in support of decision-making.

Therefore a comprehensive Clearing House Mechanism is an urgent priority to overcome the current deficiency in the system. This will be established through UNDP-GEF project *“Support to alignment of NBSAP with CBD obligations and development of CHM”*

Of the 3,700 higher plant species catalogued in Romania, 23 species have been declared as natural monuments; 74 species have disappeared from Romania; 39 species are endangered; 171 species are vulnerable; and 1253 are considered rare species. Among harvested plants for medicinal use 3 species are endangered, 20 are vulnerable, 40 are rare (of which 18 vulnerable) and 2 are threatened.

Grassland species include 37% of the total species represented. About 600 algae species and a total of over 700 species of marine and coastal plants exist.

A very high percentage of the plant species (4%) are endemic. In total there are 57 endemic taxa (species and subspecies) and 171 sub-endemic taxa (with their territory mostly in Romania).

The inventory of important plant areas (IPA) has identified 276 IPAs of which 210 in protected areas (all or part, covering an area of 426,500 ha. According to biogeographic zones the IPAs are divided as follows: Continental (128), Alpine (98), Steppic (40), Black Sea–Pontic (9) and Pannonic (1). Several IPAs already have international recognition, 3 by the Ramsar Convention and 22 are Biosphere Reserves.

Romanian vertebrates comprise: 211 species of fish of which 17 are endangered, including all native sturgeons; 20 species of amphibians, of which 3 are endangered; 23 species of reptiles which 9 are endangered; 439 species of birds (nesting, migratory and accidentally birds) of which 29 are endangered; 102 species of mammals of which not more than 10 are endangered.

Romania is a critical transit area for birds migrating within Europe. The main migratory flyway of Romania is in the east between the Carpathian Mountains and the Black Sea.

A second, less utilized migratory flyway crosses through Romania’s West Plain which is part of the larger Tisa plain shared with Hungary and Serbia.

A lateral branch runs along the Danube from east to west. This route is used by crane (*Grus grus*) and Passeriformes species.

A third flyway crosses the Transylvania basin, from northwest to southwest.

Romania is represented by a high diversity of groundwater fauna, the origin of which is fully pre-glacial. These organisms can be found living in subterranean water-filled karst cavities and in water bodies in above-ground caves. This life comprises many ancient species of crustaceans, such *Microcharon*, *Microcerberus*, *Stygasellus*, and the archiannelid *Troglochaetus*.

A great number of wild species and natural habitats are the subject of the research programs and projects developed by the universities, museums, research institutes and NGOs.

1.3 Review of the Red List

In the Red List of species, are included 17 species of amphibians and 19 species of reptiles.

The status quo of herpetofauna species existed in the Red List is the following:

- **critically endangered:** 3 species and 2 subspecies of reptiles (*Eryx jaculus*, *Elaphe sauromates*, *Vipera ursinii*, *montandoni* *Vipera ammodytes*, *Vipera Berus nikolskii*)

- **endangered** 4 species of amphibians (*Triturus dobrogicus*, *Pelobates syriacus*, *Rana arvalis*, *Pelophylax lessonae*) and 8 species of reptiles and subspecies (*Testudo graeca*, *Hermann testudo*, *Emys orbicularis*, *Ablepharus kitaibelli*, *Eremias arguta*, *Lacerta trilineata*, *Darevskia praticola*, *Vipera Berus*, *Vipera ammodytes*)

- **vulnerable:** 10 species (*Salamander salamandra*, *Mesotriton alpestris*, *Lissotriton montandoni*, *Lissotriton vulgaris*, *Triturus cristatus*, *Bombina Bombina*, *Pelobates fuscus*, *Hyla arborea*, *Rana dalmatina*, *Rana temporaria*) and 6 species and subspecies of reptiles (*Darevskia praticola*, *Podarcis muralis*, *Anguis fragilis*, *Lacerta viridis meridionalis*, *Dolichophis caspius*, *Coronella austriaca*, *Zamenis longissimus*)

- **threatened:** 3 species of amphibians (*Bombina variegata*, *Bufo bufo*, *Bufo viridis*) and 3 species of reptiles (*Podarcis tauricus*, *Lacerta agillis chersonensis*, *Natrix tessellata*)

- **without threat:** 2 species of amphibians (*Pelophylax ridibundus*, *Pelophylax kl. esculentus*) 2 species and 2 subspecies of reptiles (*Lacerta agillis agillis*, *Lacerta viridis viridis*, *Zootoca vivipara*, *Natrix natrix*)

The Life-Nature Project "Saving *Vipera ursinii rakosiensis* in Transylvania region" between 2005-2009 is still running.

An area of 365 hectares was declared Nature 2000 site and it was prepared the Management Plan for this scientific reservation taking the custody by the Romanian Herpetological Society.

The reproduction of *Testudo hermanni* in captivity is followed by the repopulation in the south-west of Romania.

Following the study funded by the Partnership Foundation, the Romanian Herpetological Society proposed a Nature 2000 site, in the North-West part of Romania with a surface by approximately 24,000 ha (Careiului Plain).

In Batca Doamnei region (Neamț County) it was saved a few important populations of amphibians (*Triturus cristatus*, *Lissotriton montandoni*, *Bombina variegata*, *Hyla arborea*, *Bufo bufo*) and the area was declared as a nature reservation.

The NGO Milvus Group proposed new Nature 2000 sites for the herpetofauna's species (especially for the *Triturus cristatus*, *Triturus dobrogicus*, *Lissotriton vulgaris ampelensis*, *Lissotriton montandoni*, *Bombina Bombina*, *Bombina variegata*, *Testudo hermanni*, *Emys orbicularis*, *Elaphe sauromates*) and not only.

This activity is financed by WWF and the Environmental Partnership Foundation. In 2008, for controlling the invasive specie-*Trachemys scripta elegans*, the Milvus Group proposed the website (<http://www.freewebs.com/trachemysadoption/>) and created a forum for keeping the individuals in captivity.

The common threats for the most herpetofauna species are the following:

- the destruction of habitats (deforestation, inning, reed burning, burning of the ruderal vegetation, pollution, etc);
- road kills (lack of any measures to protect the amphibians species in areas where they cross the roads during the mating);
- killing for consumption (although the legislation provides sanctions for any disturbing of wild life during the reproduction period, the lack of an effective control leads every springtime to real massacres of brown turtles, being killed tens thousands adults who will not be ever reproduced.
- the illegal collection;
- in certain areas, the invasive species can eliminate the autochthonous ones (for example, *Trachemys scripta* eliminates *Emys orbicularis*).

It has been undertaken the special conservation measures take into account the status of these species, accordingly with the technical and financial support of Bird Life International: creation the protected areas, protection zones surrounded by intermediary zones, establishing the integrated management plans approved by scientific councils etc.

2. Drivers of environmental changes

2.1 Air pollution and air quality

The aim of evaluating the impact of the atmospheric pollutants over the environment is to identify and quantify the potential consequences it has on it.

The air quality in Romania has been monitored by hourly or daily measures in 51 measuring stations, out of which 23 are part of the automatic air quality monitoring network.

The National Air Quality Monitoring Network includes the following types of stations:

- ❖ stations for evaluating the influence of the industrial activities on the air quality;
- ❖ stations for evaluating the influence of the "urban establishments" on the air quality;

- ❖ regional fund stations – reference station – for evaluating the air quality, far from any type of source, that may contribute to deteriorating the air quality.

The evaluation of the impact of atmospheric pollutants over the environment is done by:

- ❖ estimating the emissions of pollutants by performing the inventory of emissions, measurements of the emissions and/or shaping of the dispersion of atmospheric pollutants.
- ❖ monitoring the air quality in order to know the effects of these emissions over the population's health and ecosystems.

Estimating the annual emissions of atmospheric pollutants represents the first step in establishing the impact of these pollutants over the environment.

During 2004-2008, the national air quality monitoring was performed by manual samplings, followed by the analysis of the laboratory samples, as well as within the air quality continuous monitoring system.

For 2010, Romania has committed to frame the level of emissions within the limits stipulated by the Gothenburg Protocol.

During the past three years, there is noticed an increasing tendency of the sulphur dioxide emissions, especially due to the increase and revival of the industrial sector.

The sulphur dioxide emissions are featured by a general increase of over 3%, an increase sustained mainly by the sector "combustions in the energetic industry and transformation industries. In this sector, there has been registered an increase of over 5%, of over 6% in the "road transportation" and of 11% in "other mobile sources and machines".

On the counter pole, there are the sectors "treating and disposing wastes" and "non-industrial combustion installations", where the sulphur dioxide emissions have diminished by 44%, respectively 12%.

In the last years, the NO_x emissions have been characterized by a descending tendency, a feature mainly sustained by the modernization of the industrial installations and renewal of the national car fleet.

The NO_x emissions originate especially from the energetic industry, the road traffic, as well as from the production processes.

The sectors that represented slight increases are "combustions in the energetic industry and transforming industries" by 3%, "non-industrial combustion installations" by 9% and "other mobile sources and machines" by 14%.

These increases have been balanced by sectors such as "treating and disposing wastes" with a decrease of 47%, "road transports" by 3% and "combustions in the processing industry" by 1%.

The ammonia emissions represent a slight increase in the last years, the greatest quantity of ammonia emissions originates from agriculture (78.53% representing 156,528 t).

The ammonia emissions are especially generated by the "agriculture" sector, which reduce the high oscillation percentages featuring the other sectors such as

"non-industrial combustion installations" - 3% and "production processes" - 31%. Increases are also registered in the sectors "combustions in the processing industry", "road transports" and "other mobile sources and machines" by 6%, 7% respectively 12%.

Of the data resulted in the national emission inventory, there may be noticed an increase in the annual cadmium and mercury emissions, with a maximum in 2005, a year where a value of 10 tons is reached, respectively 11 tons, a situation due to the high quantity of industrial wastes incinerated that year (Statistical publication on generating and managing wastes).

For most of the sectors, the tendency is to decrease – "treating and disposing wastes" by 47%, and the "road transports" by 14%.

The emissions of persistent organic pollutants generally have a decreasing evolution for the past years.

The main source of emission for polychlorinated biphenyls is represented by iron and steel works and metallurgy, followed by waste incineration.

The hexachlorobenzene emissions (HCB) are excepted from the decreasing tendency of persistent organic pollutants. The domain responsible for this increase is represented by the production processes.

SO₂, NO₂/NO_x, CO, benzene, suspension powders, lead and ozone pollutants are monitored and evaluated in compliance with the Order of the Water and Environmental Protection Ministry no. 592/2002, which translates the requirements stipulated by the European regulations;

Cadmium is related to the requirements of the Order of the Ministry of Environment and Water Management, no. 448/2007 and ammonia to those of STAS no. 12574/87 – Air in the protected areas.

The values of the emissions are highlighted correlated with the values registered in the continuous air quality monitoring system. The methodology of estimation is in compliance with the CORINAIR Guide, 2007.

The annual limit value has not been exceeded (20 g/m³) for protecting the vegetation of the concentration of nitrogen oxides (NO_x) for the stations destined to monitor the ecosystems and vegetation.

The atmospheric pollution with powders may have natural causes, such as wind involving the particles from the ground surface or anthropic ones: the production processes (metallurgical industry, chemical industry etc.), combustions in the energetic sector, construction sites and road transport, industrial and municipal waste and spoil dumps, individual heating systems, especially those using solid fuels etc.

The values of the annual average concentrations of powders below 10 microns (PM₁₀) exceed the limit value (40 µg/mc) with preponderance in the urban congestions, mainly in the traffic and industrial-type stations and also in some urban fund stations.

The emissions of heavy metals are significant in two areas with historical pollution in Maramureş and Sibiu Counties.

The annual average benzene concentration has not exceeded the annual limit value for the human health plus the tolerance margin (8.7µg/mc) for the monitoring stations.

At the level of all monitored areas, the evolution of the pollutants concentrations, mediated by the stations which represented consistency and comparability of the measures indicate a slight improvement of the air quality, except for the nitrogen oxides.

Therefore it is crucial:

- To address biodiversity loss and climate change in an integrated manner and develop strategies that achieve mutually supportive outcomes e.g. promote sustainable adaptation and mitigation based on ecosystem approaches. This is the only way to ensure the long-term success of these strategies and to appropriately address the wider ecosystem challenges in the climate change negotiations e.g. by establishing a REDD+ mechanism and by including ecosystem-based approaches in the Framework for Adaptation Action;
- To take urgent action now to conserve and restore terrestrial and marine biodiversity and ecosystems; these are the basis for cost-effective adaptation to and mitigation of climate change and can provide multiple economic, social and environmental benefits. This is the most important and cost-effective measure we can take to increase the resilience of ecosystems and of society. It also includes developing and implementing actions to support adaptation of biodiversity and ecosystems to climate change;
- To ensure true buy-in from other sectors e.g. agriculture, finance, transport, spatial planning, water, fisheries, forestry, tourism, development policy etc. with regards to increasing and maintaining ecosystem resilience;
- To raise awareness of the linkages between biodiversity and climate change by communication and education campaigns, and build capacity and partnerships;
- To strengthen the knowledge base on the climate change-biodiversity nexus. This implies increased research effort, long-term monitoring, ecosystem assessments and valuation;
- To appropriately address the issue of biodiversity, ecosystem services and climate change in upcoming financial reviews.

Biodiversity, ecosystem services and climate change are closely linked. The impacts of climate change on biodiversity present new challenges for nature conservation. "*Support biodiversity adaptation to climate change*" is one of the objectives of the EU Biodiversity Action plan.

Adaptation measures will be necessary to ensure that nature conservation objectives are met under changing climatic conditions.

At the same time, nature conservation contributes to maintaining healthy ecosystems essential for any climate change adaptation and mitigation strategy. In many cases changes in ecosystem composition and especially in ecosystem structure and function, have important implications for the interactions between the biosphere and the climate system, as well as for the ecosystem services on which society depends.

Terrestrial and marine ecosystems currently absorb roughly half of anthropogenic CO₂ emissions. This is a vital ecosystem service to humanity, free of cost, without which the effects of global warming would be far greater.

The carbon storage capacity of oceans, forests, grasslands, bogs and soils is essential for mitigating climate change.

Conversely, destruction and degradation of these ecosystems can lead to the release of significant amounts of greenhouse gases.

In fact, there is now growing evidence that the capacity of the Earth's carbon sinks is weakening due to the continuous degradation of ecosystems caused by anthropogenic emissions and activities such as deforestation, soil erosion, over-fishing and poor management of fresh water and marine resources.

These multiple pressures, which interact in different ways, reduce the resilience and buffering capacity of the ecosystems to respond to future stresses.

As the loss of biodiversity continues it compromises the achievement of the climate change goals and continued delivery of ecosystem services.

Urgent action now to halt the further loss of biodiversity and degradation of ecosystems will help to maintain ecosystem services and retain future options for reducing the extent of climate change and managing its impacts.

Ecosystem-based approaches represent potential triple-win measures: they contribute to preserve and restore natural ecosystems, mitigate climate change by conserving or enhancing carbon stocks or by reducing emissions caused by ecosystem degradation and loss and provide cost-effective protection against some of the threats that result from climate change.

To reduce emissions there are "low cost co-benefit" measures that may also contribute to conservation and sustainable use of biodiversity. They include restoration of degraded land, forests, organic soils and wetlands, reduction in conversion of pastureland, less slash and burn practices, and improved grassland management.

These ecosystem-based approaches also help to maintain ecosystem services that are important for human well being and vital to our ability to adapt to the effects of climate change.

2.2 Water pollution and water quality

The water resource of Romania consists in the surface waters (inside rivers, natural and artificial lakes, the Danube River) and underground waters, in natural and improved regime.

The length of the major rivers is 5,702 km, of which the Danube covers 1,075 km (18%).

The hydrological network has a total length of 65,000 km.

The total area of inland waters is 4,913 km², of which 1,991 km² are rivers and canals, 1,327 km² are represented by natural lakes and 1,594,8 km² by reservoirs.

The main water resource consists of the interior rivers (Table 2)

Along with the Carpathians and Black Sea, Danube represents one of the major components of the natural environment of our country.

Danube's course may be subdivided in four sectors: Baziaş – Porțile de Fier (Iron Gates) sector; Porțile-de-Fier–Călărași sector; Călărași–Brăila sector; Brăila – Black Sea sector.

Being the second largest river in Europe, after Volga, Danube is a water source for different uses, food (fish fauna) and cheap energy, by means of the hydroelectric power plants from the Iron Gate I and II.

The Danube is building when meeting the Black Sea, one of the most beautiful wet areas in Europe, namely the Danube Delta, distributed on the territory of two neighbouring countries: Romania (82%) and Ukraine (18%).

The Black Sea offers a variety of conditions for harnessing the underground riches (petroleum, natural gas), aquatic (the fish fauna) and land ones (tourism and leisure). There are over 3,450 lakes in Romania.

The total surface of the lakes is of approximately 2,620 km², which means 1.1% of the entire surface of the country.

Generally, the lakes have small surfaces, as approximately 91.5% of them have below one km². The lakes are represented by: natural lakes – the most important are those lakes risen from former lagoons on the shore of the Black Sea (Razim 425 km², Sinoe 171 km²), then those formed along Danube's banks (Oltenia 22 km², Brates 21 km²), the glacial lakes in the Carpathian Mountains (Bucura Lake, having a surface of 10.8 ha, is the largest of them) and anthropical lakes, created for improving the hydroelectric potential for water supply, irrigations, fish breeding and leisure.

Table 2 Lengths of the main water courses in Romania

Name of the watercourse	Length of the watercourse (km)	Basin surface (km²)
Dunăre	1,075	33,2501)
Mureș	761	27,890
Prut	742	10,990
Olt	615	24,050
Siret	559	42,890
Ialomița	417	10,350
Someș	376	15,740
Argeș	350	12,550
Jiu	339	10,080
Buzău	302	5,264
Dâmbovița	286	2,824
Bistrița	283	7,039

Jijia	275	5,757
Târnava Mare	246	6,253
Timiș	244	5,673
Crișul Alb	234	4,240
Vedea	224	5,430
Moldova	213	4,299
Bârlad	207	7,220
Târnava Mică	196	2,071
Prahova	193	3,738
Neajlov	186	3,720
Olteț	185	2,663
Someșul Mic	178	3,773
Suceava	173	2,298
Bega	170	2,362
Arieș	166	3,005
Trotuș	162	4,456

A special category of the underground riches consists in over 2,000 mineral water springs. More than a third of the mineral waters in Europe are encountered in Romania. Some of them are simple, others hot and radioactive.

Globally, water is a revivable natural resource, vulnerable and limited; therefore, it is treated as a natural patrimony that needs protection..

Waters are part of the public domain of the state.

Monitoring the quality of the waters means an activity of standardized and continuous long-term observations and measurements, aiming at knowing and evaluating the characteristic parameters of the water in order to manage and define the state and evolution tendency of their quality as well as to emphasize the state of the water resources permanently.

The main natural lakes from Romania are shown in Table 3.

Table 3 Main natural lakes

Lakes in the glacial zones

Bucura	0.5	10.5	Hunedoara
Zănoaga Mare	1.0	9.0	Hunedoara
Bâlea	0.2	4.7	Sibiu
Câlcescu	0.1	3.0	Gorj

Lakes in volcano craters

Sfânta Ana	0.6	22.0	Harghita
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Rift lakes

Ianca	1.6	322.0	Brăila
Movila Miresii	4.5	180.0	Brăila
Lacul Sărat – Brăila	0.2	39.0	Brăila

River harbors (anchorage)

Oltina	60.0	2,509.0	Constanța
Iezerul Mostiștei	160.0	1,860.0	Călărași
Balta Albă	5.1	1,012.0	Buzău, Brăila

Jirlău	5.6	890.0	Brăila
Amara-Buzău	3.6	600.0	Buzău
Snagov	17.3	575.0	Ilfov
Căldărușani	4.5	224.0	Ilfov
Hazarlâc	0.8	168.0	Constanța
Amara-Ialomița	2.6	132.0	Ialomița
Lakes in depressions			
Zăton	1.0	20.0	Mehedinți
Iezerul Ighiu	0.2	5.3	Alba
Vintileasca	0.1	4.7	Vrancea
Lakes in natural dams			
Lacul Roșu	0.7	12.6	Harghita
Bătălău	0.1	6.0	Bacău
River-sea anchorages			
Tășaul	57.0	2,335.0	Constanța
Techirghiol	41.8	1,161.0	Constanța
Mangalia	15.7	261.0	Constanța
Tatlageac	14.0	178.0	Constanța
Lakes in the Danube Delta			
Dranov	21.7	2,170.0	Tulcea
Lacul Roșu	21.7	1,445.0	Tulcea

In Romania, the quality of the waters is followed according to the methodological structures and principles of the Integrated Monitoring System of Waters in Romania (S.M.I.A.R.), restructured according to the requirements of the European Directives.

The national system for water monitoring consists in two types of monitoring, according to the legal requirements in the field: surveillance monitoring with the aim of evaluation the state of all the bodies of water within the hydrographical basins and operational monitoring for the bodies of water which fail to accomplish the objective of water protection.

Depending on the qualitative characteristics of the bodies of water different types of monitoring programs have been achieved: Surveillance Program (S), Operational Program (O), Investigation Program (I), Reference Program (R) and Best Available Section Program (CBSD), Potabilization Program (P), Inter Calibration Program (IC), the Monitoring Program for the Vulnerable Areas in the nitrites pollution, the Monitoring Program for the Ichthyofauna (IH), the Habitats and Species Protection Program (HS), the Program for International Conventions (CI) and the Highly Modified Bodies of Water Program (CAPM).

S.M.I.A.R. encompasses 6 components (subsystems), out of which 5 refer to the natural sources: - surface running waters; - lakes (natural and reservoirs); - transitory waters (fluvial and lacustrine); - coast waters; - underground waters, and one, to the pollution sources: - used waters.

The attributions of water quality monitoring, with respect to the pollution degree fall on the National Authority "Romanian Waters", whereas the monitoring of

drinking water quality coming from surface and underground sources is the task of the Public Health Authority with its territorial structures.

Reported to the total of watercourses of 78.905 km, not taking into account the pollution caused by the natural fund and considering the fact that the unsupervised watercourse length has a 1st 2nd quality water, it results that 1.2% fall within the 5th class, 2.4% in the 4th class, 7.1% in the 3rd class and 89.2% fall within the 1st 2nd classes.

2.3 Soil quality and impact of mining activities

On Romanian territory and according to the geotectonic evolution there are platform and orogen units.

The platform units are: Moldova Platform, on the north-eastern side of the country, Moesic Platform (Walachia Sector) from the northern part of Romania, including South Dobrogea and the Scythian Platform.

The country territory is represented 67% by two orogen units: the Carpathian Orogen and the Dobrogea North Orogen, the last one with a side and insular low altitude position and small surface, occupying the northern third of Dobrogea. Through the complexity of the geologic structure, the Oriental and Middle Carpathians show different conditions for accumulating useful mineral substances. These are: mineral deposits, mineral fuel deposits, salt and salts deposits, useful rocks.

The intermountain depressions are represented by the depressions in the area of the Oriental Carpathians (Borsec–Bilbor, Jolotea, Gheorghieni, Ciucului, Comănești, Bârsei), depressions from the area of the Middle Carpathians (Loviștei, Petroșani, Caransebeș–Mehadia), depressions within the Eastern Carpathians (among which Bozovici or Almajului depression) and depressions in the area of the Western Carpathians (Brad– Săcărâmb, Zlatna– Almaș, Roșia Montană). There are also internal depressions -Transilvaniei depression, Panonic and Șimleul Silvaniei depression.

On this territory there are geologic reservations, like: Lacul Roșu – Cheile Bicazului, Piatra Teiului, Pietrele Doamnei, Sfânta Ana Lake, Valea Iadului.

Out of the total surface of the country of 238,391 km², 61.71% is represented by the agricultural surface, 28.43% being forests and 9.81% the waters and other surfaces.

The pedoclimatic resources of Romania are a renewable potential represented by fertile soils: chernozems from the Romanian Plain, West Plain, Moldova's Plateau, Transylvania's Plain, Dobrogea and other area (26.7% of the soil coating).

The agricultural soils take 14.7 million ha (0.65 ha/place), the tillable ones being of 9.26 million ha (0.41 ha/place) and the forest ones around 6.7 million ha (0.3 ha/place).

Soil erosion produced by water affects 6,3 million ha out of which 2,3 million are object of some anti-erosional measures. This type of erosion, together with the land sliding (approximately 0,7 million ha) lead to a soil loss of 41,5 t/ha annually.

Soil erosion produced by wind is a characteristic for 0,4 million ha with the risk that the surface to increase due to the disappearance of protection curtains.

Soil salinisation affects 0,6 million ha predominantly on the irrigated or drained lands. Soil deterioration and compaction takes place on 6,5 million ha of arable land. Primary compaction is present on approximately 2 million ha while the tendency of crust formation can be observed on a surface of approximately 2,3 million ha.

The main actions will be directed towards the extension/completion of the waste management systems in those counties where the existent, updated investments are limited to a new landfill, non selective collection and transport.

The purpose is the creation of a modern waste management that should contribute to the minimization of waste that will be landfilled by creating some adequate operational systems for each type of waste with the view of environmental protection.

Apart of this, the rehabilitation of the contaminated historical sites it's foreseen in several priority areas with the aim of reducing the negative impact on the environment and human health.

The protection and rehabilitation of the south coast of Black Sea aims at stopping the costal erosion, the increasing of the investment value in this area as well as the safety of the dwellings.

3. Biodiversity in each geographical area

3.1 Landscape and habitat

The significant variety of the flora and fauna in Romania derives from the complexity of the relief. Romania's flora and fauna are harmoniously divided and form a highly valuable rich, based on the controlled and rational exploitation. Romania is a country with a great biological variety and a high percentage of natural ecosystems.

The Romanian forests cover 28.44% of the country's surface and is preserves a genofund of great diversity. In order to preserve this valuable natural capital and to ensure a favourable conservation status for natural habitats of great natural and community importance, Romania has taken important steps, by implementing the legislative elements specific to the European Union, as well as of some programs and projects dedicated to preserving the biodiversity.

In Romania there are protected areas comprising of 79 scientific reservations, 13 national parks, with the largest one named Domogled-Valea Cernei, 190 natural monuments, 659 natural reservations, 13 natural parks, 13 national parks and 3 biosphere reservations (Danube Delta, Retezat and Rodna).

While virtually all the changes to the landscape and ecosystems in Romania are and have been made for local economic gain, their cumulative impacts are disrupting major ecological and physical systems to an extent detrimental to the economy and well being of the people.

Romania lies at the geographic centre of Europe and includes five of the ten biogeographic regions (BGR) officially recognized by the EU: alpine, continental, panonic, pontic (euxinic), and steppe. Romania has the greatest biogeographic diversity compared to EU countries.

As a consequence of its geographical location, Romania is a country with unique and high ecosystem, species, and genetic diversity. Romanian ecologists have identified 758 terrestrial ecosystem types.

The EU CORINE Biotope Program has identified 783 habitat types in 261 areas throughout the country.

The extensive range of ecosystem/habitat types in Romania is largely the result of the influence of climate and elevation. Of major importance are the Carpathian Mountains, 60% of which are in Romania, and the Danube Delta, 75% of which is in Romania. In total 17 major terrestrial ecosystems exist, including the major ecosystem types existing in Europe.

There is also a rich diversity of aquatic ecosystems including the Black Sea, rivers, floodplains, glacial lakes, subterranean karst cavities and caves, coastal wetlands, bogs, and mountain rivers.

While grasslands account for a large number of ecosystem types, they no longer cover a large amount of Romanian land due to encroachment by agricultural development.

Among the 783 habitat types, 94 have been designated as special conservation areas, while 25 of these are priority habitat types.

In the more humid regions at lower altitudes (up to 300 m), broad-leaved forests are predominant. In the less humid climates there are steppe grasslands, and in between the two regions there is a zone of silvostepe containing a mix of forests and grasslands.

The elevation change brought about by the Carpathian Mountains brings an abundance of bio-geographic zones which include four main types: nemoral (broad-leaved forests); boreal (primarily coniferous forests); sub-alpine (shrubby conifers, azalea, blackberry and others); and alpine (containing grasses, sedges, dwarf shrubs and a dwarf pine (*Pinus cembra*) unique to the Carpathian Mountains).

Since almost half of all forests in Romania (13% of the country) have been managed for watershed conservation rather than production, Romania has one of the largest areas of undisturbed forest in Europe.

The natural integrity of Romanian forest ecosystems is indicated by the presence of the full range of European forest fauna, including 40% of all European brown bears 30% of wolves, and 25-30% of lynx. Europe's second largest wetland, the Danube Delta, also lies predominantly in Romania.

Major grasslands, caves, and an extensive network of rivers, add to ecosystem richness.

The south region of Romania is dominated by an area of steppes, steppe woodlands and termophilous oak forests interspersed with wetlands. This mosaic of wetlands is the main reservoir of biodiversity in the region but it is endangered by agricultural fertilization, application of pesticides, mechanization, and engineered drainage.

These wetlands are remnants of an aged natural area, which hundreds of years ago connected the Carpathian and Balkan Mountain Ranges.

The alluvial zones of the Danube basin constitute a unique heritage, which is necessary for the quantitative and qualitative maintenance of groundwater reserves, and consequently to the quality of drinking water. These alluvial wetlands zones are the richest natural regions in Europe in terms of biodiversity and biological productivity.

The alluvial ecosystems are closely linked to the seasonally flooded areas of the Danube. Worldwide, these alluvial ecosystems play a crucial role in the physical and biological functioning of the great rivers and their regulation. In the Danube Delta Biosphere Reserve there are 30 types of ecosystems and more than 5000 flora and fauna species, of which 1839 flora species and 3590 fauna species:

- ❖ Most of the European population of common pelican *Pelecanus onocrotalus* and dalmatian pelican *Pelecanus crispus*;
- ❖ 60 % from world population of pygmy cormorant *Phalacrocorax pygmaeus*;
- ❖ 50 % from world population of red breasted goose *Branta ruficollis* (during winter season);
- ❖ The universal value of this reserve was recognized by the Man and Biosphere (MAB) Programme of UNESCO in 1990, through its inclusion in the international network of biosphere reserves;
- ❖ The DDBR is listed as a wetland of international importance especially as waterfowl habitat under the Ramsar Convention;
- ❖ Inclusion of the strictly protected areas in the World Heritage List under the World Cultural and Natural Heritage Convention;

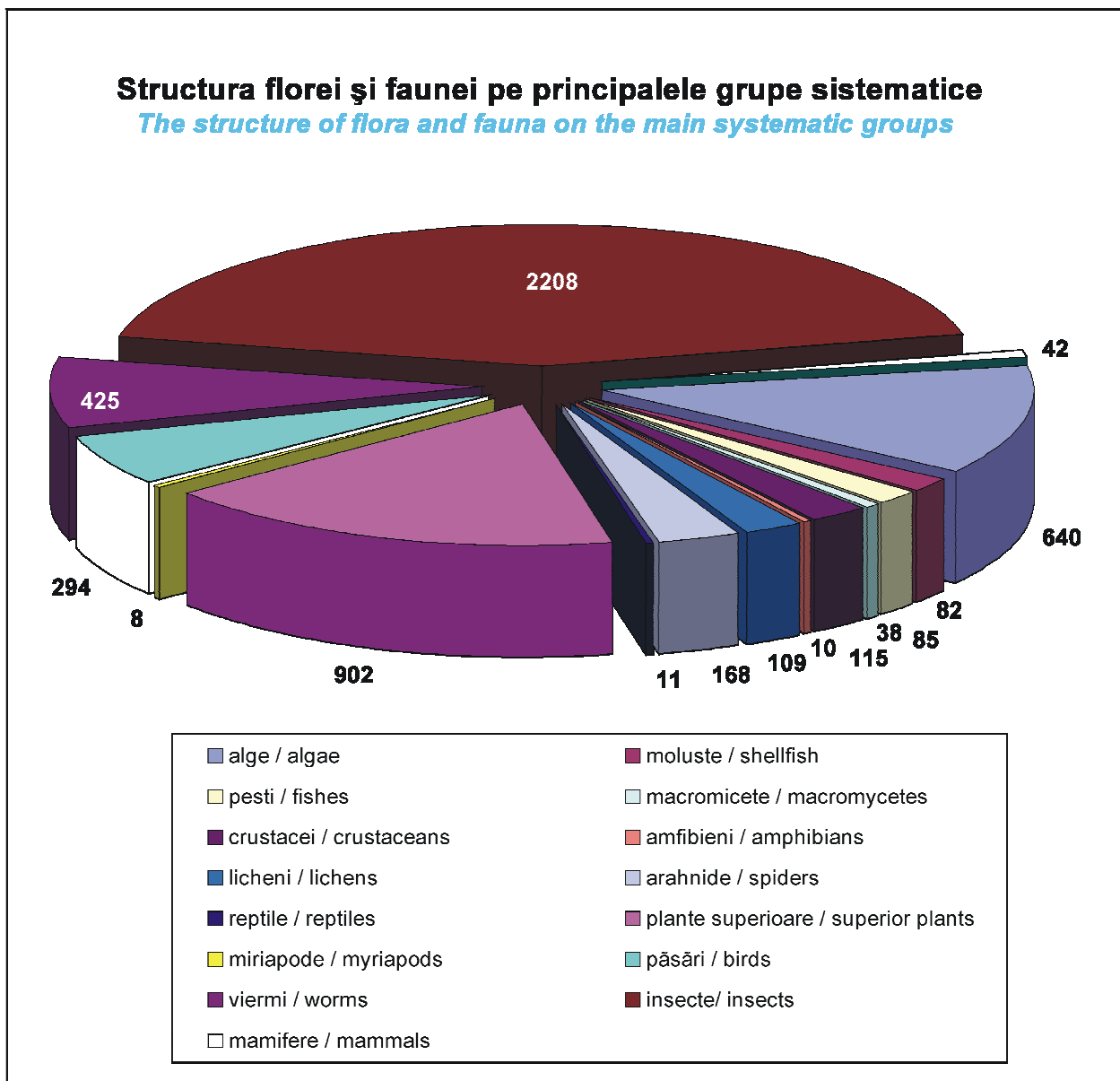
The zones of Danube Delta Biosphere Reserve (DDBR) with respect to management for nature conservation and ecologically sustainable management:

- Strictly protected areas (18 sites and cover a total of 50 600 hectares)- include relatively unspoilt places with excellent examples of terrestrial and wetland ecosystems and generally support the most sensitive species found in the DDBR;
- Buffer zones (13 zones and cover a total of 223 300 hectares)- include areas with biological characteristic, likely the previous ones, mitigate the impact of the human activities on the strictly protected areas;
- Economic zones (cover a total of 306 100 hectares)- include areas where traditional allowed activities are undertaken, in the limits of the support capacity;
- Area for ecological restoration – where Danube Delta Biosphere Reserve Authority carries on activities for ecological restoration;

The main objectives of the Danube Delta Biosphere Reserve for the management of the Biosphere Reserve are:

- ❖ Conservation and protection of the existing natural heritage;
- ❖ Encouragement of sustainable use of the natural resources;

- ❖ Provision of support, based on the results of research, for management, education, training and services.



Naturally occurring systems include alpine grasslands steppes. Semi-natural systems include calcareous grasslands, mat-grass sward on acidic soil and humid or mesophilic grasslands used as meadows.

The latter two semi-natural systems are both being affected by human activities other than traditional harvesting, such as road building, industrial development, and urban sprawl.

Romania is rich in bogs, with the more than 430 catalogued covering a surface of 7,000 ha. These bogs produce rich topsoil and provide unique habitat for different species such as *Sphagnum* spp., *Drosera rotundifolia*, *Betula nana* and the glacial relicts *Viola epipsila* and *Salix myrtilloides*. The most important are

Poiana Stampei-Casoi (Suceava County), Luci (Harghita County and Mogoș-Tușnad Băi (Harghita County). Others are located in Poiana Brazilor-Oaș (Maramures County), Găina (Suceava County) and the Apuseni Mountains (Cluj County).

The karst surface area of Romania covers 4,400 km². This puzzling geological structure is clearly displayed by a large variety of cave morphology and mineralogy. Romanian caves provide an invaluable record of quaternary geology in this part of the world.

Today, more than 10,000 caves are known, 8,000 of which are located in the southwest.

The longest cave in Romania is Peștera vântului in the Pădurea Craiului Mountains (34 km).

Topolnița cave in the Mehedinți Plateau is 15 km long and the cave from Zapodia in the Bihor Mountains measures 10.9 km.

The deepest cave is Tăușoare cave in the Rodna Mountains with an elevation change of 465 m.

Despite the poor conditions offered by the cold dark climate, life is flourishing in many Romanian caves. Where water persists in karst cavities, some 450 species of new invertebrates have been discovered, of which 356 are endemic.

Bat diversity is high in Romanian caves. Seven different bat species can be found, sometimes in colonies of thousands.

3.2 Flora and fauna

The project “*Identifying Important areas for plants protection and conservation from Romania*” was coordinated at national level by the Association of Romanian Botanical Garden (ARBG) and involved experts from 16 institutions in the field (ministries, universities, research institutes, botanical gardens, national parks).

The large area of the country, the diversity of bio-geographical zones (alpine, continental, Black Sea, panonic, steppic), the lack of recent and centralized information on flora and vegetation, the lack of an update of the position of threatened species and habitats in relation with international law, disparities regarding the nomenclature, required a specific methodological way to allow application of the unit set of selection criteria (endangered species and habitats, special botanical importance), internationally accepted IPA identification and selection differs from the designation process of protected areas from national network, through purpose, criteria and methodology. In this regard, IPA' s are designed as key sites, focal points for conservation of threatened species and habitats and of flora concentrations of high botanical value, considered threatened globally, European and nationally.

There are areas to which priority should be to focus conservation efforts in the country that hosts them. Accordingly, there is no sign of equality between national IPA network sites and the national network of protected areas. An IPA may be a part of a protected area, may include a protected area may coincide with a protected area or can be an unprotected area, which fully meets the

selection criteria and to which should be oriented national efforts of conservation. The project “*Identifying Important areas for plants protection and conservation from Romania*”, contributed to the alignment of scientific research of flora and vegetation with international standards and to identify (scientifically documented) some areas in Romania which have proved a priority for vegetal diversity conservation on global and European level.

The database project provides scientific foundation required for a proper management, sustainable adequate. Taking account of these, are clearly out the valences of the national projects which have no aim to validate the status of protected areas for the IPA' s, but only to identify them, to assess their current state of protection, to support the need of their protection and preservation, providing for governmental structures the scientific information necessary to implement the objectives of the Global Strategy for Plant Conservation. Identification of the IPA' s was based on the application of three categories of scientific criteria, internationally valid: Criterion A – endangered species, criterion B - vegetal diversity, Criterion C - endangered habitats.

To be identified and declared IPA, an area must meet at least one of three criteria or any combination of them. Taking into account the requirements of these criteria, a first methodological step was drawing up the national lists for species and habitat types recognized as globally and / or European endangered and recommended for conservation in the international reference documents (Global Red List, Habitats Directive, the Bern Convention).

A Criteria – endangered species

Areas selected under this criteria must shelter significant populations of the most endangered species at global and European level, also endemic and sub-endemic endangered species.

Under this criteria were identified following 4 categories:
Ai – Areas populated with global endangered taxa

Are taken into account taxon included in the Global Red List, Habitats Directive - Annex II b & IV b, the Berne Convention – App. I.

Aii – Areas populated with European endangered taxa.

Are taken into account vascular plants included simultaneous in Habitats Directive – Annex II b & IV b, Bern Convention – App I, bryophytes from European red List, lichens from Macrolichens Red List – 1989 and fungi from Bern Convention Red List completed in 2004 for Romania;

Aiii – Areas populated with endemic and endangered taxa

Are taken into account taxa included in Romanian Red List, endangered and vulnerable species and which are not included in Ai and Aii categories.

Aiv – Areas populated with subendemic and endangered taxa

Are taken into account taxa included in Romanian Red List, endangered and vulnerable species and which are not included in Ai, Aii and Aiii categories.

A number of 276 IPAs (Important Plant Areas) have been identified, covering 5% of the country, of which 210 within protected areas. Areas selected under these criteria must shelter an exceptional botanical wealth (vegetal communities and/or vascular plants, briophytes, lichens, fungi, algae) whose protection is important for the global conservation of vegetal diversity.

3.3 Genetic diversity

In Romania, in the “ex situ” activity which implies the conservation of the vegetal diversity components out of their natural habitat, the agricultural research institutes botanical gardens, Agronomical and Biological Sciences Universities as well as the Gene-bank of Suceava are involved. All other collections are considered work collections for research or amelioration purposes, except the collection from the Gene-bank.

The Bank of Vegetal Genetic Resources - Suceava was founded in March 1990, as an independent enterprise with juridical personality and national character.

Its purpose is to preserve the national collection of phyto-genetic resources propagated through seeds and to offer biologic material highly resistant to biotic and abiotic stress factors for amelioration programs. For achieving this goal, the Gene-bank develops specific activities of collection, characterization and estimation, regeneration, multiplication, conservation and documentation.

The situation of the present genetic resources as well as the biologic creations obtained by the Romanian zootechnical research institutes, included in the annual report for the FAO Program/2002 on “Conservation of animal genetic resources”, The problem of genetic diversity in poultry is more intricate, the native breeds were not recorded in the first stage and after that they began to disappear. Consequently, from the 94 poultry breeds that were preserved in the National Bank of Animal Genes recorded at DAD-TS, only 6 were native.

Unfortunately, at present, the National Bank of Animal Genes is liquidated due to lack of funds and inadequate management.

From the scientific point of view, the problem of animal genetic resources includes the following peculiarities:

- ❖ taxonomy aspects still unresolved in our country and abroad leading to numerous confusions regarding the belonging of an animal to a certain breed. In this context we have to mention the involvement of molecular genetics in taxonomic delimitations;
- ❖ biodiversity conservation “in situ” through a modern methodology and in close collaboration with the international bodies involved in this activity;
- ❖ drawing up the amelioration national plans.

CHAPTER 2 - Status of National Biodiversity Strategy and Action Plans

2.1. National Biodiversity Strategy

The National Capacity Self-Assessment (NCSA) for Global Environment Management (2004-2005) has identified 30 priority issues resulting from the gaps identified, concerning the implementation of the CBD, addressing aspects of capacity in the field of legislation, financing conservation and sustainable use, institution and administration, education and public awareness and scientific research priorities.

Some of the most important issues identified were:

- ❏ Unbalanced distribution of investments in the field of nature conservation.
- ❏ Legislative inflation;
- ❏ Lack of specific regulations to ensure implementation of CBD on technical and scientific cooperation;
- ❏ Strong institutional instability (at an organizational level, including environmental structures) also reflected at an individual level;
- ❏ Capacity of institutions to attract financial resources is insufficiently developed;
- ❏ There is no clear and complete evidence of the properties regime of terrains inside the natural protected areas;
- ❏ The educational system isn't adapted to the needs and requests of the CBD;
- ❏ Mechanism of clearing-house non-functional;
- ❏ Weak public involvement;
- ❏ Lack of transparency of public institutions.

2.2 Check and Review of the National Strategy

The European Platform for Biodiversity Research Strategy (EPBRS)¹ has identified further research needs.

Measures must be carefully implemented and monitored to ensure that they achieve their objectives. Long-term monitoring is essential and the research results should be widely shared and used.

Species distribution models provide a useful first approximation of the potential impact of climate on biodiversity and ecosystems.

Monitoring habitats, species' abundances and distributions, ecosystem functions and services are nevertheless indispensable processes to verify the direction and the rate of changes, and these should contribute over the longer term to the development of more realistic models via improved baseline data.

The influence of climate changes on species' phenology is still poorly understood and needs to be monitored as a prerequisite to detecting the risk of decoupling of species' interaction in time and in space.

2.3 Implementation of the National Biodiversity Strategy

The Minister Order no. 494/2005, established the procedures for taking into custody and establishing the administration of national and natural parks and the commitment to protect.

Protecting biodiversity and ecosystems and using them sustainably, thus preserving and enhancing their resilience, is one of the best and most cost effective defences against the adverse impacts of climate change.

Considering the present status of biological diversity in Romania and the European provisions for nature conservation and Natural resources management, there are several operational objectives to be taken into account.

Anyway the accent of the biodiversity conservation policy and sustainable use of Natural resources will move also from the cleaning measures and actions to the preventive ones.

From this perspective there will be followed:

- ❖ **Halting** the loss of biodiversity with a significant reduction by 2010;
- ❖ **Extending** the surface occupied by forests, at the average European percentage;
- ❖ **Finalizing** the “Strategic Plan for protecting the coastal zone”;
- ❖ It is envisaged the designation of new protected areas and also Natura 2000 sites;
- ❖ Effective **contribution** to achieving of the four global objectives on forests by 2015;
- ❖ **Defining** the optimal network of protection forest curtains;
- ❖ **Increasing** the accesibility of forest fund (optimistic scenario:12 m/ha; pesimistic scenario: 10 m/ha);
- ❖ Adequate **planning** of land use, that will contribute to the mitigation of urban dispersion and to the reduction of land fragmentation with losses of natural habitats and biodiversity.
- ❖ Soil **protection** through the rehabilitation and reuse of brown field sites, contaminated or not, and the space-saving spatial planning with the aim of reducing the soil sealing and ensuring rational use of soil;
- ❖ **Developing** the monitoring system of Protected Areas Network (inclusively Nature 2000 sites), of the reporting system on their evolution, in order to identify the favourable conservation status and further on to achieve the European environmental policy;
- ❖ **Improving** the efficiency of resources, reducing the general usage of non-renewable resources and the environmental impact of using raw materials

- through using of the renewable sources with the rate that doesn't exceed their regeneration capacity;
- ❖ **Avoiding** the generation of waste and enhancing efficient use of natural resources by applying the concept of „life-cycle” thinking and promoting reuse and recycling;
 - ❖ **Protection, conservation and regeneration** of diversity specific for the agro-ecosystems, implementing technologies that favour the sustainable agriculture;
 - ❖ **Establishing** the methodology for calculating the value of lands and products obtained for a correct and equitable granting of the compensations under the conditions of imposing of a management compliant with the conservation objectives;
 - ❖ **Legislative Framework** for applying the organic farms formula and for creating better conditions for the animals owned by farmers.
 - ❖ **Institutional support** for Nature 2000 sites management (control, training, developing the institutional capacity, preparing the scientific studies, the inventories, mapping, preparing and implementing the management plans for Nature 2000 sites and the action plans for the protection and conservation of community interest species, awareness raising activities and environmental education);
 - ❖ **Investments** in public-private partnership, for supporting the natural reconstruction, protection and conservation of habitats and species, infrastructure development (building and endowing the headquarters of the reservations' administrations and the visiting centres etc) and purchasing the necessary lands for the adequate management with the view of extending the surfaces for nature conservation;
 - ❖ **Establishing** the monitoring systems of natural protected habitats and of wild species;
 - ❖ **Elaborating** some local guides containing measures and actions for prevention, protection and intervention in case of natural risks;
 - ❖ The **designing** of works for eliminating or mitigating as much as possible the floods' effects will be done in stages from the point of view of financing and execution, depending on the vulnerability to floods of different basins of hydrographical spaces, the size of budgetary allocations, the frequency and scope of phenomena etc.

The complete inventory of all damaged/contaminated areas at national level will be done in the first stage of the 2007-2013 programming period with the technical assistance support (TA) within SOP.

Following the prioritization of investments, the most urgent projects (ecological reconstruction of heavy metal polluted soils, detoxification and rehabilitation of the soils polluted with oil, oil products and waste through bio-remediation actions, developing of reconstruction technology of the affected lands) will be financed under this measure.

The development of rural tourism activities, studies and pilot projects for promoting non-conventional energies in the „Danube Delta” Biosphere Reserve;

- Enhancing the requirements for giving in custody the protected areas;
- Elaborating an Action Plan for Biomass usage as a renewable energetic resource.
- Ensure durable support for long-term monitoring;
- Encourage and assist existing monitoring networks such as those for birds or butterflies;
- Support LTER as European contribution to the Global Climate Change Network planned by UNEP;
- Implement "synergy" or "no regret" measures that provide multiple win solutions i.e. adaptation and mitigation measures that benefit conservation and the sustainable use of biodiversity and ecosystem services.

Biodiversity policy needs to evolve to deliver biodiversity protection and enhance ecosystem resilience under changing climatic conditions.

However, in the mean time we should make best use of existing relevant legislation such as the Nature Directives, Water Framework Directive, Marine Strategy Directive, Strategic Environmental Assessment and Environmental Impact Assessment etc.

The implementation of the Nature Directives provides an essential minimum area for protected species and habitats and the ecosystem functions provided by them.

An extension of the network to accommodate the possibility of better dispersal of species and to reduce the risks of habitat fragmentation could be achieved by making best use of Article 3 of the Birds Directive and Articles 5 and 10 of the Habitats Directive.

While fully implementing existing instruments, we have to develop further measures appropriate for protecting biodiversity and increasing resilience not only to climate change, but also to the combination of climate change with other pressures.

This will include landscape level protection, improved opportunities for movement of species and habitats, development of skills and technical adaptation capacity.

Ecosystem resilience can be increased by protecting existing habitats from destruction, managing habitats appropriately, reducing external threats and where necessary, by creating or restoring habitats to increase the size of core areas and their functional connectivity to enable species to move through the wider environment and establish new populations in more suitable locations – *inter alia* - by linking ecological networks (e.g. the Nature 2000 Network).

Working with nature rather than against it offers opportunities to involve people and build responsibility to allow sustainable development within the ecological limits for a future which offers: opportunity for welfare, equity, security and human development.

Therefore the maintenance and restoration of diverse, functioning ecosystems across the wider terrestrial, freshwater and marine environment must be a guiding principle as we move forward to climate proof our policies.

Amongst the measures to reduce emissions there are "low cost-co benefit" measures which may also contribute to conservation and sustainable use of biodiversity.

They include restoration of degraded land, forests, organic soils and wetlands, reduction in conversion of pastureland, less slash and burn practices, and improved grassland management.

These ecosystem-based approaches also help to maintain ecosystem services that are important for human wellbeing (Table 4).

Table 4 Engagement of sectors

Engagement of sectors	
<p>- Fully implement the EU Biodiversity Action Plan and integrate biodiversity and ecosystem service aspects into other sectoral policies, including agriculture, regional policy, water, fisheries, forestry, transport, energy, tourism and development policy. This means ensuring the contribution of ecosystem services is acknowledged and protected. Examples of some pertinent measures are presented below.</p>	
Sector	Measure
Agriculture	<ul style="list-style-type: none"> - Develop multi-functional agricultural landscapes. - Step up agro-environmental schemes
Regional Policy	<ul style="list-style-type: none"> - Develop spatial plans that include clear objectives that support and enhance biodiversity and ecosystem conservation. - Develop a programme of action to improve landscape permeability for species at risk ideally linked with spatial planning policies. This should help ensure that all land use e.g. forestry, agriculture and urban areas, include minimum amounts of key habitat features.
Fisheries	<ul style="list-style-type: none"> - Review impact of policies relating to trade and fisheries and take measures to prevent over-fishing.
Water	<ul style="list-style-type: none"> - Avoid unsustainable water use. - Promote ecosystem-based approaches for water purification and storage.
Forestry	<ul style="list-style-type: none"> - Promote sustainable forest management and prevent deforestation and forest degradation.
Transport	<ul style="list-style-type: none"> - Introduce overarching policies to reduce fragmentation or destruction as a result of development of new transport infrastructure.

	- Review EU and Member State external action on transport including air and shipping and interactions with climate change and implication for biodiversity globally.
Energy	- Introduce policies to stimulate markets where appropriate for energy sources that will restore biodiversity (e.g. coppicing/wood fuel). - Review EU and Member State external action on energy and interactions with climate change and implication for biodiversity globally.
Development Policy	- Support ecosystem-based approaches by development programmes including those in EU Overseas Countries and Territories. - Recognize biodiversity and ecosystem conservation as a means to disaster reduction. - Ensure that development programmes do not negatively impact on biodiversity and ecosystems.
Tourism	- Support sustainable eco tourism and encourage green supply chains.

We need to raise awareness, involve stakeholders, build capacity and partnerships.

The responsibility of all stakeholders for the protection of biodiversity under a range of pressures, including climate change, must be communicated, facilitated and promoted through education, guidance, incentives and partnership working. It is hoped that people will take an interest in biodiversity and nature conservation.

Farmers, landowners, schools, communities and NGOs can play a key role and should be engaged in project planning and management.

Education and training programmes could be linked to the establishment, restoration and management of nature conservation and restoration sites.

To achieve a coherent network of protected sites we need a bold partnership of governments and their agencies, planners, businesses (including fishing, agriculture and forestry), landowners and NGOs.

Such a partnership will deliver social, economic and environmental benefits, but will require a high degree of coordination across multiple jurisdictions to provide landscape cohesion.

Capacity needs to be built across agencies and within competent authorities, both in terms of staff resources and expertise in biodiversity and climate change issues in order to deliver a coherent cross sectoral response.

To achieve a multiplier effect of useful investments, partners need to be identified and partnerships established. Ideally the wider public should also be involved.

Support campaigns that raise awareness for the link between biodiversity, ecosystems and climate change.

- Include issues related to biodiversity, ecosystem services and climate change in school Curricula.
- Facilitate stakeholder participation via existing and newly created opportunities.
- Build institutional capacity and partnerships.
- Identify vulnerable habitats and species, i.e. assessing the extent to which sensitivity and exposure are likely to result in actual impacts taking into account each species' and habitats' adaptive capacity. In particular models of impacts on species need to take into account the likely presence of suitable habitats within areas of suitable "climate space" and the potential for species to disperse to them.
- Step up research on habitat restoration. Research programmes should relate in particular to the needs of restoration and management.
- Integrate consideration of biodiversity and ecosystems with other disciplines and approaches that explicitly address the roles of institutions, policies, politics and people in successful biodiversity conservation and climate change strategies.

Adaptation measures for biodiversity can be described as a threefold process:
This process includes:

- maintenance of genetic and species diversity;
- preservation of habitat heterogeneity and connectivity to maintain migration routes and access to sites which can act as refuges from extreme temperatures;
- conservation of physical features and the protection of sites from other human pressures;
- management of entire catchments and the regulation of extraction and water use;
- restoration of degraded sites;
- development and implementation of adaptive management strategies to maintain flexibility.

Specific measures are listed below:

- Enhance the implementation of existing instruments and make them more rigorous by requiring the consideration of climate change impacts.

- Protect and appropriately manage existing protected areas and other areas of high ecological value and maintain existing connectivity amongst them.
- Take special action for vulnerable species, habitats and ecosystems.
- Apply the ecosystem approach for landscape planning to ensure that ecological function is given due weight alongside conventional socio-economic considerations.

- Increase in appropriate places the numbers of hedges, ponds, water-filled ditches, patches of woodland, scrub and extensively managed grasslands and field margins.
- Accommodate change by facilitating the movement of species to track suitable climate conditions and habitat through the countryside. The enlargement of existing sites should be explored.
- Create ecologically functional corridors (e.g. riparian habitats, hedgerows, forest strips) and stepping stones between nature conservation sites to allow dispersal and migration of species. The concept of an ecological network implies measures to conserve the integrity of the natural systems on which species and habitats depend. Corridor creation is a strategic and dynamic concept that could provide a framework to redress previous fragmentation.
- Take up strategic measures that ensure connectivity across the wider landscape. These include safeguarding of potential sites, buffer zones, enlargement of core areas, stepping stones, and habitat restoration.
- Facilitate migration and adaptation potential by locating nature conservation sites with reference to focal species or community distribution, such as in their core areas or on their extreme boundaries.
- Ensure adaptive management, which by monitoring and responding to changes and activities enables action to be modified on the basis of past experience.
- Co-ordinate ecological networks regionally, but manage locally in association with local authorities-governmental and NGOs—and in dialogue with local stakeholders.

Added value is provided by restoration schemes, since they can provide links or corridors between isolated nature reserves or create space in which species may survive.

The range of policy options to achieve this includes legislation, market-based instruments, guidance, insurance and collective action, as well as use of the planning and development process.

The maintenance and restoration of diverse and functioning ecosystems across the wider terrestrial, freshwater and marine environment must be a guiding

principle as we move to make all our policies resilient to and protective against adverse climate change impacts.

Plans to deal with climate-induced disasters should identify not only the damage to human settlements but also to local ecosystems on which they depend.

This approach would protect ecosystems both as economic mainstays of local people and as havens of biodiversity.

The major difficulties are related to the still unclear landownership within and near protected areas, insufficient staff in the Park Administration Units, the reorganisation of the Environmental Agencies, insufficient staff, and lack of economic compensation mechanisms.

The range and extent of ecosystem services provided the Nature 2000 Network and other protected areas are often not recognised, but they contribute to a variety of human needs (e.g. clean water, air, recreation, flood protection).

They form the central pillar to maintain the critical mass and variety of services necessary to cope with changing conditions. It is vital to maintain these areas as space for nature, even if the species for which they had been originally designated may have moved away.

They will provide necessary habitat for other shifting species.

Maintaining genetic and species diversity is important for ecosystem function, since it may increase ecosystem resilience by ensuring that enough redundancy of response capacity exists to maintain ecological processes and to protect against unforeseen disturbances.

Therefore conservation areas should encompass large areas, including both a broad range of habitats and a high genetic and species diversity.

National network contains 956 protected areas, covering about 7.8% of the country's surface, in accordance with the rules of International Union for Conservation of Nature (IUCN).

These areas were identified by studies carried out by Romanian research institutes under the advisement of the Romanian Academy.

Protected areas include biosphere reserves, Ramsar sites, world heritage sites, national parks, natural parks, nature reserves, nature monuments and strictly protected scientific reserves.

Through Governmental Decision no. 2151/2004 and 1143/2007 the surface grew up to 7%.

A part of the protected areas are botanical, based on the presence of one or more threatened species or on the landscape value of the area.

The following adaptation principles are fundamental to conserving biodiversity under changing climatic conditions:

- ❖ take action now;
- ❖ maintain and increase ecosystem resilience;
- ❖ accommodate change;
- ❖ develop knowledge and facilitate knowledge transfer;
- ❖ use adaptive conservation management

2.4 Biodiversity in agriculture

Plains and agro-ecosystems represent more than 12,000,000 hectares (almost 50% of the Romanian territory and 90% of the plain areas), with 9,300,000 hectares being arable land.

The main plant species used in agriculture are wheat, barley, corn, sunflower, potatoes, oat, hemp, and flax.

The main ecosystems of agricultural areas are: grassy lands used for cereals, vegetables, hemp, flax; orchards of apple, peach, plum, and apricot are mainly in hilly areas, frequently associated with meadows; hay meadows, also used as pastures; and associations of bushes and shrubs.

The diversity of species related to agro-ecosystems comprises: 15 species of mammals; 20 species of birds; 15 species of reptiles; 3 species of amphibians; more than 6500 species of invertebrates; 640 species of plants (134 weeds species).

Of these, 7 species are threatened and 12 are vulnerable. Four species of mammals, 4 species of birds, 10 species of reptiles and one specie of amphibian have limited areas in Europe.

Meteorological records over more than 100 years show an obvious trend of desertification for some 3 million hectares in the East of the country, of which 2.8 million are agricultural land (representing about 20% of the total arable land). Agriculture land is distributed according to suitability classes as follows: very good (2.8%), good (24.6%), medium (20.8%), weak (24.4%), very weak (27.4%). The most degraded are pastures and hayfields with 46.6% of the area in the very weak class and vineyards and orchards with 36.7%.

Soil degradation is affecting the quality of about 12 million hectares of agriculture land, of which 7.5 million are arable land.

Water erosion affects 6.3 million hectares out of which 2.3 million are under soil erosion control measures. This type of erosion, together with land slides leads to soil losses estimated at 41.5 t/ hectares /year.

Wind erosion affects 0.4 million hectares and soil salinization 0.6 million hectares, mainly in the irrigated or drained areas.

Soil deterioration and compaction is manifested on 6.5 million hectares of arable land. It is estimated that abandoned land accounts for 5-10% of the agriculture land. It affects local ecosystems, the landscapes and contribute to the degradation of about 123,000 hectares of arable land.

Finally, drought affects 7.1 million hectares, including the 3.2 million hectares that were previously irrigated.

With a great agro-biodiversity resources Romania has done limited study and / on-the ground measures for agro-biodiversity conservation.

2.6 5 Biodiversity in forests

Today, a total of about 6,567,000 hectares of Romania (27.65% of the land area) is covered by forest. Of these, 6,161,000 hectares are actually wooded, the other 400,000 hectares being meadows, marshes and ponds.

Most of the forests are situated in the Carpathian Mountains, at altitudes above 700 m (58.5%). The rest of forests are located in hills and plateaus between 150-700 m (32.7%) with only 8.8% located at altitudes below 150 m.

Conifers comprise 30.3% of all Romanian wooded areas. Spruce (*Picea*) are the dominant coniferous species, represented at 22.5% of all tree species, followed by fir (*Abies*) at 5.1%. Deciduous trees are best represented by beech (*Fagus*), which are the dominant tree species in Romania at 30.4%, followed by oak (*Quercus*) trees at 19.3%.

Various other hardwoods including maple (*Acer*), ash (*Fraxinus*), acacia (*Robinia*) and hornbeam (*Carpinus*) comprise 14.3% of Romania's trees, and other softwoods including poplars (*Populus*) of European and American origin and indigenous species such as alder (*Alnus*) and willows (*Salix*) make up 5.7% of all tree species.

There are 11 types of broad-leaved forests.

Over 68% of forests are of natural type, corresponding to the potential vegetation type. This proportion was maintained relatively constant during the last 20-30 years, but presently there is a slight increase in the percentage of artificial forests.

In order to preserve this valuable natural capital and to ensure a favorable conservation status for natural habitats of great natural and community importance, Romania has taken important steps, by implementing the legislative elements specific to the European Union, as well as of some programs and projects dedicated to preserve biodiversity.

In Romania there are protected areas comprising of 79 scientific reservations, 13 national parks, with the largest one named Domogled-Valea Cernei, 190 natural monuments, 659 natural reservations, 13 natural parks and 3 biosphere reservations (Danube Delta, Retezat and Rodna).

In the National Forestry Program (2001-2010) of the Ministry of Agriculture, Forestry and Rural Development one of the goals focuses on the integration of representative forest ecosystems in the network of protected areas and the conservation of biodiversity in forested ecosystems.

Romanian forests face a serious challenge in the immediate future as approximately 30% of standing forests are slated to be restituted to families of former land owners. These forests, which have been under state control for over 50 years, are virtually intact and provide crucial habitat required for large mammals, watershed protection, and substantial economic reserves if sustainable harvested.

Current forecasts, modeled on initial restitution efforts that resulted in wide-scale deforestation, indicate that the future forest owners may denude up to 20% of forests restituted for immediate economic gain.

Such an activity will result in forest fragmentation, which will disrupt genetic flow and habitat suitability throughout Romania's forests.

Deforestation will also contribute to global and local climate change, which in turn are disruptive to forestry and agriculture.

Over 50% of the forests are preserved under a special management requirement, being included either as protective forests, for water protection, for

land or soil protection, protection against climatic or industrial noxious factors, for recreation or biodiversity conservation.

The proportion of forests included in protected areas increased constantly, reaching almost 700,000 hectares in 2005, of which over 200,000 strictly protected (included in special protection areas).

The surface of protected areas with forests will increase in the future.

In the management of forests in Romania, priority is given to (i) natural regeneration which promotes the best conservation of genetic diversity, and (ii) the use of local seeds for artificial regeneration. The basic principle applied in the management of forests in Romania is continuity, implying the maintenance or improvement of the goods and services offered by the forests. Logging and harvesting other forest products is quantified in a way that will not impact on long term the productive capacity and the protection of forests at the level of each management unit.

The sustainable management of forests is included in legislation and in the Strategy for the sustainable development of forestry during 2000-2020 and is included in the technical requirements.

The requirements of the sustainable use of forests are overall respected at national level, both by the administration of state-owned forests and by the private owners of forests.

A variety of indicators are in use for forests, at different spatial scales:

- management unit: surface of forest, average volume of wood; annual average growth, species composition, the structure of the productive pool regarding the species, age, class of production, consistency etc.).
- national unit: the 'Criteria and Pan-European Indicators for the sustainable management of forests.'

The main priorities on forest ecosystems biodiversity conservation that need to be urgently approached by the foresters together with representatives of other institutions with responsibilities in biodiversity conservation and protected areas are the following:

- Clarifying the cadastre situation of the protected areas on forest area (owner, area, borders etc.);
- Analyzing each case related to the aim for which it was established as a protected area and the extent it fulfills the initial purpose;
- Update the objectives for each protected area on forest territory according to the present regulations of the national and international legislation;
- Development of management standards for protected areas in accordance with the biodiversity conservation objectives and management plans for all protected areas on forest area;
- Harmonization of the technical standards and forest guidelines with national legislation on protected areas;

- Legalization and strengthening of the national and natural parks administrations set up within RNP - ROMSILVA and requesting by them of the right to manage the protected objectives whose area is mainly forest;
- Virgin and quasi-virgin forest conservation;
- Rehabilitation of the degraded habitats on forest area;
- Inventory of the rare, endemic, endangered species of flora and fauna in forests and implementing protection measures for them;
- Creating and developing an informational system on biodiversity management in forest area which to be integrated with the national system for biodiversity management (Table 5).

Table 5 Significant and potential adverse environmental effect of forestry activities

Forestry activities	Water	Soil	Landscape	Nature and wildlife
Wood production	- sawdust	- cover good soils in sawdust - erosion, ditch forming	- degrading - aesthetic degradation	- changes of the feeding and breeding places for many animals
Seedling	- build-up of litter following leaf-falling due to acid rain - cultivate species which require a high level of humidity → diminished table water availability	- build-up of litter following acid rains → soil acidification	- uniform plantations → major changes of the shape, form, colour and texture resulting from the clear delimiting of the coniferous plots	- plantations with a single tree species → uniformness, disappearance of biodiversity

<p style="text-align: center;">Forest clearing</p>	<p>- complete land clearing → alluvia erosion → loading with alluvia and organic matter</p>	<p>- land uncovered due complete clearing → erosion due to wind and water - use of heavy equipment → compacting - sudden decrease of water requirement due to complete land clearing → flash floods</p>	<p>- extensive complete land clearing → desolate landscape</p>	<p>- debris clearing → disappearance of plants and animals depending on it → disappearance of biodiversity</p>
<p style="text-align: center;">Drainage</p>	<p>- decreasing water table level, which reduces water availability - organic soil oxidation → soil acidification → underground water acidification</p>	<p>- organic soil oxidation → build-up of acid sulphates → soil acidification</p>	<p>- soil aridness determines changes in plant communities and in landscape evolution trends</p>	<p>- decreasing water table level → disappearance of rain forests and of the wet areas with rich biodiversity</p>
<p style="text-align: center;">Weeding, herbicides, selective cutting</p>	<p>- use of herbicides → underground water pollution</p>	<p>- frequent utilisation of equipment → erosion, compacting</p>	<p>- shoots clearing → uniformness</p>	<p>- background disposal, important habitat for many animal species → disappearance of biodiversity</p>

Use of pesticides and fertilizers	<ul style="list-style-type: none"> - wash-up and carry the active ingredients → underground water pollution 	<ul style="list-style-type: none"> - fertilisation under conditions of excess humidity → loss of nitrogen → emission of glasshouse-effect gases → contribution to climate changes 	<ul style="list-style-type: none"> - changes of plant community structure and of the landscape 	<ul style="list-style-type: none"> - pesticide release → poisoning other species than the targeted ones - fertilization → changes of plant community
Use of heavy equipment	<ul style="list-style-type: none"> - soil erosion → increased alluvia load of the surface water flows - spillages / oil spots → water pollution - soil compacting → increased spillage, less infiltration to underground water 	<ul style="list-style-type: none"> - frequent utilisation of equipment → compacting, erosion - spillage oil spots → soil pollution 		<ul style="list-style-type: none"> - frequent utilisation of equipment → disturbance of wildlife biology
Leisure	<ul style="list-style-type: none"> - increased water consumption → lower water availability, pollution from tourist sites, camping sites, lands 	<ul style="list-style-type: none"> - trail making → soil erosion and compacting 	<ul style="list-style-type: none"> - infrastructure development (access roads, facilities for leisure, etc) → landscape changes 	<ul style="list-style-type: none"> - increased number of tourists in the forests → disturbance of the natural life - infrastructure development for leisure places → excess extraction of underground water affecting tree growth

Hunting		- soil contamination with lead bullets	- low access in forests during the hunting periods	- chase-off some animal species (wolves, bears, lynx) from their places of origin → disappearance of biodiversity - select game species to the detriment of other species → disappearance of biodiversity - poultry game poisoning due to lead bullets - damages due to intensive hunting
Grazing	- overgrazing → soil erosion and compacting → increased alluvia load of the surface water flows less infiltration to underground water	- overgrazing → soil erosion and compacting	- overgrazing → soil erosion and landscape changes	- overgrazing → damaging for young plants, trees and habitats

The major problems in using natural resources in a sustainable way were generated by the high poverty level and unemployment in rural areas, the change in forest ownership, all these coupled with the lack of correlation between the existing institutional and legislative environment.

For the forestry sector, the legislation requires the conservation of valuable habitats by including them in the national network of protected areas or in the category of forests with special functions.

The legislation is also very strict regarding the change of forest land use. In case a forest area can change its destination, a similar area in size and quality must be reforested.

The reduction of the degradation of forest areas is included in all management plans and is applied based on different measures: functional zonation of the forests, choice of treatments and technologies of exploitation, steep slope stabilization etc.

The loss and degradation of forest habitats is extremely low, on small areas, caused either by natural disturbances or by human activities. The indicators used in forestry are: the area of forests degraded or destroyed by disturbances (fires, pest invasion, erosion, etc.), the area of forests affected by illegal logging, the area of forests receiving other destination etc.

In some area, the forests are affected by invasive alien species. There is no strategy or coherent action plan focused on alien invasive species. Major problems are caused in the Danube Delta and floodplain by *Amorpha fruticosa*, *Fraxinus pensylvanica*, *Fraxinus americana*, clones of Euro-American poplars and *Populus nigra* hybrids.

Besides alien species another high risk threat is represented by some allochthonous genotypes or even ecotypes.

A series of measures were taken: identification of ecotypes and genotypes resistant to climated changes and other stressors, developing management technologies for forests that will consolidate their stability, prevention measures for disturbance factors associated to climate changes.

2.6 Biodiversity in coastal areas

The first checklist of species from the Black Sea lists 5,608 taxa, of which 3570 taxa are reported from the Romanian coastline. The groups with the highest number of species are Bacillariophyta (459 species, representing 12.8%), Cilliata (277 species, 7,75%), Copepoda (192 species, 5.3%) and Annelida (181 species, 5.07%).

Romania's freshwater animals originate from the Danube River drainage basin and are pre-glacial. Some relic species, which originate from the ancient Sarmatic Sea (crustaceans misidacea and cumacea, some polichaetes and limnocardiids mussels) can be found today in the Danube River, the Danube Delta and in Black Sea coastal lagoons.

The Danube drainage basin virtually covers Romania's entire land surface and comprises the richest ichthiofauna (fish diversity) of all other European rivers.

The basin was less affected by glacial periods and receives many cold tributaries, which provide good habitat for some rheophilic (fast water loving) and psychrotermophilous (cold water loving) species including beluga sturgeon (*Huso huso*). While the majority of fish in the Danube are freshwater species, 23 fish species of marine origin also inhabit the Romanian sector of the Danube.

In all, 108 species of fish are known from Romania's coastal waters out of the 170 species reported in the Black Sea.

Table 6 Significant adverse environmental effect of fishery activities

Fishery activities	Resources	Water	Nature and water wildli
Sea fishing	- overexploitation → decreasing stock of fish families, reduced genetic diversity, impact on the natural ecologic dynamics	- fish processing installations on ships → water pollution - fish catch blood spilling → water pollution - antifuling preparations (currently banned by the EU) → water pollution - gas/oil duct damaging / petrol due to bottom net trawler fishing → risk of duct rupture, ecological danger - disposal of unused fish and of fish waste → water pollution unpleasant smell	- bottom net trawler fishing and dredging → impact on - various types of fishing nets, trawl and <i>țaparină</i> (mul → impact on vertebrates - electrical fishing → impact on sea fowl and mammali
Freshwater fishing	- overexploitation → decreasing stock of fish families, reduced genetic diversity, impact on the natural ecologic dynamics (remove predators from the freshwater sources)		- lead from leisure fishing → toxic effects of sea fowl - electrical fishing → impact on sea fowl and mammali
Aquacultures		- dispose feeds excess and wastes from fish farms → eutrophication - use antifuling paint on aquaculture facilities → water pollution	- fish escaping from fish farms, exotic and transgenic f fund of the Natural populations, which increase the co ecological niches - increased demand for fish feeds (feeds for aquacultu - physical barriers for fish farms building → prevent fis

Table 7 Connection between human activities and coastal area problems

Human activities	Agents/consequences	Problems related to coastal area degradation
Urbanisation and transportation	- changes of land utilisation (for ports, airports); increased road, railroad and airways density; port dredging and sediment disposal; sea spillage (oil,	- loss of habitats and biodiversity; visual discomfort; decreasing ground water level; salt water penetration; water pollution; health risks; eutrophication; emergence of

	household wastes); water extraction; wastes and waste water disposal	new, modified species
Agriculture	- land draining; use of fertilizers and pesticides; high animal stocking; water extraction; river arrangement	- loss of habitats and biodiversity; water pollution; eutrophication; lower supply of fresh water to littoral sea water.
Tourism, leisure and hunting	- land development and altered land utilisation (golf courses); high road, railroad and airways density; harbours and piers; water extraction; waste and waste water disposal	- loss of habitats and biodiversity; disturbances; visual discomfort; lower underground water level; penetration of saltwater into freshwater supply; water pollution; eutrophication; health risk
Fishing and aquaculture	- harbour constructions; equipment for fish processing; fishing equipment; effluents from fish farms	- over fishing; impact on other species than the targeted ones; oil and garbage abandoned on beaches; water pollution; eutrophication; introduction of new species; damages to the habitat and changes of the sea biocenoses
Industry (including energy production)	- altered land utilisation; power plants; extraction of natural resources; effluent treatment; cooling water; windmills; tide dams	- loss of habitats and biodiversity; water pollution; eutrophication; heat pollution; visual discomfort; low supply of fresh water and alluvia to littoral seawater; coast/beach erosion

Of the 1785 benthic species cited from the Black Sea 84% are species of marine origin, 10% are allohtonous freshwater and brackish water species while 6% are autohtonous, ponto-caspic relicts.

The coastal ecosystems like wetlands, mangroves, coral reefs, oyster reefs, and barrier beaches all provide natural shoreline protection from storms and flooding in addition to their many other services.

Ecosystem-based approaches are cost-effective, ready now and likely to be more accessible to rural and poor communities.

Thus they can align with and enhance poverty alleviation and sustainable development strategies.

2.7 Protected areas and Nature 2000 Network

The Romanian national network of protected area includes: 3 biosphere reserves, 13 national parks, 14 nature parks, 5 Ramsar sites, 1 World Heritage

sites, 2 geo-parks, many nature reserves, strict reserves, nature monuments and Nature 2000 sites.

25 of the national and nature parks have administration and almost 300 of the other categories of protected areas are managed by caretakers, on the basis of a custody convention.

The national network of protected area is covering 19 percent of the Romanian territory.

As a member of the EU, Romania had to designate the Nature 2000 network and to insure an appropriate management for the habitats and the species of community interest. The Nature 2000 network in Romania includes 273 sites of community importance (designated according to the Habitats Directive) which are covering 13 % of the national surface and 108 special protection areas (Birds Directive) – 12 %.

The surface covered by all the Nature 2000 sites is 17,8 %

2.8 Preservation Programmes and ex-situ conservation

Ex-situ conservation programs include Zoos, botanical gardens and rehabilitation centers for bears. The objectives of Zoos are the following: conservation of genetic diversity, protection of wildlife by keeping animals, scientific researches, education and environmental awareness.

The legal framework for Zoos is the following:

- Directive 1999/22/EC which was transposed by Law no. 191/2002 of public gardens and aquariums
 - The Minister Order no. 742/2004 which regulates the authorization procedure, inventory and the registration of Zoos and public aquariums.
- In 2007 the Minister Order no. 742/2004 was repealed by the Minister Order no.1798/2007 to approve the procedure for issuing the environmental permit.

The Minister Order no. 755/2007 regarding the approval of model form for recording each Zoo and public aquarium and the National Register of Zoos and public aquariums.

During 2004-2008 all the Zoos and public aquariums were inventoried at national level and have been authorized those Zoos which respect all legal provisions.

At the end of 2008 have been recorded 41 Zoos and public aquariums, some of them being part of Romanian Federation of Zoos and Aquariums. In 2008 were established and authorized 2 rehabilitation centers: The "Liberty" Reserve for bears in Zărnești, (Brașov County) and the Rehabilitation Center for orphaned bears, in Suseni (Harghita County).

Some Zoos carry out the activities for conservation of species (aurochs) through researches programs, for example researches regarding the anthropogenic pressures on species existing on the coast of the Black Sea, researches regarding the vulnerability of aquatic species and their habitats.

In 2007 it was published the Governmental Decision no. 1500 regarding the measures for programs priority of environmental and water management, which include investments in the infrastructure, in order to achieve the standards for Zoos licensing.

14 Zoos received funds for improving the conditions of wild species and modernization.

2.9 Protection of species endangered by trade

The management authority is the Ministry of Environment and the scientific authorities are the Romanian Academy and the Forest Research and Management Planning Institute.

Responsible for:

- ❖ issuing permits and certificates is the Ministry of Environment;
- ❖ controlling commercial activities and internal commercial activities are the National Environmental Guard, in collaboration with the special offices of the Ministry of Internal, Ministry of Industry and Trade;
- ❖ borders controls is the special customs authorities under the Ministry of Finance;
- ❖ controlling the movement of live specimens are the Ministry of Environment and the Police;
- ❖ registering scientist and scientific establishments is the Ministry of Environment in consultation with the Romanian Academy.

All the measures concerning the import of the specimens are in place in concordance, in particular, with the provision of the CITES. The forms used are completed in concordance with CITES Regulations

The import permits are valid not exceed 12 months, depending on the species.

The holders have the obligation, under the Romanian legislative provisions, to return the expired or unused permits (the original and all copies) to the management authority (Ministry of Environment).

For ensure the proper retrospective issue of permits are in place the procedures established by CITES.

Romania was ratified by Law no 69/1994 the Convention on international trade in endangered species of wild fauna and flora (CITES). This is the reason for all the measures concerning the export/ re-export of the specimens are in place in concordance, in particular, with the provision of the CITES, including the completed and the used of the forms.

The period of validity of export/re-export permits shall not exceed six months, depending of the species.

The applicants have the obligation, under the Romanian legislative provisions, to return the expired or unused permits to the management authority (Ministry of Environment).

In the cases where a permit is cancelled, lost, stolen or destroyed, it is impossible to obtain other permit.

The import and export permits and the re-export certificates and the import notification are issue of the applicants by the management authority, on the basis of the favourable avis of the Romanian Academy.

The avis of the Academy is given after the analysis of the documentary evidence needed in this field.

The procedures are in concordance also with the CITES provisions and also with the procedure for environmental impact assessment.

The management authority on the basis of the analysis and the assessment of the information needed for this reason (state of the species) granted by the scientific authority can limiting the issuance of the export permits (if the scientific data emphasis that conservation state of the species is inappropriate).

The management authority approves the authorizing of the movement of species listed in Annex A, in concordance with the provisions of the Convention on international transport with species, ratified by the Romania. It is ensuring the adequately informed of the accommodation, equipment and practices and also the preparation of any live specimens before transport or during transit or trans-shipment, so as to minimize the risk of injury, damage to health or cruel treatment.

The checks and formalities for the introduction into and export of the specimens listed in the Annexes are accomplished in all the border customs.

The staffs are not sufficient and adequately trained in this field.

The documentation is checking only at the border customs office. The checks and formalities for the introduction into and export of the specimens listed in the Annexes are accomplished in all the border customs.

The staffs are not sufficient and adequately trained in this field.

The documentation is checking only at the border customs office. It has been set up an inspection system to control.

The procedures are established in concordance with national legislation in this field and it is supported by the personal of the special offices under the Ministry of Environment and Ministry of Administration and Internal.

The bodies for criminal prosecution, according to the legal competence shall do the ascertaining and investigation of the offences.

The people have the right of lawsuit with the view of environmental protection, including the trade with the wild species, irrespective of who suffered from the prejudice.

For the public is given the general information on the trade with the wild species of flora and fauna, by mass media.

For the interested people with trade of the wild species is given the detailed information about the formalities required, by the personnel's customs offices and of the Ministry of Environment's directorates.

It is supplied to magnetic support all the data on imports into and exports and re-exports from Romania that have taken place on the basis of permits and certificates issued by the management authority.

The management authority collects the data and, communicate the information on the trade with CITES species to the Convention Secretariat.

CHAPTER 3 Cross-sectional and fundamental measures

Table 8 SWOT analysis on environment infrastructures (source POS Environment, 2005)

STRONG POINTS	WEAK POINTS
Water sector	Water sector
Environment legislation for the water	Large investments required to comply

<p>sector harmonised with EU legislation Institutional structures established for an integrated management of the water sector (quality and quantity) concerning the hydrographic basins; Identification of population agglomerations and of the areas vulnerable to pollution with agricultural nitrates Technical expertise of the National Administration "Romanian Waters" for water management, particularly for the protection against flooding; Existing projects for prevention and hydro prognosis developed with US assistance Experience concerning the pre-adhesion funds, particularly the ISPA Program to improve the water services (water supply, waste water treatment, sewage system)</p>	<p>with EU requirements (9,500 M euro until 2018) Low administrative capacity to implement the legislation of the water sector Extremely low developed infrastructure for waste water treatment (waste water treatment plants and collection systems), particularly in Regions 8 and 4; Insufficient centralized systems for water supply and sewage particularly in rural areas; Insufficient data to characterise drinking water quality at the national level; Poor quality of the drinking water supplied to the population due to old pipes and discontinuation in drinking water supply; Insufficient allocation of funds for protection against flooding (there still are 2050 localities that require protection against flooding) Size of the agricultural areas affected or that may be affected by pollution with agricultural nitrates</p>
<p>Waste management</p>	<p>Waste management</p>
<p>Full transposition of EU legislation in this area; Elaboration of the National Strategy and Plan for Waste Management Administrative structures established at the national, regional and local level to implement the national policy on wastes and for inspection and control Availability of annual data concerning waste management at the national level Experience in implementing projects financed by pre-adhesion funds (PHARE or ISPA)</p>	<p>Poor infrastructure for waste collection, transportation and disposal Poor capacity of the recently-established ARPM and ANPM concerning waste management Insufficient financial and human resources at the level of the public administration of the municipalities to involve in waste management Poor awareness of the population and economic agents Insufficient promotion of the administrative instruments which to facilitate the creation of viable waste market</p>
<p>Air quality</p>	<p>Air quality</p>
<p>Full transposition of EU legislation in this area</p>	<p>High level of fossil fuels utilisation to produce energy</p>

<p>Designation of the agglomerations and areas for the management and evaluation of air quality Network of air quality in Bucharest, which may supply data on-line Experience in implementing projects financed by pre-adhesion funds (PHARE)</p>	<p>High pollution with heavy metals and particles in some areas; High specific emissions of greenhouse-effect gases, NO_x and SO₂ and powders resulted mainly from IMA National network monitoring air quality not yet completely fitted; Low numbers of operators having monitoring and control systems for the atmosphere polluting emissions; Absence of ISPA projects to protect the atmosphere, although this area is eligible according to Regulation no. 1267/1999/EC</p>
<p>Nature protection</p>	<p>Nature protection</p>
<p>About 19% % of Romania surface is declared as protected areas (including Natura 200 network); The limits of 80% of the total protected areas were determined in GIS Significant tourist potential</p>	<p>Large number of endangered habitats and species Insufficient infrastructure for nature and landscape protection; Low financial and human resources for the management of the protected areas and of the important biotopes; The management plans of the protected areas are not yet to be elaborated and not all administrations have been assigned There still is no complete inventory of all natural habitats and of flora and fauna species.</p>
<p>OPPORTUNITIES</p>	<p>THREATS</p>
<p>Water sector</p>	<p>Water sector</p>
<p>EU funds allocated for the environment (water) sector in Romania Business opportunities for the foreign companies to invest in the water sector (within the context of the allocated funds) Development of public-private partnerships for the water sector</p>	<p>Low capacity of the final beneficiaries/local authorities to develop project applications for the water sector. Non-compliance with the requirements of EU Directives for the water sector in the case of a low absorption of EU funds due to the complex process of project preparation and management and due to costly co-financing Difficulties in supporting the investment costs for the projects of environmental infrastructure, particularly by the small and average-size communities</p>
<p>Waste management</p>	<p>Waste management</p>

<p>Availability of structural and adhesion funds</p> <p>Opportunities for private investments and trade</p> <p>Development of a viable market of wastes / raw materials resulting from waste processing</p> <p>Establishment of public-private partnerships (PPP) for the wastes sector</p> <p>Finalisation of the pilot projects to recover / recycle package wastes</p>	<p>Staff insufficiently trained and experimented to apply the legal framework for wastes management.</p> <p>Insufficient capacity of absorption of the European funds</p> <p>Poor social support of good wastes services, mainly selective collection</p> <p>Requirement for financial assistance through co-financing which involves the allocation of important sums from the state budget</p>
Air quality	Air quality
<p>Common projects of implementation to reduce GHG emissions</p> <p>Introduction of renewable sources of energy</p>	<p>High costs to comply with European standards for the exchange of technologies and the use of BAT- IMA.</p> <p>Higher pressure on air quality in correlation with the economic growth</p> <p>Lack of financial resources to finance the environmental measures that require large investments, particularly at the local level;</p> <p>Uncontrolled increase of vehicle traffic with adverse consequences on the emissions into the air</p>
Nature protection	Nature protection
<p>EU funds allocated for this sector</p> <p>Development of ecological tourism</p> <p>Economic and rational exploitation of the species of flora and fauna</p>	<p>Higher pressure on biodiversity in correlation with the economic growth</p> <p>Environmental pollution</p>

Table 9 Current state of the environment infrastructures targeted by Priority 3 of the PND

FRESH WATER SUPPLY	Comments
68 % of the Romanian population connected to the utility – 98 % urban and 33 % rural (3,4 million inhabitants)	Europe has 100 % connection to the utility in urban and 87 % in rural areas
Drinking water treatment plants: 1.398 units	25 % chemically nonconforming in localities with 50 – 500 inhabitants; 10 % nonconforming in localities with more than 5000 inhabitants; 9,8 million inhabitants from urban

	areas exposed to risks due to these nonconformities.
SEWAGE SYSTEM	Comments
Localities with sewage system: 675 servicing 11.5 million inhabitants (of which 10.3 million – 90 % in urban areas and 1.15 million – 10 % in rural areas)	52 % of the Romanian population benefits of both drinking water supply and sewage, 16 % only of drinking water supply and 32 % of neither
WASTE WATER TREATMENT	Comments
28.8 % treated properly, 42 % insufficiently treated and 29.2 % non-treated	In conclusion, about 71 % of the waste waters poor directly into emissaries; of these, 49 % originate from heat and electricity producing plants and 39 from public units
1359 plants for waste water treatment (in 2004 – 555 plants, 40.8 % were functioning properly and 59.2 % were not functioning properly)	Only 340 urban agglomerations benefit of waste water treatment plants.
WASTES MANAGEMENT	Comments
29 % are municipal / urban wastes and 71 % are production wastes disposed of by the urban salubrity services	Only 5 % of rural wastes benefit of salubrity services
40 % of the wastes are recyclable, 20 % recoverable	But only 2% are recycled by selective collection, the balance being disposed of at the dump
267 municipal wastes dumps – 13 discontinued functioning, 238 are to be closed down for non-compliance with EU norms, only 16 comply	49 additional waste dumps are needed for non-dangerous wastes with capacities of 50,000 up to 100,000 tons /year
2 686 wastes dumps 1 ha or larger do not comply	Will be closed until 2010 and the rural collection of waste will expand
169 industrial waste dumps (51 for dangerous wastes, including for 10-25 % of overall medical wastes); 116 for non-dangerous industrial wastes, 2 for inert material)	Only 15 are according to EU norms; 154 will be gradually closed down and 346 burning installations / incinerators for medical wastes do not comply and will be shut down by 31.12.2008.
AIR QUALITY	Comments
39.24 % of the air pollution is from the large burning installations producing energy and industrial conversion, 31.58 % from traffic and 11.39 % from the processing industry	The most dangerous pollutions are the emissions of deposit powders, SO₂ and heavy metals

BIODIVERSITY AND NATURE PROTECTION	Comments
13 National Parks; 13 Natural Parks and a Biosphere Reservation – the Danube Delta (1,655,333 hectares) plus 935 Scientific reservations amounting to 180,000 hectares, totalling 7.8 % of the country area	The target for 2015 is 15 %
116 special area of protection for birds and 79 sites of community interest so far for Nature 2000 network	Compliance by January the 1 st
NATURAL DISASTERS	Comments
Black Sea beach lost in 35 years more than 2400 hectares (about 80 hectares / year), while the accumulations did not exceed 7 hectares / year	The coast line advanced into the hinterland by 180 – 300 meters, in some places by 400 m.

Table 10 SWOT analysis of some administrative – institutional aspects concerning the environment

Area	Strong Points	Weak Points
Institutional framework	Existence of the permanent interministerial councils for the integration of the environment policy within the sectoral policies	The Commission is established, it does not work efficiently (SEA – EIA)
Coherent methodology of evaluation		It doesn't exist / it is not public / it is not known
Cooperation between stakeholders, at the national and international level (civil society; government; companies / federations; local authorities)		It is very poor

3.1 Sustainable use of genetic resources

Romania has non-renewable resources (minerals, fossil fuels, ore ferrous and non-ferrous deposits, coal deposits, useful rocks) and renewable (water, air, soil, wild flora and fauna, including the non-exhausting ones – sun, wind, geothermal and wave energy). Between the components of the natural resources, there are strong links and interactions, so that any anthropic intervention on one of them inevitably affects the others too.

The natural raw material non-renewable resources are energy generation sources, especially made of fossil fuels, whose typical representatives are mainly hydrocarbons (petrol, natural gases).

Within the context of increasing population and consumption of natural resources, sustainable development is a pattern of development that targets a balance between the economic growth, the quality of life and the preservation of the environment in the medium and long run without increasing the consumption of natural resources beyond Earth' capacity to support.

Sustainable development aims to eliminate the disparities of access to resources both for the poor or marginalised communities and for the future generations trying to provide every nation with the opportunity to develop according to its social and cultural values while not denying this right to the future generations either.

The long-term approach means to consider the needs of the future generations and to elaborate equitable scenarios of development based on the limited natural resources of the planet.

The systemic thinking appeals to understanding the complex interactions between planet subsystems, of the propagation effects between local and global and of the multiple interdependencies between the environment, economy and society.

To understand the manner in which the strategic priorities for sustainable development in Romania might be ranked we gathered several SWOT analyses in which also contain quantitative data on the current situation of the analysed sector (environment, or the sector influencing the environment):

Table 11 SWOT analysis of the main environmental aspects in Romania

STRONG POINTS	WEAK POINTS
<ul style="list-style-type: none"> • Environmental legislation harmonised almost completely with EU legislation; • Strategies and plans of implementation of the relevant Directives for each sector of environment; • Existence of the basal institutional structures for environmental protection – to monitor compliance with community acquis, to implement the development programs for the integrated management of the water resources by hydrographic basins; 	<ul style="list-style-type: none"> • Low access of the population to centralised systems of water and salubrity compared to EU countries; • Low quality of the drinking water supplied to the population in many areas; • Rather low level of investments, after 1990, in all the sectors of the environment compared to the requirement of investments to comply to European standards; • Insufficient administrative capacity, particularly at the regional and local

<ul style="list-style-type: none"> • Experience in running programs financed by pre-adhesion funds (PHARE, ISPA, SAPARD) or from other international sources; • Technical assistance available to prepare a consistent portfolio of projects to be financed through POS (with PHARE, ISPA support and state budget); • The experience gathered by some 35 ISPA beneficiaries in large Romanian localities will be used to implement FSC projects in regions; • Delimitation of the agglomerations and of the areas for air management and air quality assessment; • Variety and wealth of biodiversity in Romania, important natural resources; • Undergoing delimitation of the protected areas; • about 19% % of Romania surface is declared as protected areas (including Natura 200 Network); • Significant tourist potential; • Increase the awareness of the decision-making factors to apply the policies and plans of actions for environmental protection. 	<p>level, to implement the environmental legislation;</p> <ul style="list-style-type: none"> • Existence of a large number of municipalities without performing water supplying companies; • Existence of a large number of sites with historical pollution due to past intensive economic activities; • Precarious infrastructure to collect, transport and remove wastes; • Poor awareness of the population and economic agents on proper waste management; • High proportion of wastes produced and stored, low level of selective waste collection, insufficient development of the waste recycling and utilisation market; • Poor awareness of the population and economic agents on the management of the protected areas; • Existence of gaps in the national network of protected areas; low financial and human resources for the management of protected areas and of the species and habitats of community interest; • Limited number of management plans for the protected areas; • Lack of intersectorial communication and of collaboration for the management of the natural resources and of the environment.
<p>OPPORTUNITIES</p>	<p>THREATS</p>
<p>Use of EU funds as an important contribution to the improvement of the environment standards in Romania;</p> <ul style="list-style-type: none"> • Increase of the standards of living and of the economic opportunities by providing quality public services, by remedying the polluted sites and by reducing the risks of natural disasters; • Decentralisation concerning the management of environment programs; • Apply the principle of partnership in 	<p>Low capacity of the final beneficiaries/local authorities to elaborate project proposals;</p> <ul style="list-style-type: none"> • Organisation, political and financial difficulties determined by the process of regionalisation; • Non-compliance with the requirements of EU Directives for the water sector in the case of a low absorption of EU funds due to the complex process of project preparation and management and due to costly co-

<p>the decision-making process for environmental protection;</p> <ul style="list-style-type: none"> • Development of long-term investment plans under conditions of sustainable development; • Implementation of the legislation to introduce the best available technologies in environmental infrastructure, to increase the efficiency of resources and energy utilisation; • Reduce the discrepancies between regions and between villages and towns; • Improved performance of the operators of public services; • Opportunities for private investments and for trade; • Approach in the life cycle of the product within the context of integrated waste management; • Development of a viable recycling market for the wastes/raw materials resulting from waste processing; • Introduction of the renewable energy resources; • Development of public-private partnerships for the environment sector; • Development of the ecologic tourism. 	<p>financing;</p> <ul style="list-style-type: none"> • Difficulties in supporting the investment costs for the projects of environmental infrastructure, particularly by the small and average-size communities; • Increased pressure on biodiversity and air quality in correlation with the economic growth; • Inefficiency of short- and average-term investments to reduce the risks of Natural disasters that may cause important material and human damage; • Availability of land for the development of environmental infrastructure; • Inadequate utilisation of EU funds, without considering the possible effects on the environment and biodiversity, for instance for the development of infrastructure that leads to habitat fragmentation.
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Source: *Ministry of the Environment and Water Management, POS Environment, April 2006*

For the efficient usage of natural resources and biodiversity protection, Romania aims the reducing by 2010, of the actual rate regarding the losses of biological diversity through the development of clean production methods, inclusively the usage of eco-efficient materials.

3.2 Promotion and implementation

Generally, there should be very clearly defined and delimited, what are the public goods and the private ones, because the access to these goods and services are guided after specific regulations, and themselves can lead to a more judicious land planning and resource management.

The establishing of some effective environmental objectives should allow that the advantages obtained from their achievement to compensate all losses in

production and consumption of some goods and services less important than others.

On the other hand it is expected that the general wealth to reflect the quality environmental level reached having in view the technologies of the moment and the society preferences for all goods and services.

Impact: avoiding over exploitations on public lands and even private; increasing the interest for sustainable valorification of renewable resources from properties, accepting the conservation servitudes and supplying some rewarded public services.

For the moment there is no strategy for biosafety, especially related to the use of genetically modified organisms (GMO), although there is a regulation system for GMOs starting with 2000. At this stage Romania has the facilities to develop in cooperation with third parties GMOs with important economic value.

We do not have yet the capacity needed for development and taking full advantage of the products of modern biotechnology. Important human and institutional resources for biotechnology are mostly located in research-development academia and institutes: Institute of Biochemistry, Romanian Academy; Institute of Virology „Ștefan Nicolau” Bucharest, Institute of Biology, Romanian Academy, Institute of Genetics and the Faculty of Biology, Bucharest University; University of Agricultural Sciences and Veterinary Medicine Timișoara, University „Babeș-Bolyai” Cluj Napoca and University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca.

These institutes are not supported in obtaining facilities anyway by the Government.

The State Institute for Testing and Registering Varieties has the capacity and ability to test and register varieties and hybrids of genetically modified plants. Romania has no accredited laboratories for GMOs analysis.

The research in the private sector is almost absent.

3.3 Measures against global warming

The Romania's climate is temperate-continental of the transitory type, being marked by eastern, oceanic, scandinavian-baltic, sub-mediterranean and pontic influences. The continental influences behave in some areas of the country, in well-differentiated climate tendencies.

Thus, in Banat and Oltenia, the Mediterranean tendency is present, featured by smooth winters and a richer pluviometrical regime (especially in autumn).

In Dobrogea, there is a pontic tendency, by rare and yet torrential rains.

The Northern part of the country (Maramureş and Bucovina) experiences the effects of the Scandinavian-Baltic tendency, having a cooler and more humid climate with nippy winters, and the West of the country is influenced by the oceanic climate, with rather moderate temperatures and richer precipitations.

The annual precipitations decrease in intensity from West to East: over 600 mm in the Western Plain and less than 500 mm in the Romanian Eastern Plain, under 450 mm in Dobrogea and approximately 350 mm on the seaside, while in the mountain areas they reach 1,000-1,500 mm.

The aim of evaluating the impact of the atmospheric pollutants over the environment is to identify and quantify the potential consequences it has on it. In order to better understand this impact, it is imposed to collect, change and disseminate the information on air quality.

The evaluation of the impact of atmospheric pollutants over the environment is done by:

- ❖ Estimating the emissions of pollutants by performing the inventory of emissions, measurements of the emissions and/or shaping of the dispersion of atmospheric pollutants;
- ❖ Monitoring the air quality in order to know the effects of these emissions over the population's health and ecosystems.
- ❖ Estimating the annual emissions of atmospheric pollutants represents the first step in establishing the impact of these pollutants over the environment.

The air quality in Romania has been monitored by hourly or daily measures in 51 measuring stations, out of which 23 are part of the automatic air quality monitoring network.

The National Air Quality Monitoring Network includes the following types of stations:

- Stations for evaluating the influence of traffic on the air quality;
- Stations for evaluating the influence of the industrial activities on the air quality;
- Stations for evaluating the influence of the "urban establishments" on the air quality;

The average concentrations of the pollutants monitored in the urban congestions, by types of stations, indicate a slightly favourable evolution of the air quality, except for the nitrogen oxides, which it can be explained by the increase in the traffic volume, the main source of pollution affecting the air quality in the monitored perimeters.

The climatic changers observed for a comparable time period represent the direct or indirect result of the human activities which determine the change of the global atmosphere composition which is added to the natural variability of the climate.

The greenhouse effect is due to the selective absorption by the molecules of all greenhouse gases of the thermal radiation emitted by Earth and its isotropic reemission into the atmospheric space, as well as towards the Earth.

The infrared radiation reemitted towards the Earth contributes to heating the low atmosphere and implicitly the planet.

By increasing the gas concentrations, the greenhouse effect is intensified, the energy transport and the humidity in the system is disturbed, a fact determining unbalances in the climatic system.

The phenomenon of global warming influences the physical systems as well as the biological ones.

Among the direct effects there may be mentioned: increase of the global average temperature with significant oscillations at a regional level, reduction of the glacial domes and implicitly the increase of the planetary ocean level, change in the hydro-logical cycle, augmentation of the arid areas, changes in the development of seasons, increase of the frequency and enhancement of the extreme meteorological phenomena, reduction of the biodiversity etc.

It is recommended the necessity of establishing policies and measures for reducing the greenhouse gas emissions (carbon dioxide, methane, nitrogen protoxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride – regulated by the Kyoto Protocol), as when lacking these measures, the increase of the global temperature shall be by 0.2 degrees Celsius in each of the following three decades.

2010, needs the reduction of the greenhouse gas emissions of at least 50% compared to the current level, by 2050. Estimation of the impact of climatic changes into the climate in Romania was accomplished by a study of the Romanian Academy where various General Circulation Models of the atmosphere were selected, which best reflect the conditions in our country. According to the results generated by these patterns, under the conditions of doubling the CO₂ concentration in the atmosphere is expected for the decades to come, an increase of the average global temperature ranged between 2.4 and 7.4oC.

The forecasted temperature changes shall be manifested regionally and locally and shall influence the ecosystems, human establishments and the infrastructure.

The climatic changes shall affect all sectors of the economy, shall lead to changing the periods of vegetation and displacing the limiting lines between forests and grass lands.

The extreme meteorological events (storms, floods, droughts) will be more frequent, and the related risks and damages may become even more significant. The areas affected by droughts in Romania have extended in the past decades, the most exposed ones being in the South-East of the country, the entire country being affected by prolonged drought.

Along with the floods, the long periods of drought lead to significant economical losses in agriculture, transportations, energy supply, water management, health, as well as in the activity within the households.

In order to analyse the potential consequences on the agricultural productivity for the main crops in Romania, several agro-meteorological models were used.

Out of the country's surface, 26.7% represent the surface covered by forests; they are unevenly spread on the territory of the country (58.5% in the mountain area, 27.3% in the hilly area and 6.7% in the plain area).

The surface of the stock of wood is of 6 366 888 hectares, out of which 6 249 236 hectares represent forests, and 117 652 hectares is destined to forest culture, production and management. In the lower and hilly forested areas, a considerable drop is forecasted for the productivity of forests, after 2040, due to the increase of the temperatures and decrease of the precipitation volume.

The hydrological consequences of the increase in the CO₂ concentration in the atmosphere are significant.

The industrial, commercial, residential and infrastructure sectors (including the supplies with power and water, the transportations and disposal of wastes) are vulnerable to the climatic changes, in various ways.

These sectors are directly affected by the change in the temperature and precipitation regime or indirectly by the general impact.

The sectors most vulnerable to the effects of the climatic changes are the constructions, transportations, oil and gas exploitations, tourism and industries found in the coastal areas. Other sectors potentially affected are food industry, wood processing, textile industry, biomass and renewable energy production. Romania has rectified the United Nations Framework Convention on Climate Changes (UNFCCC), by committing to accomplish its aim: "to stabilise the greenhouse gas concentrations in the atmosphere at a level which would prevent the anthropic harmful perturbation of the climatic system, a level that must be reached in a sufficient time interval allowing the ecosystems to naturally adapt to climate changes, so that food production would not be threatened, and economical development would be performed in a durable manner". Romania has also ratified the Kyoto Protocol by Law no. 3/2001, assuming stronger engagements than stabilising the greenhouse gas emissions, namely setting some clear measures, aims and periods for reducing the greenhouse gas emissions.

Thusly, the value of the engagement of reducing the greenhouse gas emissions for the period 2008–2012 is of 8% compared to the base year 1989, in order to harmonise with the measures of the European Union, of reducing the greenhouse gas effects by the same percentage.

During 2004-2008, a series of actions have been implemented, having as aim: the improvement of the national system for estimating the greenhouse gas effects and of the national inventory, implementing the scheme of commercialising the certificates of green-house gas emissions and elaborating the National Allocation Plan, functioning of the national register, elaborating the Guide on adaptation to the effects of the climatic changes, continuing the participation to the flexible mechanisms stipulated by the Kyoto Protocol, making the public aware with regards to the impact and adaptation to the climatic changes. By establishing the National System for estimating the level of anthropic green-house gas emissions resulted from sources or from restraint by distaining the carbon dioxide (SNEEGHG), the attributions and collaboration way have been set between the institutions involved in this process, as well as the data necessary to create the reports, the procedural stages concerning the estimation of the level of anthropic greenhouse gas emissions, reporting, processing, recording and storing the data comprised within the National Inventory of Greenhouse Gas Emissions (NIGGE). The aim of SNEEGHG administrated by the National Agency for the Environmental Protection is to provide the NIGGE transparency, consistency, comparability, the full character and accuracy, as well as to comply with the stipulations and commitments Romania has assumed under the Kyoto Protocol and/or stipulated by the community legislation in force regarding the estimation of the level of anthropic greenhouse gas emissions resulted from sources or from restraint by distaining the carbon dioxide.

Romania's last NIGGE was transmitted in 2008 and contains the estimations of the levels of anthropic greenhouse gas emissions resulted from sources or from restraint by distaining the carbon dioxide for each year of the period between 1989 – 2006.

Based on these observations, there is thusly a probability that Romania shall comply with the commitments of reducing the greenhouse gas emissions during the first period of the engagement, 2008 – 2012, without additional measures of reducing the emissions. Some intensive energetic industries have reduced the activities and this has been reflected in the reduction of the greenhouse gas emissions.

The sectors for which the levels of/restraint by distaining greenhouse gas emissions were estimated are: the energetic sector, industrial processing, use of solvents and other products, agriculture, land use, land-use change and forestry (abbreviated LULUCF), waste sector.

The country has a substantial capacity to implement the CBD, and has undertaken some assessments of capacity gaps. Between 2004 and 2005, with UNDP GEF support, a National Capacity Self-Assessment process was implemented. The NCSA Final Report contains capacity development Action Plans for each UN convention and a Joint Action Plan for all three, specifying 25 priority objectives and actions, under the seven priority themes.

Among the CBD Thematic Assessment Recommendations, priority is given to addressing institutional fragmentation through streamlining and clearer definition of mandates and responsibilities, especially for protected areas; the need to improve inter-ministerial communication on biodiversity-related issues; and the need to adopt a more integrated approach to biodiversity and other environmental and sectoral issues.

However, these assessments have been largely cross-cutting in nature, looking into the common issues of institutional set up and policy and legislative frameworks.

Therefore there remains a need to undertake more detailed assessments of capacity needs in areas solely related to implementation of the CBD, which will be undertaken through this project.

Such specific issues as in-situ and ex-situ conservation will constitute one of the main focuses of the needs assessment exercise in the framework of this project.

3.4 Ecological sustainable tourism

To prevent the adverse environmental impact of tourism activities, the areas have been identified where the pressure of tourism at peak season can exceed the support capacity by increasing the amount of house waste water, road traffic and implicitly of the car emissions and noise levels.

Table 12 Taxes paid by the tourism industry

Taxes paid by the tourism industry			
Dues for renting, franchising or leasing	To build the infrastructure needed by tourism, the suppliers of tourist services	This is a certain and constant income from the suppliers of tourist services	The tourists usually don-t know these payment dues because they affect directly

	must rent, franchise or lease land	The supply of tourist services can be thus sized as to limit the impact of tourism	only the suppliers of tourist services The industry of tourism tends to invest in “cheaper” destinations, particularly in situations of deflation
Taxes for damages to the environment (effects of tourism activities)	If the tourism activities are accountable for ecological damages such as water pollution, for instance, payments are demanded to amend the consequences (according to the principle the polluter pays)	These taxes can diminish the environmental impact of tourism This design can be implemented in combination with fines The design shows clearly the principle “the polluter pays”	The actual payments are usually much too small to cover the costs of damages remediation The design doesn't bring a regular income The income is quite low The income increases with the damages
Measures to compensate for the affected area (for effects due to constructions)	The tourism infrastructure often requires large land areas. To compensate for landscape destruction and for the destruction of the ecological functions, “in kind” rewards may be asked, such as the establishment of new biotopes or the expansion of	The area where such measures are enforced is protected from long-term intensive utilisation This design is often used when construction licenses are granted The design reflects the principle “the	This is not a way to create regular additional incomes that can be used for conservation projects In practice, the companies making investments try to avoid expenses for compensatory measures or keep them as low as possible

	the already existing ones	polluter pays”	
Tariffs paid by tourists			
Admission tickets	The tourists pay to enter a protected area	<p>This design brings regular and certain incomes for the protected areas and can be cashed by the management unit of each protected area</p> <p>These tariffs contribute to increasing tourist awareness on the value of nature and of the objectives and measures for nature preservation</p> <p>The cost of the admission tickets for attractive landscapes are accepted by tourists</p> <p>Implementation is quite easy even if, sometimes, there are legislative obstacles</p> <p>The admission tickets limit the tourist number, which reduces the environmental impact of tourism</p>	<p>The admission tickets can exclude some social groups, which are target groups for environmental education, such as the families with children. In such situations the price should be adapted accordingly.</p> <p>The incomes increase with the tourist number. The increase of tourist number tends to increase/stress the adverse environmental impact and to add to the management costs of the protected areas</p>

<p>Additional tariffs for specific attractions</p>	<p>The management of a natural area requires additional payments to arrange or to keep specific attractions such as exhibitions or scenic spots (belvedere spots)</p>	<p>Generally, substantial additional incomes are thus generated</p> <p>The acceptance is generally high</p> <p>Implementation is not hindered by major obstacles</p> <p>The tickets limit the tourist number and therefore alleviate the environmental impact of tourism</p>	<p>Often, the income hardly cover the cost for the required additional tourism infrastructure</p> <p>Particularly, the personnel costs are not covered</p>
<p>Permits</p>	<p>The tourists pay to obtain a permit for special activities in protected areas, such as climbing or navigating</p>	<p>The design allows the tourists to use the protected area for sport or for other activities and is, therefore, accepted by tourists</p> <p>The demanded amounts limit the activities in the protected area and, implicitly, the general environmental impact</p> <p>The tourists become more aware on the potential damages they can cause</p>	<p>If the permit price is too high, the tourists will choose sites outside the protected area. Therefore, payments are usually too low to support nature conservation projects</p> <p>They are hardly accepted by conservationists due to their potential of environmental depreciation, for instance destruction of vegetation, disturbance of the fauna</p>

			The implementation of such measures demands additional administrative effort, infrastructure and control mechanisms
Voluntary contributions			
Donations: Cash; Materials; Inheritance;	Many protected and natural areas depend on donations. Usually, they are not collected by the protected area, but rather in collaboration with associations or "groups of friends". The donors can be contacted by mail, advertisements, donation boxes	Tourists may decide voluntarily whether to contribute or not to the conservation of a protected area Income level is only partially dependent on the tourist number in the area	The incomes depend on the economic situation of the donors and on the way they are contacted, for instance, the donation boxes gather little money Donations are seasonal, most coming on Christmas or on Easter Additional administrative infrastructure required
Eco-sponsoring / Funds	Cooperation between the tourism industry and the environmental organisations is mutually advantageous: for instance, the donations for	The social and ecological projects are often sponsored by companies Tourist business support the projects with regular amounts	The projects rely much on the sponsor and they fail if sponsoring ends On the other hand, such projects wouldn't have been

	nature conservation and improvement of tourism image	of money or with materials No problems with acceptance by tourists	possible without the support of sponsors The sponsors prefer to pay specific projects rather than general maintenance costs
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The Ministry of Environment is the body of the central public administration specialized and with responsibility for establishing, promoting and application of the Governmental strategy in the field of management of the water, forest and environmental protection.

At Ministry's orders, under authority or coordinate by the Ministry are the following entities:

- **Entities at Ministry of Environment's orders:**
 - ❖ *Public insititutions financed by budget of the central state administration, with a legal identity:*
 - ❖ 42 Environmental Protection Agencies at County level, decentralized public duties;
 - ❖ Administration of the "Danube Delta" Biosphere Reserve.
 - ❖ *Entitie for documentation and information, with a legal identity and extra-budgetary financed*
- **Entities under Ministry of Environment authority:**
 - National Company "Romanian Waters";
 - National Company of Forests;
 - National Company "National Institute of Meteorology, Hidrology and Waters Management".
- **Scientific research entities coordonate by the Ministry of Environment**, with a legal identity and extra-budgetary financed :
 - National Institute of Research-Development for Environmental Protection, Bucharest;
 - "Grigore Antipa" National Institute of Research-Development, Constanța;
 - "Danube Delta" National Institute of Research-Development, Tulcea.

Within the Ministry of Environment operating the Directorate of Nature Protection.

At local level this is represented by similar departments under the territorial Environmental Protection Agencies with functions regarding the activities of biological diversity conservation and sustainable use of its components.

This directorate have the following main prerogatives and responsibilities:

- coordinating the activity of nature conservation, elaborating the policies and the strategies for biological diversity conservation and sustainable use of its components;
- coordinating the management of the protected areas and natural monuments, by the territorial Environmental Protection Agencies;
- funding, elaborate and propose for enforcement or promotion, in cooperation with Romanian Academy, measures and normative acts for biological diversity conservation and for management of the National Network of Protected Areas;
- propose the normative acts projects for including in the National Network of other protected areas or natural monuments which justifies it, together with Romanian Academy and specialized institutes;
- participate at the approval of the ecological impact studies and assessments for the works of planning use, of the investments and of exploitation of some natural resources, in respect with the conservation of the natural habitats and species diversity;
- elaborate, publish, up-date and distribute the “Protected Areas and natural Monuments Catalogue” and “Red List of national endangered plants and animals species” together with the Romanian Academy;
- acting for applying the legal measures concerning the sustainable use of the components of biological diversity;
- propose and coordinate, technique and scientific, elaborate the research programs for knowledge and assessment the state of the natural habitats, wild species and other goods of the national natural heritage, financed by budget of the central state administration or other sources;
- funding and acting for developed the special projects on protection, conservation and rehabilitation/reconstruction of the natural habitats and species diversity;
- ensure and survey the enforcement of the provisions and recommendations stipulate in the international conventions and agreements in the nature conservation field;
- represent the technique and scientific secretariat for the international conventions and agreements in the nature conservation field.

In the field of the nature conservation, the Environmental Protection Agencies have the following main prerogatives and responsibilities:

- ❖ knowledge of the areas of the plant and animal species from the wild flora and fauna and enforcement the necessary measures for their protection and conservation within the County territory;
- ❖ periodical assessing, surveying and analyzed the state of the protected areas and natural monuments within the County territory;

- ❖ ensure, coordinate and survey enforcement of the natural monuments protected areas management plans;
- ❖ authorized, at the request of the natural and juridical persons, harvesting of the plants and animals from wild flora and fauna, according with the legal provisions and with the ability decided by the ministry;
- ❖ collaborate with the territorial authority responsible with the agriculture and forestry, and other local administration authorities for keep record of the deteriorated lands, as well as setting up the protection curtains, in concordance with the law on land fund;
- ❖ identify the affected aquatic and terrestrial areas, requested and analyzed the proposals for their ecological reconstruction and approved this projects;
- ❖ analyzed and approved point a view of biological diversity conservation, the studies elaborated aimed authorized the economic and social activities, within the County territory.

CHAPTER 4 - Progress in the implementation of the 2010 Biodiversity Target and the Strategic Plan for the CBD

4.1 Progress towards the 2010 Biodiversity Target

Romania uses three main national databases for biodiversity: BIMS (Biodiversity Information Management System), IBIS and Nature 2000. BIMS was established in 2003, as part of the GEF/World Bank “Biodiversity Conservation Management” project and is collecting all available data generated by the biodiversity projects. BIMS was established in order to encourage the digital information exchange and partnerships.

The data stored in BIMS is used to support the decision-making at the Ministry of Environment.

Through the Phare project CBC “*Protection of the Danube – a pilot project for Cama Dinu islet*” an inventory of species and habitats along the Danube River bordering Romania and Bulgaria was undertaken.

The Integrated Biodiversity Information System (IBIS) was developed based on the BIMS. IBIS-Web is the Internet web portal for presenting biodiversity data and communicating the project results (e.g. documents, progress reports and web-based maps).

Nature 2000 informational system was structured in a way that it can provide necessary information for the evaluation of the Nature 2000 network and make the process disclosed to multiple users. It also provides for a platform to exchange views by submitting comments on-line and different individual records, data analysis, verification, validation and public consultation on sites selections.

4.2 Progress towards the goals and objectives of the Strategic Plan for the CBD

National Plan of Development (PND) 2007-2013

The strategic directions of **Priority 3** of **PND**, protection and improvement of environment quality, are in agreement with the long-term objectives of the Romanian policy of the environment and are based on the European Strategy for Sustainable Development, the 6th EU Program of Action for Environment and the Lisbon Agenda.

The Strategic Framework of PND is centred on the following directions: sustainable development of the natural values and improvement of environment quality; integration of the policy of environment protection within the regional and sectoral policies; protection and preservation of the natural patrimony; preservation of the biodiversity; reduction of disparities between regions and improvement of population access to public services; promote the education for environmental protection and the flow of information.

The Objectives are: consolidate environmental protection and reduce the adverse impact on the environment.

According to the horizontal objectives of PND 2007-2013 – sustainable development, equal opportunity and promote the information society – country development must have a sustainable character from the economic, social and environment protection points of view. Romania will use in an efficient and responsible manner its natural resources and will take actions to reduce the amount of produced waste and to develop waste management, to improve pollution prevention and control and to develop agricultural and fishery processes and systems.

Internationally funded large projects on-going or completed recently:

Implementing the Nature 2000 Ecological Network in Romania (MATRA, 2004-2006).

Taking into account the present status of the Romanian biological diversity and the European provisions for nature conservation was established the following priority objectives:

-
- Development of the legislative framework and strengthening the institutional capacity for biological diversity conservation and sustainable use of its components.
 - Organisation of the national network of protected areas and ensuring their efficient and adequate management for the natural habitats protection and biological diversity conservation.
 - Conservation of threatened, endemic, and/or rare species with a high economic value “in situ” and “ex-situ”.
 - The integration of the National Strategy for the Biological Diversity Conservation and Sustainable Use of its Components within the National Strategy, as well as within the departmental and local strategies, plans, programmes and policies for the national and local sustainable development.
 - The protection, conservation and restoration of the terrestrial and aquatic biological diversity outside protected areas through (a) reducing the negative impacts of pollution, natural resources overexploitation and inappropriate land-use practices and (b) restoring altered ecosystems and habitats.
 - Protection, conservation and restoration of the biological diversity specific to agro-systems through the implementation of the technologies which favour sustainable agriculture.
 - Training specialists and the general population in the spirit and techniques of biological diversity conservation and sustainable use of its components.
 - Involvement of NGOs and local communities in programmes and actions for biological diversity protection, conservation and restoration.
 - Conducting of special research and monitoring programmes for improving the knowledge of the biological diversity status.

CHAPTER 5 – Conclusions

However, it is important to mention that all these documents of strategic planning are currently little coordinated and correlated among them, some areas/problems being covered by an impressive number of strategies, plans of action, programs and projects, while other areas/problems are rather neglected.

Priorities

- General measures for conservation and sustainable use;
- Establishment of the Clearing House Mechanism and enhancement of Romania's participation in CHM including biodiversity information systems;
- Assessment and monitoring programmes;
- Sustainable use of components of biological diversity;
- *In-situ* conservation;
- Incentive measures;
- Research and training;
- Public education and awareness;
- Impact assessment and minimizing adverse impacts.

There are many data or clues that lead us to the conclusion that on the territory of our country there are still unprotected areas that conserve elements of flora and fauna, rare, vulnerable and/or endangered of national or community interest that should deserve to be protected.

What is missing, and this lack is acute, is the detailed knowledge, for the whole country, of the distribution and abundance of plants and animals species included to the categories above mentioned.

Achieving a database upon the country is not a goal in itself as it must have a finality – that of bringing arguments for setting under the protection of law the areas/ecosystems that consists of floristic and/or faunal elements valuable considering their biological and bio-geographical significance, maybe even with the thought of the possibility they become in the future potential resources with economical value.

Primary Objective

- ❖ Conservation of the natural habitats and wild flora and fauna species;
- ❖ Economic development strategies which integrate objectives of the National Strategy for Biological Diversity Conservation;
- ❖ Conservation and enhancement of biological diversity by the reduction of the negative impacts as well as the ecological restoration of altered ecosystems and habitats;

- ❖ Protection, conservation and restoration of the biological diversity specific to agro-systems through the implementation of the technologies which favour sustainable agriculture;
- ❖ Specialists and general population trained and educated in biological diversity conservation principles;
- ❖ Participating of NGOs and local communities in programmes for biological diversity conservation;
- ❖ Special research and development programmes for biological diversity conservation.

Major Activities

- ❖ Setting up the Green Corridor in the inferior basin of Danube;
- ❖ Organization of the Protected Areas National Network in order to cover all the types of ecosystems and habitats, and all the plant and wild animal species which are of special interest;
- ❖ Organisation of the network for the conservation of genetic resources of flora and wild fauna outside the protected areas;
- ❖ Revision of the technologies and management of biological resources in concordance with the objectives for biological diversity conservation;
- ❖ Implementation of new management systems and alternative technologies which conserve biological diversity;
- ❖ Establishment of criteria and indicators for biological diversity monitoring of economic sectors extracting and using natural resources;
- ❖ Prohibition of the unselective use of pesticides as well as the promotion of biological pest control;
- ❖ Identifying and ecologically reconstruction of ecosystems degraded by over-exploitation, pollution etc;
- ❖ Restoration of vegetation clusters and the creation of protective curtains on arable lands;
- ❖ Inventory and mapping of arable lands non-profitable for intensive exploitation;
- ❖ Elaboration of projects to enhance biological diversity on arable lands whose use has been changed (SAPARD) ;
- ❖ Reconstruction of arable lands that are no longer used to enhance biological diversity and promoting the biotechnology to conserve the biological diversity in the agriculture systems (SAPARD) ;
- ❖ Creation of a centre for professional training of specialists who will work in the biological diversity conservation field;
- ❖ Organising the education of the population in biological diversity conservation principles through mass media;
- ❖ Publishing materials for biological diversity conservation;

- ❖ Elaboration of economic instruments that can involve local communities in biological diversity conservation;
- ❖ Involvement of NGOs and local communities in the implementation of management projects for the protected areas;
- ❖ Involvement of NGOs in monitoring biological diversity;
- ❖ Development of a national programme for research on ecological, species and genetic biological diversity;
- ❖ Conduct research regarding the necessary density and structure of green corridors;
- ❖ Assessment of biological diversity in areas insufficiently or not at all studied
- ❖ Development of research for the elaboration of new systems and technologies for a sustainable management of biological resources needed to ensure biological diversity conservation;
- ❖ Research for the elaboration of measures to intervene in the protected areas in order to maintain biological diversity.

Target Outputs

- “In situ” conservation of the wild species and of the natural habitats;
- “Ex situ” conservation of the species;
- Conservation of biological diversity;
- Monitoring of biological diversity;
- Prevention of the decline in biological diversity;
- Conservation and reconstruction of biological diversity;
- Enhancement of biological diversity;
- Monitoring of biological diversity in agriculture systems;
- Restoration of biological diversity in degraded habitats;
- Restoration of biological diversity;
- Specialist training;
- Awareness and informing of the population;
- Up-dating the state of the natural capital, elaborating the Red Book of wild flora and fauna species and designating the protected areas;
- Up-dating the state of the natural capital;
- Evaluate the state of the natural capital.

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Abbreviations and acronyms

AWP	Annual Work Plan
BIMS	Biodiversity Information Management System
CBD	Convention on Biological Diversity
CHM	Clearing House Mechanism
COP	Conference of the Parties
EA	Enabling Activities
EC	European Commission

EIA	Environmental Impact Assessment
GEF	Global Environmental Facility
IBIS	Integrated Biodiversity Information System
IUCN	International Union for Conservation of Nature
MESD	Ministry of Environment and Sustainable Development
NBSAP	National Biodiversity Strategy and Action Plan
NCSA	National Capacity Self Assessment
NEA	National Executing Agency
NGO	Non-Governmental Organization
NSC	National Steering Committee
PM	Project manager
PMU	Protected Management Unit
UNCCD	United Nations Convention on Climate Change
UNDP	United Nations Development Programme
UNDP-CO	United Nations Development Programme Country Office
UNFCCC	United Nations Framework Convention on Climate Change