

The National Strategy and Action Plan for Biodiversity Conservation and Sustainable Use of its Components

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[1 Synopsis](#)

The following document is the result of an eight month process of identification of important features of Romania biodiversity, identification of the major threats to biodiversity and the establishment of priority actions to address these threats. In the first phase of this process of preparing a National Biodiversity Strategy, four working groups prepared thematic papers on different aspects of biodiversity conservation ((1) aquatic, wetlands and coastal ecosystems, (2) forests and grasslands, (3) agricultural ecosystems and (4) legal and institutional issues). Each of the thematic papers proposed a number of strategic recommendations and actions. These recommendations were then reviewed in a workshop by a wide variety of stakeholders and experts (see Appendix 1 for a list) and agreement was then reached on priority strategy needs and actions. Participants also contributed to a draft biodiversity strategy document (a synthesis of the four thematic papers) which, together with priority recommendations of the workshop are contained in this "The National Strategy and Action Plan for Biodiversity Conservation and Sustainable Use of its Components".

The document describes the elements and importance of Romanian biological diversity and proposes action needed to ensure that these natural values are retained for future generations and for the sustainable development in Romania.

[2 Executive Summary](#)

Romania is a country with rich biodiversity (ecosystems, species and genetic diversity) and a high percentage of natural ecosystems - 47% of the land area of the country is covered with natural and semi-natural ecosystems. 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 60% and 40% of all European brown bears and wolves, respectively. Europe's largest wetland, the Danube Delta, also lies predominantly in Romania. Major grasslands, caves, and an extensive network of rivers, add to the ecosystem richness.

Important for Romania as well as for all Europe, is that the territory of Romania is a meeting point between biogeographic regions - between arctic, alpine, west and central European, pannonic, pontic, balkanic, submediterranean and even eastern colchic, Caucasian and turanic-iranian regions. The high level of geographic diversity in Romania and the consequence of its location as a biological meeting place, has produced a floral diversity that includes over 3,700 species and a fauna diversity estimated to be more than 33,802 species. These figures include a large number of endemic and subendemic plants (228) and animals (1,000) specifically adapted to local conditions and only found in Romania. Species that once

thrived in many parts of Europe are now only found in Romania or found in Romania in large or significant populations.

Although rich in biological resources and important as a corridor for the movement of species (biogenetic material), Romania has suffered the consequence of human activity. Pollution, the damming of rivers, hydrological works, industrial agriculture, overexploitation of natural resources, among other factors, have all taken their toll in decreasing biodiversity. Highly sensitive mountain ecosystems are also particularly threatened by inappropriate forms of tourism and associated infrastructure development. This trend is likely to increase if appropriate measures to reduce the effects of pollution and of economic pressures connected with the overexploitation of natural resources will not be undertaken.

Taking into account these significant problems, Romania has an active governmental and non-governmental commitment to reverse the trends of biodiversity loss. A large number of areas (4.8% of the country's land area) have been designated as protected areas. Romania has signed most international conventions and regional environmental agreements. However, a coordinated and effectively managed system of protected areas does not exist and institutional arrangements for nature conservation and protected area management have not yet been clearly defined. Consequently there is an urgent need to define lead responsibility, and to further develop the field capacity, to address the rapidly increasing and changing needs for protected areas management and biodiversity conservation.

In order to address these shortcomings Romania has embarked on a process of elaborating a Biodiversity Conservation Strategy and Action Plan. The priority actions listed in Box 1 have been agreed to the wide range of participants who have helped develop the Strategy and Action Plan.

Given the expanding pressure on natural resources and biodiversity within Romania, the Romanian Government has recognised that they must act now to protect these valuable resources for current and future generations.

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3.1 Overview

As a consequence of its geographical setting and the evolution of human society in the region, Romania has a unique and high level of biodiversity and intact ecological systems. The vast reed beds of the Danube Delta, the high density of large carnivores, and the extensive forests of the Carpathian mountains are some of the more significant and best known aspects of the biological riches of Romania. There are, however, less well known but nonetheless important

components and aspects to the biological diversity of the country. Perhaps of greatest importance is the country's role as a meeting place of ecological elements from differing bioregions and as a corridor for the movement of species and biodiversity.

In order to ensure the long-term conservation of this biodiversity it is necessary to develop and implement a national strategy and ensure coordinated management. The following document, prepared by a team of Romanian experts (see Appendix 1), describes the elements and importance of Romanian biological diversity and proposes actions needed to ensure that these natural values are retained for future generations and that they are utilised to ensure sustainable development.

3.2 Geographic Setting and Climate

Romania is located in Central Europe at an equal distance between the North Pole and Equator and at an equal distance between the Atlantic and Ural Mountains. The total area of the country is 23,839,100 ha. The elevation of the country varies significantly - the Danube Delta is located at sea level and the highest peaks of the Carpathian Mountains rise to over 2500 m.

In general Romania has a temperate climate with significant zonal aspects. Some regions have high humidity and low thermic amplitudes, dryer continental climate exists in other areas creating higher thermic amplitudes, while in the south and west the influence of the sub-Mediterranean warm and dry climate is felt. The average annual temperature is 8-10°C, with frosty winters (-3° to -4°C) and warm summers (21 to 22°C), and an average annual precipitation of between 400-600 mm. In Romania there is a major part of the existing soil types in Europe and varying levels of relief brought about by underlying volcanic, sedimentary, and metamorphic rocks. The biomes that existed on the country territory, prior to human modification, consisted primarily of forests (77%), steppe grasslands (16%), aquatic ecosystems and wetlands (5.8%) and alpine and subalpine ecosystems (1.2%).

3.3 Romania as Biological Meeting Place

Significant about Romania is that it is a meeting point between biogeographic regions - between arctic, alpine, west and central European, pannonic, pontic, balkanic, submediterranean and even eastern colchic, Caucasian and turanic-iranian. The biodiversity therefore contains components that are eastern (Caucasian/pontic), northern (boreal), southern (Mediterranean and Balkanic), and western (continental european and panonic).

Important about the biodiversity of Romania is that it is a major meeting place of ecosystems from each point of the compass. The steppe xerophyllous, halophyllous, psamophyllous grassland ecosystems and the xerophyllous bush ecosystems have a direct linkage in the east with the steppe ecosystems from Moldavia and Ukraine.

The silvosteppe ecosystems can be found in the east in Moldovia, in the south in Bulgaria, in the west in Hungary and Yugoslavia. The xerotherme broad-leaved forest ecosystems reflects the presence in the north of similar ecosystems from Bulgaria and Yugoslavia. The mesophyllous broad-leaved forest ecosystems have very strong linkages with the forests from the peripheral hills from the Pannonian Plains in Hungary, from Slovakia, the Czech Republic, Poland, the mountainous Ukraine and also from the Yugoslavian and Bulgarian

mountains.

The boreal spruce and larch forest ecosystems are common in the entire Carpathian chain and can be found in Ukraine, Poland, Slovakia but also in the mountains from the Balkanic Peninsula. The alpine and subalpine grasslands and bushes have linkages both to the north in the Carpathian chain from the neighbouring countries and in the mountains from the Balkanic peninsula.

In most cases while the forest and grassland ecosystems from neighbouring countries are similar in general structure they differ in abundance and composition of elements of flora and fauna. Romania is a meeting place of each of these ecosystems and a territory through which many species have spread their distribution. The largely unbroken Carpathian mountain chain and the Danube river and its tributaries are particularly important in providing a corridor for the spread of biodiversity.

3.4 Ecosystem Diversity

The extensive range of ecosystems types in Romania is largely the result of the influence of climate and elevation. Of major importance in affecting ecological conditions are the Carpathian mountains, 60% of which are in Romania. In total 17 major terrestrial ecosystem formations exist including all the major ecosystem types existing in Europe (see Appendix 2). There is also a rich diversity of aquatic ecosystems including river floodplains, glacial lakes, coastal wetlands, bogs, and mountain rivers. Map 2 depicts the 22 ecoregions identified in Romania.

In the more humid regions, at lower altitudes (up to 300 m), broad-leaved forest are predominant. In the less humid climate there are the steppe grasslands, and in the mixing zone between the two regions there is a zone of silvosteppe containing a mix of forests and grasslands. The elevation change brought about by the Carpathian mountains brings an abundance of biogeographical zones which include four main types; the nemoral - with broad-leaved forests, boreal (horizontal) with coniferous forests, subalpine (vertical), and alpine (vertical). This latter one contains grass and small bushes.

A rich hydrological network contributes to the enhancement of biodiversity (see Map 3). Over 1000 km of the Danube River and numerous tributaries flow through Romania. Where the river empties into the Black Sea the 580,000 ha Danube Delta (113,000 ha permanently covered by water) has been formed. This is the largest delta in Europe.

Romania also has a large portion of the Black Sea coast (228 km) and associated sand dune and coastal ecosystems. The over 8,000 caves, located primarily in the south-west of the country, add to the richness of the ecosystem diversity.

3.5 Species Diversity

Romania is rich in species diversity and in the quantity and quality of populations of various threatened and endangered species. In total about 3,700 species of higher plants exist in Romania. Among them, 23 species are declared as natural monuments, 74 species are extinct, 39 species are endangered, 171 species are vulnerable and 1,256 are rare species (according to the Red List of Higher Plants of Romania, elaborated by the Romanian Academy 1994).

Grassland species include 37% of the total species represented. About 600 species of algae and a total of over 700 species of marine and coastal plants exist. Only about 600 of these species are associated with human cultivation. A very high percent of the species of plants (4%) are endemic. In total there are 57 endemic taxa (species and subspecies) and 171 subendemic taxa (with their territory mostly in Romania). See Appendix 3.

Seventy-five percent of the endemic and subendemic species are found in the Carpathian mountains. *Andryala levitomentosa*, for example, can only be found in the Bistrita mountains, *Dianthus callizonus* only in Piatra Craiului, *Astragalus peterfii* only in Cluj county, *Draba dorneri* in Retezat mountains, and *Dianthus spiculifolius*, *Helictotrichon decorum* can be found in the entire Carpathian chain. The main endemic centres for plants are the Mountains of Rodna, Bistrita-Ceahlau, Bucegi-Piatra Craiului, Retezat-Godeanu, parts of these mountain massifs being declared as national parks.

Although Romania has a high level of plant diversity it is particularly important as a centre of population density for a variety of threatened and endangered animals. Of greatest significance is the high density of bears, wolves and lynx. The populations of these animals (which have been extirpated from most areas of Europe) are the highest of any country in Europe.

Originally wolves, bears and lynx were distributed over most of the European continent, However given the growth in human populations, human settlements, and livestock raising, the large carnivores were vigorously persecuted. In western Europe, large carnivores were, with few exceptions, decimated about 150 years ago.

About 40% of the European wolf population is found in Romania. Wolf (*Canis lupus*) populations exist in only four distinct areas of Europe, the northern Iberian peninsula (2,000), the Apennine and the Maritime Alps (400), the Dinarids (1,500) and the Carpathians (3,000).

Lynx populations (*Lynx lynx*) were eradicated from western Europe about 100 years ago. Reintroduction projects in Switzerland, Slovenia and the Czech Republic brought the species back into some areas of Central Europe in the seventies and eighties. The only healthy lynx populations in Europe, however, are in the Carpathians (1,000 - 1,500 individuals), Fennoscandinavia (more than 1,000) and in the Dinaric mountains (several hundreds). The Romanian population could therefore play an important role in preserving this species.

Brown bear (*Ursus arctos*) has also its population centre in Romania. Brown bears live today in four distinct European populations: Carpathians (about 6,000 individuals), Fennoscandinavia (about 1,300) and Dinaric Mountains (about 2,000). 60 % of the European brown bear population lives in Romania.

All three large carnivore species are a symbol for wild and natural habitats. Because of their ecological position at the top of the food pyramid they have a strong impact on the health of the ungulate community. A healthy ungulate population has in turn a large influence on plant communities and overall ecological health. The maintenance of a stable and healthy population of large carnivores in Romania provides a base for the repopulation of these species in other areas in Europe. A strategy for large carnivore protection in Europe is currently being developed by the World Wide Fund for Nature (WWF) and involves Romanian participation.

In addition to large mammals, Romania has over 33,802 other species, sub-species and varieties of animals, out of which 33,085 invertebrates and 717 vertebrates. The vertebrates comprise a number of 191 species of fish, out of which 9 are endangered, 20 amphibian species, out of which 9 are endangered, 30 species of reptiles, out of which 6 are endangered, 364 species of nesting and migratory birds out of which 2 have disappeared and 6 are endangered and 102 species of mammals, out of which 2 have disappeared and 2 are endangered. Only 24 vertebrate species are declared as Natural Monuments, benefiting of total protection.

Almost all the European population of Red-Breasted Goose (*Branta ruficolis*), for example, winters in Romania and a major portion of the European population of the world threatened Dalmatian Pelican (*Pelecanus crispus*) nests in the Danube Delta. Included in the insect fauna are 227 species specifically adapted to the underground life in caves - 97% of which are endemic. Of the total Romanian fauna over 1,000 species are considered endemic although the geographical distribution of many species is only poorly known.

Similar to the situation for plants, many animals are represented in Romania by subendemic species. This includes red deer (*Cervus elaphus montanus*), wild boar (*Sus scropha atilla*), European hare (*Lepus europeus transsilvanicus*), chamois (*Rupicapra rupicapra carapatica*), Willow Tit (*Parus montanus transilvanicus*). The main centres for the endemic fauna are located in the mountain massif of Rarau-Giumalau, Haghimasul-Mare, Fagaras, Paring, Cernei, Semenic, Almaj, Bihor. (See Appendix 4).

The Danube Delta and Black Sea coastal areas also have a particularly high level of endemic or subendemic species including 7 endemic fish species, 4 endemic mollusca, 21 endemic insects, subendemic sponges and a large number of worm, and crustacean species.

3.6 Genetic Diversity

In addition to being rich in species, Romania has a very high level of genetic diversity among many species because of varying habitat conditions. There are for example a large number of genotypes of Norway spruce, pine, beech, and oak. These genotypes have varying growth rates and resistance to disease and pests. *Picea abies*, *Larix decidua*, *Pinus nigra* are all represented by Carpathian races and there are distinct climatic types of *Quercus robur*, *Picea abies* and edaphic types of *Quercus robur*, *Q. petraea*, and *Fraxinus excelsior*. There is also generally a high level of intraspecific variation among insects within Romania.

3.7 Human Influence on the Landscape

Human activities have historically significantly modified the Romania landscape. These modifications have reduced the abundance of certain elements of the ecosystem (most notably steppe grasslands) and also added new components. Today arable land comprises 39.2% of the surface of the country and a large area of mesophyllous, hygrophyllous and xerophyllous secondary natural grasslands have been formed - primarily in the mountains and hills (see Map 4). The forests now are about one-third of their previous extent as a result of human activity. Although the forests have been reduced in area, they have retained a high level of natural species composition and quality. The area of wetlands has also been reduced to about

half of its previous extent. The loss of wetlands has been particularly dramatic along the Danube River where many wetlands have been converted to agricultural use.

3.8 Economically Important Species

All of the 58 species of autochthonous trees and at least 30 species of shrubs have an economical importance producing wood, resin, fruits, flowers, leaves and bark with medicinal character or representing honey sources. The spruce trees reach heights of 60 m and grow almost 10 cubic metres of wood annually/ha.

The beech grow in height up to 45 m and the pedunculate oak 40 m. Testing on the main tree species (spruce, fir, oak, common ash, maple, poplar and willow) has identified important genetic variation that is valuable in ensuring resistance to disease and pests. Of the 1,300 species of grassland plants, 175 have nutritional value, 70 species are medicinal and 180 are melliferous (important for honey).

Of the forest and grassland animals 12 species of mammals and 7 species of birds have economical importance as game species. This includes partridge, a variety of duck and geese, wild boar, red deer, and brown bear. Twenty-nine species of freshwater fish have economic value including pike, carp, zander, sturgeon, and perch. For many local populations the utilisation of biological resources continues to be important for their nutritional well-being and economic health.

4 [Threats to Romania's Biodiversity](#)

4.1 Overview

4.2 Pollution

4.3 Changes to the Hydrological Regime

4.4 Resource Extraction and Use and Changes in the Land Use

4.5 Future Directions of Resource Use

4.1 Overview

Although Romania is rich in biodiversity (particularly the large size and quality of valuable ecosystems and the quantity of some species) the country has suffered a progressive loss of biodiversity as a result of human activity. In particular, agriculture, industrial development, transportation and the expansion of cities have profoundly affected the biological diversity, both generally and locally. Pollution, alteration to river courses and hydrotechnical works, resource extraction and overexploitation of natural resources have been the principle factors involved.

In total it has been estimated, that in the last fifty years, there has been a permanent loss of 250,000 ha of forest and grassland ecosystems and that an additional 280,000 ha have been temporarily or only partially lost. A total of about 400,000 ha of wetland habitat (much of it along the Danube River) has been permanently or partially lost as well. It is important that this controllable loss of biodiversity is stopped and reversed.

4.2 Pollution

Air, water and soil pollution have been and continue to be major threats to biodiversity in Romania. Industrial pollution decreased in the first years of the economic transition

process due to significant reductions in industrial output. However, it can be expected that as the Romanian economy begins to grow, industrial pollution of air, water and soil will begin to rise again unless changes are undertaken by instituting new manufacturing processes or by installing pollution control equipment. Agriculture runoff is also a major pollutant factor in some areas.

Part of the interior waters which could sustain a rich biological diversity is polluted and Danube brings from the upstream countries a pollution level with negative impact upon the river's biological diversity, as well as delta and Black Sea. The high nutrient load of the Danube River has caused eutrophication in the Danube Delta lakes where macrophyte, molluscs, benthic and fish species have consequently been reduced. This is particularly damaging to fish population but also to marine mammals.

4.3 Changes to the Hydrological Regime

Among the most significant ecological changes that have taken place in Romania has been the alterations to the course of rivers and the building of hydrotechnical works. In most instances these actions have had major negative consequences for aquatic biocoenoses and caused the loss of natural ecosystems and terrestrial habitats, as well as the loss of ecological equilibrium of these ecosystems on a large scale. The loss of groundwater as a result of hydrotechnical works has, for example, produced the partial or total drying out of about 20,000 ha of forests.

The draining of wetlands was promoted by the previous government in order to create arable land for agriculture. This practice led to the loss of approximately 400,000 ha of floodplains, particularly along the Danube river and in the Danube Delta (80,000 ha). The embanking of the Danube and the building of the Portile de Fier dam has also had a major impact in destroying spawning areas and the breeding success of many fish species. Together with pollution this factor has led to a reduction of sturgeon harvest (50 times lower than previously reported) and carp (10 times lower than previously reported).

Building of dams on the Danube catchment area have reduced the sediment load to the Black Sea coast and caused the partial loss of some psamophyllous habitats. Reservoirs associated with dams in other areas have also reduced forest and grasslands surfaces by about 140,000 ha.

4.4 Resource Extraction and Use and Changes in the Land Use

Since 1989, given the economic difficulties experienced by many Romanians, the tendency has been to exploit as much as possible the natural resources available in order to generate quick incomes. There has therefore been considerable illegal extraction and gathering of forest resources, including the cutting of small fir trees, mushroom collection, medicinal herbs, aquatic animals, poaching and others.

Chamois in the Rodna mountains are now threatened with disappearance as a result of poaching and the impact of poaching on sturgeon species is considered significant in causing major population declines. In grasslands there has been a continuous deterioration due to the number of grazing animals without a consideration of carrying capacity or organisation of grazing cycles and rotations. Similarly there has been

considerable overexploitation of fish resources and exploitation of peat in some boreal habitats.

Forest management practices in Romania have not always been highly sensitive to protection and sustainable use of biological resources. In particular the overexploitation of wood in some areas, the selective extraction of economical (and ecologically) important trees, and the introduction of non--native species or non autochthonous (Douglas fir and Austrian pine) have negatively impacted biodiversity. It is generally accepted that these practices have reduced the quality of biodiversity on about 1,000,000 ha of land.

Although Romania is well known for its Black Sea coast and as a major Danube River country it can be said to be relatively poor in the availability of useable water resources. There are 37 billion cubic metres of water available annually on inland rivers of which only about 5 billion can be used. From the 8 billion cubic metres of underground waters only about 4 billion can be used. One of the major problems of water use in Romania is the inefficient distribution networks which have considerable leakage and reduce the quantity of useable waters.

Surface mining operations (brown coal in the north of Oltenia, sulphur in the Calimani Mountains, and bituminous shale in Banat) have caused the loss of some important forest and grassland habitat. Soil resources have also been diminished historically in Romania as a consequence of erosion from poor farming and agriculture practices.

Estimates are that about 40% of the agricultural area is affected by erosion with an average rate of 16.5 t/ha/yr. The total area of agriculture in Romania is 14,797,500 ha, silviculture utilises 6,680,200 ha - out of which 6,245,800 ha are forests and the grassland surfaces are of 4,872,100 ha, from which 3,378,400 are pastures and 1,493,700 ha are hay fields. Of major significance for biodiversity richness and useful natural resources is the total surface of water bodies of 888,300 ha. Irrigation of agricultural land (about 3,200,000 ha in 1989) has also brought about increased salination on large areas. Overgrazing in some areas is also reducing soil resources (e.g. contribution to erosion, especially on slopes).

4.5 Future Directions of Resource Use

Although, as it has been noted, there are a considerable number of damaging practices and activities affecting biodiversity in Romania the possibilities for reducing damage to biodiversity are large. Within the country there is a highly developed sense of the connection of people to the land and following the political changes of 1989 there has been a net return of people to rural areas.

Traditional harvesting and grazing practices in Romania present an opportunity to support a sizeable rural population which lives within the limits of the available biological resources. Tourism could be developed to provide such communities with additional sources of revenue while offering incentives to retain or revive traditional practices that are sustainable or to develop new means for using natural resources sustainably.

There is a great potential to develop ecological tourism activities in many of Romania's natural areas. A newly formed association of ecological tourist homes and

farms is currently promoting this idea. Some small projects are already in place and other larger ones have been proposed.

Romania faces many changes as it moves towards a market economy. As the country's economic wealth grows in the future, new environmental pressures and challenges will arise. The private ownership of land, rises in personal consumption and the manufacture of consumer goods, the privatisation and decentralisation of industry, will (if such changes come) bring both new threats as well as new opportunities for the protection of biodiversity. Although there has been considerable human modification to the Romanian environment the potential exists for Romanian development to proceed in a manner that protects the country's valuable biological resources and at the same time improves the country's economic well being.

5 Legal and Institutional Framework for Biodiversity Conservation and Sustainable Use of its Components

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5.1 Overview

Romania has demonstrated its interest in, and commitment to, the conservation of biodiversity and natural areas through signing of international agreements, the passage of national regulations and the designation of a large number of protected areas. Despite these efforts Romania has experienced difficulties in implementing policies and strategies to achieve effective biodiversity conservation.

There is a lack of a comprehensive conservation management strategy as well as appropriate institutional arrangements for biodiversity conservation. Coordination among the various governmental organisations involved with nature protection activities is often inadequate and the public participation into the decision-making process often occurs on an ad-hoc basis.

Within Romania there is an excellent foundation of scientific research and well trained scientists and engineers. However scientific research is largely uncoordinated at the national level and data and information that is collected is neither centralised nor easily accessible. A well defined and coordinated institutional structure for evaluating, monitoring and managing protected areas in Romania is needed.

5.2 International Agreements

Romania has played an active role in many international environmental issues and is a Contracting Party to most international and regional environmental agreements and conventions.

Romania has ratified the Convention on Biological Diversity and of major significance this is legally binding within Romanian law. This not only underscores Romania's commitment to the principle of biodiversity conservation, but it also provides a legitimacy for incorporating biodiversity protection into the Romanian regulatory framework. The difficult task has been to incorporate biodiversity conservation principles effectively into coherent policies in all economic sectors, to develop and implement clear management plans for protected areas, and to achieve enforcement of laws (see Appendix 5).

Romania is also an active participant in regional environmental initiatives such as the Danube Environmental Programme, the Black Sea Environment Programme, and the Environment for Europe process. (see Appendix 9). The Danube and Black Sea Programmes, which are largely focused on water quality improvement, have recognised the important connection that exists between land-use management and water quality. Through effective protected areas management and land use policies - in particular protection and restoration of wetland areas - water quality improvements in the Danube and Black Sea will be achieved. These improvements will not only benefit Romania but other countries as well. Romania is also participating in several European Union programmes including PHARE and activities working on improving environmental standards and conditions within Romania (and harmonised to EU standards).

5.3 Existing Legislation

There are various national laws and regulations that relate to biological diversity and that attempt to support nature protection and conservation within Romania (see Appendices 7 and 8). Despite these strong efforts to incorporate environmental principles into the regulatory framework, these laws and regulations are often unclear, overlap, and are inconsistent. Further, they are inconsistently enforced by the responsible authorities.

A new law for Environmental Protection (Law 137/1995) passed in December 1995 is a framework law that is intended to be followed over the next two years with additional specific laws relating to protected areas and other environmental issues. A copy of the Law is attached as Appendix 7.

5.4 Conservation Administration and Policy

A variety of Romanian governmental organisations have responsibilities for some aspects related to biodiversity and it can be safely said that the institutional arrangements for biodiversity conservation and the management of protected areas are not clearly defined. Efforts to protect biodiversity are therefore hindered given that no single governmental organisation acts as a central coordinator for biodiversity/nature conservation/sustainable development issues and can coordinate the involvement of other national institutions, set policy and implement programmes, and direct and manage organisations active at the field level.

The largest part of the responsibilities for nature protection and management belong to the Ministry of Waters, Forests and Environmental Protection (MWFEP) and the branches or agencies affiliated with the MWFEP (see Appendix 6). The Danube Delta Biosphere Reserve, however, has its own management structure (assisted with international support). The Commission for the Protection of Nature Monuments of the Romanian Academy is the legal

scientific authority for nature conservation and protected areas. For the protected areas located on forest land the management is ensured by foresters from the autonomous agency ROMSILVA.

Local authorities are responsible for land-use planning but with no capacity and qualified staff for incorporating biodiversity/nature conservation into their policies. The 41 Environmental Protection Agencies (EPAs) offices (County MWFEP offices) have legal responsibility for environmental monitoring and nature conservation. It is important that the new laws stipulate the separation of the regulatory responsibilities, and the functions and management responsibilities for natural resources.

5.5 Management of Protected Areas

According to the Law 82/1993, the Danube Delta Biosphere Reserve has its own administration with qualified staff responsible for the implementation of the management plan, is directed by a Governor and has specific regulations and by-laws. With the exception of the Danube Delta Biosphere Reserve, there are no conservation management plans for protected areas. The Commission for the Protection of Nature Monuments of the Romanian Academy has direct scientific responsibility for all categories of protected areas (strictly protected areas, national parks, nature monuments, natural reserves and protected landscapes). Where these are forest areas ROMSILVA has management responsibility.

Despite the inadequate management structure, Romania's commitment to nature protection can be evidenced by its designation of 584 protected area covering a total surface of 1,140,590 ha, or 4.8% of the area of the country. Of this area 580,000 ha is in the Danube Delta Biosphere Reserve and the remaining 12 parks consist of an additional 400,000 ha. Unfortunately the designation of nature protection areas is not a clear and consistent process and the currently established protected areas should be reviewed to determine the adequacy of their geographical distribution, their effectiveness in protecting the biodiversity values, and the extent to which they cover the whole heterogeneity of ecological systems. Of major concern is that there exists at present no coordinated network of protected areas.

The forestry sector manages over 6,300,000 ha of forest and is mandated to manage them sustainably. Valuable about Romanian forests is the large number, and quality and size, of natural or near natural forests. See Table 2.

Particularly important examples exist in Piatra Craiului and Bucegi. These areas are valuable examples of previously existing forests in Europe and can be an important biological reserve and template for restoration of forests in other parts of Europe. In 1995 a national forestry management strategy was developed with short, medium, and long-term plans. Each of these contain regulations concerning biodiversity conservation in protected areas and forests. While there has been some encouraging progress in the management of forests there is as yet no such management plans for grasslands or steppe ecosystems within Romania. These areas also contain important species in need of protection.

5.6 Research and Scientific Activities

Romania has a strong scientific research tradition in the natural sciences. Scientific research is carried out by various universities, organisations and institutions. There is a national research programme in ecology, together with local applied research programmes that are addressing

various aspects of biodiversity and nature conservation. A primary drawback is that research and scientific activities are not coordinated or prioritised. Further there is no centralised system for organising and disseminating information. An analysis of the various research activities should be undertaken in order to develop a coherent, focused, and cost effective research programme for biodiversity conservation.

Not always connected with university and research programmes there are a number of initiatives for ex-situ conservation in botanical gardens, parks, dendrological collections, flower collections, aquariums, terrariums, gene banks, and collections of micro-organisms that are of interest for agriculture, for food and other industrial sectors, and for a variety of other biotechnological applications that are now developing.

5.7 The Role of NGOs

Since the political changes in 1989 environmental NGOs have played an increasingly important role in environmental issues in Romania. The number of NGOs has increased to almost 200.

NGOs, including highly professionalized groups and local volunteer organisations, have undertaken a wide range of initiatives, including contributing pressure to achieve policy or management improvements and organising various field activities (garbage clean-up, species protection, acting as wardens etc.). Together with local, regional, and international governments and agencies and institutions, NGOs have also often organised or participated effectively in cooperative projects in the interest of biodiversity conservation. In the Danube Delta, for example, the organisation Pro Delta, the Danube Delta Institute, The Biosphere Reserve Authority and the World Wide Fund for Nature, have together undertaken restoration of wetland areas unsuccessfully drained for agriculture.

The Romanian government acknowledges the importance of public participation as well as the importance to the democratic process of NGOs. As yet, however, there are only limited official means for NGOs to voice their opinions or provide direct input into official decisions affecting the management of biodiversity.

5.8 Environmental Education

Romania has a very well educated population with a large pool of well trained scientists and engineers and strong university traditions. Training programmes for environmental, ecosystem and protected areas management are not yet instituted (only the University of Bucharest has a programme for Environmental Management) and should be at both the national and local level.

5.9 Weaknesses in the Legal and Institutional Structure Relating to Biodiversity

Although there is considerable interest and recognition of the values of biodiversity in Romania it is clear that there are a number of institutional and regulatory weaknesses that hinder the protection and sustainable management of these resources. The National Biodiversity Strategy should seek to address these problems, which include:

- lack of a coherent policy and strategy for managing and conserving biodiversity in Romania;
- subordination of the demands for biodiversity conservation to activities which have major ecological impacts;
- poor enforcement of existing laws;
- lack of clear organisation responsibilities and institutional structure for biodiversity conservation;
- incoherence of the legal and institutional framework for monitoring the exploitation of natural resources;
- need for the implementation of the economical and financial instruments to stimulate the measures for the biological diversity conservation and sustainable use of its components.

6 National Strategy and Action Plan for Biodiversity Conservation and Sustainable Use of its Components

6.1 General Conclusions

6.2 Priority Areas

6.3 Legal Institutional Reform

6.4 Primary Needs

6.5 Priority Actions for Protecting Biodiversity in Romania

The current status and threats to biodiversity in Romania have been presented in the previous sections. In order to ensure that the existing biodiversity is maintained and damaged ecosystems restored, Romania has embarked on a process of elaborating a Biodiversity Strategy and Action Plan. (see Appendix 1 for a list of participants). This section contains the conclusions of that process and the recommendations and objectives that have been developed. It should be noted that the strategy and action plan outlined have been developed with consideration to the "Strategy of Environmental Protection in Romania" and Romania's "National Environmental Action Plan" that was completed in Dec. 1995. The conservation of biodiversity was emphasised in both documents.

6.1 General Conclusions

The following general conclusions form the basis of the objectives and actions selected for the biodiversity strategy:

- The losses of valuable natural resources through the reduction of biodiversity must be halted.
- Appropriate measures must be undertaken to ensure the long-term survival of species and ecosystems threatened by pollution, unsustainable use or by over-exploitation, etc.
- There is an urgent need for intervention to save representative species and ecosystems currently threatened.
- The economic, ecological and social value of the components of biodiversity is major and significantly surpass the costs of their conservation.
- Legislative and institutional solutions need to be developed in order to have a maximum ecological, economic and social benefit.

6.2 Priority Areas

Based on the above general conclusions the following priority areas have been identified for targeting biodiversity protection strategies.

Habitats Characterised by a Large Number of Endemic Species and a High Biological Diversity

A concentration of habitats with a great number of endemic, rare, relict species can be observed in the mountain massifs: Rodna, Bistrita and Ceahlau, Bucegi and Piatra Craiului, Retezat-Godeanu, Cernei-Mehedinti, Apuseni. A high biological diversity can also be found in the Northern Dobrogean Plateau, in the south of Banat, in the Transylvanian Plateaux and in the Danubian gorges, in the Moldovian Plateau. The most important wetland habitats are those in the Delta, and the oligotrophic and eutrophic swamps conserving relict and rare species such as the Petea thermal lake and Valsan river. These areas of high biodiversity value need priority protection.

Habitats Which are Threatened to be Irreversibly Degraded or to Be Destroyed

Habitats existing around extreme polluting sources that are threatened with irreversible damage should be a priority target for protection. The floodplain habitats in which the underground water and the flooding regimes have been modified (along the Danube River floodplain for example) and wetlands that are being heavily polluted and drained (the Olt River) also need priority attention for conservation and restoration. Hydrotechnical works (i.e. on Riu Mare in Retezat), overgrazing and uncontrolled tourism (in Bucegi, Piatra Craiului and Retezat) are placing under threat the rich biodiversity of these areas. Many other aquatic habitats are threatened or destroyed by pollution of the rivers and natural lakes and large areas of natural habitats are threatened or destroyed due to the open mining.

Habitats and Species Whose Conservation and Sustainable Management Can Provide Benefits at a Local and National Level

Habitats which contain major species of trees with high wood production value (the resonance spruce, broad-leaved trees used for veneer production etc.), herbaceous species with high medicinal, melliferous, fodder values, must be conserved and managed sustainably. All forest ecosystems with natural structures that are strongly diversified (mixed forests with beech, fir, and spruce, the uneven age beech forests, and mixed oak forests) if managed sustainably, can provide large economic benefits. For example Bucovina forest and grasslands which are very rich in species, need to be conserved and subjected to special management. Aquatic ecosystems such as the Danube floodplains and tributaries and Danube Delta can bring large local and regional benefits when protected, restored and effectively managed. At this can be added the habitats with high aesthetic landscape value which can be rendered through ecotourism.

Habitats and Species Whose Conservation and/or Sustainable Management Can Provide Educational Benefits

Habitats and species whose sustainable conservation and management can bring educational benefits, should be contained in protected areas, national parks and biosphere reserves. These areas offer excellent outdoor classrooms for education in a wide range of studies, as well as for the understanding of the natural evolution laws and processes. The sustainable management of wetlands ensures educational benefits.

Threatened Habitats and Species Which Must Be Controlled Through Special Regulations

The utilisation of the grasslands, especially those on steep hills should be regulated and strictly controlled in order to prevent their degradation and reduction of biodiversity through overgrazing and erosion. Strict regulations and permanent control over those who gather and sell plants and animals from wildlife are needed in order to avoid the loss of valuable species and to ensure their sustainable use. Also special regulations should be issued in order to prevent the reduction of the biodiversity in agroecosystems. A positive example of control through special regulations for threatened habitats and species exists in the Danube Delta Biosphere Reserve where the Administration has developed several special management measures.

According to the Bern Convention, ratified by Romania, and to the recommendations issued by the Council of Europe, specific plans and regulations shall be developed in Romania for the protection of the following bird species: *Numenius tenuirostris*, *Falco naumanni*, *Crex crex*, *Phalacrocorax pygmeus*, *Oxyura leucocephala*, *Pelecanus crispus*, *Branta ruficollis*, *Anser erythropus*, *Aquila heliaca*, *Otis tarda*.

6.3 Legal and Institutional Reform

Actions targeted at species and habitats alone are recognised as insufficient to protect biodiversity in Romania. Institutional reform and development are needed as well. In particular there is a need for:

Creation and/or Revision of Laws

It is necessary to urgently revise laws covering protected areas, particular ecosystems, hunting and fishing, protection of flora and fauna, bees protection and keeping and general biodiversity protection and sustainable use of its components.

Capacity Building

In order to ensure the implementation of actions designed for the conservation of biological diversity and sustainable use of its components it is necessary to create departments responsible for biodiversity in both national and local organisations and in the agencies which govern issues which affect biodiversity. The responsible personnel must be trained to carry out their designated tasks and thereby strengthen the capacity for biodiversity conservation in Romania.

Decentralisation

Biodiversity conservation activities should be decentralised to the regional and local level to the degree possible in co-operation with the local management units that administer forests, grasslands, and wetlands, with institutions from the academic and university network, other organisations from the public and private sector as well as with the representatives of local communities and NGOs.

A New Coordinating Mechanism for Biodiversity Conservation and Sustainable Use of Its Components

The new regulations must designate the national competent authorities with responsibilities to give direction, regulate, supervise and control for the biodiversity conservation and sustainable use of its components. A coordinating committee administered by the Ministry of Water, Forest and Environmental Protection should be organised to analyse and advise activities for the conservation of biological diversity. The committee should be made up of representatives of agencies that decide on natural resource use and include the Ministry of Water, Forests and Environmental Protection (MWFEP), the Ministry of Agriculture, the Ministry of Public Works and Territorial Planning, the Romanian Academy, the Academy of Agricultural Sciences, as well as representatives from universities, local administrations and NGOs.

Involvement of NGOs and Local Communities

The role of NGOs and local communities in the conservation of biodiversity should be enhanced by the gradual decentralising of planning, management and implementation activities.

Assessment of the Costs and Benefits of Biological Diversity Conservation

In order to assess the values, the costs and benefits of biological diversity, conservation specialists in this field will be trained with the support of international organisations.

Dialogue and Co-ordination/ Public Participation

The committee and agency of the MWFEP, created to direct, co-ordinate and manage the conservation of biodiversity, will initiate discussions at both the national and local level with all interested parties on issues related to conservation. The same organisation will ensure the coordination of specific activities related to biodiversity conservation at the national level. A national forum for biodiversity conservation should be established with the involvement of all representatives of the civil society.

Financial Resources for Biodiversity Conservation

Financial resources for biodiversity conservation (up to the year 2000) will come in part from the budget of the Ministry of Water, Forests, and Environmental Protection and in part from the public and private sector organisations that manage and use natural resources for economical activities. In the second stage, it is hoped to obtain additional funds from the local communities and other parties. Further possibilities include possibly retaining a small percentage of profits from the use of natural resources to be used for conservation activities. Similarly, regulations will be needed to raise additional funds for supporting the actions of conservation from local communities and firms which are willing to participate.

Through special regulations a system of economical incentives and penalties for biological diversity conservation will be elaborated.

6.4 Primary Needs

Taking into account the present status of the biological diversity in Romania, the threats that affect it, and the general conclusions that have been developed, the following priority

objectives have been delineated (in order of priority) ([see Table 3](#)):

6.5 Priority Actions for Biodiversity Conservation and Sustainable Use of its Components in Romania

The following projects should be included in the first stage (5 years) of the Romanian Biodiversity Action Plan.

1. Develop and implement detailed management plans in 1-2 national parks or biosphere reserves which contain natural habitats and elements of biodiversity including forests, grasslands and a rich fauna, representative for the biogeographic area of Romania, that will then be used as models for the management of other parks and reserves.
2. Completion of a national network of protected areas with new areas which contain valuable ecosystems that have not yet been protected.
3. The reintroduction of some key species that have previously been extirpated from Romania.
4. Completion of an inventory of the biodiversity in the primary types of ecosystems (forests, grasslands, and wetlands) using a unified and well defined methodology.
5. Assessment of the economic and social value and of the costs and benefits of biological diversity conservation in forests used for production and in those that are protected.
6. Assessment of the economic and social value and of the costs and benefits of biological diversity in the agroecosystems used for production.
7. Assessment of the costs and benefits of biological diversity conservation in the protected areas.
8. Assessment of the costs and benefits of ex-situ biological diversity protection
9. Organization of a network for the ex-situ conservation of biological diversity.
10. Elaboration of a model administration (for 5 - 6 agroecosystems districts with representative bioclimatic zones and layers) for the sustainable management of agroecosystems in a manner consistent with the principles and actions required under the Convention on Biological Diversity.
11. Elaboration of a model administration (for 1-2 grassland administration districts) for the sustainable management of grasslands consistent with the principles and actions required under the Convention on Biological Diversity.

The objectives and priority actions are detailed in [table 3](#).

Boxes

Box 1 Priority Objectives for Biodiversity Conservation in Romania

Box 2 Romania's Position in the Migration Routes of Birds within Europe

Box 3 Endemic and Subendemic Plant Species in Romania

Box 4 International and Regional Environmental Agreements

Box 5 The Three Biosphere Reserves in Romania

Box 6 Success Stories of NGO's Nature Conservation Projects

Maps

Map 1 Physical Map

Map 2 Ecoregion Map

Map 3 Hydrographic Map

Map 4 Land Utilisation

Tables

Table 1 Protected Areas in Romania

Table 2 The main protected virgin forests in Romania

Table 3 [List of Objectives and Priority Actions](#)

Table 3: List of Objectives and Priority Actions

	Primary Objective	Major Activities	Target Outputs
1	<i>Conservation of Romanian ecosystems and habitats by creating a national system of protected areas networks.</i>	<p><u>1-5 years</u></p> <ul style="list-style-type: none"> • Elaboration and implementation of pilot projects for the management of national parks and natural reserves. • Constitution of a protected areas network by assessing the status of the existing and of the proposed areas. • Designing and organisation of the informative system for protected areas. <p><u>5-10 years</u></p> <ul style="list-style-type: none"> • Comprehensive management plans for all the national parks and biosphere reserves in order to ensure the conservation of biological diversity. • Organisation of monitoring in the protected areas. • Expansion of the network of protected areas in order to cover all the types of ecosystems and habitats, and all the plant and wild animal species which are of special interest. 	<ul style="list-style-type: none"> • Management plans that can be used as models in other protected areas • Biological diversity conservation in remarkable areas. • Comprehensive database for biodiversity and nature protection • Biological diversity conservation in exceptional areas • Monitoring of biological diversity • Biological diversity conservation in remarkable areas.
2	<i>Threatened endemic, rare wild species and those with a high economic value in-situ and ex-situ conserved</i>	<p><u>1-5 years</u></p> <ul style="list-style-type: none"> • Elaboration of plans for the conservation of threatened species and of those with great economic value. • Reintroduction of some extinct species in ecosystems with favourable conditions. • Identification and creation of green corridors in order to implement the "EECONET" concept. 	<ul style="list-style-type: none"> • Conservation of threatened species • Restoration of biological diversity and ecosystem equilibrium..

		<ul style="list-style-type: none"> Monitoring of threatened species. <p><u>5-10 years</u></p> <ul style="list-style-type: none"> Organisation of the national network of units necessary for in-situ and ex-situ conservation of threatened species. Organisation of the network for the conservation of genetic resources of flora and wild fauna outside the protected areas. 	<ul style="list-style-type: none"> Avoiding the isolation of species Monitoring system for biological diversity. In-situ and ex-situ conservation of species.
3	<i>Establishment of necessary legislative framework and institutional capability for biological diversity conservation</i>	<p><u>1-5 years</u></p> <ul style="list-style-type: none"> Elaboration and promotion of the law for protected areas and natural monuments. Assignment of authorities to co-ordinate actions concerning biological diversity conservation Creation of special departments for biological diversity conservation in the organisations that manage biological resources in order to integrate the conservation measures from the national strategy into the management of these resources. Elaboration of a system of regulations for sustainable use of natural resources in order to conserve the biological diversity. <p><u>5-10 years</u></p> <ul style="list-style-type: none"> Creation of a decentralised management system for different categories of protected areas. 	<ul style="list-style-type: none"> Legitimate legislation of protected areas Coordination of actions for biological diversity conservation at the national level. Conservation and enhancement of biological diversity. Conservation and enhancement of biodiversity. Ensuring the management of the protected areas.
4	<i>Department strategies which integrate objectives of the National Strategy for Biological Diversity Conservation.</i>	<p><u>1-5 years</u></p> <ul style="list-style-type: none"> Revision of the technologies and management of biological resources in accordance with the objectives for biological diversity conservation. <p><u>5-10 years</u></p> <ul style="list-style-type: none"> Implementation of new management systems and alternative technologies which conserve biological diversity. Establishment of criteria and indicators for biological diversity monitoring of 	<ul style="list-style-type: none"> Conservation and enhancement of biological diversity. Conservation and enhancement of biological diversity.

		economic sectors extracting and using natural resources.	<ul style="list-style-type: none"> Monitoring of biological diversity.
5	<i>Conservation and enhancement of biological diversity by the reduction of the negative impacts as well as the ecological restoration of altered ecosystems and habitats.</i>	<p><u>1-5 years</u></p> <ul style="list-style-type: none"> Reduction of industrial pollution in places characterised by a high pollution through co-ordinated actions by the central administration, local communities and NGOs. Reduction and/or prevention of the unselective use of pesticides as well as the promotion of biological pest control. <p><u>5-20 years</u></p> <ul style="list-style-type: none"> Ecologically reconstruction of ecosystems degraded by over-exploitation, pollution, etc. Afforestation as well as the planting of arable lands strongly eroded. Planting on cleared lands covered with waste deposits. Restoration of vegetation clusters and the creation of protective curtains on arable lands Promotion of agricultural technologies that conserve and restore the biological diversity specific to agrosystems. 	<ul style="list-style-type: none"> Prevention of the reduction of biological diversity. Prevention of the decline in biological diversity. Enhancement of biological diversity. Restoration of biological diversity in degraded habitats Creation of biological diversity in artificial habitats. Restoration of biological diversity. Conservation and restoration of biological diversity.
6	Protection, conservation and restoration of the biological diversity specific to agrosystems through the implementation of the technologies which favour sustainable agriculture.	<p><u>1-5 years</u></p> <ul style="list-style-type: none"> 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. Renaturation of arable lands which are no longer used to enhance biological diversity. 	<ul style="list-style-type: none"> Monitoring of biological diversity. Enhancement of biological diversity. Enhancement of biological diversity.
7	Specialists and general population trained and educated in biological diversity conservation	<p><u>1-5 years</u></p> <ul style="list-style-type: none"> Creation of a centre for professional training of specialists who will work in the biological diversity conservation field. 	

	principles.	<ul style="list-style-type: none"> ● Introduction of the principles of biological diversity conservation into the education system. ● Organising the education of the population in biodiversity conservation principles through mass-media. ● Publishing materials for biological diversity conservation. 	<ul style="list-style-type: none"> ● Specialist training ● Education of the population. ● Education of the population.
8	Involvement of NGOs and local communities in programmes for biological diversity conservation.	<p><u>1-5 years</u></p> <ul style="list-style-type: none"> ● Elaboration of economic instruments that can involve local communities in biological diversity conservation. ● Involvement of NGOs in educational programmes for biological diversity conservation. ● Involvement of NGOs and local communities in the implementation of management projects for the protected areas. <p><u>5-10 years</u></p> <ul style="list-style-type: none"> ● Involvement of NGOs and local communities in actions for completing the network of protected areas. ● Involvement of NGOs in monitoring biological diversity. 	<ul style="list-style-type: none"> ● Biological diversity conservation. ● Education of the population. ● Biological diversity conservation. ● Biological diversity conservation. ● Biological diversity conservation. ● Biological diversity conservation.
9	Special research and development programmes for biological diversity conservation.	<p><u>1-5 years</u></p> <ul style="list-style-type: none"> ● Development of a national programme for research on ecological and genetic biological diversity and on the causes for the species decline. ● Initiation of a national programme for biological diversity research on the basis of landscape, ecosystem and habitat types. ● Conduct research regarding the necessary density and structure of green corridors. ● Researches regarding the minimal area need for the conservation of threatened species and habitats. <p><u>5-10 years</u></p>	<ul style="list-style-type: none"> ● Biological diversity conservation. ● Biological diversity conservation. ● Biological diversity conservation

		<ul style="list-style-type: none"> • 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. • Elaboration of pilot projects for implementing the results of the research. 	<ul style="list-style-type: none"> • Biological diversity conservation • Biological diversity conservation • Biological diversity conservation
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Appendix

Appendix 1 - List of participants at the strategy elaboration

Appendix 2 - Main groups of ecosystemic formations of Romania, number of ecosystem types, their present status and territorial distribution

Appendix 3 - List of the endemic and subendemic species of flora

Appendix 4 - List of endemic and subendemic species of fauna

Appendix 5 - International conventions, initiatives and programmes in the conservation and sustainable utilisation of biological diversity

Appendix 6 - Actual organisation chart of the Ministry of Waters, Forests and Environmental Protection

Appendix 7 - The Official Gazette of Romania, Law and Decrees

Appendix 8 - Legal framework and institutional responsibilities in applying the law and other normative acts which have a special significance for biological diversity conservation

Appendix 9 - Regional Environmental Initiatives

Appendix 10 - Hydrographic Map

Appendix 11- Land Utilisation Map

Appendix 12 - [List of Protected Areas in Romania](#)