

The Integration of Biodiversity into National Environmental Assessment Procedures

National Case Studies

Romania

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10.1 Introduction

- Total area: 237,000 km²
- Land area: 230,340 km²
- Coastline (Black Sea): 247 km
- River borders: 1817 km
- Terrestrial borders: 1085 km
- Highest mountain peak: 2,544 m
- Population: 22.5 millions
- GNP (USD billions, 1999): 34.1
- GNP per capita (1999): 1,520 USD
- Agriculture: 15.5% of GDP and 20% of total employment
- Total cropland: 99,410 km²
- Total forest area: 61,900 km²
- Protected areas: 4.57 - 4.80%

The climate is temperate, with significant regional variation. 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 400-600 mm.

10.1.1 Key environmental concerns

- changes of hydrological regime caused by hydro-technical works, extensive irrigation, damming and draining of wetlands, and altered river courses;
- soil erosion and degradation caused by unsustainable land-use;
- air, water and soil pollution, although decreased during the first years of the economic transition, it can be expected that future economical growing will began to rise again;
- habitat fragmentation (especially on forest lands because of land ownership changes)
- inappropriate forms of tourism and associated infrastructure development, especially in the highly sensitive mountain and coastal ecosystems.

10.1.2 Protected areas

Information about protected areas are inconsistent. There is no one official register.

According to IUCN Management Categories: 607 km²/0.26% (I); 8,416 km²/3.54% (II); 228 km²/0.10% (IV); 1,598 km²/0.67% (V).

According to the Statistical Yearbook, 1998; 3 Biosphere reserves (5,836 km²); 14 National parks (3,764 km²); 40 Scientific reservations (529 km²); 573 Reservations for nature preservation (1,181 km²); 180 Natural monuments (27 km²).

According to the NBSAP, 1996: 43 Scientific Reserves, 12 National Parks, 135 Natural Monuments, 373 Natural Reserves, 18 Landscape Reserves, 3 Biosphere Reserves, 1 World Natural Heritage, 1 Ramsar Site.

According to Law No.5/2000 for Land Use Planning, there are 17 Biosphere Reserves, National and Natural Parks (11,321 km²). The same law lists over 800 other protected areas.

Whatever the information source, facts show that most of the protected areas are “paper protected areas”. Only four of them, the Danube Delta Biosphere Reserve, Retezat National Park, Piatra Craiului National Park and Vanatori Neamt Forest Park have legally established management bodies. Several smaller protected areas have some forms of management due to the care of NGOs or other institutes/agencies.

10.2 Biodiversity

Romania has a high biodiversity, mainly due to the high percentage of natural and semi-natural ecosystems (47%).

Forests are an important component of Romanian biodiversity, their natural integrity being indicated by the presence of the full range of European forest fauna, including 60% of the European brown bear and 40% of the wolf population. Although during last century the forested area diminished to half its initial cover, nowadays almost half of the remaining forests (13% of the country) are still managed for their environmental protection values (functions), like watershed protection, soil and climate protection and also for their social values rather than production.

One of the largest European wetlands left, the Danube Delta, lies predominantly in Romania.

Over the Romanian territory, several large biogeographic regions meet (arctic, alpine, pannonic, pontic, balkanic, submediterranean, eastern colchic, caucasian and turanic-iranian regions).

10.2.1 Ecosystem diversity

The CORINE Biotopes program identified 783 habitat types, of which 758 are terrestrial.

10.2.2 Flora

There are approximately 3,700+ species, of which 228 are endemic and sub-endemic, of which 23 are declared as natural monuments, 74 are extinct, 39 are endangered, 122 are threatened, 171 are vulnerable and 1,256 are rare.

There are about 600 species of algae and 700 species of marine algae and plants

10.2.3 Fauna

There are approximately 33,800+ species, of which 1,000 are endemic or sub-endemic.

There are 84 mammal species, 368 birds (of which 312 are migratory), 25 reptiles, 19 amphibians and 191 species of fish (of which 87 are freshwater species).

Threatened species include mammals (3), bird (11), reptile (1), freshwater fish (3). A number of 24 species are declared Natural Monuments.

Large mammals include: brown bears (5,400 individuals/1998 over 28,000 km², representing about 60% of the European populations); wolves (3,600 individuals, representing about 40% of the European populations); lynx (2,000 individuals, representing about 50% of the remaining European populations).

Romania is a critical transit area for migrating birds within Europe.

10.2.4 International conventions signed and ratified

The following international conventions have been signed and ratified by Romania:

- Biological Diversity (1994);
- Climate Change (1994);
- Ozone Protection (1993);
- CITES (1994)

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- ❑ Wetlands – Ramsar (1991)
- ❑ Conservation of European Wildlife and Natural Habitats - Berna (1993)
- ❑ Protection of the World Culture and Natural Heritage - Paris (1990)
- ❑ Protection of Black Sea against pollution (1992)
- ❑ United Nations Law of the Sea
- ❑ Cooperation for the protection and sustainable use of Danube River (1994)
- ❑ Long-range transboundary air pollution (1991)
- ❑ Convention on Migratory Species, Bonn convention (1998)

10.2.5 National laws with provisions on biodiversity issues

- ❑ Environment Protection Law (no 137/1995)
- ❑ Forest Code Law (no 26/1996)
- ❑ Water Code Law (no 107/1996)
- ❑ Law on Hunting Fund and Game Protection (no 103/1996)
- ❑ Land Use Law (no 5/2000)
- ❑ Governmental Ordinance on the Regime of Protected Natural Areas, Conservation of Natural Habitats, Wild Flora and Fauna (no 236/2000)

10.2.6 Major regional and national projects on biodiversity assessment and management

- ❑ Biodiversity Conservation in the Danube Delta (financed by GEF)
- ❑ Black Sea Action Plan (financed by GEF, World Bank)
- ❑ Environmental programs for the Danube River Basin (financed by the World Bank, GEF, European Union)
- ❑ Biodiversity Conservation Management Project, BIMS (co-financed by GEF and from national sources)
- ❑ Conservation of an Euro-Siberian oak forest (*Quercus robur*) (financed through Life Program)
- ❑ Conservation of Habitats in Bucegi National Park, and
- ❑ Complex Actions for the Protection and Development of the Natural Heritage from Apuseni Mountains

10.3 National Biodiversity Strategy and Action Plan (NBSAP)

Biodiversity management and conservation is considered as an essential part of the National Strategy for Sustainable Development of Romania. Since the ratification of the Convention on Biological Diversity (Law 58/1994) the Government initiated the first steps requested for its implementation. A variety of other important international agreements for biodiversity conservation have been signed and ratified by the Romanian Government since 1990. This is extremely important for Romania since, according to article 11 of the Constitution, they become an integrated part of internal legislation. This implies not only the requirement of respecting them but also harmonization of internal legislation. The legislative framework is still unclear, overlaps and is partly inconsistent. Also, most of these important legislative steps were not followed by administrative changes, and so the capacity/infrastructure for the enforcement of existing legal provisions is either lacking or inoperative.

A series of research projects and inventories were done before 1994 to evaluate the state and distribution of biodiversity either at national or regional level. The most important project worth mentioning was the one focusing on the delineation of the main ecoregions of Romania. The project started in 1991 and lasted until 1993. In the end a number of 22 first level ecoregions with 57 second level ecoregions were identified. The main criteria used to differentiate the first level ecoregions were: climate, water resources, soil and

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vegetation structure. Soil classes and potential vegetation were the most important criteria used in delineating the second level ecoregions. In this way relatively homogenous ecological structures were delineated (V_dineanu *et al.* 1992, 1998). An important output of this project was that a national inventory of both fauna and flora was done, with tens of thousands of distribution records collected and stored in databases. Unfortunately, the cessation of the project did not allow the proper management of the huge amount of data gathered.

With support from GEF and World Bank assistance a Management Plan for the Danube Delta Biosphere Reserve was elaborated in 1994 following its new legal status: Biosphere Reserve, World Heritage Site and Ramsar Site. The Plan comprises 35 managerial objectives and 87 management projects. The administration and management of the DDBR has the status of a Regional Environmental Agency and is separated from, but linked to the local administration.

In December 29, 1995, the Environmental Protection Law (Law no. 137) was adopted. According to chapter II, articles 34 to 63, with regard to the “Protection of natural resources and conservation of biodiversity”, technical regulations should be issued regarding the measures for the protection of ecosystems, conservation of biodiversity, sustainable management of natural resources and for assuring human health. Some of the technical regulations were covered only in 2000 when a Governmental Ordinance no, 236, on the Regime of Protected Natural Areas, Conservation of Natural Habitats, Wild Flora and Fauna (no 236/2000) was signed. This Ordinance is presently discussed in the Parliament and should become a law soon. Still some further technical regulations are needed for effective implementation of the law as the overall impact on biodiversity conservation can still be considered low.

In July 1996 a panel of scientists produced “**The National Strategy and Action Plan for the Biological Diversity Conservation and Sustainable Use of its Components in Romania**”. The goal of this document was to contribute to the conservation and sustainable use of the natural capital of the country, by identifying the important features and major threats to Romanian biodiversity and establishing priority actions to address these threats. It incorporates in a single volume of 46 pages plus annexes, three of the documents needed for the implementation of the Rio Convention (i.e. evaluation, national strategy and action plan). A number of 28 scientists and administrative personnel participated in its elaboration. The institutions represented were: Forest Research and Management Planning Institute; Institute of Biology-Bucharest; Institute of Meadows-Bra_ov; Institute of Biology-Cluj; Faculty of Silviculture-Bra_ov; Research Institute for Soil Sciences and Agrochemistry; Danube Delta Research Institute-Tulcea; Museum of Natural Sciences-Tulcea; Institute of Geography-Bucharest; Ministry of Water, Forests and Environment Protection; Commission for the Protection of Natural Monuments, Romanian Academy; Natural History Museum-Bucharest; Institute of Speleology; various environmental NGO’s.

10.4 Evaluation of Biodiversity

Romania has high ecosystem diversity, ranging from high alpine areas in the Carpathians (of which 60% are in Romania), plateaus and hills, plains, steppe and floodplains, including the Danube Delta, the Black Sea Coast and a variety of wetlands and aquatic ecosystems (alpine lakes, saline and hypersaline lakes, bogs, marshes etc.). A total of 17 major terrestrial ecosystem types that include all the major European forms are found (see Table 1). This high ecosystem diversity supports in turn a high specific diversity (see Table 2).

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Table 1 Main Ecosystems in Romania

No.	Ecosystem group	No. of ecosystem types
1	Boreal coniferous forest	41
2	Mesophyllous broad-leaved forest	50
3	Hygrophyllous broad-leaved forest	24
4	Xerotherm broad-leaved forest	36
5	Cryophyllous alpine grassland	16
6	Mesophyllous grassland	67
7	Hygrophyllous grassland	151
8	Xerophyllous and xerotherm grassland	115
9	Psamophyllous grassland	19
10	Halophyllous grassland	58
11	Saxicole and petrophyllous formations	99
12	Mountain and subalpine herbs	35
13	Cryophyllous small alpine bushes	6
14	Subalpine bushes	6
15	Mesophyllous and submesophyllous bushes	20
16	Xerophyllous bushes (steppe)	4
17	Hygrophyllous bushes	11
TOTAL		758

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Table 2 Species richness in several major taxa in Romania compared with the rest of Europe

Taxa	Europe	Romania	
		No.	%
Angiosperma	12,500	3,350	26.8
Insecta: Dermaptera	34	9	26.5
Insecta: Orthoptera	600	170	28.3
Insecta: Coleoptera	20000	10,300	51.5
Insecta: Plecoptera	150	130	86.7
Insecta: Trichoptera	400	277	69.3
Insecta: Ephemeroptera	200	101	50.5
Amphibians	71	19	26.8
Reptiles	199	25	12.6
Birds	520	249	47.9
Mammals	250	101	40.4

10.4.1 Main threats to biodiversity identified in the NBSAP

- air, water and soil pollution
- changes of the hydrological regime
- over-hunting and over-fishing, including poaching
- soil degradation and loss

10.4.2 Legal and institutional Framework for Biodiversity Conservation and Sustainable Use of Its Components

The NBSAP admits that in Romania “there is a lack of comprehensive management strategy as well as appropriate institutional arrangements for biodiversity conservation. Co-ordination among the various governmental organizations involved with nature protection activities is often inadequate and the public participation into the decision making process often occurs on an ad-hoc basis.”

The institutional arrangements for biodiversity conservation and for protected areas management are not clearly defined, further more, there is a lack of capacity for biodiversity conservation and protected area management, and there are no management plans developed for protected areas.

Although there is a national research program in ecology, research and scientific activities are not coordinated or prioritized and there is no centralized system for biodiversity information management.

NGO activities are considered successful by the NBSAP, although there are very few examples of NGO activities with major impact on biodiversity conservation. Most of the Environmental NGOs are grass-root oriented, their involvement in major issues is low and poorly coordinated at regional and national level.

Environmental education is poorly represented in school curriculums at all levels.

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Other weaknesses identified by the NBSAP in the legal and institutional framework for biodiversity conservation: biodiversity conservation is subordinated to activities with major ecological impacts, poor enforcement of existing laws, incoherence of legal and institutional framework for monitoring the use of natural resources, lack of economical and financial incentives for biodiversity conservation and sustainable use of its components.

10.4.3 Strategy and Action Plan

The following primary objectives were identified (copied without changes):

1. Conservation of Romanian ecosystems and habitats by creating a national system of protected areas network.
2. Threatened endemic, rare wild species and those with a high economic value should be conserved both *in situ* and *ex situ*.
3. Establishment of necessary legislative framework and institutional capability for biological diversity conservation.
4. Department strategies, which integrate objectives for the National Strategy for Biological Diversity Conservation.
5. Conservation and enhancement of biological diversity by the reduction of the negative impact as well as the ecological restoration of altered ecosystems and habitats.
6. Protection, conservation and restoration of the biological diversity specific to agro-systems through the implementation of the technologies which favor sustainable agriculture.
7. Specialists and general population trained and educated in biological diversity conservation principles.
8. Involvement of NGOs and local communities in programs for biological diversity conservation.
9. Special research and development programs for biological diversity conservation.

Priority actions were identified for each of the primary objectives. These actions were planned for 5 and 10 years, with very general target outputs for all proposed projects. No costs were estimated for the implementation of these objectives, which remain vague and too general.

To our knowledge this report had little impact at both the executive and legislative levels. Thus, the Ministry of Waters, Forests and Environment Protection published two reports, in 1996 and 1998, without referring to the NBSAP, although the latter was published under its supervision. Also, an excellent book, "Romania 2020" published jointly by both the Romanian Academy and the UNDP in 1998, which critically presents the situation of biodiversity, just mentions the nine priority objectives identified in NBSAP.

In 1998 the National Report was presented to the Conference of the Parties of the Convention of Biological Diversity.

10.5 Progress with implementation of the NBSAP

10.5.1 Review of progress for each of the Objectives

Objective 1 - *Conservation of Romanian ecosystems and habitats by creating a national system of protected areas network.*

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- The *Biodiversity Conservation Management Project*, implemented since 1999, contributes to the:
 - development of a special law for biodiversity conservation and protected area management. This is now in a form of Governmental Ordinance No 236/2000 on the Regime of Protected Natural Areas, Conservation of Habitats, of Wild Flora and Fauna
 - establishment of a Biodiversity Information Management System (BIMS) and of the National Network of Protected Areas.
 - development of three models of management for protected areas, including management plans that can be used as models in other protected areas.

Objective 2 - *Threatened endemic, rare wild species and those with a high economic value should be conserved both in situ and ex situ.*

- A project on the conservation of large carnivores was started in 1994 with WWF support. One of its aims is to promote cohabitation of man with large predators by supporting traditional land-use methods. Thus shepherds are encouraged to use traditional methods for herd protection during alpine summer grazing (i.e. use between 5-10 sheep dogs with different training – sheep herding, bear or wolf protection), and eliminate completely the use of traps and poisoned bait that have almost eliminated large prey birds. The traditional perception of large carnivores is tolerant and favorable among local communities, deprived of the prejudices so widespread in Western Europe (see for example the eradication of bears and wolves from the Pyrennes in France).

Objective 3 - *Establishment of necessary legislative framework and institutional capability for biological diversity conservation.*

- *Governmental Ordinance on the Regime of the Protected Natural Areas, Conservation of Habitats, Wild flora and Fauna (236/2000)*

Provides the legal framework part of the technical regulations needed for the efficient management of protected areas. It is under discussion in the Parliament and should become a law in the first half of 2001.

- *The Governmental Decision 367/2000 regarding the organization and functioning of the Ministry of Water, Forests and Environmental Protection*

This decision created several new departments within the Ministry, including the Directorate for Nature and Biodiversity Conservation (Directia Conservarea Naturii si a Diversitatii Biologice).

- *The National Council for the Environment and Sustainable Development*

Law 158/ 1999 establishes the National Council for the Environment and Sustainable Development (Consiliul National pentru Mediu si Dezvoltare Durabila), whose main task is to implement the objectives and recommendations of the Agenda 21. Its establishment strengthened the institutional framework although its role remains mainly consultative.

Objective 4 - *Department strategies, which integrate objectives for the National Strategy for Biological Diversity Conservation.*

A National Forest Sector Policy And Strategy was developed in 2000. For the first time a sector strategy considers biodiversity conservation concerns, emphasizing the importance of biodiversity conservation in the development of the Forestry Sector.

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Objective 5 - *Conservation and enhancement of biological diversity by the reduction of the negative impact as well as the ecological restoration of altered ecosystems and habitats.*

A variety of activities were regulated through legal provisions:

- Law no. 111/1996 concerning the safety of nuclear activities.
- Ministerial Order no 322/2000 issued by the Minister of Waters, Forests and Environmental Protection concerning the procedure of authorization of collecting, capturing, and purchasing of wild animal and plants for commercial purposes.
- Governmental Ordinance no 81/1998 regarding the reconstruction of degraded lands through reforestation.
- Ministerial Order no 125/1996, of the Minister of Waters, Forests and Environmental Protection, regarding the Regulation of economic and social activities with impact on the environment.
- Ministerial Order no 756/1997 of the Minister of Waters, Forests and Environmental Protection, approving the Regulation concerning the Environmental Pollution Assessment.

Ecological reconstruction of several highly degraded areas continued or was started in major critical polluted hotspots (Copsa Mica, Baia Mare, Petrosani area).

Objective 6 - *Protection, conservation and restoration of the biological diversity specific to agricultural systems through implementation of technologies, which favor sustainable agriculture.*

- Inventory of strongly eroded and/or polluted soils was recently done.

Objective 7 - *Specialists and general population trained and educated in biological diversity conservation principles.*

- Introduction of principles of biological diversity conservation into university curricula is considered, some of the universities already providing undergraduate, postgraduate, continuous and distant training in Environmental Management and Sustainable Development (e.g. University of Bucharest).

Objective 8 - *Involvement of NGOs and local communities in programs for biological diversity conservation.*

- *The SACIM Network*

The European Community PHARE program financed in 1996-1997 the creation of the SACIM network by three Romanian NGOs. This network included 120 environmental NGOs and aimed at following-up the implementation of 11 international environmental conventions signed by Romania, including the Rio Convention. The network is not functional anymore, but was an important step in raising public awareness and is an indicator of the willingness to push forward the much needed changes.

- Through the *Biodiversity Conservation Management Project*, financed by GEF, the Romanian Government and the National Forest Administration, the Park Management Authorities at the three model protected areas involve local communities and NGOs in management planning and conservation activities.

Objective 9 - *Special research and development programs for biological diversity conservation.*

- *National Biodiversity Information and Monitoring System Design*

□ In order to address the priorities identified in the BSAP, with the assistance from the World Bank and GEF, the Ministry of Water and Environment Protection will support the design of a Biodiversity Information Management System, through the Biodiversity Conservation Management Project. *Danube River, Danube Delta and Black Sea Environmental Programs* (see annex 2).

- *The Action Program for the Environment Protection in Central and Eastern Europe*

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This document was agreed upon at the Ministers' conference in Lucerna, Switzerland, in April 1993. The proper action program includes short, medium and long-term targets, until 2020. Although the targets were identified and evaluated, the results are far from being achieved on schedule (Ilie, 1996; *** 1998)

10.5.2 Present situation

Shortly before general elections in November 2000, the former Government issued a long-expected ordinance on "The regime of protected natural areas, conservation of natural habitats, of the wild flora and fauna" (Governmental Ordinance 236/November 24, 2000). The ordinance is now debated in the Parliament and it is expected that it will become soon law. This law fills a major gap in our legislation and offers the legal framework needed for a comprehensive and efficient management of the natural environment. Nevertheless the unjustified delay in promoting this law has led to severe destruction of the various components of biodiversity (for further details see Soran *et al.*, 2000).

After general elections in November 2000, the newly elected government started reorganizing the administration. Thus, the former Ministry of Waters, Forests and Environment Protection was restructured, the Forests Department moved to the Ministry of Agriculture. These changes, beyond the unavoidable temporary chaos produced, already had an impact on the operational infrastructure.

Although the present left wing government has repeatedly stated its goals of European integration, it is difficult to believe that at least during the next year any important steps will be made towards the implementation of the Action Plan. As with previous governments, environmental protection is not considered a priority. Social and economical issues are most debated/decisions.

10.6 The EIA System

10.6.1 Historical background

The first legal provisions on the necessity to prevent and reduce negative impacts on the environment were made in Law No 9/1973 the first Environmental Protection Law in Romania. However, these legal provisions were too general and vague, recommending to all agencies, institutes and businesses to protect the environment and to reduce all negative effects of their activity on the environment. All activities had to be approved according to legally established standards for environmental protection.

In 1990 the newly created Ministry of Environment issued the Ministerial Decision No 113, establishing technical documentation required to obtain an environmental agreement, as a compulsory approval to develop new investments/activities. This legal document lists all activities that need to have an EA for approval. Although this is the first legal document introducing the concept of EA, it does not make any references to an EA system and there are no clear references on the concept of EA.

Ministerial Order 170/1990, issued by the Ministry of Environment approves legal procedures for the environmental agreements for establishing/developing investments. This MO requires an EA, but was limited only to the possible sources of pollution.

10.6.2 Environmental Assessment procedures

The concept of Environmental Authorisation was introduced by Ministerial Order 437/1991, as a tool to keep under control “activities related to components of the environment”. This order still did not establish a comprehensive EA system. The technical data required for the activities offer only the possibility to verify compliance to legal standards, without any possible analysis of impacts on the environment.

The first law establishing that “EA procedures are compulsory in the initial phases of projects, programs or activities” is the Environmental Protection Law No 137/1995 (Art. 4.b). This law was followed by a Ministerial Order 125/1996 issued by the MWFEP, that approves agreement procedures for economical and social activities with impact on the environment. Law No 137 and the Ministerial Order 125 are the legal basis for the EA process in Romania.

“EA Process can include the following stages: preliminary stage, main stage and the analysis and validation stage” (Law 137, Art.11). Responsibility for deciding the stages of the EA Process stays with the national or local Authority for Environmental Protection (i.e. Ministry of Waters and Environmental Protection and Environmental Protection Agencies).

The EA Process has the following stages (Law 137/1995):

- ❑ request for approval and description of the project, sent to the Authority for Environmental Protection
- ❑ indication on the type of the activity influencing the need for a EA (wether the activity needs an EA or not)
- ❑ review of the activity in the presence of the Authority for Environmental Protection, activity owner, experts, local authorities that can be affected by the environmental changes
- ❑ AEP issues a report indicating issues arising from the review and which have to be addressed in the EA
- ❑ the owner of the proposed activity presents the EA report, considering all alternatives for project implementation
- ❑ preliminary review accomplished by the Authority for Environmental Protection, acceptance or request for a new report
- ❑ public review of the EA report
- ❑ final review performed by the Authority for Environmental Protection, made public and motivated according to the findings resulted from stages f) and g)
- ❑ issue of the environmental agreement or authorisation.

The authorising procedures are public. EA costs are supported by the owner of the activity/project and have to be developed by specialized persons/companies. The responsibility for the information included in the EA goes to the project owner and for the EA report goes to the person/company who has developed the study (Art. 12).

Annex 2 of Law 137 lists the activities that need EA in order to obtain environmental agreement and/or environmental authorisation. The Authority for Environmental Protection can include also other activities as having a significant impact on the environment and need EA.

According to Law 137/1995 development projects need to have EA if they cover activities listed under the following areas: transport, energy, water management, waste management, national security, sport, tourism, industrial activities, other.

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The key legal requirements for EA are established in detail in the Ministerial Order 125/1996:

- ❑ Scoping includes characteristics of the proposal, characteristics of the receiving environment and impact screening.
- ❑ The EA report has to be subject to a public consultation process. Stages of this process are described in Annex 3 of the Ministerial Order.
- ❑ Specific stakeholder consultation is possible to recommend specific issues for inclusion in the EA and also for the final review of the report. A “group for technical review”, i.e. a group of specific stakeholders will be formed if the AEP considers that this is necessary.
- ❑ Independent review of the EA is not a key requirement. The AEP decides whether there is a need for independent review.
- ❑ The owner of the project/activity supports all costs for the EA and the public consultation process related to the EA.

References/sources for more detailed explanations: Law 137/1995 and Ministerial Order 125/1996.

10.6.3 EA Implementation

EA implementation is generally considered as a process that slows down development, as a burden of further bureaucratic requirements. Activity/project owners do not perceive its importance at the real dimensions. Legal requirements are fulfilled to some extent, but there are several aspects influencing the effectiveness of implementation.

Institutional capacity with the AEP both at national and regional (county) level, responsible for implementation is not sufficient for an effective implementation. EPAs are low in human and technical resources assigned for this task, meaning that there is not enough capacity for review, advice and follow-up.

It is difficult to appreciate if the EA resulted in ‘better’ decisions from (i) a biodiversity perspective, and (ii) a broader environmental and/or social viewpoint. A national review of the process/results of EA might provide some data.

However, it is important to consider the general Romanian context, generated by the already too long socio-economic transition:

- ❑ economical and social decline are considered more threatening than the long term effects of human activities on the components of biodiversity;
- ❑ nature and natural resources are taken for granted even more than in many of the other European countries;
- ❑ knowledge and awareness of the general public on nature conservation issues and on the need for a sustainable development is limited.

The effectiveness of the EA system is reduced not only by the insufficient institutional capacity, but also by the low public involvement generated by lack of interest in EA. Public participation and involvement is also reduced by lack of trust with the general public that they would be able to influence EA process and determine changes in the investments/projects/activities.

Impacts on biodiversity have to be considered in the development of the EA. Specific elements that have to be described in the EA according the Ministerial Order 125/1996, Annex 4, para 3.5 are:

- ❑ “Elements of terrestrial and aquatic ecology:

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- vegetation – type, predominant species, rare, protected, threatened species, protected areas, specific ecosystems
- fauna – characteristic species to the area, rare, protected, threatened species
- aquatic ecology – specific species and biotypes
- wetlands in the area and around the area used by the activity/project, effects on the objective.”

Para. 5.3 from the same Annex. requires an evaluation of the impacts on flora and fauna as follows:

- emission of pollutants that could affect terrestrial flora and fauna
- how the impact is affecting terrestrial flora and fauna
- how could the impact of pollution on these environmental factors be reduced or diminished.

However, it is important to know that the final decision on the approval for the activity/project will be made based on aspects that do not include biodiversity perspective as an important one to consider. Thus, the AEP, for the final decision will consider:

- risks for people’s life in the area;
- effects on the health of the inhabitants;
- respecting legal limits for the pollutants released in the environment;
- improving the quality of environmental factors;
- security measures;
- solutions offered for some social issues;
- public utility;
- sustainable use of the resources and waste;
- achievement of the objectives of the approved plans and programs.

Environmental Protection Agencies do not have required human resources to improve considerations on biodiversity perspectives to the EA. Most of the county level EPAs have no ecologists/biologists in their framework and/or specialists who can effectively deal with biodiversity issues in the EA. Further more, public access to existing information on biodiversity aspects is limited due to lack of transparency. Lack of a specialized department in the Ministry of Waters and environmental Protection and Environmental Protection Agencies is one of the main causes for the chronic lack of transparency and public participation.

10.7 Biodiversity and EA

The differential conservation and management approaches of the components of biodiversity as defined by the Rio Convention will be briefly presented, with the exception of ethno-cultural diversity, which is beyond the goal of this report.

Genetic diversity is mainly considered in cultivated plants and domestic animals, little interest being shown towards wildlife. There is a seed bank in Suceava (north of the country) and several forest tree gene conservation measures taken, like seed collections, gene forest reserves, seed orchards and clonal archives (PHARE Report, 1999). There are 2,333 seed stands partially or fully protected, covering an area of 70,288 ha and 347 gene reserve forests, strictly protected, with an area of 11,304 ha. The country is also participating in the EUFORGEN program aimed at international cooperation in the field of forest gene resource conservation and utilization. Co-operation is still limited due to the lack of compatible national directories of forest tree genetic resources based on standard international nomenclature. Preserving the genetic diversity of forest trees is extremely important, since in contrast with Western Europe, where several countries faced nearly complete deforestation at the end of the middle-ages, almost two-thirds of

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the initial forests were still present at the beginning of last century in Romania. These forests maintained a high degree of semi-natural status until recently, and they provide a habitat for many species of animals, now rare or disappeared from the western part of Europe (bear, lynx, wolf, wildcat, birds of prey etc.). Thus, in 1985, 71% of the forests were managed ensuring natural regeneration (considered to be semi-natural forests) and there still are small areas (about 0.1%) of virgin forests, undisturbed by man.

Genetic diversity is practically not studied at national level, mainly due to lack of performant equipment for DNA analyses. There are some small centers established, but they are mainly focused on medical research. There are a number of international joint research projects studying the genetic diversity of various taxa, but they are focused on evolutionary aspects. Also, many important papers are published abroad, in peer reviewed journals, but with little impact at national level. For example, although the presence of *Rana lessonae* in Romania (Anura: Amphibia) was documented in several papers, it was not included in any of the annexes of the recently published Governmental Ordinance on the Regime of Protected Natural Areas and Conservation of Habitats, Wild Flora and Fauna, as if it were missing altogether. One can compare this to the huge interest this species has raised in the UK. On the other hand, an endemic subspecies of newt (Urodela: Amphibia) recently also confirmed to be genetically different from the nominal subspecies, was included as a priority for conservation.

The Government recently passed a law (no 32/2000) and two decisions (no 1037 and 1041/6.11.2000). According to this Law, conservation of genetic diversity of domestic animals will be financially supported by the State. Financial incentives are provided to the breeders of an important number of local breeds (cattle, sheep, pigs, poultry, fur animals, silk worms, bees, carp and other fish species).

Most approaches in biodiversity studies are still confined to species diversity. A Red List of plants was recently published (Oltean et al., 1994), and the Red List of Vertebrates and also the Red List of animals and plants from the Danube Delta Biosphere Reserve will be soon published. Although an important step in the inventory and in setting priorities for conservation, limiting activities to the elaboration of Red Lists is a drawback.

Ecosystem diversity was relatively well studied during the CORINE project financed by the European Community. The identification of ecoregions was also helpful in identifying types of ecosystems. An excellent book was published in 1992 (Doni_a et al., 1992) that described major types of vegetation (terrestrial and wetlands), but having a limited distribution, didn't have the impact it deserved.

Ethnic diversity was well studied in several parts of the country, mainly in the Danube Delta and Banat regions and there are several important measures that try to support the maintenance of the high cultural, religious and ethnic diversity of several parts of the country.

At national level the studies of different components of biodiversity were not integrated, hotspots were not identified and priorities in conservation are still established mostly based on subjective reasons.

Biodiversity impact studies are mainly focused either on species (vertebrates or several groups of insects) or the vegetation type (i.e. most visible components of biodiversity). There is no weighting of the studies according to the presence of endangered/threatened components of biodiversity.

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A very good case study was done in the late sixties, before the dam at the Iron Gates was built together with Yugoslavia. For several years hundreds of scientists worked in the area studying the fauna, flora, hydrology, archaeological ruins, caves, ethnic diversity etc. The results were published in a series of books together with the predicted changes. The inventories done at that moment were unequalled until then, but unfortunately the effects of the dam were not consistently followed afterwards. Several recent publications have shown for example the long distance impact of the dam on the Black Sea (Humborg et al., 1997). The almost extinction of sturgeons in the Danube basin due to extensive dam building in the area, was predicted at that moment but no measures were taken to prevent it.

The construction of the Rhine-Main-Danube canal, inaugurated in 1992, was seen everywhere in Europe as a great construction, uniting east and west and providing a cheap transport route between the Black Sea and the North Sea. Traffic prospects on this route comprise between 6 and 10 million tons per year. Recently the project of the Danube-Oder-Elbe canal was once again brought to attention, but this time severe critics were made. Overall, the impact these canals have by destroying a variety of habitats, mostly wetlands and facilitating the spread of exotic species is ignored and no measures for preventing it are taken. Not the smallest concern was raised in Romania on the potential negative impact that alien species might have, despite the fact that the Black Sea was most severely affected by them (Gomoiu & Skolka, 1996).

The possible construction of a network of pipelines for the transporting of oil from the Caucasus and Caspian Sea through the Black Sea port of Constan_ă to Western Europe received intensive media coverage and raised political turmoil. No concern on the certain negative environmental impact and costs was ever mentioned. It is probable that the benefits could have been less than the environmental costs incurred, but to our knowledge no EIA was done. This illustrates very well the priorities of the decision makers, that tend to ignore the long-term environmental impacts for immediate benefits.

In the summer of 1999 (i.e. several months after NATO's bombing of Yugoslavia) the Ministry of Water, Forests and Environmental Protection financed a project for the improvement of monitoring activities linked to the environmental impact of the war along the Danube, up to the Black Sea. The limits of the monitoring activities (frequency of sampling, parameters monitored and methods used) were recognized but no operational changes were done, thus, another environmental disaster found the authorities unprepared to cope with the negative impacts. The delay in reacting is becoming chronic mainly with regards to environmental disasters that require rapid and prompt measures.

There is a network of environmentally focused institutions that survey a variety of parameters nation-wide (see Annex 1). The main limits of the different monitoring programs is that they are not integrated (we don't have an integrated monitoring program), and there are limited resources, both financial and with trained personnel, that do not allow for detailed studies in environmentally vulnerable areas. There is a lack of transparency concerning the environmental impact. There are several monitoring programs developed at continental scale, financed by the European Community, focused on several major topics like acid deposition, human impacts on alpine lakes etc.

10.8 Case Studies

An important aspect of the historical background for EA in Romania has to be clarified before presenting case studies. Before 1989 (i.e. under the communist regime) impact assessment studies were compulsory before any major building site or exploitation were started. These studies were financed from the budget allocated to the specific

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project/investment. Frequently assessment started after the activities begun. In the (unlikely) case of a negative EA report, the investment would have not been approved, the investment/project would have not been budgeted, meaning that the institution who performed the assessment would not have been paid at all. This led to positive assessments for all investments/projects. Economical and social benefits of planned investments/activities were prevailing over any possible negative impact on the environment. This is a legacy still influencing EA approaches in Romania.

10.8.1 Black Sea coastal development

During the last decade, especially after the land was returned to its previous owners, a large number of privately owned houses were built along the Romanian Black Sea coast, many of them without authorization. The coast is already facing increasing erosion and many, once famous, beaches have diminished and are now protected by extensive dykes that tend to limit the erosion process. Illegal building adds a new pressure to an already vulnerable ecological system. The foundation Animal Planet is financing a project intended to save the sea-horse, endangered by the destruction of sea-grass beds along the coast, but except for this non-governmental initiative, the “official” response is almost absent.

10.8.2 Export of wildlife products

A variety of wild plant and animal species are exported for food, pharmaceutical or cosmetic industries, for pet shops or for relocation for hunting purposes (Table 3). Unfortunately, there are few or no data regarding the quotas and/or quantities exported during previous decades so no estimation of the impact can be made. Data was made available since, starting with 1997 and several legislative measures were taken to control the collecting, purchase and export of these resources. Thus the Ministry of Water, Forests and Environment Protection issued Ministerial Order 201 (March 14, 1997) that establishes the procedures needed for authorization of harvesting, capturing and acquisition of wild plants and animals from the wild for commercial purposes on the internal market and for export. Three years later, the same Ministry issued a second Order (322, March 16, 2000) that improves the procedures and evaluation needed to obtain a permit.

Table 3 Wild plant and animal species exported during 1997-1998

Plant or animal group	1997 (in tons)	1998 (in tons)
mushrooms	7,451	5,643
medical plants (dry weight)	1,950	2,290
other plants (dry weight)	1,201	483
wild berries	7,508	12,854
snails	2,000	2,000
Tubifex worms	6	22
water frogs	-	20
living wild rabbits (pcs)	5,500	7,290

Most collecting permits were issued without previous studies regarding the carrying capacity and the possibilities of a sustainable use of these resources. Except for tubifex worms and wild rabbits, all other species are heavily exploited. Additionally to the amount exported an unknown quantity is being harvested for local and national use. In most cases, although at national level the quantities are not high, quite often local harvesting causes overexploitation and even local extinction. Decreasing living standards led to an increased pressure from unemployed persons whose income is based mostly on natural resources that they are harvesting from the wild. Obviously, no regulations can effectively control or limit illegal harvesting, fishing and poaching for the moment.

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Another major limitation of the effective enforcement of legislative measures is the lack of trained personnel at the borders and airports, which can correctly identify the specific status of the natural products being exported. This is also valid in market places where frequently protected species are traded mainly in pet-shops. Thus protected or even endangered species of amphibians, reptiles and birds can be purchased in most large markets. Large quantities of an endangered plant species (*Ruscus aculeatus*) were sold on the market in Bucharest and other cities/towns during last year, either during spring instead of *Buxus* sp. or shortly before Christmas in different traditional arrangements. Since the public markets do not have trained personnel who can identify illegally traded species, this commerce will certainly continue, with a heavy impact on wildlife.

Several Romanian fishing companies that are allowed to fish a limited amount of sturgeon in the Danube Delta have reported in 1999 no sturgeon landings, but huge quantities of caviar. Apparently the caviar comes from Ukraine and enters the European Union market in this way. Again, despite the intense concern expressed in the media, no legal measures were taken against the culprits.

10.8.3 Aurul Baia Mare

A relevant example with intensive media coverage in February 2000, was the cyanide leak from Aurul, Baia Mare mining company. The Aurul SA society is jointly owned by Esmeralds Exploration Limited from Australia and Remin, Romania. The factory in Baia Mare was designed to process 2.5 million tons of waste/year in order to obtain and estimated 1.6 t of gold and 9 t silver per year. The project was supposed to last for at least 10-12 years.

On January 30, 22:00 the dyke that surrounded the lake broke, allowing the leaching of about 100,000 m³ of liquid and slime containing between 50 and 100 t of cyanide and heavy metals, including copper. The contaminated waters of the small river of S_{ar} reached the larger rivers of Some_u, then Tisza and finally through the Danube the Black Sea. Almost 2000 km of river were affected and caused huge environmental damage.

The Baia Mare county has seven important, still operating, mines and the resulting contaminated waters are stocked in 215 lakes and ponds. The county has high levels of chronic pollution of soil, air and water, a result of many decades of improper mining and industrial activities. Thus, lead content in the blood of adults is 2.5 times higher than the safety level, while in some children it can be as high as six times.

During a seven years period, Aurul SA received all the needed environmental authorizations required by Romanian legislation before starting to operate in May 1999. The processes and technologies used for the recovery of precious metals were completely new for Romania and were considered at the moment to be the most modern, safe and efficient, contributing to an improvement of the environment in the area. Shortly after the beginning of activities two small leaks were recorded and possible several other unreported leaks happened. It is beyond the goal of this report to present further details, but it is should be mentioned that the surrounding area has a high population density and the toxicity of the pollutants is extremely high and, except of cyanide, heavy metals have long-term effects.

Overall, both the company and local authorities had inadequate plans for controlling leaking in the environment and their response was extremely slow. The main question is how efficient is the EA system if this site was allowed to operate without major revisions after the two "minor" leaks in 1999 (REC Report, 2000).

10.8.4 Sky resort in bucegi mountains

Recently a joint action of the Directorate for Nature and Biodiversity Conservation from the Ministry of Waters and Environmental Protection and the Committee for the Protection of Natural Management from the Romanian Academy stopped the development of a sky resort in the Bucegi Mountain. Specialists from these institutes were asked by NGOs and the local media to stop this investment as the location was in the area of the Bucegi National Park.

10.8.5 Andezit quarry in hunedoara county

In 2000 a private company, S.C. Prodandezit S.R.L is asking for approvals for an andezit quarry in the area Calea Balului – Bucuresci, on an area of 20 ha. Destination of the quarry is research on the composition of the exploited rocks, a quantity estimated to 3.000.000 tones. The investment is not a big one, but approaches to the biodiversity components of the EA are representative.

On the ecological aspects of the area there is a brief and very general description of the forests that one can find at different altitudes in a hill area, without a clear description of the forest that will be impacted by the investment. There is no description on any of the specific elements of the forest, not even an economical evaluation of the timber. Actually it is not even clear if the area is covered by forests or pastures.

There is also a very general description of the fauna, with an enumeration of the most common species of mammals and very few birds.

Impact on biodiversity is considered “low and without significance, especially considering that the pasture has a low grazing value”.

The EA in this case shows that biodiversity concerns are not considered important and data offered on this component of the EA is inconsistent and irrelevant.

10.9 Future actions to improve the effectiveness of biodiversity conservation and sustainable use

Future actions to improve effectiveness of biodiversity conservation and sustainable use will have to consider the following issues:

- Romania is adapting and “modernizing” its legislation, including the legislative framework for environmental protection and management. There are important pressures from the European Union to adopt the “acquis communautaire”, i.e. the legislative framework of the EEC for a future extension of the union to the east. The results so far are deceiving: the legislation is still confuse and unclear, a mixture of old and new laws, with long delays between complementary laws. International conventions are quite easily and rapidly adopted, but national laws that should provide the tools for their implementation are adopted at a later stage. For example, the Rio Convention was signed in 1994, the Law on Environmental Protection in 1995, while the law for the management of protected areas is being discussed only now in the Parliament. Some of the international conventions adopted have parts that are unsuited for the country’s present specific needs or are unrealistic.
- There is still great confusion regarding land ownership, which will continue for several years. Many of the private landowners that have recently regained their properties, have lost the traditional know-how of managing it and/or do not have the possibility to invest in modern, appropriate management techniques. Also, for centuries, many components of the natural environment (forests, pastures, lakes, ponds, springs and rivers) were jointly owned by the local communities and/or

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monasteries or landlords (Table 4), who will also receive the formally owned land. After a quite long period of state ownership and management most of the agricultural and forest land is returning to former owners, with a legal requirement for proper management. Because of poor legal enforcement for the time being in Romania, it is difficult to estimate the impact of these recent changes on biodiversity on the long-term.

Table 4 Changes in forest ownership (in %) in County of Suceava, the county with the highest percentage of forests: in 1875 during Austrian domination, in 1948 before communist land reform and in 1996 before return of forests to private ownership (Barbu, I. unpubl)

Type of ownership	1875	1948	1996
private	31	12	4
state	0	6	96
churches/monasteries	51	59	0
community	13	13	0
joint possessions	5	10	0

- Impact of alien species is little documented until they start having serious environmental impacts. This issue is of serious concern since there is no strategy at national level to cope with this threat. Even more, there are permanent introductions of exotic species done by different national institutions (fish and game, forestry) and private initiatives (pet trade, flowering plants etc.).

For example, the construction of the Rhine-Main-Danube canal was considered a great success, but no attempt is made to monitor the spread of aquatic species between the two river basins. During the last decade, several wild populations of jackals became established in the south of the country, up to the Danube Delta, in areas from where the wolves became extinct in the early sixties. It is difficult to assess the impact in the future on wildlife, especially on the highly endangered *Otis tarda* for which there is a LIFE project underway, and on the wolf populations when they will get in contact. Wolf populations suffer already from a severe genetic erosion and drift and have long hybridized with stray dogs. Their survival might be further threatened in this way.

□ The National Protected Areas Network

The Maastricht Conference in November 1993 proposed the development and implementation of the European Ecological Network (EECONET). In 1995, the Romanian government promoted the creation of the National Network of Protected Areas in the Law on Environment Protection. The so-called network included all the areas that were previously declared under protection, but did not provide corridors to connect them. Several other “networks” were proposed like: EMERALD based on the Berna Convention, NATURA 2000, based on the CEE directive 92/43, and PEEN (Pan-European Ecological Network) proposed at the Ministerial Conference in Sofia in 1995. There are too many initiatives, each with its own committees, specialists, workshops and roundtables, little results and few resources. Considering the confusion existing in Romania with land ownership, and to a certain degree in other former communist countries, the design and implementation of these networks is far from being an easy task. Overall, too much effort is being devoted to formal aspects and too little to their implementation.

10.9.1 Proposed actions to improve biodiversity conservation and sustainable use:

- i) Existing legislation with regard to biodiversity conservation and sustainable use has to be reviewed, improved and harmonized. All

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- sectoral policies/strategies and legislation should consider biodiversity conservation and sustainable use of natural resources as a high priority issue, as a basic principle for economic and social development.
- ii) Enforcement of existing legislation has to improve. Special capacity building for proper enforcement of environmental/biodiversity conservation related legislation has to be considered with improved access to information on data needed for enforcement (e.g. Red Lists, species descriptions)
 - iii) Financial incentives should be considered and legally approved for biodiversity conservation management, i.e. for proper management of protected areas and for proper management measures for habitat/species protection. This action is very unlikely to be considered during the economical transition period.
 - iv) Capacity building actions have to be considered on biodiversity conservation and on EA for the national and local authorities for environmental protection and for companies/institutes/individuals performing EA.
 - v) The development of the Biodiversity Information Management and Monitoring System should be urged and financially supported, so that needed information for biodiversity conservation actions could be reliable and easily accessible by all stakeholders.
 - vi) EA system has to be improved with regard to the biodiversity component. Companies/institutes/individuals authorized to undertake EA should be legally asked to prove abilities/knowledge on biodiversity issues at a higher level or to consider specialists review on the biodiversity conservation issues in the EA.
 - vii) Public awareness strategy has to be developed and implemented for biodiversity conservation and sustainable use of natural resources. Target groups for these public awareness activities should be clearly defined and addressed differently, decision makers and officers from public services being two of the most important target groups.
 - viii) Environmental NGOs, mostly grass-root oriented, should develop a strong network and should be supported to develop their lobbying capacity.
 - ix) School curriculums should include education on the importance of biodiversity conservation and sustainable use.

10.10 Conclusions

The major drawback now in an effective EA system and biodiversity conservation in Romania is land ownership. Since the return of private land was done generally in a consistent, efficient way, this problem will persist for several more years, as land restitution will not be finalized during the next few years. Another drawback, perhaps less important but with potential negative effects is the loss of traditional knowledge of managing natural resources, especially in the lowland parts of the country where state farms were widespread.

Many of the legislative and administrative changes were formal, introduced under international pressure. Fortunately, the increased proportion of younger people in institutions and administration, the overall opening to the world and the tremendous impact of the internet concerning access to information, is pushing changes forward and at a faster pace than several years ago. It is very possible that, if political and economic stability will prevail during the next few years, now that the situation in Yugoslavia has improved, with western financial and managerial help the progress will be impressive.

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Although there is a strong infrastructure, i.e. institutes specialized on different components of the environment, with good background and capacity to perform EA (see Annex 1), cooperation and coordination between them is very weak. There are very few joint, clear goals and responsibilities are often not stated clearly. A great deal could be achieved if the activities of these institutions would be coordinated and better managed.

There are no national databases and metadata standards and that limits very much access to information for scientists, decision-makers and the general public. The establishment of a national database should be considered a major priority by the Ministry of Water and Environment Protection.

There is still a deficit of trained personnel for the competent management and assessment of biodiversity, both at institutional, governmental, and at local level.

Although several laws promote the transparency regarding access to environmental data, there still is an urgent need for improvement.

Since 1999 Romania is part of the EEC LIFE program and it is expected this participation will help both directly through the projects financed and by developing links with local communities and administration.

There is an overall lack of coordination in the area between neighboring countries and cooperation and harmonization should be increased. There are already new regional initiatives for harmonizing activities, like the Central and Eastern Europe International Long-Term Ecological Research (CEE-ILTER), and Networking of long-term integrated monitoring in terrestrial systems (NoLIMITS). The creation of regional natural parks is still in its dawn.

Example: The Danube Delta is divided between Romania (80%) and Ukraine (20%), but while Romania has elaborated a management plan since 1994, has finished the inventory of biodiversity, and has developed the institutional capacity, Ukraine lags behind in both institutional support, inventory and management plans. It is hard to imagine an effective management of this large and important wetland without efficient co-operation and harmonisation between the two countries.

The final conclusion is that the effect of the EA system on biodiversity conservation should be improved, as it does not address impacts on biodiversity in an open and informative manner, in compliance with relevant standards.

Relevant biodiversity values are not encompassed by the EA system for reasons shown in these last two chapters of the present study.

Key successes are related to recent changes in the legislative framework with regard on biodiversity conservation and EA processes. However, lack of trained personnel and weak enforcement of existing legislation does not make this success relevant. Major changes will happen only when the proper infrastructure/capacity will be associated to the legislative framework.

Coordinated efforts have to be made to review and improve/develop an integrated strategy and action plan for biodiversity conservation and sustainable use of natural resources in Romania.

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Willingness for EU accession and associated legal/environmental requests can bring the necessary pressure on decision makers for action in this area and, in the same time, might allow access to funding coming from abroad to help development in this area.

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10.12 Appendices

10.12.1 List of national services and networks

National Institute of Hydrology and Meteorology
National Water Management Service
National Geological Survey
National Soil Information Service
National Forest Management Service
Plant Protection Service
Veterinary Service
National Weed Cadaster
Regional Environmental Protection Agencies
National Biodiversity Monitoring Service
National Geodesy and Remote Sensing Center
National Radioactivity Survey
Romanian Institute for Marine Research
Romanian Center of Marine Geology and Geochemistry
National Institute for Hygiene and Public Health
Air Quality control
Nature Conservation Cadaster

10.12.2 The Black Sea and Danube River

Introduction

The environmental impact and assessment of the Danube river and the Black Sea goes beyond a national approach to a regional level. Since the environmental impact goes beyond the national borders or Economic Exclusive Zones and the problems faced by the Danube and Black Sea are extremely serious they require rapid and decisive measures in a joint, regional frame.

The Black Sea has several unique features: it is the world's largest land-locked sea and the world's largest anoxic sea (90% of its volume), with a high stratification of the water column (salinity and temperature). The Black Sea is a young sea where natural changes still take place and is still subjected to maturation processes. It is considered one of the most endangered marine system, due to high eutrophication, pollution, invasive alien species and overexploitation of resources. It has a catchment area six times larger than its own surface. The main river drained by the Black Sea is the Danube River, which drains an area twice the size of the Black Sea and brings 76% of the annual freshwater discharge. The Danube River is also highly polluted and affected by human activities. Between the Black Sea and the Danube basin stands the Danube Delta, a small buffer system with an area of 5,000 km² (1/86 of the Black Sea's area). While there are 6 countries bordering the Black Sea and 17 in its catchment, the Danube River crosses 12 countries and drains small parts of several more.

The Danube and the Black Sea are, like all other large rivers and epicontinental seas in Europe, facing a variety of problems as a result of conflicting functions. The most obvious conflicts are those between the river as a means of transport of waste substances (that affect the quality of water) and the production of electricity (dams) on one side, and the river as a source of irrigation water and the production of drinking water, as fishing water and as recreational areas on the other side. It is likely that the various sectors of the economy, such as industrial production, electricity production, transport and agriculture, will be stimulated in the Danube river basin in the coming years and will therefore grow. This necessitates the taking of timely measures to ensure that the various functions of the

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Danube and Black Sea do not conflict even more but rather show a balanced development. Where certain functions already conflict, measures are needed which lead to a restoration of the balance, in pursuit of the sustainability of the river and sea functions.

Presently, the Black Sea must process a gigantic quantity of nutrients and xenobiotic substances. In the long term, it is difficult to imagine that the system will be able to endure this. In the determination of limiting conditions (standards) for the water quality of the Danube, the capacity of the Black Sea will possibly be the limiting factor. The destruction of about 300,000 ha of wetlands along the Danube floodplain in Romania alone caused a rise in the load reaching the Black Sea.

Regional approaches

Policymakers and managers within a number of countries have begun to move away from a sector-by-sector approach to managing marine resources and towards an integrated, total ecosystem strategy for regulating coastal development, fish harvest, and other aspects affecting marine biodiversity. Such an approach, whether on land or at sea, can be used to balance conservation needs with the economic and social demands of people living within coastal zones or adjacent marine and terrestrial habitats. The concept of *bioregional management* offers a mean of coordinating the activities of the various governmental agencies and other institutions charged with coastal zone resource management.

Most of Europe's seas have environmental problems associated with human activities. For most seas, the scale of the problems has not been fully quantified or understood. In order to improve this situation, detailed quality and status assessments are required. Such assessments establish the scope of any environmental impacts and effects, and provide a quantitative baseline against which future quality can be compared and progress monitored. *Establishing a baseline of quality* in terms of input loads, contamination levels and biological status and effects is a major starting point.

The Black Sea has many functions, ranging from fishing, tourism and mineral extraction on one hand, to its use as a cheap transport route and as a convenient place to dump solid and liquid waste on the other. Many of these uses have an additional economic cost through their impact on the environment. The present environmental crisis was precipitated largely by ignoring these hidden costs. Like so many environmental issues, by paying little or no attention to these costs, they have been conveniently transferred from one generation to the next. For example, the yearly cost of oil wasted down the Danube is about 7 million USD (50,000 t/year).

An integrated marine and coastal zone management policy must be applied together with heavy investments in services, to stop the deterioration of the economic and social value of the Black Sea Coast. The Black Sea Coast is the only marine area available to millions of eastern Europeans. The following activities must be undertaken to improve its status: minimise or eliminate inputs of pollutants; conduct environmental impact assessments of major activities with potential impacts on marine systems, and systematically monitor and evaluate these impacts; address socio-economic needs of coastal communities and ensure meaningful participation of these communities in the planning and implementation of the policies; collaborate at a regional level to address land-based impacts on marine systems.

Regional agreements concerning the Black Sea

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The resources of the Black Sea are shared by six coastal countries: Bulgaria, Georgia, Romania, Russia, Turkey and Ukraine. Management of the Black Sea's shared resources is the responsibility of these countries but part of the responsibility for controlling aquatic and airborne pollution must also be shared amongst the eleven other countries which have a major part of their territory in the Black Sea basin. Most of all *protection of the Black Sea cannot be made on a unilateral basis*. Joint management and protection of shared resources is one of the few available options to countries bordering the Black Sea. In this manner, *a better sense of ownership of the sea's resources can be attained*.

Until recently, the Black Sea was unprotected by any common policy or legal regime. It became obvious that the protection of the Black Sea cannot be achieved on a unilateral basis. Almost every use of the sea and coastal areas has the potential for affecting the well being of neighbouring countries. Joint management and protection of shared marine living resources is one of the few available options to countries bordering the Black Sea. The most common problems facing the implementation of ICZM in Black Sea coastal states (valid for Romania also) are:

- there is a strong need for new (ICZM) laws or amendments of existing laws related to sustainable development in the coastal zone. This also includes a need of strengthening local administration.
- lack of coordination in the coastal zone between governmental and non-governmental departments.
- in the different sectors in the coastal zone there are increasing current and potential conflicts concerning the exploitation of resources.
- there is a weak public participation in the decision-making process focused on coastal zone management.
- a severe shortage of financial resources for environmental/ICZM investments.
- limited institutional capacity to adapt to the new requirements, lack of trained personnel for the specific needs of ICZM.

An international workshop on the Black Sea held in Varna (Bulgaria) in 1991, led to the beginning of **The Cooperative Marine Science Program for the Black Sea**. It aimed at:

- understanding the oceanographic processes and rates contributing to the environmental quality, including variability in time and space,
- assess the role of human inputs,
- the effects of long-term climatic changes,
- develop realistic ecological models, coupled with general and regional circulation dynamics in a form used for management,
- establish a long-term database of fluxes and materials that affect the Black Sea.

Inspired by the Regional Seas Conventions which emerged after the 1972 Stockholm Conference on Environment and Development, representatives of the Black Sea countries began to negotiate a Convention for the protection of the Black Sea in 1985 which was finally signed in 1992 in Bucharest by all six countries, "The Convention for the Protection of the Black Sea Against Pollution", also known as the Bucharest Convention. The main goals of this agreement are:

1. protection of the marine environment against pollution from land-based sources;
2. cooperation in combating pollution of the marine environment by oil and other harmful substances in emergency situations;
3. end of dumping;
4. scientific and technical cooperation and monitoring.

Unfortunately, the convention does not state the priorities and timetable needed to bring about environmental actions. For this reason, a **Ministerial Declaration on the Protection of the Black Sea Environment** was signed in Odessa in 1993. Based largely

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upon the Agenda 21 this innovative document sets the stage for three years of change. A request for support to the Global Environmental Facility, received funding in 1993 and so started the **Black Sea Environmental Program**, jointly managed by the UNDP, UNEP, the World Bank and also by the European Union's Phare and Tacis programs, and by other governments. The goals of this program are:

- improve the capacity of Black Sea countries to assess and manage the environment,
- support the development and implementation of new environmental policies and law,
- facilitate the preparation of sound environmental investments.

As a result, in 1995, for the first time in almost two centuries of scientific research on the flora and fauna of the Black Sea, the littoral states each prepared National Reports showing the current situation within their borders. These reports formed the basis for the compilation of a regional report on the biological diversity of the Black Sea (Zaitsev & Mamaev, 1997). The first step in creating the Black Sea Action Plan was the completion of a systematic scientific analysis of the root causes of environmental degradation in the Black Sea and led to the identification of:

- the sectoral activities that cause the degradation and its seriousness;
- the information gaps, policy distortions, institutional deficiencies;
- economic and social aspects vital for the successful implementation of the plan.

The analysis of root causes termed a **Transboundary Diagnostic Analysis (TDA)**, completed on 22 June 1996 (see Annex). The results of the TDA clearly demonstrate that the Black Sea can still be restored and protected. Unfortunately, most targets set were focused on reducing overfishing, and very little on coastal development and pollution. On 31 October 1996, Environmental Ministers from Bulgaria, Georgia, Romania, Russian Federation, Turkey and Ukraine met in Istanbul to sign the **Black Sea Strategic Action Plan**, one of the most comprehensive programs ever undertaken, the product of three years of consultations and research. Lack of funds and economic uncertainty in the area prove to be the major setbacks, impossible to cope with at national level, needing international cooperation and support.

TDA recommendations for Black Sea countries (according to Zaitsev & Mamaev, 1997):

1. set progressively higher targets for use of small pelagic fish directly for human food and progressively reduce amounts of fish going to fish meal/oil. The proportion going to food should be no less than 50% in 2000 (not achieved by all countries).
2. licensing of all larger fishing boats, allowing the reducing of the number of licenses in time during fleet renewal process.
3. encourage the reduction of the total fishing power of the Black Sea fleet, thus reducing overfishing.
4. encourage the sale of licenses between countries with overcapacity and those with needs for fleet rebuilding or replacement.
5. jointly decide access area for national fleets in international waters to avoid conflicts.
6. create and maintain a common database both on resources and fishing fleets.
7. develop an equitable system of allocations of either fleet capacity and quotas by country.

Regional agreements concerning the Danube River

Due to its importance in providing a cheap mean of transport for Central and Eastern European countries, for more than 150 years the Danube Commission has supervised, regulated and controlled navigation. Although several regional agreements were signed regulating activities in the Danube Basin, none focused on environmental aspects until recently. Traffic on the Danube is very intense, amounting at 138.8 billion tons in 1989.

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In 1991, GEF started financing the Danube River Basin Program for the environmental protection of the river together with the Danube Delta Biodiversity Project. The European Bank for Reconstruction and Development financed in 1990 a study of the Danube by the Equipe Cousteau (Equipe Cousteau, 1993).

The Danube, unlike the other large European rivers, is only slightly developed, especially downstream of Vienna (Austria). This relative freedom is one of the river's richness and would come to an end if it is developed. The Danube is not chronically polluted in its entirety. This is partly due to the high flushing rate of the system which is, in turn, a consequence of the enormous flow rate of the river and its seasonal variability (6,000 m³/s upstream the Danube Delta). There is a large number of pollution "hot spots", that reflect the discharge of waste and effluents from human activity.

In October 22, 1998, the convention on Cooperation for the Protection of the Danube (Danube Protection Convention) came into force. One year later the International Commission on the Protection of the Danube River was set up to support the implementation of the targets and regulations of the convention. A Task Force was set up by the UNDP, GEF and the EU-Phare program to draw a feasibility study and to develop a Strategic Action Plan as a basis for national programs and other financial strategies. The first steps were to deal with two special issues:

1. Monitoring, Laboratory and Information Management Expert Group for the monitoring and quality assessment issue.
2. Accident Emergency Warning System, for early information on accidental water pollution incidents.

Last year several more agreements were signed:

- "Agreement on the Establishment and Joint Management of a Transboundary Protected Area in the Danube Delta and Lower Prut River" by Romania, Ukraine and Moldova.
- "Declaration on the Cooperation for the Creation of a Lower Danube Green Corridor" by Bulgaria, Moldova, Romania and Ukraine. This includes measures for the management of existing protected areas, for the establishment of new protected areas and for the restoration and rehabilitation of floodplain wetlands both with and outside protected areas.

Several key obstacles were identified during the last ten years of joint regional activities:

- lack of experience in much of the region with regards to practical restoration projects;
- lack of knowledge and information about the economic benefits of floodplain and the economic value of restoration;
- lack of coherence within and between donors, meaning constantly changing donor priorities and difficulties in achieving long-term tasks.

Recently, WWF International started the Danube – Carpathian Programme, in an attempt to fund biodiversity studies and promote awareness on the value and vulnerability of this area.

Conclusion

The several projects focused on the Black Sea and Danube River and Delta will provide a unique opportunity to link the concepts of *river basin management, wetland conservation and management, integrated coastal zone management and marine resource management*.

There are still gaps in the integrated management of natural resources. In Romania for example, the Danube Delta Biosphere Reserve includes the Razim-Sinoe lagoons, but most of the littoral lakes are not protected and are highly polluted by sewage, thus also affecting the coastal zone. The only littoral lake formally protected is lake Agigea, but no

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measures are taken to reduce the nutrient and pollutant burden drained into it. The present approach in the Romanian cities bordering the Black Sea is to built longer pipelines to dispose of the sewer further away from the coast. The bottom current directs the polluted waters towards the deep parts of the sea, but no estimate was done to assess the impact of the huge amounts of organic matter and pollutants on the already anoxic deep waters.