


Forest Ecosystems

Please provide to following details on the origin of this report

Contracting Party	The Republic of Moldova
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Date of submission:	November 20, 2002

Please provide summary information on the process by which this report has been prepared, including information on the types of stakeholders who have been actively involved in its preparation and on material which was used as a basis for the report

The thematic report on forest ecosystems has been prepared basing on the available information from the current assessment of the First National Report on Biological Diversity, National Strategy and Action Plan on Biological Diversity Conservation, the Second National Report on Biodiversity in the Republic of Moldova and National Report on Forest Fund State in the Republic of Moldova. Also, the information from monographs, collections of scientific works, reports submitted to the relevant conferences was used to compile this thematic report. The collaborators of the Chair of Forestry within the University of Real Sciences and the Institute of Forest Researches and Planning under the State Forest Agency "Moldsilva" (SFA) brought an important contribution to the elaboration of this report. The databases held by the scientific and educational institutions served as source of information for the elaboration of the thematic report, which shows the real state of the forest ecosystems in the Republic of Moldova. Close contacts have been established with various state organizations (SFA "Moldsilva", Institute of Forest Researches and Planning, Chair of Forestry within the University of Real Sciences, Institute of Botany under the Academy of Sciences of Moldova (ASM), Institute of Zoology under ASM, State University of Moldova and State Agrarian University) and NGOs ("Ecospectru", "Progresul Silvic", Centre for the Conservation of Forest Resources "Fagus", Society of Botany of the Republic of Moldova, Association of Zoologists of the Republic of Moldova, "Biodiversity Protection"), and scientists from academic and branch institutions. Contacts have been also established with the National Scientific Council for Biodiversity Conservation (NSCBC) and experts from the General Division on Protected Areas and Biodiversity within the Ministry of Ecology, Construction and Territorial Development (MECTD).

Decision IV/7 on Forest biological Diversity

1. What is the relative priority afforded to implementation of this decision by your country?					
a) High		b) Medium	X	c) Low	
2. To what extent are the resources available adequate for meeting the obligations and recommendations made?					
a) Good		b) Adequate		c) Limiting	X
				d) Severely limiting	

3. Has your country assessed the status and trends of its forest biological diversity and identified options for its conservation and sustainable use? (Decision IV/7, paragraph 12)	
a) no	
b) assessment underway (please give details below)	X
c) assessment completed (please give details below)	
d) not relevant	

If a developing country Party or a Party with economy in transition -

4. Has your country requested assistance through the financial mechanism for projects that promote the implementation of the focused work programme on forest biological diversity? (Decision IV/7, paragraph 7)	
a) no	X
b) yes (please give details below)	

Programme element 1: Holistic and inter-sectoral ecosystem approaches that integrate the conservation and sustainable use of biological diversity, taking account of social and cultural and economic considerations

5. Has your country identified methodologies for enhancing the integration of forest biological diversity conservation and sustainable use into a holistic approach to sustainable forest management at the national level? (Work Programme, paragraph 13)	
a) no	
b) yes – limited extent (please give details below)	X
c) yes – significant extent (please give details below)	
d) not applicable	
6. Has your country developed methodologies to advance the integration of traditional forest-related knowledge into sustainable forest management, in accordance with Article 8(j)? (Work Programme, paragraph 14)	
a) no	
b) yes – limited extent (please give details below)	X
c) yes – significant extent (please give details below)	
d) not applicable	
7. Has your country promoted cooperation on the conservation and sustainable use of forest biological resources at all levels in accordance with Articles 5 and 16 of the Convention? (Work Programme, paragraph 15)	
a) no	
b) yes – limited extent (please give details below)	
c) yes – significant extent (please give details below)	X

d) not applicable	
8. Has your country promoted the sharing of relevant technical and scientific information on networks at all levels of protected forest areas and networking modalities in all types of forest ecosystems? (Work Programme, paragraph 17)	
a) no	
b) yes – limited extent (please give details below)	X
c) yes – significant extent (please give details below)	
d) not applicable	

Programme element 2: Comprehensive analysis of the ways in which human activities, in particular forest-management practices, influence biological diversity and assessment of ways to minimize or mitigate negative influences

9. Has your country promoted activities for an enhanced understanding of positive and negative human influences on forest ecosystems by land-use managers, policy makers, scientists and other relevant stakeholders) (Work Programme, paragraph 29)	
a) minimal activity	
b) yes – limited extent (please give details below)	X
c) yes – significant extent (please give details below)	
d) not relevant	
10. Has your country promoted activities to assemble management experiences and scientific, indigenous and local information at the national and local levels to provide for the sharing of approaches and tools that lead to improved forest practices with regard to forest biological diversity? (Work Programme, paragraph 30)	
a) minimal activity	X
b) yes – limited extent (please give details below)	
c) yes – significant extent (please give details below)	
d) not relevant	
11. Has your country promoted activities with the aim of providing options to minimize or mitigate negative and to promote positive human influences on forest biological diversity? (Work Programme, paragraph 31)	
a) minimal activity	
b) yes – limited extent (please give details below)	X
c) yes – significant extent (please give details below)	
d) not relevant	
12. Has your country promoted activities to minimize the impact of harmful alien species on forest biological diversity? (Work Programme, paragraph 32)	
a) minimal activity	
b) yes – limited extent (please give details below)	X
c) yes – significant extent (please give details below)	
d) not relevant	
13. Has your country identified means and mechanisms to improve the identification and prioritisation of research activities related to influences of human activities, in particular forest management practices, on forest biological diversity? (Work Programme, paragraph 33)	
a) minimal activity	
b) yes – limited extent (please give details below)	X

c) yes – significant extent (please give details below)	
d) not relevant	
14. Does your country hold research results and syntheses of reports of relevant scientific and traditional knowledge on key forest biological diversity issues and, if so, have these been disseminated as widely as possible? (Work Programme, paragraph 34)	
a) not relevant	
b) some relevant material, but not widely disseminated	
c) significant material that could be more widely disseminated (please give details below)	X
d) yes - already widely disseminated (please give details below)	
15. Has your country prepared case-studies on assessing impacts of fires and alien species on forest biological diversity and their influences on the management of forest ecosystems and savannahs? (Work Programme, paragraph 35)	
a) no – please indicate below whether this is due to a lack of available case-studies or for other reasons	X
b) yes – please give below any views you may have on the usefulness of the preparation of case-studies for developing a better biological understanding of the problem and/or better management responses.	

Programme element 3: Methodologies necessary to advance the elaboration and implementation of criteria and indicators for forest biological diversity

16. Has your country assessed experiences gained in national and regional processes, identifying common elements and gaps in existing initiatives and improving indicators for forest biological diversity? (Work Programme, paragraph 43)	
a) minimal activity	X
b) yes – limited assessment made (please give details below)	
c) yes – significant assessment made (please give details below)	
d) not relevant	
17. Has your country carried out taxonomic studies and inventories at the national level which provide for a basic assessment of forest biological diversity? (Work Programme, paragraph 43)	
a) minimal activity	
b) yes – limited assessment made (please give details below)	
c) yes – significant assessment made (please give details below)	X
d) not relevant	

If you have ticked any of the boxes in questions 5 to 17 above which invite you to provide further details, please do so here.

(Information can include descriptions of methodologies and of activities undertaken, reasons for success or failure, outcomes and lessons learned)

1. At present the forests in the Republic of Moldova cover 394 000 ha (9,6%) of the country. The biodiversity of the forests is rich. The number of vascular plant species in forest ecosystems is about 1000 and mushroom species more than 1000. The number of animal species (terrestrial vertebrates) is 172 and about 10 000 species of insects occur in forest ecosystems. 46 species of endangered and vulnerable vascular plants grow in forests. All forests in Moldova are included in the first functional group, which means that the function of these forests is a protective one. This group includes several functional categories. There are 5 scientific reserves in the Republic of Moldova, of which 2 are forest reserves and 3 forest-aquatic ones.

The inadequate forest management in the past led to a non-proportional distribution of forests after their age, quality and origins in Moldova. This fact caused the diminution of forest quality, change of forest compartments and the decrease of biodiversity in certain areas. Taking into account the above-mentioned, we consider as high priority the implementation of the decision of the Conference of the Parties.

2. The Republic of Moldova does not have enough financial and institutional resources to implement the decisions of the Convention on Biological Diversity. The low level of funding from the state budget does not allow to carry out large researches in the field of forest biodiversity protection and conservation, development and functioning of the system of natural protected areas and protection of vulnerable and endangered species of animals and plants. The research programs are limited. The capacities of institutions are not enough to investigate the biodiversity components. The complex programs on biodiversity research lack. The foreign financial assistance would mean an essential support for the protection of forest ecosystems biodiversity.

3. The state body, which manages 89% or 311,8 thousand ha of the National Forest Fund, is State Forest Agency "Moldsilva" (SFA). State forests are subject to forest arrangements, which provide the description of the state of some forest biodiversity parameters: typological diversity of forests, species composition of forest sub-compartments, state of grassy cover, regeneration, etc. Some data on the state, problems and methods of the conservation of forest ecosystem biodiversity are shown in the First national Report on Biological Diversity of the Republic of Moldova (prepared by MECTD, Biodiversity Office, GEF Project "Biodiversity Conservation, 2000) and in the Strategy on Sustainable Development of the National Forest Sector, and Annals

of the Academy of Sciences of Moldova. Unfortunately, large programs on forest biodiversity conservation and sustainable use of forest resources have not been elaborated.

4. In 1996 the Republic of Moldova requested financial support from the Government of Finland to prepare the Strategy on Sustainable Development of the National Forest Sector. This support was offered and Moldova elaborated the above-mentioned paper, which was approved by the Parliament of the Republic of Moldova on July 12, 2001. In 1999 Moldova received funding (125 000 USD) from the World Bank to prepare the First National Report on Biological Diversity, Biodiversity Conservation Strategy and Action Plan. They were approved by the Parliament of the Republic of Moldova on April 27, 2001.

5. Special methods of strengthening and solving the issues of conservation and sustainable development of forest biodiversity were not elaborated. The long-term Strategy on Sustainable Development of the National Forest Sector stipulates the issues of integrating forest sector with agricultural and energy ones, processing industry and people recreation, with the purpose of sustainably developing forest sector and conserving biodiversity.

The basic documents that can be used to implement the provisions of the Convention on Biological Diversity within the framework of conserving forest biodiversity in Moldova are the following:

- Forest Code, 1996
- Law on animal Kingdom, 1995
- Law on the Fund of Natural Areas Protected by State, 1998
- Law on Plant Protection, 1999
- Law on the Improvement of Degraded Lands Through Afforestation
- Law on Environment Protection, 1993
- Law on Natural Resources, 1997
- Law on the Principles of Urbanistics and Territorial Development, 1996
- Law on Monument Protection, 1993
- Law on the Payment for Environment Pollution, 1998
- Land Code, 1992
- Red Book of the Republic of Moldova, second edition
- Parliamentary Decision on the Concept of Developing the National Hunting Fund, 1997
- Governmental Decision on the Register of Soils and Plant Hybrids Which Are Harvested in the Republic of Moldova, 1994

- Governmental Decision on the Collection of Snails, 1994
- Governmental Decision on the Approval of the Basic Principles for the Restoration of the Degraded Lands, 1994
- Governmental Decision on the Approval of the Regulation of SFA “Moldsilva”, 1995
- Governmental Decision on the Improvement of the Management of Forest Fund and Forest Vegetation, 1996
- Governmental Decision on the State Review of the Forest Fund, 1997
- Governmental Decision on the Classification of Forests into Functional Groups and Categories, 1997
- Governmental Decision on the Foundation of the Scientific Reserve “Codru”, 1971
- Governmental Decision on the Foundation of the Reserve “Iagorlic”, 1998
- Governmental Decision on the Foundation of the State Reserve “Prutul de Jos”, 1991
- Governmental Decision on the Foundation of the State Natural Reserve “Plaiul Fagului”, 1992
- Governmental Decision on the Foundation of the State Natural Reserve “Padurea Domneasca, 1993
- Regulation on Rare, Endangered and Vulnerable Species of Animals and Plants in the Republic of Moldova – Red Book of the Republic of Moldova, 1995
- Provisional Regulation on Grass Harvesting and Grazing on the Territories of the Forest Fund of the Republic of Moldova, 1993
- Regulation on the Way of Recovery of the Damage Caused Through Minor Offences in Forestry, 1992

6. The Republic of Moldova did not elaborate special methods of active use of the traditional knowledge. Nevertheless, the traditions of sustainable forestry are shown in the Forest Code and are stipulated at the relevant workshops and seminars.

7. The Republic of Moldova has ratified the following biodiversity-related conventions and country programs:

- Action Program on Sustainable Development “Agenda XXI” (Rio de Janeiro, 1992);
- Concept of Environment Protection in the Republic of Moldova (1995), which proposed a new concept of governmental policy in the process of economy reformation considering

environmental issues for a sustainable development;

- National Strategic Action Program on Environment Protection for the Period of 1995-2010-2020 (1995), which has the purpose of directing economy, environment and the whole social system towards a prosperous human development and a healthy society with a high level of living conditions;
- National Environmental Action Plan (NEAP), 1996, which identifies the priority fields and purposes of the environmental policy of the country for a short-term (1 year) and medium-term (up to 3 years) period. The implementation of the NEAP mainly depends on the capacity of implementing general policy with concrete results at local level, including through the planning of environmental activities at local level;
- Environmental Performance Review of the republic of Moldova (1999), which has been elaborated by the Economic Commission for Europe of the UN. Its main objective is the assessment of the environment and environmental protection activities in Moldova, as well as providing assistance to the Government of the Republic of Moldova for achieving performances in the field of environment protection by generalizing existing data and information in this domain and giving recommendations on the improvement of the ecological policy;
- Biodiversity Conservation Strategy and Action Plan (2001);
- Strategy on Sustainable Development of the Forest Sector in the Republic of Moldova;
- Concept of the Environmental Policy of the Republic of Moldova (2002), which proposed the background for the governmental environmental policy for the period of transition to market economy. It also stipulated the priority directions of the national environmental policy according to the global ones.

8. At present there are 63 000 ha of forest lands protected by state, which represent 95% of the surface of state protected areas. The state protected areas are grouped into 5 scientific reserves and other protected areas. It is planned to establish the national parks “Nistrul Inferior” and “Codrii Orheiului”.

Two natural areas protected by state (“Padurea Domneasca” and “Prutul de Jos”) have been included in the “EMERALD” Network.

9. The majority of workshops, conferences and publications dedicated to forestry are carried out

under the following slogan: “Forest is an ecological stabilizing factor”. Unfortunately, little attention is paid to the impact of the anthropic factor on forest ecosystems. Most of our forests are degraded as a result of multi-annual negative anthropic impact.

10. The traditional knowledge and experience of the local population on the sustainable development of the forest sector are not largely applied. The traditions of non-timber resources use (herbs, berries, walnuts cultivation etc.) have been revived lately and allow to apply the traditional knowledge to the conservation and sustainable development of forest biodiversity.

The measures directed to the minimization or mitigation of the negative human impact on forest

Biodiversity and used in forest practice are the following:

- Development of the network of protected areas according to the current state and observance of legislation on the state protected units;
- Extension of areas covered with forest vegetation by creating new forest crops, forest screens and afforesting degraded lands;
- Increase of the bioproductive and ecoprotective potential of the forests by:
 - establishing the forest frame,
 - creating seed fund of the main autochthonous species and using the seed of local origins in forest activities,
 - prohibiting to use some alien invasive species of aggressive nature, such as: *Acer negundo*, *Amorfa fruticosa*, *Caragana arborescens*,
 - establishing and keeping the optimal structure of the age class in the natural forests and planted ones,
 - performing forest-technical activities in accordance with the technology requirements and ecological principle on the basis of forest typology,
 - combating pests only through biological methods.

12. Information on the negative impact of alien species on the forest biodiversity in Moldova is showed in the First National Report on Biological Diversity. This issue remains actual for the Republic of Moldova at the level of flora and fauna, taking into account that during the last two decades the expansion of such species as *Acer negundo*, *Carpinus betulus*, *Robinia pseudoaccacia*, *Hyphantria cunea*, *Nyctereutes procyonoides* occurred.

It is proposed to stop growing and using aggressive alien species, such as *Acer negundo*, *Amorfa*

fruticosa, *Acer dosicarpum*, in the forest sector and to entirely or partially withdraw them during sanitary cuttings.

13. The Institute of Forest Research and Planning was set up in 1999. The laboratory on forest Biodiversity has been established within this Institute. At present a detailed program on forest biodiversity researches is being elaborated.

14. The Institute of Botany and Institute of Zoology of the Academy of Sciences of the Republic of Moldova have prepared and published the following papers on the basis of multi-annual flora and fauna researches:

- Identification Manual of Superior Plants from Moldova (1986);
- The Vegetal World of the Republic of Moldova, 5 volumes (1986-1989), where more than 1850 species of forest flora are described. The first three volumes focus on biological diversity of the forests: volume one describes plants of forest glades and skirts, 1986; volume two identifies vascular plants, 1986; volume three shows forest plants (mushrooms, mosses, lichens), 1987;
- Botanical Researches, 9 volumes, (1981 – 1990);
- Vegetation of the Republic of Moldova, 1995;
- Animal World of the Republic of Moldova, 6 volumes, (1979 – 1984);
- Rare and Endangered Birds of Moldova, (1989);
- Rare and Endangered Insects of Moldova, (1992), describes wildlife, in particular, that of forests;

The Institute of Botany (Botanical Garden) has elaborated the first 4 (of 6) volumes “Flora of Bessarabia”. Unfortunately, none was published because of the lack of funds. The data on forest biodiversity of the Republic of Moldova are gathered by the State Forest Agency “Moldsilva” through the scientific laboratories of reserves that annually prepare “Nature Annals”, Ministry of Ecology, Construction and Territorial Development and environmental NGOs. These data are not widely shared among the population, the reason being their scientific style of writing and as a result the public is not interested in it.

15. The forest fires (which occur because of human fault) are not widely spread in Moldova and do not heavily impact the forest biological diversity (because of the specific structure of the forests).

Distribution of the deciduous species in the National Forest Fund of the Republic of Moldova

Species	Area, thousand ha
Quercus species, Including:	140,6
Quercus robur	78,4
Quercus petraeae	56,6
Quercus pubescens	4,8
Quercus borealis	0,8
Acacia grove	113,9
Ash grove	16,6
Poplar grove	10,7
Hornbean grove	9,4
Linden tree grove	2,9
Beech grove	0,4
Resinous grove	7,2

The forests of the Republic of Moldova, according to their species composition with the domination of deciduous species (97%), are classified as having a low risk of forest fires (the average being 3,6 points). The main cause of the forest fire is the irresponsible attitude of the people. Another threat to forest biodiversity is the illicit cutting, unauthorized grazing, pollution of the forest fund with municipal waste and unregulated tourism. The factors, which have a direct influence on biodiversity, generate also an indirect impact on the reduction of biodiversity, contributing in this way to the penetration of invasive species (*Urtica sp.*, *Canabis sp.*, *Chenopodium sp.* and *Atriplex sp.*) into forest ecosystem, intensification of the secondary successions in ecosystems, extension of the areas covered by aggressive synanthropic species and secondary phytocenoses with a reduced composition of species. The coniferous forests (*Pinus sp.* and *Picea sp.*), which usually are subject to forest fires, have a very small weight and, that is why, the fires are registered yearly on an area of 50-100 ha, where practically the grassy layer is destroyed.

An intensive invasion of *Acer negundo* and *Robinia pseudoacacia* occurs in the forest ecosystem

of the Republic of Moldova. *Acer negundo*, considering its high potential of reproduction, eliminates such autochthonous species like *Populus alba*, *Fraxinus excelsior*, *Quercus robur* from associations, especially from azonal forests of the Prut and Nistru river meadows. *Robinia pseudoacacia* penetrates very actively in forests of *Quercus petraea* and *Quercus robur*.

Evolution of forest structure in Moldova between 1925 – 1998.

Specii	1925 – mii ha	1925 - %	1998 – mii ha	1998 - %
Quercus species	119,	56,9	140,6	43,3
Hornbeam grove	123,9	11,4	9,4	2,8
Linden tree grove	15,2	7,2	2,9	0,9
Poplar grove	12,7	6,1	10,7	3,3
Ash grove	12,5	6,0	16,6	5,1
Beech grove	2,5	1,2	0,4	0,2
Acacia grove	0,9	0,4	113,9	35,0
Resinous grove	0,06	0,03	7,2	2,2

Special thematic researches on alien species impact on forest biological diversity have not been carried out and are not planned for the next years by the research institutions of the Academy of Sciences of Moldova and the Institute of Forest Research and Planning. It happens because of the lack of funds and incomplete awareness of the fact that alien aggressive species change the floristic composition of forest biocenoses, leading to the diminution of the biological diversity.

17. The last forest planning in the cycle of ten years in the Republic of Moldova was performed in 1985 by a team of experts from Kiev (Ukraine). Since 1992 the planning of the National Forest Fund (about 325 000 ha) has been carrying out by forest engineers from Moldova with the direct participation of experts from Romania. The forests are divided into 69 forest ranges, 5 reserves with 187 forest sectors.

The main objectives of the forest planning are the following:

- to assess the forest resources and their ecoproductive potential;

- to identify the current structure of the forest stands according to their regime of management, species, age class, production class and composition;
- to establish the ecological and social-economic functions of the forest;
- to make up the harvesting plans.

Since 1992 the system of supervising the health conditions of the forest and inventory of the National Forest Fund has been existing. The Republic of Moldova is the member of the Program on International Cooperation for the Assessment and Monitoring of the Effects of Pollution on Forest "ICP-Forest". The national network of polls includes 700 poolls and the European one includes 12 permanent polls. The Republic of Moldova belongs to the group of countries with heavily affected forests.

The forest monitoring and planning, which assess the real condition of the National Forest Fund, identifies 2 basic strategic directions:

- restoration of the vital potential of existing forests;
- extension of the areas with forest cover.

The main operational element and objective of the forest policy is the Program on the Conservation of the Forest Biological Diversity that is shown in the National Biodiversity Conservation Strategy and Action Plan and the Strategy on Sustainable Development of Forest Sector of the Republic of Moldova.