2.4.2. Government - local

The Constitution of Mongolia establishes local-government units at three levels: aimag, sum and bag, and each have governors (executive), citizens' Khurals (legislative), and the courts (judiciary). The capital city, Ulaanbaatar, is divided into districts (duureg) and sub-districts (khoroo). Governors are appointed by the aimag and sum citizens' Khurals. In this report references to aimag, sum and bag can be assumed to include the capital city and its subdivisions.

Aimag and capital city governors are responsible for environmental protection measures in the areas under their jurisdiction. Specifically, they have to develop the measures, transmit them to the local Khural, and organize implementation. They also have to send ecological information to the central government, control or prohibit activities with adverse environmental impact and equip State Environmental Inspectors with required equipment and transportation.

Sum governors issue permits, monitor compliance with laws and regulations and assess the benefits to citizens of the environmental legislation.

Apart from the State Environmental Inspectors and Rangers (see section 2.1.2.) there is a third implementing arm for Mongolia's biodiversity conservation activities. These are the Certified Organizations who collaborate with local governments on issues of protection and utilization of natural resources. For example, they recommend quotas for hunting on the basis of surveys, and they take actions to protect the environment from disease, harmful insects and rodents. Currently the forestry and hunting boards act as Certified Organizations but many have not yet been officially certified and are experiencing financial and management difficulties as a result.

The aimag and Capital City Khurals are responsible for approving environmental protection measures and the required budget, for setting maximum limits for the use of natural resources in each sum or duureg, for making decisions on the status of local protected areas and for establishing their boundaries. Sum or Duureg Khurals determine the actual limits on the use of natural resources and approve environmental protection measures at the local level.

The local judiciary consists of thirty-six trial courts and twenty-one courts of appeal distributed around the country.

Although there are administrative and legislative frameworks there is still insufficient knowledge about environmental issues and ecology among the governors, the legislators and the judiciary. There is also insufficient consultation between governors and the Khurals and the general public. There are conflicts that need resolution, for instance, with regard to the administration of special protected areas. Local government administrations sometimes duplicate activities, compete for business, or apparently overlap in their legal responsibilities. There is a need for

greater logistical support and increased training for the State Environmental Inspectors and Rangers.

2.4.3. Private - non-governmental Mongolian organizations

The first environmental association, known as 'MACNE' (The Mongolian Association for the Conservation of Nature and Environment) was established in Mongolia in June, 1975. Since 1990 it has become more independent of government. It is concerned with training, public information, and conservation projects such as Przewalskii's horse reintroduction and snow leopard research.

Other Mongolian environmental associations includes:

- The Mongolian Gazelle Society which is concerned with conservation of the Mongolian Gazelle.
- The Environmental Law Society, which was established in 1994 to advise the public on environmental law issues and to lobby for private citizens.
- The Green Movement, which was formed in 1994 to lobby for and carry out activities in support of environmental protection. (Note: The Green Party is a separate organization - a political party campaigning on an environmental platform).

According to the Law on Environmental Protection, environmental NGO's carry out implementation of environmental legislation, carry out reviews, demand alleviation of shortcomings determined during such reviews, submit their suggestions and recommendations concerning environmental protection, organize training, develop projects and recommendations, methodologies for conservation and restoration of nature and the environment. The Government of Mongolia may delegate special functions of its responsibilities for environmental protection to NGO's on a contractual basis, and may finance the implementation.

A draft law on NGO's is being processed and is expected to be adopted within the next two years.

2.4.4. Private - for profit

(a) Environmental firms

Several environmental consulting firms have been formed since 1990 to supply the demand for professional expertise in the field of environmental surveys, training and impact assessment. They rely to a large extent on contracts with international donors.

Renewable energy is becoming a growing field, and the demand for small individual-ger capacity wind and solar generators is being met by a number of

companies that specialize in the import, manufacture, distribution and installation of renewable energy appliances.

(b) Other private economic organizations

All economic entities and organizations in Mongolia have to comply with legislation on the environment, observe national standards on emission and other environmental effects and pay for their own environmental impact assessments when required in the case of new activities.

2.5. Assessment of law and policy

2.5.1. Legislation: laws, regulations, resolutions, conflicts

The 1991 Constitution establishes the right of Mongolian citizens to live in a safe and healthy environment and states that all land and natural resources of Mongolia are subject to state protection.

The adoption of environmental laws in conformity with the constitution created a legal basis for the protection of species.

Almost all laws have some relevance to biodiversity conservation. The most closely related are the following:

- Law on Environmental Protection, 1995
- Law on Air, 1995
- Law on Hunting, 1995
- Law on Protection from Toxic Chemicals, 1995
- Law on Forests, 1995
- Law on Natural Plants, 1995
- Law on Water, 1995
- Law on Land, 1994
- Law on Underground Resources, 1994
- Law on Mineral Resources, 1994
- Law on Protection of Livestock Genetic Fund and Health, 1994
- Law on Natural-Plant-Use Fees, 1995
- Law on Fees for Use of Water and Mineral Water, 1995
- Law on Forest-Use Fees, 1995
- Law on Hunting-Resource Use and Hunting and Trapping Authorization Fees, 1995
- Law on Special Protected Areas, 1995

About half of the around sixty regulations for the implementation of these laws have been issued. There are some inconsistencies and contradictions between and within laws and an analysis of these, with recommendations for improvements in the laws and regulations, is due to be published in April, 1996.

Environmental Impact Assessment

Resolution #121 (June 1994) authorized the establishment of environmental impact assessment procedures and delegated drafting responsibility to the MNE and the NDB. The Law on Environmental Protection (1995) established Environmental Impact Assessments in order to identify possible adverse effects on human health and the environment, and to determine measures to minimize and mitigate them. EIA's are required prior to operating, initiating, or developing projects or programs, and prior to expanding economic activities or services or entering into contracts. The cost of the assessment falls on the organization requesting project approval.

The EIA procedures divide projects into twelve categories according to the type of industry involved. The last category, Special Projects, includes commercial fishing and hunting, forestry, translocation of animals and plants, use of poisonous chemicals and radio-active substances, and any activities near the boundaries of protected areas. This category is exclusively under the jurisdiction of the MNE. Responsibility for the other eleven categories is delegated to either the MNE, the Aimag and Capital city governments or the Sum and Duureg governments, depending on the size, location and complexity of the project.

Conclusions on legislative status

Mongolia has made major strides in environmental protection by these legislative actions. Present weaknesses are:

- There is not enough information about the new laws available to the public or even to government officials.
- Necessary regulations have not all been prepared and officials responsible for implementation of laws and regulations take insufficient action and too slowly.
- The public is not convinced about the serious consequences of breaches of the law. Examples of sufficient punishments for environmental law offences are rare. The process from arrest to charging, trial and sentencing needs to be given more attention.
- Although the environment is protected by laws it is not fully protected in practice. There are often conflicts between business activities dealing with wild species and biodiversity conservation and there is illegal use of natural resources; some of it might be facilitated by bribery.
- The economic laws and the environmental laws should be implemented in close coordination with each other.

2.5.2. Strategy

During recent decades, government policy favored industrialization and economic development with little attention to environmental impacts. The political and economic transition slowed some of these developments, for instance the intensification of agriculture and mineral exploitation, but the pressures are building

again. Now, however, there is a Ministry for Nature and the Environment which is responsible for all issues affecting the natural environment of Mongolia. The Ministry's mandate covers conservation and management of natural resources, maintenance of environmental quality, and mitigation of natural disasters. The Ministry is implementing policies and programs relating to the environment and conservation, and there are new parliamentary guidelines to include environmental considerations in decision making in every sector.

Most importantly:

- This National Biodiversity Conservation Action Plan sets forth an action program to ensure that conservation of biodiversity be achieved in parallel with the economic development of the country.
- Mongolia signed the Convention on Biological Diversity in Rio de Janeiro in 1992 and will implement the Convention's promise through its strategy on Ecology, which will be based in turn on other plans including this one, the National Environmental Action Plan, and the Mongolian Action Plan for the 21st century (Capacity 21), and through functional plans addressing protected areas, desertification and climate change.

2.6. Assessment of public information and education programs related to biodiversity conservation

2.6.1. Formal education: schools, colleges, universities

Lessons related to the environment and species conservation are taught at all levels in Mongolia's schools, from kindergarten to secondary schools. There are a total of 381,000 school children in Mongolia and 19,000 teachers, a teacher-pupil ratio of one to twenty. Curriculum development, and training of teachers in biology, have to include modern concepts of environmental protection and ecology. At the University level, new courses on ecology, geography and tourism have recently been introduced, and the Darkhan College of Ecology will provide courses on ecology and environmental protection. In 1995, 1,247 students graduated from university and colleges in subjects related to biodiversity (Table 17).

The teaching of ecology and conservation biology is just beginning and more work needs to be done on curriculum development and training of teachers. Mongolia has thousands of years of tradition in animal husbandry and close contact with natural biological events and processes. However, despite this traditional knowledge base and the current school and university programs, scientific ecological understanding is weak.

Table 17 Number of students graduating with majors related to biodiversity

Major	Number of students
Biology	269
Biotechnology	81
Biology-Geography	10
Zootechnology	152
Agronomy	182
Veterinary science	307
Forestry	56
Geology	150
Botany	40

Provision of ecological education in schools and colleges is a legal requirement but at present the hours taught are insufficient and there is a shortage of suitable textbooks. A curriculum guide to biodiversity has recently been distributed to primary and secondary school teachers. Textbooks in Mongolian on ecology, livestock ecology, and environmental protection are awaiting publication. In the meantime, English and other familar foreign-language texts should be made available to scientists, students and administrators.

School drop-outs

Since 1990, over 100,000 children have dropped out of school - this figure includes mostly primary or secondary school. In 1994-1995, 22,700 children dropped out, which is a 16.7 % dropout rate. The reasons for leaving school are varied but include remoteness of some people from schools, family needs for the labor of their children, and dissatisfaction with the level of teaching provided in some schools. Efforts to inform these children of ecological issues include T.V. programs on ecology and vacation classes in ecology taught by specially trained teachers using the empty school classrooms.

2.6.2. Books, Magazines, Newspapers, TV, Radio

There is increasing coverage of environmental matters in the newspapers and on TV and radio but the coverage falls short of what is necessary to inform the public of the problems, issues and possible solutions. Recently books and pamphlets have been published describing Mongolian biodiversity, assembling the new environmental laws in one volume, and describing interesting tourist routes in each aimag. Two quarterly magazines on biodiversity issues are being published from an office in the Ministry for Nature and the Environment. There are several areas in which improvements can be made in informing the public about Mongolia's biodiversity as well as global biodiversity and the importance and means of conserving it. At present there is insufficient public knowledge of the laws relating to biodiversity and the environment so the laws need to be publicized further, with an easily understood summary of the

main points. Breaches of the environmental laws that come before the courts are not adequately publicized in the media.

Improvements are needed in the availability of textbooks and reference materials, and in the presentation of exhibits in natural history museums so that the importance of conservation becomes clear. Part of the problem is that the journalists and editors of newspapers and magazines have only a vague understanding of the real issues of biodiversity conservation.

2.7. Assessment of personnel training for biodiversity conservation

In-service training in the field of biodiversity conservation is carried out by the Ministry for Nature and the Environment for its own staff in the form of seminars and short training courses, but these are mostly financially supported at present by international projects active within the Ministry. Overseas training, both short-term and long-term is also taking place, and is being funded by foreign governments' scholarships or multilateral or bilateral aid projects. A ranger training course for protected area staff is being developed and trainers for this are being trained so that it will become institutionalized within the Ministry. There are plans to develop one or more training centers both for in-service training of Ministry staff and staff of other Ministries and of local government, but there are insufficient funds available at present.

There is an urgent need for training in basic ecological principles and conservation biology, not only for Ministry of Nature and the Environment employees but also for employees of the other Ministries and for government decision makers both at the central and local levels.

2.8. Description and Assessment of International Cooperation on Biodiversity Conservation

2.8.1. Multilateral cooperation

In recent years international cooperation has been directed towards protection of the environment and maintenance of ecological stability in parallel with economic development. Mongolia sent a top-ranking delegation to the U.N. Conference on Environment and Development in Rio de Janeiro in 1992, headed by the Prime Minister. At the conference, Mongolia proposed to regard its territory as a special biosphere zone of international significance. Mongolia is now taking steps to implement the direction approved by the Rio conference.

Multilateral aid from the Global Environment Facility has enabled the Ministry for Nature and the Environment to implement the Mongolia Biodiversity Project jointly with UNDP and UNOPS. This project has worked on planning for biodiversity conservation, on drafting of environmental laws, establishment of a biodiversity

database, training, protected area management, and public information about biodiversity. A further UNDP/UNOPS project under the MAP 21 program will assist the Ministry for Nature and the Environment and The National Development Board to integrate environmental considerations into decision making processes in all relevant Ministries and at all local government levels. It is called MAP 21, or Mongolian Action Plan for the 21st century. The UNDP will shortly start a project to increase public information about biodiversity issues.

The Asian Development Bank has financed projects on Environmental Impact Assessment and Environmental Management, and the World Bank supported the preparation of the National Environmental Action Plan.

Mongolia has signed and ratified international conventions in the field of biodiversity conservation, including the Convention on Biological Diversity (1992), the Convention to Combat Desertification (1994), and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (1996). The law regarding ratification of the Convention on Ozone Protection was passed in October, 1995. Mongolia sent a delegate to the 6th meeting of the Ramsar Convention on Wetlands of International Importance in March, 1996, preparatory to joining that convention.

2.8.2. Bilateral cooperation

Table 18 lists agreements that have been made with neighbouring countries to cooperate in the field of environmental conservation.

Apart from these agreements with neighbouring countries, Mongolia has also been cooperating with donor countries and organizations on biodiversity projects within Mongolia. The German Agency for Technical Cooperation (GTZ) is supporting a joint project with The Ministry for Nature and the Environment on selected protected areas and their buffer zones.

The New Zealand Ministry of Foreign Affairs funded in 1995 an evaluation of Natural Grasslands concentrating on the Altanbulag district. Additionally, DANIDA is funding a pastureland resource management program in two aimags, and a remote sensing unit of Tokyo University is providing information for the MNE on pastureland use.

There is a Dutch government-funded project with the aim of reintroducing Przewalskii's horse to Khustain Nuruu Nature Reserve.

The U.S. National Aeronautics and Space Agency and EPA are implementing a technical cooperation program on climate change and remote sensing.

The Government of Canada's International Development Research Center has sponsored a pilot investigation into economics and sustainable development in Mongolia.

The U.S. Peace Corps will be assigning volunteers to Protected Areas in 1996 to teach English to protected areas staff and assist with protected area management and environmental education.

Table 18 List of agreements, parties, and dates of signature for bilateral cooperation agreements

Title of agreement	Parties	Date signed
Agreement between the Government of Mongolia and the Government of the Russian Federation on Cooperation for Environmental Protection	Mongolia/ Russia	2/15/94
Agreement between the Government of Mongolia and the Government of the Russian Federation on Protection and Use of Border Waters	Mongolia/ Russia	2/11/95
Agreement between the Government of Mongolia and the Government of the Russian Federation on Scientific and Technical Cooperation for Hydrometeorology and Environmental Monitoring	Mongolia/ Russia	4/ 5/95
Agreement between the Government of Mongolia and the People's Republic of China on Cooperation for Environmental Protection	Mongolia/ China	5/ 6/90
Agreement between the Government of Mongolia and the Government of the People's Republic of China on the Protection and Use of Border Waters	Mongolia/ China	4/ 4/94
Agreement between the Government of Mongolia and the People's Republic of Kirgizstan on Cooperation for Environmental Protection	Mongolia/ Kirgizstan	7/10/93
Agreement between the Government of Mongolia and the Government of Kazakstan on Cooperation for Environmental Protection	Mongolia/ Kazakstan	Draft
Daurian International Nature Protection Area	Mongolia/ Russia/China	2/94

2.8.3 Non-governmental cooperation

A number of individuals and international non-governmental organizations are active in the field of biodiversity conservation in Mongolia. For example:

The World Wide Fund for Nature has been carrying out joint surveys with the Ministry for Nature and the Environment with the aim of expanding the system of protected areas, particularly in the Eastern steppes, the wetlands of the Great Lakes Depression, and north-eastern Dornod. They have also been working in the field of public information.

The Christian Oswald Foundation, the Baumann Foundation and other donors are assisting the National Commission on the Conservation of Endangered Species to establish wild populations of Przewalskii's horse in Gobi B Strict Protected Area and the Khustain Nuruu Natural Reserve.

The Asia Foundation has been working with the Ministry for Nature and the Environment and with local non-governmental organizations in the field of environmental law.

The International Snow Leopard Trust is supporting a reward program for local herdsmen who refrain from killing snow leopards in their ranges. New York Zoological Society/The Wildlife Conservation Society (New York) is supporting research into snow leopards and the Institute for Zoo Biology and Wildlife Research (Berlin) has been supporting the survey and publicity work of the Mongolian Gazelle Society.

CHAPTER 3 ACTION PROGRAMS

3.1. Overall objectives

As discussed in the preceding chapters, the biodiversity of Mongolia is being damaged and faces increasing threats. The overall objective of the Biodiversity Conservation Action Plan is to set in place measures to protect biodiversity and to restore damaged areas. Rapid increases in Mongolia's population and industrialization have occurred and further increases are proposed. It is therefore critical to the ensuring of sustainable development that consciousness of biodiversity be integrated into economic and social programs.

A fundamental principle of Mongolian state policy is that economic development must be in harmony with the environment, that every measure will be taken to check possible negative environmental consequences linked with the extraction and utilization of natural resources, and that air, water and soil pollution will be combated. Development projects will undergo ecological analysis (Environmental Impact Assessment, or EIA), and if such projects are implemented, development will occur under strict control so that ecological consequences will be minimal. Specific objectives and actions are described in this chapter to further the overall objectives of state policy.

As a statement of its desire to contribute to the protection of the global environment, on 12 June 1992, Mongolia took the historic step of proposing to the Secretary-General of the United Nations Conference on Environment and Development that Mongolia be accorded special status as a world biosphere zone of special international significance.

Additionally Mongolia intends to conserve permanently at least thirty percent of its land and water area in the protected area system as an important strategy to conserve biodiversity. This Biodiversity Conservation Action Plan furthers this objective by proposing new areas that expand the protection of ecosystems and species not protected or adequately protected by the existing protected area system.

3.2. Specific objectives and actions

3.2.1 Establish complete protected area system representative of all ecosystems and protecting endangered species, including joint actions with the Russian Federation and the People's Republic of China

As a result of the protected area system review described in Chapter 2, a list of proposed new protected areas has been drawn up to fill the ecosystem and species gaps identified.

Action 1

Complete planning including boundaries consistent with biodiversity conservation goals for the following proposed protected areas and submit proposals to Parliament.

Table 19

a) Proposed Strictly Protected Areas and National Conservation Parks

#	Place names	Map code	Category	Provinces located in	Size 1000 ha	Ecological zone and special features
1.	Altai Tavan Bogd	38	National Conserva-tion Park	Bayan - Ulgii	642.2	Snow and glacier-covered three peaks of Mongol - Altai, mountain valley, mountain, steppe.
2.	Zuun Khangai	65	National Conserva-tion Park	Arkhangai, Uvorkhangai	887.5	Forest - steppe, mountain steppe, mountain valley of Khangai region
3.	Khar-Us, Khayrgas Nuur	43	National Conserva-tion Park	Uvs, Zavkhan Khovd	1200.0	Great Lakes Basin, semi - desert steppe, semi - desert
4.	Baga Gobi	107, 108	Strictly Protected Area	Umnogobi, Dornogobi	1926.0	Desert, semi - desert, semi - desert steppe of south - eastern region of Mongolia
5.	Onon-Balj	48	National Conserva-tion Park	Khentii	544.9	Forest-steppe of Onon-Ulz region.
6.	Gurvan Bogd or Ikh Baga Bogd	93	Strictly Protected Area	Bayankhongor, Uvorkhangai	317.4	Semi-desert steppe, arid steppe, mountain steppe in the Gobi-Altai region
7.	Khordol Sardag	34	Strictly Protected Area	Khovsgol	200.0	Mountain taiga and rugged mountain near Khovsgol
8.	Burengiin Nuruu	47	Strictly Protected Area	Selenge	500.0	Forest-steppe in Orkhon Selenge basin

b) **Proposed Nature Reserves**

#	Place names	Map code	Provinces located in	Ecological zone and special features
1.	Shishkhed-Tengis Baran Gol Basin	33	Khovsgol	Mountain taiga with rare animals such as reindeer, beech marten and moose.
2.	Bushtag Uul	46	Uvs	Forest-steppe and mountain forest with elk, Siberian roe deer, beech marten, snow leopard, Eurasian lynx
3.	Untaa Yamaat	62	Bayankhongor	Glaciers with high mountains, mountain valleys, and animals such as wild sheep and wild goat.
4.	Burkhan Buudai	83	Gobi-Altai	Mountain steppe with wild sheep, wild goat, snow leopard, Eurasian lynx.
5.	Tsagaan Temeet	66	Dornod, Sukhbaatar	Arid steppe, herds of white-tailed gazelle.
6.	Alag Khairkhan	80	Gobi-Altai	Mountain steppe with wild sheep, wild goat, snow leopard, and Eurasian lynx
7.	Khar Yamaat	60	Khentii Sukhbaatar	Unique landscape formation and mountain arid steppe with wild goat, wild sheep and Eurasian lynx
8.	Ikh Argalant	105	Bayankhongor	Semi-desert steppe with wild goat, wild sheep, and Eurasian lynx.
9.	Zoolon Uul	115	Umnogobi	Semi-desert with interesting landscape and wild sheep and wild goat.
10.	Khogno Khaan	64	Bulgan	Forest-steppe with beautiful scenery, elk and roe deer
11.	Salbariin Tal	56	Dornod Khentii	Arid steppe with the herds of white-tailed gazelle
12.	Tujiin Nars	39	Selenge	Pine forest along river valley
13.	Olgoi Nuur	73	Bayankhongor	Area of outstanding natural beauty along river banks to the south of Khangai
14.	Menengiin Tal	57	Dornod	Arid steppe with main distribution of white tailed gazelle
15.	Zagiin Us	95	Dundgobi	Distribution area of saxaul in the eastern part Mongolia.
16.	Baitag Bogd	78	Khovd	Mountains of Gobi-Tyanshang with wild sheep, wild goat, and Eurasian lynx
17.	Borzongiin Gobi	108	Umnogobi	Wild ass, black - tailed gazelle, unique Gobi ecosystem.
18.	Arkhan Buural--Badariin Nuruu	37	Khovsgol	Forest, forest-steppe, elk, roe deer

19.	Ikh Tunel, Emged, Uvgud	45	Khovsgol	Mountains with forest and taiga, elk, moose and roe deer.
20.	Shargiin adag-Jar Khyaruunii Belchir	44	Khovsgol	Mountains with taiga and river valleys, elk, and roe deer.
21.	Bokhloo-Chagtain Nuruu	51	Selenge	Forest, forest-steppe, elk and roe deer.
22.	Ikh Gazriin Chuluu	84	Dundgobi	Granite mountain with unique landscape formation, wild sheep, wild goat.
23.	Bayan Tokhom Gobi	91	Sukhbaatar.	Semi-desert with white-tailed gazelle.
24.	Asgatiin Tsagaan Tolgoi	81	Sukhbaatar.	Arid steppe with special natural structures.
25.	Tovkhon Khaan Uul	113	Arkhangai	Outstanding natural beauty, elk and roe deer.
26.	Senjitiin Dukh Uul	75	Gobi-Altai	High mountains, argali and ibex
27.	Delger Khangai Uul	92	Dundgobi	Mountain in steppe with unique features, argali habitat
28.	Terkhen Tsagaan Uul	40	Khovsgol	Outstanding natural beauty, unique landscape formation and biodiversity
29.	Bulgan Khangai Uul	41	Uvs	Outstanding natural beauty, unique landscape formation and biodiversity.
30.	Nogoon Nuur - Guna Yamaat	50	Zavkhan	Outstanding natural beauty, habitat for many animals
31.	Binderya Khan Uul	54	Khentii	Outstanding natural beauty with unique landscape formation
32.	Myangan Ugalzat	70	Khovd	Main habitat for argali (wild sheep)
33.	Khalhan Bulnai	35	Khovsgol	Outstanding natural beauty, mineral water and spring
34.	Ikh Nartiin Khad	86	Dornogobi	Unique landscape formation, wild sheep and wild goat.
35.	Tesiin Gol	42	Uvs, Khovd, Zavkhan	Rare animals such as beaver and otter
36.	Boon Tsagaan	88	Bayankhongor	Outstanding natural beauty, water fowl
37.	Nomgon	106	Umnogobi	Religous mountain habitat for argali and ibex
38.	Altan Khokhii	49	Uvs and Khovd	Wild sheep, wild goat, outstanding natural beauty
39.	Lag Nuur	67	Dornod	Arid steppe, white tailed gazelle
40.	Zotol Khan	79	Sukhbaatar	Semidesert, herds of gazelle

c) **Proposed Natural and Historical Monuments**

#	Place names	Map code	Provinces located in	Ecological zone and Special features
1.	Mongoz Tsakhir	117	Uvs	Limestone mountain with uniquely shaped spruce trees
2.	Ikh Khairkhan	59	Zavkhan	Mountain with several famous caves of Mongolia.
3.	Ereen Nuur Mongol Els	61	Gobi-Altai	Pure water lake in the sand
4.	Uenchiin Khavtsal	69	Khovd	Deep cliff in the southern part of Mongol Altai Range
5.	Bust Nuur	52	Zavkhan	Beautiful fresh water lake in the northern part of Khangai Nuruu
6.	Ulaagchnii Khar Nuur	53	Zavkhan	Combination of forest-steppe, sand and fresh water lake in the western part of Khangai Nuruu
7.	Khokh Nuur	63	Bayankhongor	Fresh water originating from glaciers in Khangai Nuruu
8.	Khangal Nuur	58	Khentii	Fresh water lake originated by tectonics in the south part of Khentii.
9.	Galuut Khavtsal	73	Bayankhongor	Deep cliff in the middle part of Galuut Gol
10.	Arag Chuluu.	87	Dundgobi	Granite cliff in the arid steppe zone.
11.	Ashig Khorgo Chuluu	97	Dornogobi	Granite cliff with unique landscape formation in desert steppe zone
12.	Algui Ulaan Tsav	96	Umnogobi	Fossil lake deposit with animal fossils.
13.	Tsagaan Suvarga	99	Umnogobi	Fossilized lakebed with many colors
14.	Shiliin Bogd	85	Sukhbaatar	Extinct volcano in the middle of the steppe.
15.	Khuren Khanii Nuruu	104	Umnogobi	Mountain with special unique landscape features
16.	Budariin Chuluu	94	Sukhbaatar	Granite mountain with unique landscape features
17.	Suikhent	101	Dornogobi	Petrified forest
18.	Altan ovoo.	116	Sukhbaatar	Worshipped extinct volcano
19.	Ergeliin Zoo	103	Dornogobi	Fossil lake deposit with animal fossils
20.	Baishint	89	Sukhbaatar	Lake deposit with ancient animal fossils
21.	Burdnii Els	98	Dornogobi	Sand dune in the middle of semi-desert.
22.	Bogd Uul 18	100	Dornogobi	Granite cliff mountain with unique features
23.	Tsagaan Del Agui	90	Dornogobi	Long cave originated by natural forces.
24.	Tsonj Chuluu	109	Dornogobi	Igneous rock mountain with unique landscape features
25.	Noyen Uul	55	Tov	Special mountain with ancient historical and cultural monuments

26.	Noyon Bogd	110	Umnogobi	Legendary extinct volcano
27.	Darkhan Uul	72	Khentii	Granite mountain with cliffs, wild sheep and wild goat.
28.	Choiriin Bogd	76	Dornogobi	Granite mountain with cliffs
29.	Bayan Nuur	36	Uvs	Lake of fresh water originated by tectonics in the middle of sandy desert.
30.	Gurvan horoo	111	Uvs	Site of the second highest watertall in Mongolia
31.	Kherlen, Toono Uul	68	Khentii	Mountain with unique landscape formation
32.	Sum Khokh Burd	82	Dundgobi	Special oasis in desert steppe zone
33.	Shargaljuut	77	Bayankhongor	Site of the hottest spring water in Mongolia
34.	Nogoon Tsav	102	Bayankhongor	Multi-colored deposit of lakes with ancient animal fossils
35.	Gurvan Bambuu	112	Umnogobi	Special features cut by drainages in the desert zone
36.	Bogd Uul	74	Bayankhongor	Granite cliff mountain in desert steppe zone
37.	Zorgol Khairkhan	71	Tov	Granite cliff mountain in arid steppe

The list includes four new National Conservation Parks, four new Strictly Protected Areas, forty new Nature Reserves and thirty-seven new Natural and Historical Monuments, a total of eighty-five sites. Five of the existing protected areas will also have their boundaries expanded (Figure 10). The exact boundaries, and hence areas, of the new sites remain to be defined, but the new additions will increase the Protected Area system from 26 protected area sites with an area of 12.6 million hectares (eight percent of the country) to a total of 117 sites covering approximately eighteen percent of the country. Additional areas will be added later, through either new sites or extensions to existing protected areas, to reach the ultimate goal of at least thirty percent protected area coverage, but the immediate goal is to establish these listed sites and expansions.

Action 2

Continue evaluation of protected area system needs and submit proposals to Parliament.

Tables 20, 21, and Figure 11 summarize the ecosystem and species protection extended by the above additions. Five biogeographical zones and seven species remain outside the proposed expanded system. Species that would be potentially protected are listed in Appendix 8. Also work with Russian and Chinese counterparts to develop international protected areas.

Table 20. The area and percentage of current and proposed protection in each biogeographical zone

Region		Biogeographical zone	Area of zone, (1,000 ha)	Area of protection (1,000 ha)	Percentage protected
A. Altai Sayan	1	Mongol Altai	6,538	760	11.63
	2	Turgen nuur	793	151	19.08
	3	Ulaan taiga	855	18	2.07
	4	Khovsgol Zuun Ereg Orchim	3,213	749	23.31
	5	Darkhad	357	38	10.75
	6	Khovsgol	659	539	81.68
	7	Sengilen	1,211	8	0.68
B. Trans Baikal	8	Buteeliin Nuruu	2,247	59	2.63
	9	Burengiin Nuruu	4,086	261	6.39
	10	Baga-Khentii Nuruu	1,968	1,291	65.59
	11	Onon-Tuul Belchir	7,214	929	12.88
	12	Khentiin Baruun Bel	2,825	166	5.89
C. Daguuriin Dornod Mongol	13	Uldzin	2,346	139	5.92
	14	Menengiin Tal	11,990	1,752	14.61
	15	Dund Kherulen Belchir	5,911	114	1.92
	16	Doloodyn Gobi	2,976	82	2.77
	17	Dariganga	1,062	170	15.99
D. Tov Mongol	18	Khangain Khoid Bel	9,575	1,389	14.51
	19	Khangai Baruun Bel	2,561	35	1.38
	20	Khangain Urd Bel	3,532	34	0.97
	21	Khankhukhei	965	37	3.85
	22	Tesk	1,154	71	6.14
	23	Orkhon	2,087	0	0.00
	24	Burgaltai	2,299	51	2.20
	25	Darkhan	3,715	86	2.31
	26	Mandalgobi	3,423	99	2.91
	27	Khoid Gobi	2,203	57	2.61
E. Tov Azi	28	Gobi Altain Nuruu	7,706	2,007	26.04
	29	Uuluudiin Khondii	2,823	488	17.28
	30	Gobi Tienshan	2,489	1,280	51.43
	31	Umnod Tenger Uul	1,797	67	3.73
	32	Uvs Nuur	2,453	605	24.68
	33	Achit Nuur	1,286	116	9.01
	34	Nuur	10,662	2,094	19.64
	35	Dundad Uul	1,982	294	14.81
	36	Shargiin Gobi	484	0	0.00

E. (cont)	37	Prikhangai	2,318	0	0.00
	38	Boontsagaan-Orog-Nuur	1,336	132	9.86
	39	Ongiingol-Sainshand	6,759	460	6.81
Tov Azi	40	Dalanzadgad	3,636	517	14.21
	41	Gobi-Dzungar	2,565	514	20.06
	42	Altain Tcaasdakhi Gobi	5,234	3,375	64.47
	43	Khukheldziin Gobi	1,651	0	0.00
	44	Bordzongiin Gobi	3,482	0	0.00
	45	Zuun Gobi	7,616	446	5.85
F. Khyangan	46	Khalgingoliin Dund Belchir	1,011	348	34.47
	47	Modtoi-Khamar	181	181	100.00

Table 21 Species classified as not potentially protected with established and proposed protected areas by the analysis

CLASS	NAME	LEGAL	REDBOOK	IUCN	CITES
Mammalia	*Erinaceus dauuricus*		Y		
Mammalia	*Crocidura leucodon*				
Mammalia	*Nyctalus noctula*				
Mammalia	*Vespertilio murinus*				
Mammalia	*Vespertilio superans*		Y		
Mammalia	*Alticola strelzovi*				
Mammalia	*Euchoreutus naso*		Y		

Action 3

Improve public support for protected areas, and the buffer zones surrounding them.

Public support for protected areas is vital for their integrity and successful management. Protected area managers will work to reduce the impact of local people on protected area resources by facilitating access to alternative resources and ensuring sustainable development in the buffer zones. This will be achieved by:

(a) Consultation and joint planning between protected area administrations and local community representatives to determine management policies and actions.

(b) Dissemination of information about the benefits of protected areas to local people, including through schools.

(c) Selection and training of local people with good knowledge of the local area, flora and fauna to work as protected area staff.

(d) Investigation of local traditional forms of land use and grazing patterns and recommendations for their revival where appropriate to prevent further land degradation.

(e) Establishment of standard monitoring procedures to determine changes in socio-economic status and use of natural resources by the local people.

(f) Working with other appropriate agencies to encourage small businesses that rely on the protection of the natural resources of the protected area, for instance in supplying services to tourists, such as guide services, rent of camels or horses, or accommodation, food and washing facilities.

(g) In order to implement such actions effectively, cooperation wherever possible and appropriate with non-governmental organizations active in this field.

Action 4

Aggressively protect and manage protected areas using ecologically sound principles.

Natural processes must be allowed to function within protected areas. Interventions of any kind must be carefully analysed beforehand to consider their effects on the ecosystem as a whole. All protected area management and development must be guided by approved plans.

Action 5

Undertake research and monitoring in protected areas.

(a) Gather materials connected with previous and ongoing research and monitoring in protected areas.

A full review of previous research work in each protected area and its environs will first be undertaken to identify relevant gaps in knowledge. This will involve review of unpublished as well as published material.

(b) Approved research and monitoring programs for each protected area will be developed.

Research and monitoring does not need to be based on high technology and expensive equipment. Most of the essential work can be completed with adequate transport facilities, maps, binoculars, telescope, tapemeasure, spring balances, plant press, notebooks and pencils. As funds become available, and when the need is identified, more sophisticated research methods will be employed.

(c) Research staff will be engaged where necessary, trained where necessary and given appropriate facilities to carry out their work.

A large proportion of the monitoring work can be carried out by Rangers once they have been given the necessary training in systematic collection of data. Trained biologists are also required to give direction to the work and to analyse the results in a way that is useful to the protected area administration for decision making. .

(d) Improve the supply of information and the flow of information to the central biodiversity information management system in Ulaanbaatar.

(e) Make contact and collaborative research agreements with foreign universities and research institutes in order to increase training of research staff and facilitate the collection of essential information on protected area ecosystems and local communities.

Action 6
Develop ecologically sound guidelines for delineating protected area zones.

The present law is mute on determination of zones within Strictly Protected Areas and National Conservation Parks. The degree of biodiversity conservation achieved is dependent on the size and location of these zones. Guidelines will be developed which are based on principles of conservation biology, the presence of endangered species, other conservation requirements, socio-economic needs of local inhabitants and on-the-ground realities. Additionally, obtain clarification of permitted use within zones.

Action 7
Develop and submit to Parliament a protected area strategy incorporating the above proposals and principles.

3.2.2. Establish effective population control measures to limit human impact on the nation's biodiversity

Mongolia's low density population was relatively stable for many centuries and 80-90% of the people were engaged in livestock husbandry. Low human populations and correspondingly low animal numbers along with grazing practices learned over eons kept use mainly within the land's carrying capacity. Largely as a result of government policies, Mongolia's growth and total population exploded since 1950 (total population: 758,900; annual growth rate 0.5%) to 1990 (total population: 2,095,600; annual growth rate 2.5%). Much of the growth has occurred in urban areas (now 54.6% live in urban areas) with over 25% located in Ulaanbaatar. It is estimated that Mongolia's population will reach approximately 3.5 million people by 2019. Mongolia's traditional policy was concerned with the protection of its historic civilization and the conservation of the natural resources on which it depends. Every country and system has a finite carrying capacity which when exceeded has serious impacts for the socio-economic system and the environment. Mongolia has not adequately assessed the consequences of its rapidly growing population.

Action 1
Determine the country's carrying capacity based on the availablity of renewable natural resources (soil, water, forest, grassland, renewable energy etc.), and the requirement to protect the environment and conserve biodiversity, achieving a quality standard of living for its citizens while maintaining the country's most important cultural traditions.

Action 2
Review government policies that encourage a rapid population growth rate.

Action 3
Review government policies about population distribution and discourage schemes to promote settlements in and around protected areas.

Action 4
Study the links between environment and development and use the results to work out a sustainable development strategy. This action to be linked with the MAP 21 or Capacity 21 program.

Action 5
Spread information among the public about the effects of increased population on the environment and link programs for elimination of poverty and reduction of unemployment with protection of biodiversity, and develop international cooperation in this field.

3.2.3. Implement an effective environmental impact assessment program to understand the effects of proposed actions on biodiversity

Although the Law on Environmental Protection (See Chapter 2) makes provision for environmental impact assessments to be carried out at the expense of those proposing commercial or other activities that will have an effect on the environment, there are problems in implementation of the regulations. There are no established procedures for determining the adequacy of EIA's and no process is defined for resolution of conflicts and who should make the final decision in cases of conflict.

EIA is not yet adequately integrated into planning and decision making. Another major problem is the lack of background data on biodiversity with which to assess the impact of proposed projects.
This need is addressed under 3.2.4 and 3.2.5.

Action 1
Establish procedures to ensure that EIA analyses are considered throughout the decision making process on proposed actions, train staff at national and local level, and establish processes for resolution of conflicts including determination of who adjudicates in the last resort.

Action 2

Improve public understanding of EIA and encourage participation of the public in providing information, inquiries and appeals.

This will involve publication of lists of proposed projects in the press and otherwise, solicitation of written comments from the public, and holding and adequately advertising public meetings at which representations can be made and questions answered. The local inhabitants, who have a great knowledge of their homeland, have to be involved in these processes if EIA's are to have any credibility.

Action 3

Require EIA's to consider cumulative impact of proposed actions. Also take steps to plug loopholes in the present law that allows developers to split large projects into smaller ones and thus avoid the legal requirement to carry out EIA.

Action 4

Improve the capability of the government to carry out monitoring of environmental impact and strengthen their enforcement capabilities.

Action 5

Establish Environmental units in all the main development ministries in order to oversee adequately the EIA processes and to ensure EIA are considered in decision making.

Action 6

Develop guidelines for judging the adequacy of EIA and refine guidelines for acceptable limits to environmental impacts.

Action 7

Add special provisions to the EIA regulations concerning protected areas, to ensure that criteria are tightened when development projects will have impacts upon protected areas.

This does not mean that special provisions will be established merely within a certain distance of a protected area, but that any impacts upon protected areas will be subject to stricter controls and limits.

3.2.4. Establish a research program that improves knowledge of biodiversity and relevant threats

Considerable research has been carried out on the biodiversity of Mongolia and a large body of information exists, but as scientific knowledge grows, so does the awareness of what is not known. The process of developing this Biodiversity Conservation Action Plan has brought together much information on Mongolia's biodiversity. The process has helped to identify gaps in knowledge and data.

Actions to obtain the most critically needed knowledge are organized by research on ecosystems, species and genes.

Action 1

Initiate a research program to improve understanding of the functioning of Mongolia's ecosystems and processes and the factors affecting their health and the most urgent threats.

Mongolia is at a critical juncture in its development. It is important to understand better the functions and capacity of the ecosystems comprising the country in order to determine what activities are sustainable. Priority should be given to determining the ecological carrying capacity of the important grassland ecosystems. The research should also identify ecosystems requiring further protection.

Action 2

Develop accurate population and distribution information for animal and plant species with priority given to threatened and endangered species, endemic species and species that are hunted or fished.

As part of the development of this BAP a national workshop was held in February 1993 to compare species population and distribution data. In August and September 1995 these data were entered into the biological information system and gaps in the data identified. Research is needed to fill those important gaps, especially for threatened and endangered species. Reasons for low populations are a high priority research area. A long-term study of the Mongolian gazelle is also a high priority as this species migrates over large distances, is now rare outside Mongolia, is subject to an annual legal harvest as well as poaching, and its migration routes and hence the integrity of its habitat are threatened by railway and road construction projects, and mining and oil drilling.

Harvesting regimes for the exploited fish and wildlife must be developed in order to have a sustainable harvest. Cooperation with Chinese and Russian counterparts is required here, for example in fish harvests in the east of Mongolia.

Action 3

Develop a genetic conservation research program

The means to conserve plant and animal genetics in the wild in Mongolia are not well understood, but that knowledge is critical to long term biodiversity conservation and maintenance and improvement of domestic plant and animal breeds. The recommendations of the International Plant Genetic Resource Institute should be examined carefully as a guide in developing this phase of the research.

3.2.5. Establish a nationwide information and monitoring system for biodiversity conservation

Many kinds of information are required to conserve biodiversity effectively, including data on ecological relationships, species distribution, status and trends, human uses, and changes in land use. New technology makes data management more productive than before. For example the development of computerized Geographic Information Systems (GIS) has greatly simplified the analysis and formulation of biodiversity conservation strategies and actions. Monitoring information will be provided through various sources such as remote sensing, meteorological stations, air and water quality measurement stations, herbaria, museums, publications, reports, field studies, surveys and other sources.

Information needed for biodiversity conservation can be divided into three parts:

1) Biological information on individuals, populations, communities, and ecosystem, for all kinds of animals, plants, fungi and microorganisms,

2) Environmental information on the natural environment such as geology, geomorphology, climate, water quality and soil conditions, and air, water and soil pollutants,

3) Socio-economic information such as laws, regulations, land-use, investment, trade, publicity, training and education.

Biological monitoring takes place within the Information and Computer Center of the Ministry for Nature and the Environment, to provide data needed to describe current environmental and land-use conditions, to provide data on species and habitats, especially those that are threatened or endangered, to guide land-use management policies and decisions, and to have the capacity to model the effects of alternative conservation strategies on natural resources and traditional lifestyles. The center is equipped with computers, software, and GIS equipment, and provided much useful information and graphics for this plan. It will be essential for monitoring Mongolia's biodiversity trends and the effectiveness of the actions taken.

The actions required to establish and maintain an information and monitoring system to conserve biodiversity are:

Action 1
Improve the coordination and use of various information and monitoring networks.

Over the years many data about Mongolia's biology and environment have been collected by Mongolians and others. However, much of these data are not readily available for analysis and use. Additionally, a great deal of information is being received currently through the weather forecast network which is processed in the Information and Computer Center. Other information gathered mostly concerns agriculture, water and various pollutants.

A considerable number of data on natural sciences are gathered by the Academy of Sciences and other research organizations. The availability and coordinated use of data are poor. Sharing of data and information between agencies, the universities and the public should be the rule.

The Information and Computer Center should take the lead in developing procedures for information sharing and coordination. It should also be linked to other information sources in Mongolia, and internationally to the World Conservation Monitoring Center.

Action 2
Improve biological information, especially occurrence and distribution data for all taxa. Presently distribution and population data for many species are poorly known. Priority should be given to endemic and endangered species.

Action 3
Improve monitoring of trends through use of advanced technologies such as remote sensing.

Since Mongolia is a vast country with a sparse population, gross changes in land use and vegetation can best be monitored using world satellite information and remote sensing. The center should receive this information in order to monitor environmental pollution, natural disasters, forest and grass fires, pollution, land-use, forest clearing, desertification, and protected area trespasses.

Action 4
Strengthen field monitoring programs.

Monitoring should be one of the main tasks of state and local inspectors and protected area staff. Procedures and specialized training should be developed.

3.2.6 Establish national education and training programs for biodiversity conservation

Mongolians have traditionally lived close to nature, but increasing numbers of young city dwellers are losing touch with their roots, and are missing the upbringing that the herdsmen's children have and the understanding of the interrelationships of flora, fauna, land, water, sun and air that this gives them. Although nature in Mongolia has been relatively well preserved, in order to secure it for the future it is vital that ecological education and training be given to young people so that they will understand nature and the environment and biodiversity and the sustainable use of natural resources.

Action 1

Establish ecology and nature protection classes and quiz competitions for school children and include the courses into the official curriculum of the Ministry of Science and Education.

Action 2

Render assistance to aimag and city schools in obtaining books, magazines, slides, videos, and other audio-visual material.

Action 3

Institute a college level degree program in ecology.

Action 4

Train teachers how to teach ecology classes while they are doing their own teacher training courses.

Action 5

As part of executive training programs provide local leaders with training in basic ecological concepts tied to applied conservation.

Action 6

Establish a Biodiversity Conservation Training Center to provide high quality training in ecology and conservation biology for staff of the Ministry for Nature and the Environment, legislators, judges, other government officials, and interested members of the public.

Action 7

Establish a comprehensive library in the MNE and generally improve the country's library collection in ecological and related fields.

3.2.7 Establish a public information program to improve people's knowledge of biodiversity and the importance of conserving it

Without public support, efforts to protect Mongolia's biodiversity will fail. It is too easy for individuals to profit from taking more than their share of natural resources or more than is sustainable. A public information program has to be diverse to be successful, and should not rely on official cant. Magazines, books, radio and television programs on biodiversity will be encouraged through grants, and accurate information will be circulated by the Ministry for Nature and the Environment. A more informed public will begin to take part in inquiries and appeals concerning the effects on biodiversity and the environment of development projects. Mongolia has a rich cultural tradition of living with nature and this will be reflected in the material produced.

Action 1

Evaluate and monitor nationally and regionally the public's perception of biodiversity and the importance of its conservation.

Action 2

Encourage through a competitive grant scheme the spread of information about biodiversity through all aspects of the media, from publication of environmental magazines and posters to production of television and radio programs and the holding of public meetings and seminars.

Action 3

Promote public awareness of biodiversity issues through regular publication by the Ministry for Nature and the Environment of periodic fact sheets and newsletters.

Action 4

Hold painting, writing and speaking competitions for children on the topic of biodiversity conservation.

Action 5

Promote the establishment of local museums and natural history clubs. The existing summer camp program can be used as a starting point for children's natural history clubs.

3.2.8 Control pollution of air, water and soil

Air water and land pollution is a serious and growing problem requiring vigorous actions.

Action 1

Establish clear standards for acceptable levels of toxic substances and bacteriological material in air, water and soil, and make the standards stricter for protected areas.

Action 2

Improve monitoring of air, water and soil quality through training and purchase of necessary field and laboratory equipment.

Action 3

Include Environmental Impact Assessment conclusions on pollution in permits for development projects, and strengthen permit enforcement.

Action 4

Continue the pollution mitigation measures initiated in the Tuul Gol under the Tuul Gol Pollution Mitigation Project and use the experience gained to control pollution on other rivers.

3.2.9. Control hunting and fishing

Overutilization (unsustainable harvests) and illegal harvests are a serious threat to the country's wildlife.

Action 1
Improve the implementation of the present laws concerning hunting by providing training for Inspectors and Rangers.

Action 2
Through the public information program convince people of the need to take from nature at a rate lower than or equal to the replacement rate for renewable resources, such as wild animals. Through public education, gain the help of the general public in preventing illegal hunting and fishing.

Action 3
Ensure that all harvest quotas are based on accurate biological information and that, following the precautionary principle, the quotas are known to be sustainable.

Action 4
Strengthen border controls and train customs officers in detection of animals and their parts which are in illegal trade.

Action 5
Review and make necessary changes to the laws and regulations concerning wildlife exploitation, including closed areas, seasons, permits, quotas, bag and possession limits, and methods of taking.

3.2.10. Prevent pasture deterioration through overgrazing

Pasturelands (grasslands) account for 80% of Mongolia and although estimates vary, it is certain that a significant proportion is overgrazed and damaged by other causes.

Action 1
Determine health of Mongolia's pasture land.

Pastureland health should be defined as the degree to which the integrity of the soil and the ecological processes of pasture ecosystems are sustained. The minimum standard for pasture management should be to prevent human induced loss of pastureland health. The capacity of pastureland to produce valuable animal products and satisfy other values depends on intact soil, stores of nutrients and water, plant community dynamics and the integrity of internal nutrient cycles and energy flows. Assessment of Mongolia's pastureland health should include measures of soil stability, integrity of ecological processes, and properly functioning recovery mechanisms. The Ministry of Food and Agriculture and the Ministry for Nature and

the Environment and other interested institutions and persons should meet to develop plans for a national assessment, using to the full extent existing information and knowledge.

Action 2
Establish, through research, grazing capacities.

Using all available information and through research develop understanding of grazing capacities. Develop grazing capacities, considering the needs of wildlife, for various ecosystems, land uses, and pastureland health categories (healthy, at risk, and unhealthy).

Action 3
Establish procedures to ensure that numbers and kinds of livestock are within the grazing capacity of the particular pasture and that the best of traditional and modern grazing management are used.

3.2.11. Establish effective land-use planning control and transportation policy

The Mongolian Law on Land effectively divides Mongolia's territory into seven land classifications: Agricultural land; Cities, Villages and Settlements land; Land for Transportation and Networks; Forest territory; Water territory; Reserve lands; and Land for State Special Needs. The Law on Land requires all levels of government to participate in the planning process to establish new boundaries for all classifications. Several Ministries are currently involved in drafting a government resolution to regulate the criteria and procedures for the determination of land classification. One government resolution has already established a time-line of two years (1998) for the completion of the General Land Management Plan.

Action 1
Develop national policy on land use of Mongolia taking into account biological resources and their distribution.

Action 2
Based upon this general policy, develop ecologically sound land-use plans using biological data for each aimag and sum. The plans should have enforceable rules that protect biodiversity.

Action 3
Transportation planning should be consistent with land-use policy and plans should minimize the effects of developments on biological diversity. Planning must aim to reduce the serious problem of multiple tracking.

Development of the road and rail networks will require assessment of the effects of the roads and railways on wild species of plants and animals; for instance on movements of animals through their seasonal and annual ranges. Mitigation

measures such as bridges or underpasses may be necessary to allow free passage of migratory animals such as Mongolian gazelles. Road and rail construction should avoid sensitive areas such as wetlands. Rules will be established to control multiple tracking.

3.2.12. Develop strong regulations to protect biodiversity from effects of mining.

According to the Ecologically Sound Economic Development Guidelines to be followed in Mongolia for the next 15-20 years, minimization of environmental impact in mining production through appropriate technology is required.

Action 1
Ensure that all mining operations include stringent environmental protection measures and habitat restoration after operations have ceased.

Action 2
Require environmental impact assessments not only for proposed mining operations themselves but also for new settlements and other developments that result from the mines.
EIA will examine the secondary impacts of proposed mining operations.

Action 3
Develop regulations to remove and store mining waste and establish a system for its disposal.

3.2.13. Support tourism while developing sensible regulations to protect biodiversity

Tourism could become a profitable industry for Mongolia, but like any other industry it has environmental impacts that have to be assessed when making decisions on permitted activities. The benefits of tourism in wild areas include a better informed public, and opportunities for increase in rural people's incomes.

Action 1
Include special consideration for tourism in protected areas in the National Development Plan.

Action 2
Establish clear mechanisms for assessment of environmental impacts of tourism activities and for decisions to be made on whether they should be permitted and with what conditions. This will require close cooperation between local government and the National Service Protected Area and Ecotourism in cases of tourism in protected areas.

Action 3

Include tourism in the National Program for Protected Areas. Tourism activities in protected areas should be consistent with the National Program and permitted by approved protected area master plans.

Action 4

Encourage the involvement of local people in tourism so that economic benefits stay in the area.

Action 5

Prepare regulations that set limits on the environmental effects of tourists in protected areas.

Action 6

Monitor the effects of tourism on the environment and on the socio-economic conditions in the area.

3.2.14. Ensure that agriculture and forestry are carried out in ways compatible with biodiversity conservation

Unsound practices have caused a decrease in forests and grasslands, reduced productivity and diminished biodiversity.

Action 1

Adopt forestry practices that ensure sustainable forests and conserve biodiversity.

The measures required are:

1) A ban on cutting in any remaining primary natural forests
2) A scientific determination of allowable harvest from the suitable timber land base
3) A ban on clearcutting, and minimization of fragmentation of stands by careful planning of logging areas
4) Use of silvicultural cutting systems that rely on natural regeneration rather than tree planting
5) In reafforestation projects, use of indigenous species in mixture and within their natural range
6) Support and promotion of solar and wind energy to take the pressure off forests for fuelwood.

Action 2

Introduce and support ecological agricultural practices.

The measures most important to Mongolia include:

1. Careful land use and soil evaluation before cultivation of virgin soils or major change in crops
2. Water management and conservation

3. Practices that protect the soil from water and wind erosion to which Mongolia is particularly susceptible, such as no-till agriculture for growing grains
4. The use of integrated pest management techniques to minimize adverse environmental effects and to control pests economically
5. The use of green manuures and other forms of organic material and crop rotations to enrich soils and minimize chemical fertilizers
6. The use of plant and animal species and varieties genetically adapted to Mongolia's harsh conditions.

3.2.15. Identify and restore damaged lands

An estimated 9.5 million hectares of land has been damaged through cultivation, overgrazing, mining, timbering and multiple tracking and require restoration.

Action 1

Assess total extent of damaged lands through gathering of existing information and collection of further data through research. Determine areas, distribution and the reasons for the degradation. Land will be classified according to level of degradation.

Action 2

Establish priorities for restoring damaged lands and establish a ten-year timetable within which to accomplish restoration. Define the restoration methods that should be employed in each case. In all cases, the cause of degradation has to be stopped before restoration begins.

3.2.16. Develop renewable, clean energy sources and ensure environmentally safe transport of fossil fuels

Mongolia's thermal power system is based on the use of solid fuel. In 1994, a total of 1000 MW of power was generated. 70% was produced from coal and 30% from imported diesel oil. There are 1,200 km of 220 KV power lines, 2,000 km of 110 KV and 330 km of 35 KV. The requirement an additional for power is growing steadily. If the present trend continues, there will be a need for 70-120 MW by 2000 and 200-400 MW by 2020. Mongolia is rich in fossil fuel: coal resources are estimated at 23 billion tons and oil reserves have just started to be explored. However, burning fossil fuels causes air pollution and acid rain; fuel waste pollutes large areas of land and causes water pollution; mining itself has adverse effects on the environment; and energy distribution lines occupy large areas of land.

Additionally, many people, both in the cities and in the countryside, use wood in large quantities, including rare species.

Agenda 21 states that present energy production and use does not guarantee sustainability. It recommends

1) improvement in energy production, distribution, transportation and final use,
2) introduction of environmentally sound, reliable energy systems and development of new renewable energy sources.

At present only 0.01% of energy in Mongolia is produced from renewable resources, but there is potential to use an additional 6400 MW. The high number of sunny days, the relatively low temperatures for much of the year, the high intensity of the sun and the high amount of wind mean that two thirds of the country's needs could be met with energy through wind and solar power.

Furthermore, there are hydropower potential and hot groundwater sources that could be used for energy production.

Twenty places have been identified as potential sites for hydropower plants, notably the 220 MW power station planned for Egiin Gol. However, the environmental impacts of this and other dams can be considerable, particularly on aquatic fauna and flora, by changing water flow and preventing passage, and on terrestrial ecosystems, through flooding.

Wind and solar energy generation have the least impact on the environment. Production and use of wind and solar energy generators has started in Mongolia. The Renewable Energy Research Institute of the Mongolian Academy of Sciences is conducting research in this field and assembling small generators for the use of herdsmen. Several companies are also working in this area and the Ministry for Nature and the Environment has tested equipment in Gobi B Strictly Protected Area.

Action 1
Introduce modern, environmentally sound energy technology and the wider use of renewable energy sources.

Portable wind and solar generators are particularly suitable for herder families with their low demand for electricity. Increased use of solar stoves and fuel saving stoves will both save biodiversity through reducing the demand for trees and bushes, and make people's lives easier.

Sum centers, which normally rely on diesel generators, should be converted to the use of solar and wind energy generators.

Action 2
Establish government policies favoring the renewable energy production industry through economic, fiscal, and financial measures.

Action 3
Carry out a public information program on the benefits of renewable energy use.

3.2.17. Improve ex-situ management for species conservation and conserving genetic resources

Protecting animals and plants in their natural environment is always preferable to raising them in captivity: it is more cost-effective and ecologically sounder. It is important that all aspects should be studied thoroughly before starting to breed animals in captivity. Ex-situ conservation programs should always be linked to in-situ programs that correct the cause of the need for captive breeding. Zoos and gardens have educational and scientific importance, but collections should not harm or disrupt wild populations.

Action 1

Assess carefully the needs for captive breeding in Mongolia. Limit captive breeding and reintroduction programs to Mongolian extant species or to those whose extinction is otherwise imminent. There must also be a commitment to habitat restoration and protection of the wild population.

Action 2

Carry out necessary research before embarking on captive breeding projects.

Action 3

Monitor captive breeding programs carefully. Continually assess the costs and benefits to the wild populations.

Action 4

Establish a livestock gene bank for traditional Mongolian breeds.

Action 5

Found a small national zoo for educational purposes with appropriate species in the collection (jerboas, lizards, etc.).

Action 6

Improve the facilities and work of the Ulaanbaatar Botanic Garden, focusing on educational programs.