



Sectoral and Cross-Sectoral Integration of Biodiversity in Mongolia

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1. Introduction

Mongolia reported¹ on a range of measures, including: Millennium development goals-based comprehensive national development strategy of Mongolia; Mongolia Action Programme in the 21st Century; Millennium Development Goals; regional development; international, regional and bilateral cooperation; agriculture; public health; mining industry; environmental education and public awareness; the role NGOs in biodiversity public awareness.

2. Millennium development goals-based comprehensive national development strategy of Mongolia

In 2009, Mongolian Parliament approved the Millennium Development Goals (MDGs)-based Comprehensive National Development Strategy of Mongolia.

The Millennium Development Goals (MDGs)-based Comprehensive National development Strategy of Mongolia defines in a comprehensive manner its policy for the next fourteen years. Policies are aimed at promoting human development in Mongolia, in a human, civil and democratic society, and developing intensively the country's economy, society, science, technology, culture and civilization in strict compliance with global and regional development trends. The objective of the MDG-based Comprehensive National Development Strategy of Mongolia is to protect and strengthen Mongolia's sovereignty, and develop it into a middle income country through achieving its Millennium Development Goals, attaching high priority to:

- promoting private sector-led dynamic economic growth;
- human development in Mongolia including education, healthcare;
- sustainable development of science, technology and environment;
- strengthening intellectual development and human capacity;
- creating a knowledge-based economy sustained by high technology, which respects environmentally friendly production and services;
- fostering a democratic system of governance which serves its citizens, protects human rights and freedoms, and is free from corruption and red tape.

The long-term development policy of Mongolia, its priorities, and strategies for their implementation and expected outcomes are defined in the MDG-based Comprehensive National Development Strategy of Mongolia in two phases. First, to achieve the Millennium Development Goals and intensive

¹ Mongolia (2009). Fourth National Report on Implementation of Convention on Biological Diversity, Ulaanbaatar, 2009, 125 pp.

development of its economy in 2007-2015, and the second, to make a transition to a knowledge-based economy in 2016-2021.

Environment policy within the framework of Mongolia's development priority 5:

A policy, which envisages a set of integrated economic, social and ecological measures aimed at protecting the environment, including the measures to protect atmosphere, land, mineral wealth, water, forests, species of fauna and flora; proper utilization of mineral resources, their rehabilitation; measures on adaptation to climate change, reducing the adverse impacts of desertification and drought; halting the emission of hazardous chemicals and radioactive waste; and improving waste management shall be implemented.

Both phases (2007-2021):

Strategic objective 1. Limit and terminate nature and environmental pollution and degradation:

- Implement a rehabilitation policy based on economic assessment of damages caused to nature and environment.
- Implement a set of legal, economic, managerial and organizational measures to reduce air pollution in Ulaanbaatar City, major towns and large settlements.
- Prepare and implement a programme and plan of actions to reduce air pollution in Ulaanbaatar City and major towns.
- Increase the use of renewable sources of energy, including the use of solar, wind and hydro energy on their own or in combination with each other.
- Implement an integrated policy of using new technology and management to collect, transport, store, sort out, recycle, and reuse solid waste in urban and other settled areas and thus, create new job opportunities.
- Within the framework of the Clean Development Mechanism (COM) of the Kyoto Protocol, implement a joint project to reduce greenhouse emissions and sell it at a market price.
- Create an environment monitoring system meeting international standards.

Strategic objective 2. Implement an integrated policy aimed at proper use of land and mineral resources:

- Enhance the natural resource management at national and local levels by improving laws and regulations on the use of mineral resources and environmental protection; introducing economic instruments to enforce laws, and establishing a self-financing mechanism; and improve coordination among different sectors.
- Create a national land heritage fund, comprising of pristine areas dear to many generations of Mongolians, enhance the state policy and management of specially protected areas.

- Expand the network of specially protected natural areas, create a sound structure of its administration, and introduce a modern-day security management.

Strategic objective 3. Necessary conditions for protecting and ensuring proper use of water resources, preventing their shortage, and providing the population with water, which meets health requirements, will be created. A national programme “Water” shall be implemented:

- Enhance the legal environment for protecting and proper use of water resources; improve water resource management to save water, its structure and organization.

- Resolve the problem of public and industrial water supply through replenishing surface water reservoirs by putting some of them into economic circulation.

• Increase water reserves to supply water for cities and mining plants. Strategic objective 4. Conditions for sustainable use and protection of forest reserves, reforestation and maintaining ecological balance shall be created:

- Explore forest reserves by using satellite data and remote sensing, determine the sprawl, structure, and composition of forests, develop forest mapping and sustainable forest management programmes, and create a forest database based on geographical information systems.

- Within the framework of a medium-term strategic objective, undertake measures to make climate milder, restock woodlands and create green zones in Gobi and steppe regions to facilitate fight against desertification, soil erosion, and sand movement.

- Strengthen forest protection through introduction of modern management methods; create a liability system to ensure proper use and protection of forests by allowing local residents and communities to own up to 20 percent of forests on a contractual basis.

Strategic objective 5. Contain the depletion of animal and plant life, and create conditions for their natural recreation and sustainable use.

- Revise procedures related to ensuring sustainability and natural growth of populations of rare and extremely rare species, create economic and legal environment for their protection, explore ways of creating reliable biological resources by using biotechnological achievements to perform assisted reproduction, and create and protect gene pools of rare and extremely rare species.

- Secure support from international organizations, donor countries and individuals for efficient implementation of long and short-term projects designed to establish and protect reserves and habitat of wildlife, and increase domestic and foreign funding sources.

- Take measures to study the dispersal and reserves of rare and extremely rare plant species, create and protect their gene pool, establish a system of registration, information and monitoring, elaborate a plan for their proper use, provide for restoration and cultivation of rare plants.

Strategic objective 6. Promote capacity to adapt to climate change and desertification, to reduce their negative impacts:

- Undertake a science-based assessment of climate change effects and define their prospects, and implement a policy in line with the concept of sustainable development.
- Assess areas affected or are at the risk of being affected by drought and erosion due to environmental degradation and climate change, define their prospects, and enhance the capacity to adapt to the peculiarities of those areas.
- Choose and cultivate those sorts of grain, potato and vegetables, fodder plants which are hardy and capable to adapt to environmental and climate change, develop new sorts, and introduce advanced methods and technology in crop-farming.
- Develop and implement a policy with regard to regulating the population and structure of livestock in accordance with pastures' capacity.
- Develop in combination both nomadic and intensive animal husbandries capable to adapt to environmental and climate change, which would be more productive and with good biological capability.
- Increase public participation in the activities related to climate change and desertification, to defining and introducing adaptation measures, means to cope with climate change, to reducing their adverse impacts, expand the work on providing to the public related knowledge and information

3. Mongolia Action Programme in the 21st Century

Mongolia Action Programme in the 21st Century (MAP-21) adopted in 1999 includes many important environment management issues including biodiversity conservation In this comprehensive document reflects the following tasks on protection of biodiversity (sources: Summary report of the Mongolian action programme for 21st century)

- An accurate evaluation of the current conditions and threats to biodiversity;
- Identify causes of species decline, and define trends;
- Develop species protection policies and programmes;
- Create species preserves;

4. Millennium Development Goals

Goal 7 of the Millennium Development Goals refers to environmental sustainability. The most pressing environmental problems were identified to be those summarized in Table 1, the World Bank commenting that Goal 7 for Mongolia related to the loss of environmental resources, increasing degradation of pasture and forest, urban pollution, loss of biodiversity, and the provision of safe drinking water. (Source: World Bank. 2004)

Table 1

Issue	Identified action	Comments
Land pasture degradation	Manage grassland (communal ownership, extension education, improved quality pasture, fertilizer use, rotational grazing, animal health, post-harvest value added, and diversified livelihood).	Causes of land degradation have been identified as overgrazing in localized areas close to markets and water, mining activities, and infestations by grasshoppers and Brand's vole (both related to pasture degradation)
Vehicular air pollution	Reduce emissions via vehicle inspections and tune up programs, etc., and higher standards on new vehicles.	Air pollution as in increasing urban problem where concentrations of some pollutants exceed safety levels in winter due to burning lignite coal in outdated central heating and electricity plants, and stoves in thousands of gers.
Low energy efficiency	Adopt proper pricing, improve building-based systems, use clean fuel, improve stoves, insulation, and building design.	Low energy efficiency is due mostly to under-priced energy resources. Features are poor insulation in buildings, low efficiencies in the central heating systems and the heat losses via the above ground hot water delivery. Also, the central heating systems contribute to water wastage.
Deforestation	Manage forests, enforce the regulations, collect stumpage and other fees, and adopt community forest management.	The principal cause is illegal logging reducing forest cover from about 11% of the country in 1990 to about 8% in 2002. There is little reforestation.
Decreasing biodiversity	Protect protected areas, forests, wetlands, pasture-land, desert steppe, and adopt measures, e.g., hunting fees, etc.	Biodiversity reduction is caused by many factors, principal among them being excess and illegal hunting and habitat loss (because of deforestation and land degradation)

5. Regional Development

The Medium-Term Regional Development Strategy (2003) identified a set of policies focusing on regional development and recognizing regional and local scales and the different ecological conditions across the country. Key features of the strategy are to:

- Erase differences in social and ecological conditions across the country;
- Limit unemployment, poverty and ecological decline;
- Determine priority sectors of the economy suited to the ecology of the regions;
- Encourage local development within the regions.

The strategy proposes raising rural living standards, health and education so that the rural-urban drift may be slowed so that the benefits of development may be shared more equally across the country. Details include improvement of the livestock industry, the development of services and improved internal transportation, whereby the rural areas would be served by and contribute to new value adding post-harvest industries, tourism, mining and agricultural service activities clustered around eight urban growth poles located along new and strengthened transport axes.

The International Panel on Climate Change (IPCC) in 2001 identified potential strategies that Asian countries could adopt in order to adjust to, or mitigate the effects of, climate change and recommended that the following actions be taken:

- Assess risks to endemic species and ecosystems;

- Implement” integrated planning and management based on ecosystems;
- Reduce habitat fragmentation and protect buffer zones and migratory corridors;
- Encourage mixed-use strategies;
- Manage forests to prevent deforestation, ensure sustainable harvesting and conserve natural habitats;
- Monitor and assess trends and variabilities in key climate elements;
- Coordinate climate change adaptation activities among countries in the region;
- Apply techniques to improve understanding of climate change and its variability;
- Inform NGOs and the public on climate change and involve them in planning, adaptation and mitigation strategies.

The Government approved the National Climate Change Program in 2000 with the objective to implement a series of actions related to climate change and mitigate the effects. As part of this process, researchers identified several inter-related adaptation measures specifically to cope with Mongolian climate change, including those to:

- Improve water resources management and conservation;
- Reduce and control the number of livestock currently degrading the land;
- Improve pasture management, fodder quality and land management in general;
- Improve livestock quality, productivity, feeding and management;
- Introduce soil stabilization/enhancement techniques

used in other dry climate areas and ownership/userfee strategies to encourage long-term soil management.

6. International, Regional and Bilateral cooperation

Mongolia as a competent subject of international right has joined 14 environmental conventions and protocols, which made possible attraction of international resources for solving issues of rational nature resources management, including conservation and sustainable use of biodiversity, capacity building of all stakeholders and promotion of sectoral and cross-sectoral partnership.

In 2002 Mongolia joined Cartagena Protocol to UNCBD. Its joining allows Mongolia to implement activities related to transboundary movement of genetically changed organisms and products; take measures on non-admission their import to the country, including mutual assistance in making researches and scientific and technical elaborations, and information exchange in the field of biotechnology.

Since 1979 Mongolia is a member of World Intellectual Property Organization (WIPO). The Government of the Mongolia realized a necessity of development of methods of protection and working out of standards in the field of protection of traditional knowledge, genetic resources and folklore. Several International meetings “Intellectual property and traditional knowledge” hold, 2008 with participation of WIPO. In the framework of meetings measures on cooperation between Mongolia and WIPO in the area of protection of intellectual property for transformation of human capacity, cultural wealth, unique folklore and ancient history in economic development. The Government of the Mongolia adopted government Programme on development of system of intellectual property. Mongolia ratified to 14 international convention.

Table 2. International conventions on Environment and conservation Ratified by Mongolia

Year signed	Environment convention Ratified by Mongolia
1992	Convention on Biodiversity
1992	Convention on Climate change
1994	Convention to Combat Desertification
1996	Convention on International Trade in Endangered Species of Flora and Fauna
1996	Vienna convention on Protection of the Ozone Layer
1996	Montreal Protocol on Substances that Deplete the Ozone Layer
1996	UN Convention on Combating Drought and Desertification
1997	Basel Convention on Control of Trans-boundary Movement of Hazardous Wastes and their disposal
1999	Convention on Wetlands and International Importance as waterfowl Habitat
1999	Convention on Migratory Species of Wild Animals
2002	Kyoto protocol
2002	Cartagena Protocol on Bio-Safety
2003	International Whaling Convention Persistent Organic Pollutants

The Kherlen and Khalkh Rivers of Eastern Mongolia belong to the Amar river watershed. Therefore, Mongolia participates in the conservation of the Tumen Gol river watershed in cooperation with China, Russia and Korea, six sites in Mongolia. The Mongol Daurian protected area of Dornod aimag has a territory of 210,000 ha, and is a trans-boundary protected area of Mongolia, Russia and China. Meetings and seminars are organizing by protected areas administration of three countries.

Activities towards strengthening cooperation with Kazakhstan and Russia are conducted as part of the conservation of the Altai Soyon eco-territory of Western Mongolia. Representatives of the three countries meet every year to discuss joint activities.

The inter-governmental agreement of trans-boundary water conservation was signed by Mongolia and Russia, with subsequent studies of water resources in trans-boundary areas.

There is a strong need to improve cooperation with Russia and China to conserve river water resources and biodiversity and to improve management of protected areas. Likewise, there is a strong need to improve cooperation with Kazakhstan to conserve the Altai-Sayan eco-region of western Mongolia. .

Mongolia cooperates with China to combat desertification, to improve land and pasture management, to conserve migratory wild and/or rare animals, such as the gazelle, and to exchange environmental data.

Within the framework of East Asian environmental cooperation, Mongolia works to actively implement the “Tumen River Biodiversity Conservation” project, and to establish a regional and national information system of biodiversity and water.

North East Asian environmental ministers, scientists and professionals met in Seoul, Beijing and Manila to discuss ways to prevent yellow dust and sand storms, to reduce its damage and to remediate its underlying cause. All parties agreed that “yellow dust and sand storms are a regional disaster,” and to implement a detailed study of sand storms. Representatives of the Khan-Khentii protected area, Mongolia and the Sokhond nature reserve of Chita, Russia agreed to establish transboundary protected areas and sign agreements of cooperation.

In addition, the MNE and the Russian Natural resource ministry prepared the agreement proposal to establish Lake Uvs national park.

The Mongolian and Chinese Academy of Sciences agreed to establish a joint steppe ecosystem study centre.

The Mongolian-Russian biological expeditionsve been studied the composition of algal species in wetlands of the Huder river, Orhon river valley, Telee river valley, and Tes river valley. As a result, 96 species or subspecies belonging to 5 orders, 29 families and 42 genera were listed in these areas.

In 2003, a 1:32.5 scale vegetation map of riparian and boggy plains of the Ugii nuur wetland area, listed in the Ramsar convention, was produced with funding from JICA. This material could serve as base material to inform wetland monitoring and evaluation criteria.

The National University of Mongolia organized a biodiversity study of particular regions in cooperation with foreign universities. For example, according to a contract with the Nature Conservation Centre at the Gottingen University of Germany, studies of forest steppe ecosystems and their biodiversity have been studied from the base of the Honin nuga station of West Khentii for more than 10 years.

An agreement of cooperation between environmental sectors of Mongolia and the People’s Republic of Turkey was signed. Within the frame of the “Green belt” national programme, the MNE and Forest Authority of South Korea signed a memorandum of understanding for long term financial support of the programme.

The MNE and the Development Cooperation Ministry of Netherlands signed memorandum of understanding to implement environmental projects such as “Integrated water management” and “National Geo-information centre” and other programmes that will be of annual total cost of 2 million USD, starting from 2007. The Government of Netherlands provides this funding as non-repayable support to Mongolia. With the support of the UN and other financial organizations, 23 long, mid and short term projects have been implemented. From 2007, several projects with the aim of intensifying forest resource restoration work, such as “Community Forestry Management” will be implemented.

Since 1990, Mongolia's international cooperation on environmental issues has reached a high level. Projects with international organizations like GEF, UNDP, UNEP and WWF, and countries such as Germany, the Netherlands, Japan and the USA have been jointly implemented. Due to limited financial resources, obligations undertaken under agreements cannot be fulfilled. There is therefore a need to coordinate and harmonize the implementation of the Convention on Biological Diversity at a national level with related UN and other international conventions and agreements. The above conventions are aimed at the conservation of complementary and interdependent parts of the ecosystem, so the need to foster cooperation between conventions arises as an urgent issue.

Mongolia presently has seven inter-governmental agreements, including thirty bilateral cooperation agreements with foreign countries. These were established between 1990 and 1998. They serve as vitally important consensus documents that have great significance for the protection of the country's biological diversity, especially in border areas. With the view to fostering regional cooperation, and cooperation with neighbouring countries, provisions on the joint proper use of biological reserves have been incorporated into several agreements. These include "Cooperation agreement in the environmental sector between the Governments of Mongolia and the People's Republic of China" (1990), "Cooperation agreement in the environmental sector between the Governments of Mongolia and Kyrgyzstan" (1993), "Cooperation agreement in the environmental sector between the Governments of Mongolia and Kazakstan" (1998), "Cooperation agreement in the environmental sector between the Governments of Mongolia and Russian Federation" (1994), "Mongolia-China Inter-Governmental Agreement on Protection of Transboundary Waters" (1994) and the "Mongolia-Russia Inter-Governmental Agreement on Protection of Transboundary Waters" (1995).

7. Agriculture

Agriculture sector and processing industry were and remain the key sector in providing of food safety of the country. The main impact of agriculture on biodiversity is related to extreme livestock pasturing, expansion of arable lands, watering lands and destruction of habitat of flora and fauna.

Land degradation has caused substantial impacts on agricultural production, especially crop yield and animal production. Crop yield has also been reduced due to fact that farmland soil fertility has decreased by about 20%. Wheat yield has halved since 1980s. As a result of overgrazing, Mongolia's over 40 million livestock lack pastureland. The lack of pastureland has resulted in malnutrition, loss of livestock heads and in reduction of animal products, thereby affecting the country's economy.

The total land area of Mongolia is 156.5 million ha of which 118.4 million ha (75.8%) is capable of agricultural production and pastoral livestock production. Cultivated land occupies 1.35 million ha of the total land area, Over 57% of total arable land is located in the north-central aimags (provinces) of Tov and Selenge and the northeastern aimag of Dornod, As of today, 126.3 million ha or over 70 % of the total pastureland areas have been degraded. The total area of the damaged or depleted land is estimated to be 121.7 million ha of which 91.7 million ha are eroded by the combination of wind and water, 21.1 million ha eroded by water, 1.0 million ha are considered damaged, and 7.9 million ha are

covered by sand as a result of human activities. About 8.6 million ha of pastureland has been severely degraded due to intensive use of pasture all around the year.

Almost half a million ha of land which has been used for agriculture during the last 40 years has been eroded and the fertility has decreased by 20 %. The size of pastureland damaged by grasshoppers reached 0.423 million ha of land and plants in these areas are becoming extinct. Due of mismanagement or improper use of farmland, soil fertility is often lost or destroyed by even single windstorm or flood event.

Protection of biodiversity resources from degradation or destruction has always been a key issue for consideration by the Mongolian Government. The Government of Mongolia adopted two resolutions: one in 1974 on “Urgent measures to protect soil from erosion”, and the other in 1981 on “Introduction of soil protection systems in farm land management”. During the implementation of these two resolutions, the old destructive technology of farming was replaced by new advanced techniques, which has saved a substantial amount of soil from loss. Forest belts were built around many farmlands. The use of farmland has shifted to a rotational basis. Additionally Mongolia is working towards implementation of projects to reduce land degradation and erosion by rehabilitation of land resources affected by mining operations; and combating desertification and sand movements.

In 1995, Mongolia adopted a package of Land Laws to regulate land relations in market economy conditions.

While these laws are enacted, Government of Mongolia has started a process to renew land policies and is providing innovative land policies for sustainable management of land resources. To realize the new innovative land policies, the Government has re-drafted “Land law” and “Law on Land Fees” which are endorsed by the Parliament on 7th June 2002 (communication with MNE, 7th June 2002). The “Law on Land, 1995” has specific provisions towards land use protection in its articles such as:

Article 51: Pasture, its rational use and protection

Article 52: Rational use and protection of hay fields

Article 53: Rational use and protection of cultivation areas

Article 55: State Certificate on land characteristics and quality and its’ procedures. According to this, the state certificate shall include following indicators: thickness of fertile soil layer; contents of decomposition; soil pollution and chemical pollution; changes in vegetation cover; changes in land surface characteristics; and changes in the composition of pasture and hayfield plant species, etc.

8. Public health

Public health is one of the sectors of Mongolia that is being reformed. It reflects its role not only in health care but in increasing life expectancy and welfare of the Mongolia’s citizens and achievement of Millennium Development Goals. The Government’s National Biodiversity Strategy specifically mentions medicinal plants as a biological resource requiring management for their conservation and sustainable

use. It also recognizes the need to address the preservation and maintenance of knowledge, innovations and practices of indigenous communities embodying traditional lifestyles. The Mongolian Agenda 21 and the National Action Plan against Desertification also advocate the conservation and sustainable use of medical plants.

Mongolian traditional medicine considers the body, both of humans and of livestock, as a whole and complete entity. The diagnosis of ailments is based mainly on observation, feeling the pulse, palpation, listening to breathing, smell, urinary examination, and, in the case of humans, questioning. From the combination of these the doctor diagnoses the illness or syndrome and prescribes treatment. The medical concoctions required many involving plants, are either brought by the doctor, found by the herders directly, or bought from outlets in rural towns or cities.

Over 3000 species of vascular plants have been recorded in Mongolia, of which 600 are said to have medicinal properties beneficial to humans and livestock. Mongolian traditional medicine, including herbal plant applications, has a history of more than 2000 years, and is regarded as a valuable national heritage..

Medicinal plants thus constitute an important aspect of health care in Mongolia, accounting for over 70 percent of all Mongolian medicine. Hospitals and modern care are not easily accessible, and are often prohibitively expensive, so a large part of the population relies on traditional medicine for their primary health care.

It is estimated that at least 85 Mongolian plant species are threatened with extinction and others are becoming rare due to pressures from unsustainable harvesting, heavy grazing and other factors. Thus, attention needs to be given to their conservation, sustainable harvesting and, in some cases where threats are high, cultivation.

The Government of Mongolia has assigned traditional medicine an integral place in the national health care system. There are already been a number of policies promulgated to encourage traditional medical plant use and technology. In 1991, the Ministry of Health approved a five-year plan to encourage the use of traditional medicine in public facilities, stating that plant life and herbs should be used efficiently, and drug availability should be increased, and new types of herbal medicines should be sought. In 1995, the Ministry of Health and Social Welfare developed additional policies to build upon Mongolian experience in traditional medicine for disease control. In 1999, the State Policy on Development of Mongolian Traditional Medicine was approved by Parliament, emphasizing Mongolia's commitment to the development of traditional medicines.

In addition, support has been given to the training of traditional medicine practitioners. In 1990, the Department of Traditional Medicine was established at the Mongolian National Medical University to train doctors to specialize in traditional medicines, as well as to provide short courses to doctors trained in western medicines.

There are needed to Conduct surveys of medicinal plants and identify threatened species of national and global significance and develop and execute community management plan for each Region. Also, should be done Knowledge base development and public awareness increased in project areas to promote medicinal plants as an economic resource capable of sustainable management and develop Management guidelines (e.g. harvesting techniques and regimes) produced for different types of medicinal plants in arid/semi-arid ecosystems, together with descriptions of species which could be traded only from certified cultivated sources.

One of the sectors significantly influences on biodiversity is pharmaceutical sector. In Mongolia there are 40 pharmaceutical producers. Most of them used are natural pickings from wild growing or cultivated herbs. There is a lack of knowledge in raw materials and locations of economically important objects of flora, ecology and biology peculiarities of used species, rational approaches and methods of continuous use of wild plants in the area of medicinal herbs use.

On the basis of existing flora and fauna traditional knowledge of traditional medicine is being developed during centuries. These traditions are based on knowledge of medicinal herbs and approaches of health improvement in conditions of mountain inhabitancy. Unfortunately, local population gathers medicinal herbs, separate objects of fauna that undermines their funds opportunity to recover. It happens in most regions of the country with the connivance of local and central authorities.

State policy in the area of protection and use of flora resources is inconsequent and declarative. There is a lack of cadastre of flora species and analytical data base of plant resources, without which it is impossible to regulate system of sustainable use and effective control of raw materials. Issues of rational use of flora objects at local level are not included into the programmes of complex socio-economic development of territories. Also there is a lack of interaction between state structures and self-governance bodies.

9. Mining industry

Currently, 15-20% of GDP and 50% of the country's total exports have been contributed by the mining industry. As of December, 2000, there were 1329 deposits licensed for exploration and 439 deposit licensed for utilization. As of today, there are over 200 operating mines of which 111 gold mines, 24 metal mines, 34 coal mines, 15 salt mines and remaining belong to other categories. Mongolia is rich with mineral resources and has a developed mining industry. Most of mining's are located at the relative step areas (including gold and ore mining), are threat to vulnerable step ecosystems and destroy habitat of species of flora and fauna, pollute rivers and ground waters. Open ways of mining destroy cover and blast works provide inconvenience to most of animals.

Necessity of planning measures on protection of natural resources for mining development.

Law of Mongolia on Environmental impact assessment has been ratified in 1998, and in accordance with it, all companies and services that have been operating without any assessment were required to go under the environmental assessment. The true idea of the environmental impact assessment is being a

coordinating mechanism of preventing and protecting the environment from possible damages and lowering the risk that can be caused by human behaviors.

Based on the environmental impact assessment, the project will be concluded in four levels, first, “not feasible”, if the negative impact on the environment outweighs the benefit of the project, second, “feasible with conditions”, if the some part of the negative impacts can be corrected or recovered, third, “feasible”, when there is no or slight impact on the environment, and at last, the fourth, “the project cannot be implemented due its non compliance with current laws and regulations, or its technology is not environmentally friendly or the project is not included in the land management planning”.

Therefore, the Government of Mongolia attaches high priority to the important role of environmental impacts at all levels. This will ensure the prevention of potential adverse impacts such as the destruction of biological diversity, air or soil pollution, and other negative consequences.

Mongolia has started transiting into a market economy since early 1990s. Along with this transition, many services and industries, particularly mining sector, have started flourishing, and increasingly started affecting the environment at the same time. “Gold Program” which was the beginning of the development of mining industry in Mongolia, and other mining projects with both foreign and domestic investments, have raised the necessity of establishing policy and legal frame on the environment in Mongolia.

The gold and other mining activities, particularly the exploitation method of heavy use of extremely poisonous chemicals such as mercury and cyanide, have casted dark shadow on the environment including soil erosion and withered rivers and streams.

Moreover, foreign and domestic investment has increased in agriculture, infrastructure, light and heavy industries and service sectors. Particularly, number of projects being implemented in mineral exploration and exploitation sector has increased; mining activities always accompany environmental risks and affect the original state of nature causing air, water, soil and underground pollution.

Among the projects that are being implemented in Mongolia, mining projects have much higher negative impacts on the environment. All problems caused by the mining industry can be grouped into three.

First: Mining industry damages the soil.

Second: Gold placers are usually located in the river basins. Because of this, river ecosystem has been destroyed resulting loss of water reserve. Moreover, due to the change of river flow, water level has been decreasing.

Third: Vegetation cover in the area is lost forever, because of the removal of soil.

Therefore, it is important to improve the quality of the environmental impact assessment and environmental protection plan, and to enforce environmental monitoring programs. Measures toward decreasing negative impacts of certain projects need to be enhanced.

As a result of the joint efforts of State Specialized Inspection Agency and the Ministry of Nature and Environment, number of mining companies which prepare environmental impact assessment reports has been increased, however, the implementation of the environmental impact assessment and recovery work do not meet the requirement. This statement can be affirmed by the environmental degradation and other problems we are facing today.

The fact, that companies are responsible for developing environmental impact assessment and consequently, its implementation, has become the main mechanism of enforcing environmental laws and regulations, having people understood their responsibilities within the government policy and conducting monitoring activities.

According to the assessment, the companies will operate to minimize the negative impacts on the environment and follow professional recommendations on how to lower negative impacts and how to conduct recovery work within the allotted budget.

10. Environmental education and public awareness

In 2007 Mongolia joined global process of implementation of UN Decade on Education for Sustainable Development and implementation of UNECE Strategy on Education for Sustainable Development. Initiatives in the field of education for sustainable development in the Mongolia are implemented in the framework of environmental education that was reflected in national political documents Media: There are a number of printed and TV media suppliers which occasionally cover environmental

issues including forest and biodiversity issues, but no specialized magazine. The MNE had agreement with main news paper such as Onoodor, Daily news on publication environment news including biodiversity conservation news. There is financial problem to publish environment articles in news paper because certain newspapers now ask for cash payments for publication.

There is a Press Institute has a training and communication centre that could become a key support centre for the media in the country in environment public awareness. . The second is the forthcoming creation of an “Baldorj” Environmental Journalists Club. This club is very active to promote environment and biodiversity conservation public awareness in the country.

Museums: At the provincial level (aimags), has a local History Museum. These museums could be a prime channel for disseminating environmental including biodiversity information, all the more as schools are still touring these institutions a lot for ecology awareness. The museums’ managers would be interested in getting hold of some “new, colorful and modern” information materials and could then easily offer to collaborate in the implementation of public awareness forest projects at the provincial level. This is a less conventional channel that would deserve attention.

Religious groups: The traditional religious institutions in the country (currently undergoing some substantive revival) could serve as a good channel for dissemination of environmentally sound practices and awareness of environmental problems.

11. The role NGOs in biodiversity public awareness

NGOs contribute and publish reports in the framework of environmental education, education for sustainable development, lawmaking and public participation, which helps to develop sectoral and cross-sectoral partnership in issues of conservation of natural resources. Mass media also pay attention to rational use of natural resources and conservation of biological diversity. The initiatives of NGOs on holding clean up days and tree planting.

The Government of Netherlands, GEF, UNDP, and other projects conduct activities on increasing awareness of local communities on importance of biodiversity conservation.

The 2001 the Dutch/UNDP-funded Environmental Public Awareness project (EPAP) as one of the most interesting and useful project in Mongolia. Apart from working with government agencies, it effectively mobilized a large number of environmental NGOs and through several dozens of small pilot projects (most of them costing less than \$5,000 each), implemented by NGOs between 1997 and 2001, Among other things, it demonstrated existence of opportunities to environment improvement including biodiversity.

Most foreign-funded projects are implementing public awareness activities through national NGOs that take the environment-related messages to the grassroots. The Government has been able to link with these projects to project the general direction of its environmental policies and programs.

NGOs are more active in public awareness area. The most important among them. NGOs are represented in the National Council for Sustainable Development and Environment Minister's council the effectiveness of that representation however uncertain. NGOs have bridged the information gaps only in part, and mostly in Ulaanbaatar only. There are many environmental NGOs has been established in aimags, n but there capacity are very weak.

It is evident that NGOs have difficulties in disseminating the materials, documents and posters that they produce, because they do not have easy access to the media (newspaper, radio, TV) nor to government proper dissemination channels (such as the National Parks system, formal education system, etc.). However, noteworthy awareness products have been generated: color-posters, simple black and white brochures, booklets.

Cooperative coordination among agencies, working in the field of rational use biodiversity resources and conservation is restricted. Indistinct responsibilities in state structures and weak communications are a barrier to timely, full dialogue and interaction among executive ministries and agencies in decision making of significant environmental issues. There is a lack of an integrated concept of sectoral and cross-sectoral partnership at local and national levels. Rather, the strongest support for mainstreaming

of environmental concerns typically comes not from the environmental or environment-related ministries themselves but from outside, especially donor outsiders.