

GOVERNMENT OF MONGOLIA
MINISTRY OF NATURE AND ENVIRONMENT

**National Plan of Action to Combat
Desertification in Mongolia**

Ulaanbaatar 1997

Preface

Many nations of the world are facing the problem of rapidly growing populations and lack of food supply. In many cases, the main reason for lack of food supply is land degradation and desertification. Therefore, the problems of combating desertification are faced by many countries and needs to be a matter of concern for the international community as a whole. Problems of Combating Desertification can be solved only with the collaboration of many nations of the world. Loss from drought and desertification reduces the pace of economic development in many countries. Unfortunately, droughts and desertification are a common occurrence in many places. As a result of understanding this problem a Convention on Combat Desertification was signed in Paris (1994). Two years later, this Convention came into force. From the early stages our country supported this Convention and Mongolia was within the first fifty countries that have ratified the Convention.

With assistance from UNEP, UNSO, UNDP and ESCAP we have developed our National Plan of Action to Combat Desertification (NPACD). The NPACD was approved by the Government resolution 169 of Mongolia in July 1996. The latest version of the National Plan of Action to Combat Desertification was made with the technical assistance of the UN Office to Combat Desertification (UNSO). Small- scale projects are to be implemented immediately. The NPACD has been developed with the assistance Mr. P. Wit (consultant of UNSO) and Mongolian government representatives: Drs. Ts. Adyasuren, N. Sarantuya, D. Namkhai, D. Purevtseren, D. Dash and Kh. Jalbaa.

Although our country has developed the National Plan of Action we still need financial assistance from local and international organizations as well as from donor countries for implementing this National Programme.

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Executive Summary

Introduction

The UN Conference held in Rio de Janeiro in June 1992 adopted Rio declaration on Environment and Development , Agenda-21 and pointed out that "National antidesertification programmes needed to combat the problem".

The National Plan of Action to Combat Desertification in Mongolia (NPACD) presents a comprehensive framework for activities to combat land degradation and desertification, on the short and medium term.

Desertification is defined as:

Land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variation and human activities.

(Convention on Desertification, June 1992)

Following this definition, 90 % of Mongolia is vulnerable to desertification. These areas are, in the case of Mongolia almost exclusively used as range lands, supporting about 29.3 million head of livestock (sheep, goats, cattle, horses and camels).

Land degradation is not wide-spread, but also not uncommon. Especially around centres of socio-economic activities like roads and wells, or district- (Sum) and province (Aimag) centres, degradation and in the drier areas desertification have become apparent.

Anthropogenic causes of desertification include:

- Overgrazing. Mongolia's national herd has remained remarkably constant over the years, even with an annual population growth of about 1.5%. Scientific research suggest that the grazing lands are being exploited at their carrying capacity's level. Small increases in animal populations or changes in land-use patterns may therefore result in localized degradation. Such changes include the tendency to settle for more prolonged periods around infrastructural facilities, herding by salaried herdsmen, and herding by inexperienced herdsmen fleeing the cities where employment opportunities have been greatly reduced after the socialist era.
- Inappropriate agricultural practices. During socialist times, large scale transformation of range lands into croplands has taken place. Insufficient attention was given to the marginal conditions for crop growing in Mongolia. Land tillage at springtime for instance has led to massive wind erosion. Also, with the transition to a market economy, the large scale farms -whether privatised or still state-owned- lack the funding needed for investment into their enterprises. As a result a larger proportion of the farmlands has been abandoned, while on the existing farmlands yields are still on the decline.
- Deforestation. In the Northern watersheds where Mongolia's only extensive forest resources occur, larger areas of forests are lost annually due to inappropriate exploitation techniques (clear felling etc.), and forest fires, leading to water erosion, loss of biodiversity, hydrological changes down-streams etc.. Reafforestation only covers a small percentage of the area lost annually. In the Gobi, the lack of fire wood and alternatives for it, make that the local population exploits the very last of these resources around their settlements, destabilising the soil, which leads to wind-erosion, sanding up of waterholes and other infrastructures etc.. Rehabilitation activities, if any, are of a very small, pilot nature only.
- Ill-planning and worse use of the road network. Cross-country travel frequently brings permanent damage to the vulnerable steppe and desert vegetation, from where gully erosion may start leading to hydrological changes in a larger area such as lowering ground water tables.

In recent years the government, with assistance from the international donor community, has formulated a number of policy documents to serve as a framework for activities that influence Mongolian ecosystems and their uses.

Of particular importance to this NPACD, are the National Environmental Action Plan (NEAP) and the Mongolian Action Programme for the 21-st century (MAP 21). These documents provide a more general institutional basis where NPACD can be considered to fill in certain chapters.

The recently adopted New Land Law provides a more adapted legal framework for implementation of activities to curb land degradation.

Environmental issues are within the mandate of the Ministry of Nature and Environment (MNE). Like other Mongolian government structures at the national and local level, it is limited in its effectiveness through a general lack of funds, which makes for instance recruitment of staff for new tasks difficult. This situation is certainly not better at the Aimag- or Sum level.

Strategy

The NPACD's strategy is adhering to the principle of **attacking the causes** of degradation, rather than curing the symptoms.

In order to do so it stresses the importance of **preventive** measures.

Since causes of degradation often are linked to human activities, effective **participation** is a leading orientation, notably for field projects. Another important orientation in this context is the **emphasis on rangelands** management.

If results are to be sustainable, activities leading to them must be **integrated** in their physical environment as well as their socio-economic and institutional setting. An integrated approach means that all factors of influence on desertification and mobilisation of resources to combat it, are to be considered. Measures may then be taken to alleviate certain bottlenecks. Such measures in the physical environment may include soil conservation measures, rangelands improvements, etc.. In the socio-economic and institutional rural environments it may include measures like organisation of users groups or marketing facilities, in order to mobilise the population for local anti-desertification programmes.

Before an approach for the sustainable management of Mongolia's land- and water resources at a larger scale, can be launched in the field, a number of activities is needed in the short run that develop and test potential tools and that creates an enabling institutional environment.

Such activities include:

- Public awareness raising.
- The mobilisation of existing knowledge on ecosystems and their uses: Traditional knowledge of resource users, results of research by Mongolian institutes.
- Review of Policies and Formulation of Action Plans at the different government levels
- Development of Appropriate Technologies and Methodologies (sustainable at the different actors' levels: resource users, national and local governments).
- Training of government staff.
- Instalment of monitoring facilities.
- Pilot projects in the field of integrated, participatory management of renewable natural resources.

Other methodological considerations include:

- The mutual reinforcement of projects initiated under the NPACD, with other projects from other National Plans or Programmes.
- The involvement of local NGO's like MACNE, The National Women's Council, the National Herders' Association, Green Movement, D&E, etc..
- The coverage of all major ecological zones by the different field projects

At the centre of all NPACD activities will be a coordination unit at the MNE. It will be fully integrated within the institutional framework of MAP-21.

Implementation

The general objectives of MAP 21 and NPACD are the same:

To ensure that a process of national development is established which fully incorporates the principles of environmental sustainability and meets basic human needs.

The NPACD's Programme Headings follow directly from the strategic considerations:

- **Institutional support for awareness raising, coordination and monitoring of the NPACD.**
- **Creation of an enabling environment for sustainable management of land resources.**
- **Support to applied and adaptive research and its dissemination.**
- **Assessment and monitoring of drought and desertification/land degradation.**
- **Promotion of sustainable pastoral land use systems.**
- **Integrated management and rehabilitation of crop lands.**
- **Sustainable management of forest resources.**

Activities described under these objectives are clustered into 19 projects. For each projects a project identification sheet is given in an Annex.

The first 7 projects should be initiated as soon as possible. They cover essentially the first two immediate objectives.

The main accent of the other 12 projects, to be implemented after 3 - 5 years, is on field activities of sustainable management of natural resources. Emphasis is put on participatory rangelands management, bot croplands and forested area are covered as well.

Table 2 of the main report gives an overview of Projects, Activities and Strategic Criteria and their interactions.

Resource mobilisation

The government of Mongolia, with support from UNDP/UNSO will undertake innovative activities to mobilize internal and external resources for the implementation of the NPACD. It can not be expected that the (important) costs of this NPACD can be substantially covered by Mongolian Funds alone. However for the sustainability of the programme, it is of utmost importance to identify local resources for funding of anti-desertification activities, and to actually generate funds from these resources as early as possible. UNSO has relevant experience in such issues and can provide assistance concerning setting up the internal funding of the Mongolian National Plan of Action to Combat Desertification.

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List of Abbreviations

ADB	Asian Development Bank
CIP	Centre for International Projects (Russia)
CTA	Chief Technical Advisor
Danida	Danish Development Agency
D&E	Development and Environment (Mongolian NGO)
DGIS	Dutch Development Agency (Directorate Generaal voor Internationale Samenwerking)
DO	Desertification Office
EIA	Environmental Impact Assessment
ESCAP	Economic and Social Commission for Asia and the Pacific
EU	European Union
GEF	Global Environmental Facility
GIS	Geographical Information System
GOM	Government of Mongolia
GTZ	German Technical Cooperation Agency (Gesellschaft für Technische Zusammenarbeit)
HQ	Head quarters
IDRC	International Development Research Centre (Canada)
JICA	Japanese International Cooperation Agency
MACNE	Mongolian Association for Conservation of Nature and Environment
MAP 21	Mongolian Action Programme for the 21st century
MNE	Ministry of Nature and Environment
MOAI	Ministry of Agriculture and Industry
NEAP	National Environmental Action Plan
NGO	Non Governmental Organisation
NPACD	National Plan of Action to Combat Desertification
PALD	Policy Alternatives for Livestock Development in Mongolia
PAP	Poverty Alleviation Programme
RS	Remote Sensing
UK	United Kingdom
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNSO	United Nations' Office to Combat Desertification and Drought (formerly United Nations Soudano-Sahelian Office)
USAID	United States Agency on International Development
USD	United States (of America) Dollars
WB	World Bank
WWF	World Wide Fund for Nature

1. Introduction. . Introduction

1.1 History of the National Plan of Action to Combat Desertification.1

An initial draft of the NPACD was prepared in 1991 by Mongolian and Russian specialists with the assistance of United Nations Environmental Programme (UNEP), Economic and Social Commission for Asia and the Pacific (ESCAP), and Russian Centre for International Projects (CIP). The initial draft in Russian was translated in English and revised in 1992-1993 with the help of international consultants.

In 1994 a second draft was prepared, equally with the assistance from UNEP by two international consultants, Dr.D.P.Sheehy and Dr.D.E.Johnson. Although from a scientific or technical point of view, not many things could be said against this document, its size and accessibility did not make it fit for use as a policy document.

A national workshop on desertification was organized in August 1995 with support from UNEP, ESCAP and UNDP to review the 1994 draft in the light of the newly adopted UN convention to Combat Desertification. This workshop recommended to reformulate the National Plan of Action to Combat Desertification taking into account the outcome of the workshop and the provisions of the UN Convention on Desertification. The present document is the follow-up of that recommendation.

This document is only one of the first steps in a process of continuous upgrading of a national programme to combat desertification in which all stake-holders participate. Reformulation of policies will be based on new insights obtained from analyses of results of earlier phases. In the present National Plan of Action to Combat Desertification, such activities of participatory planning form an integral part of the programme.

1.2 Description of the Mongolian environment with special reference to desertification.

The environment of Mongolia is relatively pristine in comparison to most other countries of Asia, even though geographically it is in the arid zone of the Asian continent. Natural resources include vast areas of natural grazing land, a remarkable indigenous flora tolerant of herbivore, fauna comprised of viable populations of large wild herbivores and other temperate zone wildlife, and a pastoral animal husbandry tradition that has changed very little in its traditional production techniques and emphasis. Landscapes of Mongolia are diverse, ranging from high elevation mountain ranges with glaciers, vast steppe grasslands, to sand and stone deserts in which precipitation infrequently occurs.

2.1 Geographic Position.2.1 Geographic Position

Geography has a major influence on agricultural potential in Mongolia. The location of Mongolia in the center of the Asian Continent with dry and temperate climatic conditions has favoured development of extensive grass and shrub steppe grazing lands that have the capacity to support large numbers of grazing herbivores. The presence of northwest to southeast oriented mountain ranges in the western portion of Mongolia, a grass steppe ecological zone in the central and eastern portions of the country, forest steppe in the north central portion of the country and the arid Gobi in southern Mongolia provides winter-spring and summer-fall pasture land capable of meeting seasonal forage requirements of domestic and wild grazing herbivores.

Geographic position and associated climatic influences can also be a negative environmental condition that affects sustainable use of land resources, especially pastoral livestock production. Variations in temperature and precipitation create seasonally harsh conditions limiting productivity of biological systems. While limiting for pastoral livestock production systems, geographic location and climate are major constraints to attempts to increase agricultural productivity by using more intensive production

techniques. These attempts often coincide with and initiate degradation of natural resources that lead to a long term decrease in the productive potential of adapted biological systems.

1.2.2 Land resources.

Total land area of Mongolia is 156.5 million ha of which 118.4 million ha (75.8%) is capable of agricultural production, primarily extensive, 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.

The aimags forming the arid Gobi third of Mongolia have 1% or less arable land. Other aimags have amount of arable land ranging between 1.1 and 9.5%. Arable soils are characteristically dark chestnut and chestnut soils and are typical of soils that evolved with steppe vegetation. Organic matter content is 3 to 4% with pH of 6.0 to 7.0. Soils are shallow (average of 30 cm) even in the crop producing aimags of Tov and Selenge where conditions are most suited for intensive agricultural production. In these aimags, only valley bottomland and lower slopes of hills on primarily north aspects are cultivated because of greater soil depth and higher soil moisture retention. Principle crops produced on cultivated land are cereal grains (wheat has comprised approximately 80% of cereal grain production since 1960; other cereals are barely, rye and oats used primarily as greenchop silage for feeding dairy cattle), potatoes and vegetables.

Native pasture land suitable for pastoral livestock production occupies 117.147 million ha (Table 1). High mountain (including alpine) pasture types comprise 4.6% of total pasture land area and occur primarily in the northwestern and southwestern aimags. Forest-steppe pasture types comprise 27.1% of total pasture land area and occur primarily in the northwestern and north-central aimags. Grass steppe pasture types comprise 22.8% of total pasture land area and occur primarily in the northeastern and north-central aimags. Desert-steppe pasture types comprise 19.5% of pasture land area and occur primarily at lower elevation in the northwestern aimags and in the northern part of the southern Gobi aimags. Desert pasture types comprise 19.4% of grazing land area and occur primarily in the southern part of the Gobi aimags along the border with the Inner Mongolian Autonomous Region of China. The distribution and occurrence of the major pasture types in Mongolia have in the past provided optimal conditions for implementing pastoral grazing management strategies.

1.2.3 Water resources. .2.3 Water resources

Hydrological resources in Mongolia include rivers, lakes and groundwater. As can be expected they are of more importance and of a more permanent nature in the northern parts of the country. In the arid and semi-arid zones however an important number of lakes, springs and wells may be found albeit that they are often of an ephemeral nature or contain saline water.

1.2.4 Ecological regions .2.4 Ecological regions

Mongolia can be separated into several agro-ecological regions and sub-regions with significantly different environmental conditions, agricultural and livestock production potential, and ecological response to rate factors promoting anthropogenic induced degradation (Fig. 2). Climatic and geophysical rate factors include amount and timing of precipitation, temperature extremes, elevation, frost-free days and type of soils. Both extended drought and winter snow/ice storms commonly occur. In general, the extremely cold and dry winter, the dry, cold and windy spring season, and the occurrence of most precipitation between mid-June and the end of August limits the potential productivity of Mongolian land resources.

1.2.4.1 Hangai-Hovsgol region .2.4.1 Hangai-Hovsgol region

The Hangai-Hovsgol Region is located in the northwest of Mongolia. As a mountainous region of high elevation and deep valleys with some forest and arid steppe, agricultural production is limited to harvesting forage with grazing animals including yaks, cattle, sheep and reindeer. Agricultural activities

other than pastoral grazing include a limited amount of fodder harvest and grain production in the steppe areas of the region. Aimags forming the region include Arhangai, Hovsgol, Bulgan and Zavhan.

Climatic and physical factors influencing biological systems in the Hangai-Hovsgol Region include elevation between 2000 and 3000 m; mean annual temperature between -2.5°C and 7.5°C with low temperature in January of -24°C and high temperature in July of 19°C ; between 60 and 100 frost-free days, and annual precipitation between 200 and >400 mm. Wind speed averages between 2-4 m/sec and snow cover is often > 15 mm in depth.

1.2.4.2 Selenge-Onon Region. .2.4.2 Selenge-Onon Region

The Selenge-Onon Region in north-central Mongolia is the principle agricultural cropping area for Mongolia and the location of intensive agricultural production characterizing the former State Farm system. The region is a basin with drainage to the north. Most cropping activities involve rainfed cultivation of cereal grains (wheat, barley, rye, oats) and some vegetables. Under the command economy, dairying was the primary focus of State Farms in this region with grain and silage primary supplementary feeds used during the winter milking season and forage obtained from summer-fall pastures the primary dairy cattle feed during the summer milking season. Other than Frisian dairy cattle, native or hybrid cattle and sheep are the primary grazing animals and are managed using pastoral grazing strategies. Aimags forming the Selenge-Onon Region include Tov, Selenge and Bulgan.

Climatic and physical factors influencing biological systems in the Selenge-Onon Region include elevation between 1500 and 2000 m; mean annual temperature between 0.0°C and 2.5°C with coldest temperature in January at -20°C and warmest temperature in July at 19°C ; between 70 and 120 frost free days, and annual precipitation between 250 and 400 mm. Snow cover averages 5 to 10 mm in depth and wind speed averages between 4 to 6 m/sec.

Table 1. Natural grazingland vegetation types of Mongolia

Natural zones	Area %	Number of types
I. High mountain belt	5.3	15
II. Mountain forest steppe belt	27.1	-
a. Mountain meadow-steppe	3.3	24
b. Mountain steppe	21.3	28
c. Mountain meadow	25	21
III. Steppe zone	22.8	38
IV. Desert steppe zone	19.5	24
V. Desert zone	19.4	21
VI. Interzonal vegetation	5.9	-
a. River valleys	2.1	32
b. Hollows, meadows	3.8	29
Total	100.0	232

1.2.4.3 Altai region. .2.4.3 Altai region

The Altai Region is the high mountain region in western Mongolia. Agricultural production in the northern and central part of the region is limited to using cattle, sheep, goats and yaks to harvest grazingland forage with pastoral grazing management strategies. In the southern Altai Region, irrigated fruit, berries, and melons and limited fodder production is possible. Aimags forming the Altai Region include Uvs, Bayan-olgi, Hovd, Zavhan and Govi-altai.

Climatic and physical factors influencing biological systems in the Altai Region include elevation between 1500 and 4000 m; mean annual temperature between -2.5°C and 5.0°C with low temperature of -24°C in January and high temperature of 22°C in July; between 60 - 120 frost free days, and precipitation between 400 and 500 mm. Snow depth ranges between 5 to >15 mm and wind speed can occur between 2 and 6 m/sec.

1.2.4.4 Central and eastern steppe region. .2.4.4 Central and eastern steppe region

The Central and Eastern Steppe Region is the broad, essentially treeless region in central and eastern Mongolia. Agricultural production, except for limited rained cereal grain and fodder crop production is limited to using sheep, goats and cattle to harvest grazingland forage using pastoral grazing management strategies. Most State Fodder Farms (20 in 1991) were located in the eastern Steppe Region. Harvest of hay from native pastures is a major agricultural activity and the source of much of the hay that was transferred to fodder deficient Gobi aimags through the State Emergency Fodder Fund. Aimags included in the Central and Eastern Steppe Region include Dornod, Hentii, Sukhebaatar, Dornogov and Dundgov.

Climatic and physical factors influencing biological systems in the Central and Eastern Steppe Region include elevation between 900 and 2000 m; mean annual temperature between 0.0°C and 2.5°C with low temperature in January of -20°C and high temperature of 22°C in July; between 110 and 140 frost free days, and precipitation between 150 and 250 mm. Snow depth ranges between 5 to 10 mm and wind speed

can occur between 4 and 8 m/sec.

1.2.4.5 Gobi region. .2.4.5 Gobi region

The Gobi Region includes the semi-arid and arid southern section of Mongolia. In this region, moisture availability and arable soils are major limiting factors to agricultural production. Except in irrigated oases suitable for the production of vegetables and melons, agricultural is limited primarily to using sheep, goats and camels to harvest grazingland forage. The Gobi Region is the centre of a cashmere goat industry. A major limiting factor to livestock production in the Gobi Region is the need for winter supplemental feed for livestock in a region that has little inherent capability to produce supplemental feed. Aimags forming the Gobi Region include Govi-Altai, Bayan-hongor, Ovor-hangai, Dundgov, Omnogov and Dorngov.

Climatic and physical factors influencing biological systems in the Gobi Region include elevation between 700 and 1400 m; mean annual temperature between 0.0°C and >2.5°C with a low January temperature of -20°C and high temperature of 23°C in July; between 90 to > 130 frost free days, and precipitation of 100 mm. Lack of snow used as a moisture source by grazing animals rather than snow depth is a major factor limiting to livestock production in the Gobi Region. Wind speed between 2 and 8 m/sec occurs.

1.2.5 Socio-economic environment.

Livestock numbers have remained relatively stable over the last decades at 29.3 million head (29.3 million in 1996 of which 46.3 % were sheep, 31.2% goats, 11.8% cattle, 9.5% horses and 1.2% camels) representing about 60 million sheep forage units.

Changes are occurring in Mongolia that may increase future degradation of grazinglands: Herders are tending to concentrate livestock in certain areas for social reasons, markets for livestock off take are limited, and people who have lost jobs or been demobilized from the military are returning to rural areas and acquiring livestock.

Intensive agricultural production continues to be limited by numerous constraints, especially environmental constraints that significantly increase risks involved with production. Crop production on the minimal amount of arable was expanded greatly between 1960 and 1990 with the reported area under cereal grain production at 651,000 ha in 1990 and potato production at 11,000 ha. Average yield of cereal grains from cultivated land during this period was 1.3 tons/ha. Since 1990, yields and cropped area have declined as a result of the increasing cost and difficulties associated with obtaining fertilizers, spare parts for equipment, chemicals, fuel and other agricultural inputs. In addition, the cropped area subject to erosion because of a lack of conservation measures and improper tillage methods has increased to 0.79 million ha in 1990 (59% of the total arable cropped area).

Since 1940 the population of Mongolia has tripled and is now at approximately 2.3 million, just over half of whom live in urban areas. The population continues to grow at around 1.5 % per year. Although the population density of Mongolia is with 1.5 persons per square kilometres one of the lowest in the world, an additional factor influencing sustainable land use and the potential for desertification of natural resources is the high growth rate of the Mongolian population. The growth rate is one of the highest in Asia. An increasing population will exert pressure on a land resource base that is only marginally capable of higher productivity.

Studies seem to indicate that the social organisation of the rural communities is showing a tendency to revive the traditional structures of the period before 1920 when the socialists took over.

The basic unit is the family (ail). A number of families may group together forming a Khot ail. Groups using the same resources may be formally or informally organised around the resource they use e.g. neg jalginhan: People using the same valley. Other economic activities of a collective nature include horshoo, a form of cooperative organisation adapted from the socialist era.

Even when there seems to be a return to old forms of organisations, it is unlikely that the outcome of the present spontaneous rural reorganisation process will be a replication of foregone times. Traditional structures may reappear but they will be adapted to be able to answer to such challenges from modern times as demographic changes, disappearance of old habits, the establishment of modern facilities at Sum centres etc.. Such changes have fundamentally altered the context of rural Mongolia compared to pre-socialist times. The tendency to settle for a prolonged period in the vicinity of infrastructures as roads, or Sum centres is a possible sign of a reaction to modern times.

Mongolia is amongst the world's least industrialised countries. Since the transition to a market economy (1991) the country is going through a period of major economic difficulties. Economic growth is a must for Mongolia. For that it depends very much on its natural resources.

The exploitation of renewable natural resources has come under such stress that locally it has exceeded rates that are sustainable, leading to serious degradation of water- and land resources and vegetation cover.

For these reasons, developing and applying methodologies to mitigate causes of degradation of natural resources at this time in Mongolia is critical to Mongolia's future. Methodologies developed need to address social and economic causes of degradation as well as methodologies directly applicable to mitigate on-going desertification. Observations of areas which are currently losing their resource base, indicate that social and economic factors are the primary factors of anthropogenic desertification.

1.2.6 Administrative division of the country.

.2.6 Administrative division of the country

Administratively Mongolia is divided into 21 Aimags (Provinces). Each Aimag is subdivided into a number of Sums (Districts), totalling about 390 for Mongolia as a whole. Within Sums Bags (Subdistricts) were existing, but their present functioning is rather unclear. At each administrative level operates a council, the members of which are elected from and by the population of the administrative level.

1.3 Mongolia's strategy. .3 Mongolia's strategy

As Mongolia changes its political system from a socialist collective model to a more democratic, representative form espousing market economics, questions concerning future land tenure, land use policies and resource management are being debated by politicians and government ministries. What the final outcome of these debates will be remains undecided but it is a priority of most Mongolians that land policies promote sustainable use. Defining and implementing sound land use policies is critical because the changes that have occurred in Mongolia since 1989 with the collapse of the socialist economic system have as yet failed to produce a new system.

Mongolia as a country is concerned with maintaining its natural resource base. Consequently, there is a serious effort to develop a realistic strategy that addresses degradation of natural resources and limits the rate and extent of natural and anthropogenic desertification in Mongolia. Although commitment to preventing further degradation of natural resources is sincere, financial constraints imposed by a transitional economy affects implementation of the strategy. Mongolia made a strong request for international assistance at the UNCED conference held in Rio de Janeiro, Brazil, in June, 1992.

1.3.1 Existing policies. .3.1 Existing policies

Mongolia's overall environmental objectives are encompassed within the Environmental Mission Statement which has been prepared for the Ministry of Nature and Environment. This statement has been derived from elements of national legislation, the Government's Program of Action, the Rio Declaration, the Explanatory Note of Mongolian Government to UNCED, the Agenda 21, the UN ESCAP Regional Strategy on "Environmentally Sound, Sustainable Development" and Conventions on Biodiversity and Climatic Changes. The Mission Statement comprises the following elements particularly relevant to desertification:

- Restore degraded environmental quality.
 - Maintain and improve renewable natural resources.
 - Protect and preserve unique and significant natural resources and areas.
 - Restore and improve conditions of degraded natural resources.
 - Assure that economic development is sustainable through adequate attention to environmental considerations, and improve environmental quality and natural resource uses through sustainable development.
 - Improve management and assure coordination between elements of central and local government.
 - Assure community and public participation and cooperation.
 - Identify real and full costs of environmental and resources uses and assure that such costs are born by users and beneficiaries.
- (source: National Environmental Action Plan)

The National Environmental Action Plan, formulated with the assistance of the World Bank states the following:

The National Plan of Action to Combat Desertification will serve as the Land Degradation and Desertification Section of Mongolia's National Environmental Action Plan.

A number of other relevant policy documents are being elaborated on biodiversity, forestry, energy, and water resources. Like this NPACD, these documents fill in chapters of the Mongolian Action Plan for the 21st century, which is further discussed in section 1.4.

Of a more general nature but very relevant for desertification and its integration into overall development are the Mongolia Education and Human Resource Master Plan that should provide for incorporation of desertification and degradation issues in school- and university curricula, and the Public Investment Programme where ecological aspects will have to be incorporated in the decision making process on investments affecting renewable natural resources.

A general revision of existing legislation has been started during the present transition period. These include laws on land, on water, on Protected Areas, and a Forest Law. Although the general principle is that natural resources remain state property, long-term leasing rights can be granted, for which legal texts are being prepared (e.g. on land-use fees).

1.4 Prior and ongoing assistance. .4 Prior and ongoing assistance

Four particularly important initiatives with regard to the results of UNCED to which Mongolia has equally committed itself, are the Biodiversity project, the formulation of the National Environmental Action Plan (NEAP), the Environmental Management Plan of Mongolia and the Mongolian Action Programme for the 21st Century (Mongolia's Sustainable Development Programme, MAP 21).

The UNDP/GEF supported Biodiversity Project focuses on improving the institutional capacity of the Ministry of Nature and Environment in planning, management techniques, species conservation law, parks and tourism management as well as datasytems management. By the end of the project a Biodiversity Action Plan will have been completed and steps taken towards a Biodiversity Trust Fund.

In 1993, the Ministry of Nature and Environment prepared a draft National Environmental Action Plan establishing the government's priorities and identifying issues and actions for protection of environmental quality, natural resource conservation and institutional capacity building. The draft NEAP underwent a through revision in early 1995 with the assistance of the World Bank, resulting in more clearly delineated priorities.

The Environmental Management Plan of Mongolia, completed in 1994 by the government, sets out to integrate environmental concerns into all public investment and ensure the future maintenance of the absorptive and regenerative capacities of Mongolia's ecosystems. Amongst the most urgent concerns addressed by this programme is mentioned the enhanced management and effective protection of the supply and quality of water resources, land resources and biological diversity, as well as the integration of environmental concerns into public investments and the government project planning cycle.

The Mongolian Action Plan for the 21st century (MAP-21) is the country's national agenda for the 21st century on sustainable development. It covers activities on both the national level as well as Aimag level, on policy formulation, awareness raising and implementation of pilot projects. It provides an overall framework for sustainable development activities based on the natural resources of Mongolia's ecosystems. Other plans, like the NPACD or the Biodiversity Action Plan fill in certain chapters of the MAP 21 in more detail and are considered to form an integral part of it. The MAP-21 document is formulated with the assistance of UNDP, and was accorded by all parties in november 1995.

The Economic and Social commission for Asia and the Pacific (ESCAP) has planned a mission to examine water resource management issues in Mongolia.

Other aid agencies with projects in Mongolia include:

* Japan's International Cooperation Agency (JICA) which is supporting a small-scale forestry

sector development initiative.

- * The German Technical Cooperation Agency (GTZ) which is executing an integrated management programme for Hentei and Gobi Gurvan Saikhan areas.
- * The Danish International Development Agency (Danida), which is executing a pilot project for monitoring of natural resources using Remote Sensing and Geographic Information Systems in 4 Sums in Arhangai and Dornogobi Aimags.
- * The General Directorate for International Cooperation of The Netherlands (DGIS), which is supporting MACNE with the integrated management of Khustain Nuruu Mountain Steppe Reserve.
- * The World Wide Fund for Nature (WWF), with a conservation planning programme for Hentei over the past few years.
- * The Asian Development Bank with a project entitled "strengthening the environmental management capability of the Ministry of Nature and Environment, with activities that reinforce institutional development through activities like environmental monitoring, review of legislation, training, and development of early warning systems for natural disasters including drought.
- * Another ADB financed project is executed by the Land Policy Institute, and deals with the development of land policy and improved land management.
- * The International Development Research Centre of Canada (IDRC) finances the Canadian-Mongolian Project "Economic incentives for environment and sustainable development". It organises regional seminars and subcontracts research to local research institutes on matters like methodologies for environmental assessment. It operates at minimal costs through a Mongolian coordinator at the MNE, paid on project funds.

Some highly relevant research on changes in the animal husbandry system during the transition period has been executed by Mongolian institutes assisted by counterpart organisations from abroad, e.g. the works of the Arhangai High Mountain Research Institute together with the University of Sussex (UK) on the project entitled Policy Alternatives for Livestock Development In Mongolia (PALD).

Assistance of relevance for desertification issues is also going on in the institutional and socio-economic fields. It includes:

- * The Mongolian Management Development Programme, with assistance from UNDP.
- * The Economic Policy Support Project, with assistance from USAID.
- * The National Poverty Alleviation Programme, financed by different donors amongst which UNDP.

1.5 Institutional framework.

The implementation of a National Plan of Action to Combat Desertification requires per definition a multisectoral approach. For such programmes related to use of natural resources, crossing ministerial boundaries, the National Council for Sustainable Development presents a forum where integration of development related activities are discussed at the inter-ministerial level.

Ministries that are directly concerned with desertification issues, are the Ministry of Nature and Environment, the Ministry of Finance, the Ministry of Agriculture and Industry, and the Ministry of Infrastructure Development.

Ministries that should integrate desertification related concerns into the planning and execution of their activities:

include the Ministry of Enlightenment, the Ministry of Defence, but also Ministries like the Ministry for External Relations, the Ministry of Health and the Social Welfare, the Ministry of Justice.

The MAP 21 programme will be operating under an institutional set-up that will reinforce the inter-ministerial collaboration. In order to that the Cabinet Secretariat Government of Mongolia is responsible for implementation of a Project MAP-21. Figure 3 and 4 illustrate the institutional arrangement of Map 21, as well as the organizational structure of the Ministry of Nature and Environment, charged amongst others with the co-ordination of all issues related to desertification.

The Map 21 programme envisages the affectation of Aimag Technical Consultants in all Aimags for the execution of its activities at the local government level. These advisors will share facilities with the staff of the Poverty Alleviation Programme that is presently setting up offices in all 21 Aimags with local consultants trained in poverty alleviation.

2. Strategy.

2.1 Desertification, its causes and consequences.

2.1.1 Definition.

Desertification, according to the Convention on Desertification is defined as:

"Land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities."

Following this definition, about 90% of the territory of Mongolia could be subject to desertification.

2.1.2 The state of land resources of Mongolia 32.1.2 The state of land resources of Mongolia

A recent Mongolian report estimates that 30 % of the country is moderately affected by degradation, and 4 % severely to very severely. Information obtained from the Botanical Institute of the Mongolian Academy of Sciences indicates that most *aimags* have a high percentage of pastureland with moderate and high degradation.

Observations of grazingland have substantiated that degradation from concentrated livestock use of pastures is occurring. Degradation of vegetation and wind erosion of soils is evident around population centres and livestock watering wells in the desert steppe and desert ecological regions. However, degradation of natural grazingland is less apparent in traditional, extensive pastoral livestock production areas.

In the reality of present day Mongolia, signs of degradation are not uncommon, although experts generally agree that the condition of Mongolia's land resources is still in a rather satisfactory state. Signs of degradation include the classical signs of desertification and land degradation that can be observed in other areas of the world prone to desertification, such as dramatic increase in number of dust storms in recent years, increase in flash floods, decrease in yields of agricultural produce, declining fertility rates in livestock, increase in deforested and denuded land, decrease in biodiversity, lowering ground water tables, etc..

The declining productivity leads to increased pressure on the remaining resources and migration into urban areas. The tendency to return to a rural life style during the onset of the transition period has been reversed in the last year.

2.1.3 Major causes. .1.3 Major causes

Among the major causes are mentioned climatological variations which may lead to natural disasters that, through interaction with human factors, will lead to accelerated degradation at local level. For instance, desertification in the Gobi ecological zone is reported as being caused primarily by increasing aridity of climate and grazing impacts associated with livestock.

Climatic changes might have been accepted as a reality by UNCED, it is difficult to analyze its appearance at specific locations such as Mongolia. Results of research presented at two recent workshops of a Mongolian- Chinese network of meteorological scientists suggest a rise in temperature and precipitation. Other scientists claim however that drought is a cyclical phenomenon, but that its duration may have become longer and deeper.

Amongst the anthropogenic causes are mentioned:

- Overgrazing.
A realistic program addressing desertification will have to address livestock production as a major cause of degradation.
Obviously ecologically degraded pasture exists in Mongolia, primarily as a result of livestock

concentration and other causes associated with human activities. In some locales, livestock grazing is the direct cause of degradation of land resources, i.e., around water sources and population centres. In other areas, the direct impacts of livestock grazing are compounded by activities associated with human attempts to intensify livestock production, i.e., cultivation of marginal soils to produce livestock supplementary feed and reduction of areas capable of producing high forage yields by conversion to marginal human food crops. It is also apparent from observations of Mongolian pasture resources that major areas of pasture remain in relatively pristine condition relative to vegetation composition and structure and stability of the biological system. With some exceptions, even areas most degraded appeared to be ecologically capable of responding to livestock management strategies that reduced concentration of livestock.

- Wind- and water erosion of cultivated soils and abandoned farm lands.
- Intentional burning.
- Vehicle tracks.
The latter may seem negligible in a vast country like Mongolia, but it can easily be observed that most valleys are marked by these tracks and that the vegetation is very vulnerable to it (even one passage can be seen for a long time). Both factors combined make that gully erosion often starts at tracks, thoroughly changing the hydrology and productivity of entire valleys.

Also rodents and insects cause serious damage to natural vegetation, notably in forest stands, which in combination with other negative influences, may aggravate the situation.

Degradation induced by anthropogenic rate factors are common to all ecological zones of Mongolia. Cropping induced soil erosion, disturbance from mining and industrial activities, and deforestation are most prevalent in the forest steppe and grass steppe ecological zones but have great and fast impact on stability of biological systems in desert steppe and desert ecological zones as well. Degradation from livestock grazing and trampling and vehicular disturbance of vegetation and soils are spread throughout Mongolia but the effect is much more severe in the desert steppe and desert ecological zones because of the nature of soils and lack of moisture. The generally arid nature and unstable soils makes the two ecological zones susceptible to anthropogenic degradation, not only in actual impacts but also in limiting opportunities to stabilize or reverse the rate of degradation.

The most prevalent human activity in Mongolia that can potentially induce anthropogenic degradation is animal husbandry characterized by livestock grazing. Many other anthropogenic rate factors are partially or wholly related to livestock grazing, such as vehicle induced disturbance, cropping activities to supply fodder and hay to livestock, and providing livestock with drinking water. Livestock induced degradation of biological systems is most pronounced at locations where climatic, topo-edaphic, vegetation, and human influences create 'convergence' of rate factors that lead to accelerated degradation.

2.1.2 Institutional and socio-economic bottlenecks.

The country's institutional and socio-economic environment is not yet ready to cope with these problems. To cite the MAP 21 document:

- Planning and development predominantly take place sectorally, cross sectoral issues are not fully addressed.
- Environmental variables are not an integral part of economic policies, planning, or project implementation.
- Current laws and economic policies do not provide a comprehensive system of incentives and penalties to foster sustainable national development.
- An increasing number of people are unable to meet their basic demands.
- Local levels of government are largely dependent on support from the central government to

- carry out basic functions.
- Government institutions are inexperienced in planning within a market based economy.
- Formerly state run enterprises are experiencing difficulties as they shift their management strategies and production techniques.

The MAP 21 concludes, and this is as well relevant to the NPACD:

Policies and development plans and programmes in Mongolia must be designed to foster the sustainable use of natural resources while striving to ensure a basic and healthy standard of living for all citizens.

2.2 Leading principles .2 Leading principles

Sustainability of uses of natural resources is since UNCED globally accepted as essential to all development activities.

In order to combat desertification sustainably and effectively, measures taken should **address the causes** of desertification rather than its consequences.

Natural causes like a recurrent **drought** are to be considered a **constant** feature in Mongolia and measures will often be of a mitigating nature (e.g. drought preparedness).

For man-induced causes, priority will be given to **preventive** rather than curative measures. However, this puts a special emphasis on raising public awareness since in vulnerable areas that nevertheless are still in good condition, land-and water-users as well as decision makers may not be sensitised about the necessity of measures to be taken to prevent degradation of their environment.

Curative measures like stabilising of moving sands will be executed when important infrastructures are threatened and when the results can be integrated with a more general approach of a preventive nature. Such activities will also play a beneficial role in raising public awareness.

2.3 Orientations .3 Orientations

When addressing anthropogenic causes of desertification, the following orientations are applied:

2.3.1 Participation.

A first and most important orientation is the **effective participation** of all actors in the proposed measures. Participation is not a philosophy of development, it is a recognition of the fact that man often is the prime resource user, and that sustainability of uses necessarily has to pass through him (or her). Effective participation means in particular that people should not only be consulted for their appreciation of the problem, their knowledge of the ecosystems and socio-economic systems, or used during the execution of measures, but should also be associated actively to the decision making process at the different levels, whether local- (e.g. organisations of herdsmen, women included, Bag and Sum authorities), Aimag- or National level. It is the task of formulation missions for individual Project Documents to specify the modalities for such effective participation given the institutional and socio-economic peculiarities of the ecological zone and the administrative unit in which the project will be implemented.

2.3.2 Integrated approach.

Secondly, if measures taken are to give sustainable results, they are to be of an **integrative** nature. Not only the activities mentioned under this programme should follow this integrated approach, also programmes formulated under other sectors (e.g. national policies on energy, water resources or demography) should fully integrate anti-desertification considerations.

Equally, the National Plan of Action to Combat Desertification itself will form an integrative part of the MAP 21 and NEAP as stated explicitly by these plans.

Mongolia's fast growing population is putting stress on most of the country's natural resources. The

integrated approach of the NPACD means that projects **may** include activities for alternative employment such as artisanat, alternative sources of energy to prevent ongoing deforestation, etc. as long as such activities can be considered essential for relieving the pressure on over-utilised natural resources, or are needed to mobilise people for anti-desertification activities.

Integration and integrated approach in the context of anti-desertification projects mean that project activities are planned and executed within the overall context of the area where the project will be active. It means that the project team knows who is needed to complement their activities, when and where. In case such activities are considered of essential importance for the sustainability of project results, the project might initiate such activities itself, preferably by making an appeal to logical partners for such activities, (e.g. by subcontracting that activity to an NGO). Integrated approach does **not** mean that the project should do everything and may get lost in general development activities.

2.3.3 Emphasis on grazing lands .3.3 Emphasis on grazing lands

Given the fact that land use in Mongolia is essentially linked to the **livestock sector**, priority will be given to activities involving this sector. Since there seems to be a general consensus about the fact that present stocking rates are more or less in equilibrium with the availability of fodder resources over the year, activities should be orientated towards maintenance of the rangelands in a good productive state, and a more efficient use of fodder resources (rotational grazing, distribution of stock as a function of the carrying capacity, integration with other forms of agriculture, etc.).

2.4 Methodological considerations .4 Methodological considerations

2.4.1 Phasing of the Programme .4.1 Phasing of the Programme

There is an urgent need for implementation of activities that sustainably improve the management of land resources **in the field**. However, in order to do so effectively, a number of conditions has to be fulfilled in the short term. These conditions cover notably institutional aspects, but also the development of appropriate tools for sustainable management of Mongolia's natural resources in the different ecological zones. Projects identified in this document can then be clustered in two groups: A first group clusters those activities that should give results in the short term. Their results will be essential for the execution of more integrated field-projects to be launched in the medium and long run.

Activities covered by the projects in the short run include:

- **Public awareness** raising.
- The creation of an **enabling environment**.
In the government sector this includes **policy-formulation** at local, provincial and national level, amendments to existing **legislation** and law-enforcement, and internal resource mobilisation, but also the development of an institutional memory on desertification issues, both in research as in management.
- The development of **appropriate technologies** and methodologies. For this, action-research using local and traditional knowledge will be given priority. Of particular importance is a limited number of pilot projects where an approach for sustainable use of Mongolia's grazing resources will be developed under real life conditions, testing technologies and methodologies developed elsewhere, in an integrated context.
- The operationalisation of **existing knowledge** (traditional, in local research institutes, and internationally), and the improvement of understanding of the processes of desertification through the promotion of research both nationally as internationally. Notably within the region of Central Asia there is a need to establish a regular exchange of expertise and research results on desertification issues.

- For the non-governmental sector short term actions may include pilot activities on marketing, credit programs, and organisation of users groups, when such activities are needed to mobilise these users groups for participation in anti-desertification activities.
- The establishment and/or improvement of **monitoring** capabilities to follow the condition of land-, water- and vegetation resources and the trends in factors influencing these resources (climate and weather, human activities). Capabilities to assess the effects of land degradation and desertification should be integrated with the monitoring of these phenomena. Only those parameters should be monitored that permit a solid assessment of the condition of the land- and water resources. Monitoring and assessment activities should include the training of field-officers that should use the results during their contacts with the stake-holders, and the annual publication of a state of the Mongolian environment. Policies resulting from these activities should cover such items as priorities for information collection, government and private sector roles, costing procedures, standards for information collection and storage, etc..
- Small scale trials to increase productivity of range- and other agricultural lands and activities to improve the quality and the processing of animal products for sale at the local, national or international market.
- Etcetera.

Several of the activities mentioned for the short term may continue into a next phase: Monitoring, research, training, extension services, policy review, participatory projects at the field level, etc.. Priority in the second phase however should be with actual improvement of management of land- and water resources in the field.

2.4.2 Programme approach. .4.2 Programme approach

Projects that involve directly the local users of natural resources are of an interdisciplinary nature and preferably should follow the **programme approach**. Although such an approach normally demands a long-term commitment of all partners (population, government of Mongolia and international donor community), projects could start in the short or medium run since the first years of such projects normally concentrate on base-line surveys and starter activities, that in the case of Mongolia, may have the character of action-research.

An important aspect of the programme-approach is the association of the population that uses the land- and water resources of a given area, to an iterative planning process. Beforehand it is than not always easy to describe the outcome of a project quantitatively in a project document, but the implementation of an action plan formulated with the full participation of the stakeholders generally leads to motivated partners in development and more sustainable results.

2.4.3 Coverage of ecological zones. .4.3 Coverage of ecological zones

The methods and instruments developed cover the country's major **ecological zones**. In the short term this will include the initiation of sustainable land- and water management pilot-projects in two zones, representing the sub-humid and the semi-arid/arid systems respectively. In the medium- and long run the other zones should receive a similar attention.

2.4.4 Capacity building. .4.4 Capacity building

In view of the current policy of decentralisation, (which is strategically important for an anti-desertification programme and should be reinforced by it), a special accent will be put on institution building at the local level, for instance regarding extension services. Several projects defined under other programmes and plans (MAP 21, NEAP, PAP,...) also include capacity building at the local level. The NPACD will put a special accent on developing institutional capabilities at the local level through sustainable management of natural resources projects in the field, where every group of actors will be

specifically addressed. Local government staff, organisations of users' groups, NGO-staff will then be trained on the job ("Learning by doing").

2.5 Implementation of the NPACD

Implementation of the NPACD at the national level is the responsibility of the Ministry of Nature and Environment. It is at this level that actions on desertification will be initiated, coordinated and monitored and partly may be executed. At the field level, local governments (at Aimags and Sums) will be charged with the implementation of activities in areas under their jurisdiction.

The Ministry of Nature and Environment will assure the integration of the Plan into overall development, in the first place by presenting it to the Joint Executing Panel of MAP 21, headed by the National Development Board under the National Council for Sustainable Development. Here not only the plan as such will be discussed but the MNE will also have its say on other sectoral programmes that may be of influence on the sustainability of uses of natural resources in the country.

Sum- and Aimag governments will have similar tasks where integration of anti-desertification activities into development of their area is concerned.

Within the Unit of the MNE created for the execution of MAP 21 a special branch will be in charge with all matters concerning desertification and land degradation. Such an institution that deals explicitly with desertification and land degradation **only**, will be a guarantee that desertification and land degradation receive the emphasis in policy formulation and implementation that these phenomena deserve. Leaving the NPACD within an institutional setting where other environmental tasks are covered at the same time, will lead to a dilution of attention to desertification, which is highly undesirable given its impacts on natural resources and the population that depends on them. Ad hoc solutions are per definition not sustainable but could be useful to cover a period during which a more permanent institutional set up can be worked out. Such an ad hoc solution could be the installation of a **Desertification Office (DO)**.

The DO might be led by a full time, high level Mongolian expert assisted by an international expert with a long and outstanding experience on institutional arrangements regarding management and conservation of natural resources.

Although coordination of development activities like an anti-desertification programme is a government task, the actual shortage of staff and the lack of funds to recruit new staff justifies a substantial financial input from the donor community until Mongolia can take over.

Apart from the more general tasks described above, the Desertification Office should identify necessary activities needed to strengthen institutional capabilities at local, provincial and national levels. It will have the competence to initiate such activities for which the necessary means will have to be made available to it.

The Terms of Reference (TOR) for this office should be flexible so that the lower governmental levels (Sum, Aimag) can have a say in the arrangements that will be proposed to them by the desertification office. Such participation will motivate their staff to implement necessary activities whole-heartedly and will greatly enhance the efficacy and sustainability of the initiatives taken at their level.

Since the opportunities to discuss issues related to desertification that will involve other ministries, in plenary meetings of the NDB or the National Council for Sustainable Development may be limited and of a rather political nature, it is thought that for the short term the organization of an informal consultative group on desertification in Mongolia could be very useful. The secretariat of this group would be with the desertification office of the MNE. Its members should be selected amongst the technical staff coming from the different ministries involved with exploitation and management of natural resources (whether directly or indirectly), completed by a selected number of specialists from research institutes, universities and NGO's. Similar groups are foreseen in the MAP 21 document for other themes. Depending on the agenda, staff of projects in execution or representatives of the donor community might be invited to participate on individual meetings as resource persons.

One important task of this consultative group will be the definition of modalities to come to a more permanent set-up of institutional arrangements regarding desertification.

2.6 Resource mobilisation .6 Resource mobilisation

This NPACD provides a comprehensive framework for collaboration among:

- * National and local levels of Government.
- * Agencies of the UN, Donors and International financial institutions.
- * NGO's, the private sector, the scientific community and special interest groups.

As such it is an important instrument for resource mobilization. It includes provisions for an effective monitoring and evaluation system, and for coordination and integration of institutional activities. It presents a coherent set of proposals for projects, to be submitted by the Mongolian Government with the assistance from UNSO/UNDP for external funding.

UNSO/UNDP can equally assist the GOM to identify internal resources of revenues that could be mobilised for use in anti-desertification activities.

A specific instrument for internal resource mobilisation will be the establishment of a National Desertification Fund. The purpose of such a fund would be to contribute to the mobilisation of financial resources from different possible sources and to channel these resources rapidly and efficiently to the local level to support anti-desertification and drought mitigation activities.

National Desertification Funds are intended to finance activities at the local level. Therefore, their governing bodies should include the government together with other stakeholders, especially local communities.

The National Desertification Fund is a complementary source of funding and only one of several mechanisms at national level for supporting implementation of the NPACD.

Since the NPACD is described as part of the MAP 21 process, the results of the different activities under this plan should be presented in a coherent way at such important MAP-21 milestones as the launching of MAP-21 and the MAP-21 summit. These events are important for where results of the NPACD will be presented to the different parties concerned, including national and international policy makers and funding agencies. Results will be presented according to MAP-21 standards, showing the internal coherence of the NPACD and its integration in the overall MAP-21 approach. In particular, the short term pilot-projects on sustainable rangelands management identified under the NPACD could be presented as the MAP-21 pilot projects to be submitted for funding at the launching of MAP-21.

2.7 Special Considerations 2.7 Special Considerations

- Compared to regions with desertification problems in Africa, Mongolia has the advantage of possessing a largely literate population (although illiteracy is increasing in the generations that are presently growing up) and a good critical mass of relatively well educated persons. The important number of research stations of the country is a witness to that. Therefore, priority is to be given to the recruitment of **local rather than international staff** for the execution of most projects. Nevertheless, the transition period is also characterised by a difficult period of behavioural change. The period of uncertainty that Mongolia is going through makes that people tend to wait (attentively), and are not stimulated to take the responsibility for new initiatives. For that reason access of local staff to international expertise, especially but not only related to management issues, will still be needed for the next years to come.
- Quite a few projects are already active in the country with activities to prevent land degradation. Where projects can be considered to complement existing activities of international assistance it often can be a good strategy to combine efforts and execute an integrated "programme" composed of two or more projects in the same area especially during the initial stages of the NPACD. Such for reasons of effectiveness and efficiency.
The more integrated projects foreseen in the medium and long run, ought to be spread evenly over the national territory as a function of desertification risks and interests at stake.

- Pilot-projects with an objective to develop rational management of land resources (with a participatory approach) should be confined within the territory of one Sum to avoid cross-boundary complications at this pilot-stage. (The Sum seems to be, at this time, the lowest functioning administrative unit.)
For instance, pilot-projects that seek to assist users' groups in the sustainable management of their grazing lands should identify and work with those groups that have their year-round grazing resources confined within the administrative boundaries of one Sum.
In a later stage projects might be implemented that cover (parts of) the territory of more than one Sum or even Aimags.
- **Non-Governmental Organisations** in Mongolia are still relatively rare. The few that are present are of particular interest for their possible association to anti-desertification activities. They include the Mongolian Association for the Conservation of Nature (MACNE), Green Movement, Development and Environment (D&E), the National Women's Council and a National Association of Herdsmen. These and other NGO's should be associated to activities both at the local, the intermediate and the national levels.
- For an effective participation of resource users in activities of improved management of the resource, it is essential that the population concerned is guaranteed the access to that resource for a period of time sufficiently long to make them the prime beneficiaries of their investment in the system. The Government of Mongolia should be prepared to grant them such priority rights. For instance, in the new Land Law provisions are made to grant long-term grazing rights (60 years with possibilities for prolongation) to organisations of herdsmen, that could be applied within the framework of projects to combat land degradation and desertification.
- In the rural communities Mongolian **women** have a heavy workload, for the greater part composed of reproductive and household tasks. This is one of the reasons that female-headed households are more commonly found amongst the poorer strata of the Mongolian rural societies. It also means that project activities that involve tasks that are traditionally executed by women may increase their workload. This could lead to the negligence of other tasks or to the non-achievement of the activities' objectives. Therefore a special attention is needed for the position of women and their tasks. Measures taken should rather alleviate their workload than increase it, and should reinforce their position in the society.
- Many project idea's are mentioned in the different documents produced on use of natural resources in Mongolia, notably in policy documents like National Action Plans, Master plans and the like. It is most of the time unclear what the status of such projects is: Is the idea accepted, is there a formulation under way or is the idea put aside? The situation may change from one month to the other. It is therefore important that formulation missions sent to produce a project document on any of the projects identified in this NPACD are fully informed of ongoing or planned activities in the field that the proposed project is supposed to cover. The Government of Mongolia will prepare such information in advance of the formulation mission. Such an activity is particularly important for all training and public awareness raising activities whether already taking place or still in the planning stages.

2.8 Coordination Arrangements .8 Coordination Arrangements

The Unit within the MAP-21 in charge of the NPACD will have a task in harmonising all activities related to desertification of its own Ministry (MNE) as well of other ministries. Such activities may be both financed from international, and/or from internal funds.

In order to fulfil this task, it will:

- Produce a regular update of the NPACD to be submitted for approval at the relevant political levels.

- Take the initiative to contact Project Directors, Technical Advisors and Donor representatives in order to coordinate activities in mutual agreement
- Report to the National Council for Sustainable Development through the appropriate channels of the Ministry of Nature and Environment on these issues

2.9 Counterpart Support Capacity

Given the very limited resources of the Government of Mongolia at present times, it can not be expected that it can mobilise important additional internal funding for the implementation of the NPACD. UNSO/UNDP will facilitate the consultative process to mobilize resources (see section 2.6). The lead donor will emerge during these consultations.

The different projects identified should not expect an important recruitment of new staff on government funds, but should be realistic and work as much as possible with the human resources that are available. However, in case recruitment is considered absolutely necessary, the government should be asked to commit itself to take over staff paid on project's funds, fulfilling tasks that ought to be continued after the project will be finished. Such considerations are to be covered by the formulation missions for the respective projects.

Other guidelines to consider when trying to overcome the limitations of the Government's resources especially for the after-project phase are:

- Efficient use of human and other resources, avoiding duplication of activities amongst projects.
- A monitoring and reporting system that is only asking the essential data for evaluation and decision making (no hobbyism).
- Keeping numbers of meetings and participating staff in meetings to a necessary minimum
- Making clear and concise task descriptions allowing enough flexibility for the different staff members active in a project
- Etc.

UNSO/UNDP has expertise in mobilising and channelling local resources for use in anti-desertification activities. Such expertise could be solicited by the Mongolian Government in order to intervene more sustainably in those activities that require more permanent funding than can be expected from foreign donors (see also section 2.6).

3. Development Objectives. . Development Objectives

The development objectives of the National plan of Action to Combat Desertification integrate fully with the Development Objectives as formulated in the MAP-21 Document:

"To ensure that a process of national development is established which fully incorporates the principles of environmental sustainability and meets basic human needs."

The short term goal of the NPACD is to provide Mongolia with an institutional capability to effectively address problems with sustained use of natural resources caused by the natural and anthropogenic forces associated with desertification and land degradation.

This National Plan of Action to Combat Desertification in Mongolia provides a comprehensive framework for all activities related to measures controlling and reversing land degradation and desertification. It identifies a number of projects to develop both this framework and instruments to combat desertification and land degradation, to be executed in the nearby future.

4. Programme of Activities . Programme of Activities

In annexe I a number of projects is listed that cover the criteria mentioned in the strategy (section B.4) but are organized in this chapter following the prioritisation of the National Workshop on Combatting Desertification in Mongolia of August 1995.

These projects are regrouped according to the urgency with which they should be executed. Projects to be implemented in the short term, generally are projects that should deliver results on which larger scale field- and other projects in the mid- and long term depend.

The last three of the prioritized programmes as described by the National Workshop are of a rather sectoral nature. The projects described under these programmes, covering the participatory management of natural resources, are of an integrated nature, addressing mostly more than one land use practice. These projects are located in specific ecological zones where mostly only one land use practice is dominant. Projects then have been arranged under the different programme headings according to the "leading type of land use".

The projects identified can be classified under the following programme headings:

i) Institutional support for awareness raising, coordination and monitoring of the NPACD.

Given the importance of land degradation and its consequences for land use in Mongolia, this programme seeks to institutionalise anti-desertification activities at the national level, by establishing a unit that will have the explicit task to mobilize all concerned parties and draw their attention to desertification and degradation, its consequences and needs for action. This programme will be part of the larger institutional set-up of MAP 21 where desertification is implicitly covered by objectives of sustainable use of resources.

Only one project falls under this heading:

* Project 1: Establishment and Operationalisation of a Desertification Office within the Ministry of Nature and Environment.

This project has a high priority in view of the present institutional weaknesses at the central and local governmental level where a limited number of personnel with very limited means has to deal with a large range of environmental and other issues. The D.O. should be the engine of the NPACD, guidance being delivered from other structures within MAP-21.

ii) Creation of an enabling environment for sustainable management of land resources

This programme covers the development of institutional instruments that will enable the different partners in development (population, government, ngo's, donor community) to address desertification issues in a sustainable way. It should be fully integrated into policy programmes of a broader nature as the MAP-21 where more general actions concerning the sustainable use of renewable natural resources are foreseen.

Two projects fall under this project heading:

* Project 6: The establishment of a National Fund to Combat Desertification

* Project 7: The formulation of a National Land Use Policy, as well as Land-and water use Management Plans for each Aimag and each Sum.

This NPACD is of a provisional nature, marking the beginning of a process to integrate desertification related considerations into overall development activities. The results of the projects identified under this heading permit a more structural, longer term consideration of those issues leading to a greater sustainability. They provide a framework for the different field projects of the later stages of actions against desertification.

iii) Support to applied and adaptive research and its dissemination

This programme permits to maintain and expand an institutional memory on desertification issues in the country from where innovative and appropriate instruments can be developed for use in the field. Such instruments need to be brought to the resource users, tested at their level, and distributed to all groups of persons in a similar position. Extension therefore forms an integral part of this programme, although it should be recognized that extension include a kind of partnership between resource users and extension workers that goes beyond facilitating the interactions between research and resource users only! For that reason it is of importance that this part of the NPACD is fully attuned to other programmes and action plans such as the MAP 21.

Two projects, identified for the short term fall under this heading:

- * Project 2: Programme of Action-research to develop appropriate technologies and -methodologies for anti-degradation and -desertification activities in Mongolia
- * Project 3: Mobilising existing knowledge on desertification, its causes, consequences and possible remedies for use in the ecological, socio-economic, cultural and institutional context of present-day Mongolia

Medium-term projects identified under this heading include:

- * Project 9: Setting up a National Extension Service on desertification and land degradation at the Sum level.
- * Project 11: Ongoing research.

In Mongolia an important institutional memory is already existing on environmental issues, notably with a number of research institutes and universities. Given the shortage of government funds and the attractiveness of the private sector during the present transition period, there is a serious risk of desintegration of the already acquired knowledge. Projects under the short term seek to safeguard this institutional memory at the research level, and to utilise it to the benefit of the concerned institutions and the policy makers in charge with plans to combat desertification and land degradation. It will also contribute to the establishment of an institutional memory at the different management levels, supported under the other headings. Mid-term projects under this heading will consolidate the achievements in institutional memories of the short term and will expand this to target groups like extension officers, (other) local government staff and the eventual priority target group, the resource users.

iv) Assessment and monitoring of drought and desertification/land degradation

This programme seeks to develop tools for the appreciation of the importance of desertification and land degradation and their evolutionary trends at all levels where decisions on land use are being made. The results of this programme should provide the different decision makers with the minimum of information to make sensible decisions possible. Activities need to be attuned to other monitoring and assessment activities in the environment as planned for in the different policy documents like the National Environmental Action Plan, the Environmental Management Plan, or the National Plan on Natural Disaster Reduction (presently being drafted).

Two projects identified for the mid-term fall under this heading:

- * Project 8: Establishment of environmental monitoring and assessment capabilities in 10 Sums (5 Aimags), with special reference to desertification issues.
- * Project 10: Development of a General Environmental and Natural Disaster Database cum Information Centre.

In chapter 2 monitoring activities are included under the short term phase of this NPACD. The reason that no short-term projects are identified under this heading is simply that they are already being

executed under different arrangements than the NPACD. It would be wise to await the results of for instance the Danida financed pilot-project on monitoring and resource assessment in the Arhangai and Dornogobi Aimags before launching more monitoring projects at a larger scale.

v) Promotion of sustainable pastoral land use systems

There is an urgent need for action in the field to conserve and sustainably use Mongolia's land-and water resources. Pastoral land use is by far the most important form of use of land-and water resources in Mongolia. Therefore a larger number of field projects has been foreseen covering participatory management of grazing land.

The programme should necessarily include contingency planning for drought and other climatic shocks (e.g. heavy snows).

Projects identified under this heading for the short term include:

- * Project 4: Sustainable management of the land- and water resources of the Mongol Els in the Kukh Morit Sum, Gobi-Altai Aimag.
- * Project 5: Pilot-project on sustainable rangelands management in the Arhangai and Dornogobi Aimags.

For the medium term are identified under this subprogramme:

- * Project 12: Sustainable management of renewable natural resources: Project(s) in areas prone to land degradation and desertification in the Central and Eastern steppe ecological zone.
- * Project 13: Pilot project on sustainable rangelands management in the zones surrounding the Northern Gobi Protected Area.
- * Project 14: Bufferzone management around the Khustain Nuruu Mountain Steppe Reserve.
- * Project 16: Stabilisation of sandy soil grazing land to protect Zamyn Uud border railway station and town.
- * Project 17: Pilot project on the rehabilitation of land-and water resources at a selected Goldmine.

Most of these projects are identified for the medium and long term since they depend largely on results of projects identified at the short term. Under the first 4 programmes under this chapter important boundary conditions will be fixed (Land use policies, public awareness, capacity building etc.), and appropriate technologies and methodologies will be developed for use in integrated projects under the last 3 headings of this chapter.

Results of research activities are not automatically applicable in the field. Therefore, two field projects under this heading

are of a pilot nature, to be initiated in the short run, where innovative integrated and participatory approaches are to be tested under Mongolian field conditions in at least two different ecological zones. These projects should be considered for submissal as pilot-projects under MAP-21 at its launching.

vi) Integrated management and rehabilitation of crop lands

Although the area under crops is very minimal indeed for the country as a whole, locally it may have serious impacts on the quality of ecosystems and on their sustainability. In pre-socialist times, crop-growing was virtually non-existent. The large scale technologies introduced during socialism were ecologically ill adapted to Mongolia's vulnerable ecosystems, and are in the present transition period equally ill adapted to the new socio-economic situation of the country. Nevertheless, self-sufficiency in food-production remains high on the political agenda. It is therefore needed to develop -within the boundaries set by the ecological and socio-economical systems- sustainable ways of crop-growing that satisfy the political objectives of self-sufficiency. Activities on desertification and land degradation form then only part of the integrated approach.

Two (medium-term) project are identified under this heading:

- * Project 15: Sustainable, integrated management of oasis in the Gobi-desert
- * Project 18: Agro-sylvo-pastoral development of the Ughtaal State Farm

Projects are identified in the medium term because of the small area under crops (1% only), and the dependency of these projects on results of activities identified for the short term.

vii) Sustainable management of forest resources

Forest resources in Mongolia are found in the Northern part of the country only. Their woods are exploited for fuel and construction (including utilities like furniture). The sustainability of exploitation of these forests is at stake which endangers not only their survival, but also the quality of downstream water-and land resources.

In the arid zones, sparse subshrubs, shrubs and other woody elements are locally heavily exploited for fuel, causing destabilisation of soils and moving sands. Since in these areas the prime reason for human activities is related to pastoral land use, activities to conserve the wood resources of the arid and semi-arid zones are integrated with the projects on improvements of pastoral systems.

Only one (medium-term) project is identified under this heading:

- * Project 19: Watershed Management in the Northern Mountainous zones.

This project is identified under the medium term for the following reasons: Only 8 % of the country is under forest cover, and most of it is situated in the more humid zones; the project depends for an important extent on results of activities to be initiated in the short term (research, institutional arrangements,...).

5. Risks . Risks

The projects identified have in common that they deal with the risks of degradation and desertification by natural causes. Implicitly or explicitly, each should have a drought preparedness component which should be underlying for instance the integrated management plans of some of the proposals.

A major risk is that some short-term projects do not get started in time so that projects foreseen in the mid-term who may be partly dependent on their results, are still empty-handed at their onset. Therefore it is of vital importance that not only the institutional setting will be arranged as quickly as possible (Project 1), but it is equally important that projects get initiated in the field to test the different approaches under real conditions.

Table 2- Overview and priority ranking of projects

Priority Progr. and Project Nbs	Ecological Zone	Priority	Duration (years)	Budget (USD)
<u>Institutional Support</u> Project 1	country wide	1	3	1.000.000
<u>Enabling environment</u> Project 6	country wide	1	2	300.000
Project 7	country wide	2	1,5	550.000
<u>Research and dissemination</u> Project 2	country wide	1	3	500.000
Project 3	country wide	1	3	300.000
Project 9	pilots in every ecological zone	3	3	2.000.000
Project 11	country wide	3	3	300.000
<u>Monitoring</u> Project 8	pilots in every ecological zone	2/3	3	2.800.000
Project 10	country wide	3	5	6.000.000
<u>Pastoral systems</u> Project 14	Gobi (and Altai)	2	5	2.000.000
Project 5	Hangai / Hovsgol; Gobi	1	3	2.100.000
Project 12	Central and Eastern Steppe	3	5	2.000.000 per project
Project 13	Gobi	3	5	2.000.000
Project 14	Selenge/Onon	3	5	2.000.000
Project 16	Gobi	3	3	200.000
Project 17	Selenge/Onon Central and Eastern Steppe or Gobi	3	3	100.000
<u>Croplands</u> Project 15	Gobi	3	3	1.500.000
Project 18	Selenge/Onon	3	5	1.500.000
<u>Forest Resources</u> Project 19	Hangai/Hovsgol	3	3	1.600.000

Annexe I - Short descriptions of identified projects in the short term and medium- and long term

A. Projects to be implemented in the short term

Project 1

Project title:

Establishment and Operationalisation of a Desertification Office within the Ministry of Nature and Environment.

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to establish institutional structure at local and central level of creating capacity for sustainable development. This project is based on programme area of the Chapter "Education and Capacity Building for sustainable development" of Mongolian Agenda-21.

Objectives:

To install an operational unit within the Ministry of Nature and Environment capable of planning, coordinating and initiating activities related to combating desertification in Mongolia.

Problem to be solved:

Presently many activities are taking place concerning the Mongolian environment that may have positive or negative impacts on the renewable natural resources of Mongolia. Activities which influence land- and water uses may be executed under different Ministries, with or without the technical assistance from international donors. Information on these activities is spread amongst many actors. A real overview seems to be absent except possibly in the mind of a few individuals. Such a situation makes proper planning, identification of priority areas and -activities difficult. A transparent institutional set-up with a coordinating unit with well defined tasks is therefore urgently needed permitting a more efficient use of human and other resources and a more effective approach to combat desertification.

The unit to be created will also be charged with a limited number of activities of a more general nature related to desertification such as awareness raising and the like.

Expected output:

- A Desertification Office within MNE, fully equipped, and with a Mongolian staff capable to execute the described tasks.
- A general public aware of desertification, its causes, problems and possible remedies
- Brochures, articles in newspapers and magazines, TV- and video-productions, chapters in school- and university curricula, etc..
- A National Policy on Desertification, including a plan for implementation, to be integrated with a more general policy on land management (see project 7).
- About 100 professionals specially educated in issues related to desertification
- A review of NGO's that could be associated to anti-desertification activities
- An appreciation of the usefulness of the Mongolian legislation for combating desertification, and recommendations for improvement
- A set of publications reviewing existing approaches to desertification and their applicability in Mongolian circumstances.

Target beneficiaries:

In the first place the Ministry of Nature and Environment and its staff will benefit. Secondly the administrative and technical staff of the Aimag- and Sum governments.

Some activities under this project address the Mongolian public as a whole like raising public awareness.

Strategical considerations:

The Desertification Office will be the centre of inspiration of all activities mentioned under this project. About all other activities of relevance to desertification it will have to be informed in order to be able to coordinate efforts and to harmonize approaches where such is needed.

During the execution of this project, an international institutional expert with experience in environmental matters will be assisting the National Coordinator leading the D.O..

For some activities the D.O. may need special and temporary support from outside expertise (subcontracting activities or hiring consultants).

In case the approved budget of the project has not foreseen financing certain activities, the D.O. may contact other funding agencies to finance the activity. Public awareness for instance could possibly be subcontracted to a NGO on separate donor's funds. Also the formulation of a National Policy on Desertification could be integrated and financed under Project no.7 (Formulation of land use policies at national and local levels). This is to be sorted out by an eventual formulation mission for this project.

The Desertification Office will be part of the institutional frame work set up for the MAP 21 programme within the Ministry of Nature and Environment. Its exact position will have to be decided upon by the formulation mission for this project.

Activities:

Activities of the Desertification Office will include:

- Coordination and harmonisation of approaches of the different projects and programmes addressing desertification issues.
- Public awareness raising. The Desertification office should orient itself with other projects and programs (like the NEAP) where awareness raising activities are foreseen, and should coordinate its efforts on this important issue with such actors. Public awareness should concentrate on causes and consequences, and should indicate for each target group what they could do to prevent unnecessary damage (e.g. the behaviour of off-the-road vehicle-drivers). Special attention is to be given to incorporation of degradation- and desertification issues in school- and university curricula.
(The Uganda National Wetland Programme may offer relevant insight into how awareness programmes at the national, provincial and local levels might be organised and linked to such issues as policy-formulation at the different levels. It also includes such elements as integration of environmental issues (in their case sustainable use of wetlands) into school curricula, newspaper- and magazine articles, t.v.- and video productions, organisations of seminars etc..)
- Organisation of a National Debate on Desertification. Preferably this should be organised bottom-up i.e. that firstly workshops should be organised at the Sum level, regrouping representatives of users communities and Sum staff (both technical and administrative) where desertification and its implications are to be discussed. Later on this is to be repeated at the Aimag and National Level where the outcome of the discussions of the lower levels should provide input for the discussions. The result should be at great use for the formulation of a National Policy on Desertification.
- The Formulation of a National Desertification Policy to be integrated into a more general Land Use Policy.
- Capacity-building at local and central level. Here again efforts need to be combined with other projects and donors in order to make an efficient use of human, financial and material resources and harmonise the different approaches. Capacity building should concentrate on building up knowledge about the mechanisms of the processes leading to desertification and should enable natural resource managers to acquire the necessary management skills at their respective levels.
- The association of NGO's to the process of combating desertification. The Women's Council,

MACNE, Herders' Associations and others are to be associated notably to activities like Public Awareness Raising and the National Debate. It may be necessary however to undertake a special inventory of local NGO's, the interests they cover, the people they represent and the expertise and other facilities they offer.

- The outcome of a National Debate may lead to the installation of a National Forum on desertification (and analogous bodies at the other levels). These fora will have a more political than technical function.

For the technical backstopping an informal group will be installed in which technical staff from national and local governments, research institutes and NGO's are invited to participate.

- Review of existing environmental legislation, including legislation on legal persons such as users' groups or other economic entities, and proposals for amendments where necessary.
- Propagation of lessons learnt from research and ongoing projects to all partners involved with desertification issues. This includes lessons from other areas with desertification problems. The publication of a bulletin and/or a manual serving as a sort of "menu" should be considered.

Duration:

3 years

Costs:

International personnel (incl.travel and allowances):	540.000 USD
Mongolian Staff (local experts, driver,secretary)	75.000 USD
Consultancies (incl.NGO involvement)	45.000 USD
Local travel and allowances	30.000 USD
International Travel	20.000 USD
Equipment (car, office)	30.000 USD
Functioning of equipment,office costs	30.000 USD
Reporting, printing costs etc.	30.000 USD
Staff training	20.000 USD
Seminars, workshops	100.000 USD
Unforeseen	80.000 USD
 TOTAL	 1.000.000 USD

Project 2

Project title

Programme of Action-research to develop appropriate technologies and methodologies for anti-degradation and -desertification activities in Mongolia.

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to support of achievement of the national science and technology for become more sustainable, to upgrade some current technologies and replace environmentally sound, appropriate technology resource conservation. This project is based on the programme areas of Chapters "Science and Technology" and "Combating Desertification" of Agenda-21.

Objectives:

To develop appropriate technologies and methodologies for sustainable management of renewable natural resources in Mongolia, in order to have a menu of tools available for integrated rural development projects combating desertification and degradation.

Problem to be solved:

In Mongolia experience with integrated rural development projects is very limited indeed. Approaches in the past were adapted to the existing command-economy model, and are not necessarily appropriate for the present economical units, whether family-level or of a more aggregate order (khot ail and others). Persons willing to change this situation are often still empty-handed and are going through a period of trial and error. This project is intended to combine such individual efforts through a more structured and better coordinated approach.

Expected output:

The expected output is a number of techniques and methodologies covering the physical as well as the socio-economic and institutional environment of rural Mongolia, that has proven to be appropriate to these environments.

Target beneficiaries:

The first beneficiaries will be the research organisations, NGO's, etc. that will receive the resources to develop the different instruments that may be used in integrated rural development activities. Secondly, local governments and others in charge with implementing rural development projects, will benefit from the results of this project. In the end of course the project is intended to improve the situation for the Mongolian population, with all its social strata.

Strategic considerations:

At the Desertification Office (Project 1) a highly qualified Mongolian coordinator will be installed to manage this project. Project execution will be done exclusively by subcontracting activities to local research institutes, NGO's etc.. In case the DO is not yet fully operational, the coordinator will be backstopped by an international consultant that will annually assist the coordinator with the planning of the activities, the evaluation of the results and the drafting of the subcontracts. For subcontracts involving management aspects, local expertise may make an appeal to international expertise. Also international study tours can be justified for some subjects.

The coordinator will be with the Desertification Office or the responsible unit within MAP-21 since this will enable him or her to be aware of activities of other projects in this field and to attune his planning according to their needs. Being part of the DO or MAP-21 also will permit him/her to contact other funding agencies in case the budget allocated to him/her can not cover costly subcontracts in specific fields.

Action-research means to develop tools in the very situation where they will have to be applied and adapt them according to a trial and error system, associating members of the intended group of end-users and using their specific knowledge.

The Mongolian Academy of Science should be narrowly associated to this project.

Also intensive collaboration will be needed between researchers working under this project and the short term pilot projects in the Mongol Els and Arhangai and Dornogobi Aimags (projects 4 and 5).

Activities:

Activities to be subcontracted to Mongolian research institutes may include:

- Water conservation and -harvesting techniques - especially in the Gobi area -, including trials to conserve snow melt for irrigation or other purposes. Results of other projects with components related to water management (e.g. small scale irrigation) should be used when this action-research will be set-up.
- Development of an integrated approach to energy-problems especially in the Gobi-area.

Elements to be considered: Protection and rehabilitation of forest resources , notably Saxaul stands of the Gobi; reforestation with woody plants (subshrubs, shrubs and trees) requiring a minimum of irrigation water i.e. at planting time only; energy-saving technologies; use of alternative sources of energy (wind, solar); establishment of local tree nurseries, etc..

- Pilot-plantations of trees in settlements and along roads.
- Trials on improvement of productivity of agricultural lands using available resources: Water, land, manure and human labour. Such trials may include the establishment of small summer gardens on the highly manured lands around the different camp-sites for fodder-, vegetable growing or other, production of hay on such areas, etc.
- Trials using modern inputs like: The use of chemical fertilization on larger tracts of land for hay-making and its long-term effects on soil-and vegetation quality, reseeding, rotational grazing with the use of fences, the use of urea in combination with low-protein straw for cattle fodder, etc..
- Pilot-activities to open up market opportunities, notably in more isolated areas.
- Development of ecotourism. Other donors have shown specific interest in this field (E.U., W.B.) and should be contacted about this subject.
- Alleviation of the workload of women. The use of small scale machinery for processing of animal products using alternative sources of energy could be an option.
- Design and testing of rural credit schemes and/or cooperative financing institutions
- Etc., etc.

Duration:

3 years

Costs:

Coordinating Unit:

Mongolian staff

(coordinator and administrative staff)	50.000 USD
International backstopping (optional)	75.000 USD
Equipment	20.000 USD
Miscellaneous	20.000 USD
Subcontracts (10)	300.000 USD
Unforeseen	35.000 USD

TOTAL 500.000 USD

Project 3

Project title:

Mobilising existing knowledge on desertification, its causes, consequences and possible remedies for use in the ecological, socio-economical, cultural and institutional context of present-day Mongolia

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to identify the profile of Mongolian nature and land use management, educate national scientists and decision makers. The project is based on the programme area of Chapter on "Combating Desertification" and is related to programme areas of Chapters on "Education and Capacity Building for sustainable development", "Protection of the Atmosphere" and "Conservation and sustainable use of Natural Resources" of Agenda-21.

Objectives:

Mobilising existing knowledge on desertification and degradation related issues and making it accessible for future use in Mongolia.

Problem to be solved:

Over the years a lot of knowledge has been accumulated in Mongolian Research Institutes that either has not been published or is published in a way that it is not readily accessible to people actually working on land degradation and desertification in the country (internal documents, publications in the Russian language,...).

Secondly, Mongolian researchers do not have easy access to international research on the same subject. Mongolian funds for attending international conferences, participating in international study tours or even subscriptions to international scientific journals are very limited indeed. It is very important that the existing Mongolian institutional memory in these matters is used and kept up to date as a basic tool to generate innovative ideas for use in anti-desertification projects.

Expected output:

- About 10 Mongolian scientist that have actively participated in international exchange (study-tours, conferences) in the Central Asian region.
- About 15 mission reports and papers presented to international conferences
- An English review of Mongolian research results over the last 50 years.
- An map indicating the most vulnerable areas to desertification and degradation in Mongolia, based on scientific research by Mongolian Institutes using internationally accepted methodology and standards.
- A methodology for an ecological and economical assessment of degradation and its prevention, tested for different cases representing the major ecological zones of Mongolia.

Target beneficiaries:

The Mongolian research institutes will be the first to benefit from this project that will enable their staff to acquire the much looked for access to international sources of information and get the equally desired recognition and appreciation from the home-front. Mongolian policy-makers, especially at the Ministry of Nature and Environment will consequently be able to make more balanced decisions which in the end will benefit the Mongolian population as a whole.

Strategic considerations:

This activity should be coordinated by the Desertification Office who may need to employ temporarily a Mongolian expert for this task. In case the DO is not yet fully operational, backstopping of this coordinator by an international consultant should be foreseen.

Most of the research will be of a desk-research nature involving also some visits to other research organisations, in Mongolia or abroad. A limited amount of fieldwork might be executed provided it can be done in an equally limited amount of time.

The DO will proceed with this project through subcontracting the different activities to the participating research institutes.

Subcontracting this project by the DO -as a sort of programme- to the Mongolian Academy of Science should be explicitly considered by the formulation mission.

Collaboration and exchange of ideas between partners participating in this project and the short term field projects under this NPACD (projects 4 and 5) should be foreseen in the project document.

Activities:

- International networking. Special emphasis is to be put on the organisation of exchange of knowledge between experts and policy-makers from the Central Asian region (Mongolia, Russia, China, Khazakstan, Turkmenistan, Uzbekistan, Kirgizia,...) through the organisation of seminars, study-tours, etc..

- Inventarisation of areas vulnerable to desertification. In the short run, a relatively limited exercise using existing data as well as remote sensing techniques will reveal valuable information for the planning of future activities until more sophisticated projects have been installed. For instance maps on the normalized vegetation index are already being produced regularly from which general, but valuable conclusions can be drawn on the availability of vegetative mass over the seasons and over the years in desertification prone regions.
- A review of existing knowledge and research in Mongolia. Many research results of Mongolia are not published or published in Russian language so that they are not readily available to the world's scientific community. It includes highly relevant topics like:
 - * The causes of desertification and their relative importance in Mongolia: Natural and anthropogenic causes and their interactions.
 - * The limiting factors for improvement of rangelands in Mongolia.
 - * The possibilities for rehabilitation of degraded crop lands.
 - * Analysis of (geo-)hydrological data: Identification of causes of recent changes in hydrology and geohydrology
 - * The potential for improvement of rangelands in the Gobi using indigenous *Allium* species
- Environmental and economic assessment of land degradation and the benefits of prevention of such degradation.

Duration:

3 years.

Costs:

Coordinating Unit:

Mongolian staff	20.000 USD
International backstopping (optional)	25.000 USD
Equipment	10.000 USD
Miscellaneous	20.000 USD
Subcontracts	200.000 USD
Unforeseen	25.000 USD

TOTAL 300.000 USD

Project 4

Project title:

Sustainable management the land- and water resources of the Mongol Els in the Kukh Morit Sum, Gobi-Altai Aimag

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to implement the programme areas of Chapter on "Conservation and sustainable use of Natural Resources" in areas with fragile ecosystem and develop advanced technology for integrate management of desertified parts of Mongolia. The project is based on the programme areas of Chapter on "Combating Desertification" and related to programme areas of Chapter "Conservation and sustainable use of Natural Resources" of Agenda-21.

Objectives:

To develop and implement a methodology for participatory management of degraded and decertified lands adapted to the Mongolian situation.

Problem to be solved:

The Mongol Els is a large tongue of sand of 600 kms. long and 10- 15 kms wide in the Western part of Mongolia. Locally the combined effects of climate and man have degraded the natural vegetation to such an extent that important infrastructures like the Sum centre of Khukh Morit and some waterpoints are being threatened. Costly sand-stabilisation measures, installed with the help of MACNE, though initially successful, have failed due to lack of maintenance and the weakness of the local government during the transition period. No other organisations have yet taken over the government's responsibilities for management of the publicly owned resources of land and water.

Expected output:

After an initial phase of three years the project is expected to have produced:

- An institutional set-up of Users' organizations and Sum-level institutions willing to and capable of implementing the activities foreseen in an integrated management plan.
- An integrated management plan, formulated with the active participation at all concerned parties and adopted by them.
- Results of a number of base-line surveys and monitoring activities permitting the drawing of a well balanced management plan.
- Conclusive results on a number at starter activities in the physical, social and institutional environment of the Khukh Morit Sums, notably on the fixation of moving sands.

Target beneficiaries:

The target beneficiaries are to be found primarily amongst the population of Khukh Morit Sum and more particularly amongst the resource-users of the Mongol Els. Since this project is innovative in nature, the lessons learnt will benefit the rural population of Mongolia as a whole.

Strategic considerations:

The Mongol Els covers only part of the home-ranges of local herding families. Nevertheless as a natural entity it is well recognised by them as having special characteristics that demand an adapted management. Moreover, the problems created locally by the moving sands have attracted the attention of the highest political level. The Mongol Els has therefore a high value for demonstration the integration of the activities of prevention with those of rehabilitation. The local population is already sensitised about the dangers of ongoing degradation. Stabilising the sands could be seen as a starter activity for the project using a programme approach.

The resources of the Mongol Els are not the only resources that the local inhabitants use for their survival. Some measures might be initiated by this project to relieve pressure on the Mongol Els. Such activities must be equally considered in an integrative way in order not to transport problems of the Mongol Els to neighbouring zones, exporting in fact degradation.

In a consecutive phase of the project more attention could be paid to the full range of grazing lands of the resource users of the Mongol Els, including seasonal rangelands in the surrounding mountain areas.

Given MACNE's acquaintance with earlier activities of sand-stabilisation, this NGO ought to be associated to the project.

Projects of integrated participatory management like this one demand a long term commitment of all partners -in the order of 10 years or more- if results are to be sustainable.

A project office will be installed at the Sum centre, where necessary infrastructure including communication with the Aimag centre will be provided. The office will be manned by a Mongolian project director. One international expert with substantial experience in integrated rural development projects will be his counterpart, charged with advising and participating in tasks of integrated management. The team will be completed by a number of locally hired technicians since it is felt that technical expertise is readily available on the Mongolian Labour Market.

The project will collaborate closely with researchers active under projects 2 and 3 of this NPACD.

Activities:

Activities in this project in the short term can be regrouped in three clusters: Activities to organise and mobilise the different actors, base-line surveys and starter-activities. Activities will include:

- Training of Sum staff in order to turn them into extension workers to the benefit of local resource users ("training of trainers"). In particular they will receive a special training in participatory techniques such as Rapid Rural Appraisals.
- Awareness raising amongst the population of the Sum: Organisation of seminars, production of leaflets, video presentations, etc..
- Establishment of grazing- and water rights, identification of users-groups, allocation of these rights to these groups based on the modalities set in the countries environmental legislation.
- Organisation of local resource users and training of representatives of such organisations in management techniques
- Training of groups of herdsmen in modern land management practices
- Analysis of the importance of the resources of the Mongol Els in relation to other resources
- Formulation of a management plan for the Mongol Els with the users' groups (participatory approach) and representatives of the Sum government, based on existing traditional and other knowledge and results of recent research.
- Implementation of the management plan through the organisations of herdsmen and with the backing of the Sum authorities and technical services. Elements in the Management plan **may** include:
 - * Dune-fixation and sand-stabilisation techniques at places where important infra-structures are being threatened.
 - * Establishment of grazing reserves, identification and reservation of haylands (under Sum administration or other, depending on what is considered to be the most appropriate form).
 - * Instalment of a pilot credit scheme, when needed to mobilise human resources of the Sum to achieve project's objectives.
 - * Initiating alternative activities of employment. More specifically, the quality of wood sculptures produced by the Principal of Kukh Morit Secondary School is such that there must be a good market for it. To pass this ability on to a number of craftsmen (including women) to be trained by the Principal would open a market and provide alternative employment opportunities. Other alternative employment opportunities might be found in the collecting, drying and processing of culinary and medicinal plants. Such activities might be of special interests to the women of the area, provided that their workload permits it and may motivate them to participate fully in anti-desertification activities.
 - * The use of modern fences to prevent animals to enter areas to be rehabilitated, may also be included. Once a vegetation is established inside the fence it might be exploited for use as hay or other. For that reason the enclosed area should be sufficiently large (200 ha or more). The fence could be electrical, with a solar panel as energy source.
 - * Control of vehicle use outside beaten tracks, and awareness raising amongst drivers.
 - * Measures of Action-Research mentioned under Project 2
 - * Management of waterholes, creation and rehabilitation of waterholes within or outside the Mongol Els
 - * Etc..

Duration:

5 years, with prolongation if results are promising.

Costs:

International personnel	900.000 USD
Mongolian expertise and office staff	200.000 USD
Consultants and subcontracts (NGO, Research Institutes)	50.000 USD
Local Travel	18.000 USD
Seminars, training etc.	25.000 USD
International travel, study tours etc.	25.000 USD
Equipment and Supplies	200.000 USD
Revolving funds	200.000 USD
Functioning costs	100.000 USD
Reporting costs	10.000 USD
Evaluation and backstopping missions ¹	100.000 USD
Unforeseen	172.000 USD
 TOTAL	 2.000.000 USD

Project 5**Project title:**

Pilot-project on sustainable rangelands management in the Arhangai and Dornogobi Aimags

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to improve management and use of integrated use of resources of indigenous people, selfmanagement of herding families and demonstrate management system for sustainable agriculture development. This project is based on the programme areas of Chapters on "Managing Land Sustainability" and related to areas of Chapters "Sustainable Agriculture and Rural Development" and "Combating Desertification" of Agenda-21.

Objectives:

To develop and implement a methodology for participatory management of degraded and decertified lands adapted to the local situation, in two different ecological regions of Mongolia.

Problem to be solved:

This project has much in common with project 5 in the sense that it is all about integrated use of land- and water resources. However, in this case the idea is to identify the spatial limits of a given area based on economic, social/cultural and institutional conditions. The project should assist a group of herding families (Khot ail or higher level) to organise itself, to delimit its area of resource use and define and implement a management system to sustainably use their resource base and where possible, to improve it. Such cannot be done without the full involvement of the Sum administrative authorities and technical staff. They will also benefit from the lessons learnt from this project. Experience from similar projects in other regions of the world has learnt that such a project can only be successful if the agricultural system is addressed as a whole, including its non-physical environment as well as the socio-economic or institutional environments.

Expected output:

After an initial phase of three years the project is expected to have produced:

- A clearly defined all-season grazing area in each Sum where the project is implemented to be managed by the resource-users, agreed upon by them (and their neighbours) and backed by the administrative authorities.
- An institutional set-up of Users' organizations and Sum-level institutions willing to and capable

- of implementing the activities foreseen in an integrated management plan for the selected area.
- An integrated management plan, formulated with the active participation at all concerned parties and adopted by them.
- Results of a number of base-line surveys and monitoring activities permitting the drawing of a well balanced management plan.
- Conclusive results on a number at starter activities in the physical, social and institutional environment of the selected Sums.

Target beneficiaries:

The target beneficiaries are to be found primarily amongst the population of the selected Sums and more particularly amongst the resource-users.

Since this project is innovative in nature, the lessons learnt will benefit the rural population of Mongolia as a whole.

Strategical considerations:

The project should complement the Danida financed project in these two Aimags that is presently being executed (nov.1995). Thanks to this project an enabling environment has been created at the institutional level: Sum- and Aimag staff are aware of the causes and problems of desertification, and should be capable to serve as partners to local organisations of resource users in combatting desertification. In particular they have received monitoring equipment and a training how to make best use of it. Some additional training will probably still be necessary, notably on extension techniques.

Like for the Danida project, it will be very useful to develop the project in two different ecological zones. Therefore, the project will have two field offices with a central Project Bureau in Ulaanbaatar. The field offices are in charge with actual project execution and should be the main focal points of the project. The central bureau would be attached to the Desertification Office or other MAP 21 structure in charge with the NPACD within the MNE, and should be a kind of facilitating unit. The central bureau should be manned by a full-time Mongolian Director and his international counterpart, with some administrative backing. The field offices will be headed by an international expert for the first few years, with a Mongolian counterpart to replace them after 3 years. The field offices will equally benefit from a number of technical staff to be recruited on the Mongolian labour market.

An alternative set-up could be the establishment of two separate projects. This is to be considered by the formulation mission. This mission should also decide in what Sums the project should be implemented, given the condition that the full-season ranges of the resource-users are preferably all within one Sum. Before the arrival of the mission the Mongolian government should make concrete suggestions to that end.

Projects of participatory management of natural resources demand a long-term commitment of all partners. If results of a first face are promising, a prolongation should be foreseen in order to make results sustainable.

The project staff should collaborate with researchers involved in activities under projects 2 and 3 of this NPACD.

Activities:

Activities in this project in the short term can be regrouped in three clusters: Activities to organise and mobilise the different actors, base-line surveys and starter-activities. Activities will include:

- Training of Sum staff in order to turn them into extension workers to the benefit of local resource users ("training of trainers"). In particular they will receive a special training in participatory techniques such as Rapid Rural Appraisals.
- Awareness raising amongst the population of the Sums: Organisation of seminars, production of leaflets, video presentations, etc..
- Selection of groups of resource-users.
- Identification and delimitation of all-season ranges of the selected groups.

- Establishment of grazing- and water rights of the selected groups and allocation of these rights to these groups, based on the modalities set in the countries environmental legislation.
- Organisation of local resource users and training of representatives of such organisations in management techniques.
- Training of groups of herdsmen in modern land management practices
- Formulation of a management plan for the selected areas with the users' groups (participatory approach) and representatives of the Sum government, on the basis of traditional knowledge and results of research.
- Implementation of the management plan through the organisations of herdsmen and with the backing of the Sum authorities and technical services. Elements in the Management plan may include:
 - * Establishment of grazing reserves, identification and reservation of haylands (under Sum administration or other, depending on what is considered to be the most appropriate form).
 - * Arrangements with neighbouring groups on mutual use of resources in case of emergency situations.
 - * Instalment of a pilot credit scheme, when needed to mobilise people for anti-desertification activities.
 - * Initiating alternative activities of employment. Such alternative employment opportunities might be found in the collecting, drying and processing of culinary and medicinal plants that may be of special interests to the women of the area (provided that their workload permits it) and may motivate them to participate in the execution of anti-desertification activities.
 - * The use of modern fences to prevent animals to enter areas to be rehabilitated might also be included e.g. around a watering point. Once a vegetation is established inside the fence it might be exploited for use as hay or other. For that reason the enclosed area should be sufficiently large (200 ha or more). The fence could be electrical, with a solar panel as energy source.
 - * Control of vehicle use outside beaten tracks, and awareness raising amongst drivers.
 - * Measures of Action-Research mentioned under project 2.
 - * Etc..

Duration:

3 years with prolongation if results are positively evaluated.

Costs:

International personnel	1.140.000 USD
Mongolian expertise and office staff	210.000 USD
Consultants and subcontracts (NGO, Research Institutes)	50.000 USD
Local Travel	54.000 USD
Seminars, training etc.	18.000 USD
International travel, study tours etc.	15.000 USD
Equipment and Supplies	100.000 USD
Revolving funds	200.000 USD
Functioning costs	150.000 USD
Reporting costs	6.000 USD
Evaluation and backstopping missions	50.000 USD
Unforeseen	107.000 USD
TOTAL	2.100.000 USD

Project 6

Project title:

The establishment of a National Fund to Combat Desertification.

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to encourage and promote financing resources to implement sustainable development in Mongolia. This project is based on the programme area of Chapter "Financing Sustainable Development" and is related to areas of Chapter on "Combating Desertification" of Agenda-21.

Project Objectives:

To define the modalities of establishing and managing a National Trust Fund on desertification, including measures for continuous funding.

The purpose of such a fund would be to contribute to the mobilisation of financial resources from different possible sources and to channel these resources rapidly and efficiently to the local level to support anti-desertification and drought mitigation activities.

Expected output:

- National Trust Fund on Desertification installed with a clear legal status to enable its intended use.
- Transparent procedures and guidelines regarding use of the fund, responsibilities, accountability, etc..
- Staff at the central level fully qualified to run the operations, both financially as technically when the combat against desertification is concerned.

Target beneficiaries:

Local resource users that are involved with anti-desertification activities and that may depend on funding from this Desertification Fund to initiate or continue their activities.

Problem to be solved:

The problem to be solved concerns the sustainability of the actions at the local level, undertaken with the assistance of outside donors, once the donors decide that it is time to leave such things to Mongolia.

Strategic considerations:

This project should go through two phases. The first phase is to investigate the possibilities for internal fund raising in Mongolia, to define modalities for its management, to formulate its legal status and formalise it, train the staff for the day-to-day management of the fund, identify the members of the board of governors, define criteria for funding of activities, etc.. The second phase should then concentrate on operationalisation of the fund for the uses it was intended for: Financing anti-desertification activities of a general interest, according to the guidelines set in the first phase.

The aim of the fund is to finance activities at the local level. Therefore, their governing bodies should include the government together with other stakeholders, especially local communities and NGO's.

The execution of this project should take place under the guidance of the Desertification Office within MAP-21. Technical backstopping from specialists in financial management with expertise in setting up of trustfunds will be required, especially in the first phase of the project.

More information on National Desertification Funds, their rationale, potential benefits, operational modalities and other aspects are given in an appendix to this project sheet, where the executive summary is given from a concept paper by UNSO (dec. 1995).

Activities;

Activities should include:

- An investigation into the possibilities to raise sustainably funds to guarantee the continuation of the processes to combat desertification once the donors have pulled out.
- The design for the management and allocation of these funds: For what kind of activities, in what priority regions, etc..
- Financing activities to combat desertification from the fund
- Regulations regarding the governing body of the fund

Duration:

First phase: 2 years. Second phase: 3 years

Costs:

Mongolian technical and office staff	20.000 USD
International backstopping	20.000 USD
Training (incl.study tours)	30.000 USD
Equipment	10.000 USD
Initial alimentation of the fund	200.000 USD
Miscellaneous	10.000 USD
Unforeseen	10.000 USD

TOTAL 300.000 USD

Project 7**Project title:**

The formulation of a National Land Use Policy, as well as Land-and Water Use Management Plans for each Aimag and each Sum.

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to identify ways for sustainable land and water use management and make it easier for local people affected by land and water use planning, to have stronger land planning and water use management system, which support sustainable development of the country. This project is based on the programme areas of Chapters "Conservation and Sustainable use of Natural Resources" of Agenda-21.

Project objectives:

To assist the National authorities with the drafting of a National Land Use Policy, as well as the Aimag and Sum governments with the drafting of Land-and Water Management Plans for the areas under their jurisdiction.

Problem to be solved:

No well defined national policy on land use nor land-and water use management plans exist at the present time. Reasons are the general lack of knowledge at the different governmental levels on the physical, socio-economical and institutional characteristics of their areas notably during the transition period, as well as the lack of sufficient human and other resources. The highest political levels have indicated their wish to have these policy documents ready in 1998, but at the same time necessary guidelines as to what they should respond to are lacking. It is expected that the situation will be more transparent in the next years to come so that the drafting of these documents could start in 1997.

Strategic considerations:

This project will have to be carried out under the direction and supervision of MAP-21.

The local plans should be fully integrated with a Land Use Policy to be formulated at the National Level. The National Policy should reflect the realities of the problems in the field, while the Sum- and Aimag plans should provide elements for the national policy. Reviewing of policy and plans will therefore be a regularly repeated activity, where all levels will mutually reinforce the process of formulation.

It is equally important that the higher administrative levels produce their own documents based on the draft-plans of the lower levels, since sometimes problems may be cross boundary, e.g. the use of grazing lands in neighbouring Sums during periods of natural disaster.

For the Sum plans it will be essential that the resource users participate actively in the drafting of the plans. The use of existing political structures only (although their representatives may be directly chosen) is insufficient. Their involvement is too often of a reactive nature, approving or amending the drafts. A truly participatory approach is interactive, combining a bottom-up and top-down approach, where the population need to be consulted before the formulation of even a draft document. The results of the national debate on desertification, identified as an activity under project 1, will be of particular importance to this project, both as a process of interaction between higher and local levels of decision making, as well as to its outcome.

This activity is fully the responsibility of Mongolia. However, some international expertise will probably be needed for the management related aspects of project implementation.

The project document should fully incorporate the results of the ongoing ADB-financed project with the Land Policy Institute on land policies and improved land management.

Activities:

Activities include:

- The drafting of the policy-documents. Use should be made of all relevant experiences of recent years on land-and water management in Mongolia including the tapping of traditional knowledge at the local level. An interesting activity in this aspect will be the analysis of the appropriateness of the existing legislation and its enforcement. This analysis should permit the formulation of recommendations to adapt the legislation where needed, and the identification of measures needed to improve its enforcement.
- The organisation of seminars during the drafting process
- Finalisation of the documents to be submitted to the political decision makers.
- Training of administrative and technical staff of the lower administrative levels on how to conduct such a process as well as training in modern land- and water use management techniques.

Duration:

1,5 year

Costs:

Mongolian staff	20.000 USD
International staff	180.000 USD
Local Travel	10.000 USD
Training	20.000 USD
Seminars, workshops etc.	40.000 USD
Equipment	20.000 USD
Reporting (incl.maps)	200.000 USD
Miscellaneous	10.000 USD
Unforeseen	50.000 USD

TOTAL

550.000 USD

B. Projects to be initiated after 3 to 5 years

Project 8

Project title:

Establishment of environmental monitoring and assessment capabilities in 10 Sums (in 5 Aimags), with special reference to desertification issues.

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to develop and establish the institutional capabilities of monitoring and assessment of natural resources, introducing advanced technics and technology. This project is based on the programme areas of Chapters "Conservation and Sustainable Use of Natural Resources" of Agenda-21.

Objectives:

To gradually expand the institutional capabilities to monitor and assess conditions and evolutionary trends in land- and water resources and the factors influencing them at the central and decentral administrative level.

Problem to be solved:

The monitoring of evolutionary trends in Natural Resources and factors influencing them is of crucial importance for a timely and efficient response to undesired changes in the quality of these. This has been one of the reasons for Danida to implement a pilot project in two Aimags (Arhangai and Dornogobi) covering different ecological zones. The National Environmental Action Plan advocates two projects at a much larger scale, covering the whole territory of Mongolia. These two projects - a GIS/Remote Sensing Project and a National Environmental Data Base, both with links to the Aimag level- demand a sum of over 11 million U.S. dollars. Experts sometimes consider these projects a bridge too far in present day Mongolia and advocate a phased approach, using the results of the Danida project and improving on that, where deemed necessary.

Expected output:

- A monitoring system installed in 10 additional Sums in 5 Aimags, using Remote Sensing and Geographical Information Systems.
- Staff trained at the different administrative units to use the equipment installed, to interpret its results and to communicate and report these to the other hierarchical levels.
- Descriptions and analyses of the state of environmental affairs in the Sums covered by the project
- Staff at the central level (MNE) capable to manage the enlarged monitoring system

Target beneficiaries:

- Technical staff at the Sum and Aimag level, charged with environmental monitoring tasks.
- Administrative authorities at the Sum and Aimag level, in charge with a sound and balanced development of the area under their jurisdiction.
- To a lesser extent this also applies to both technical and administrative staff at the central level.

Strategic considerations:

This project is to be considered a further step to cover the country nation-wide with a monitoring system using R.S. and G.I.S..

The additional 5 Aimags should cover the major ecological zones and be spread evenly over the country. Since the Danida project is involved in Arhangai and Dornogobi Aimags, priority should be given to Aimags in the more Western and more Eastern part of the Country. Other criteria for selection of Aimags are:

- * Presence of other projects so that there may be a mutual benefit.
- * Ecosystem conditions of the Aimag: If there is already question of serious degradation or not.
- * The presence of a research station covering the ecological zone.

Before the arrival of a formulation mission, the Government of Mongolia should present a first selection of Sums.

For its implementation, the project should follow the Danida project with, of course, adaptations according to in- and external evaluations of their results.

The central project office should be with the Ministry of Nature and Environment, headed by a Mongolian director, assisted by two international experts, with expertise in management, training and use of modern technologies like R.S. and G.I.S.. Each expert will equally have a Mongolian counterpart with background in R.S. techniques, to be trained on the job by his or her international partner.

At the Aimag and Sum level, the Environmental Inspectors or other technicians of that level, will be the project's principal partners.

Further reference is made to the Danida project, whose results should be made available to the formulation mission upon its arrival. Conclusive results from the Danida project are expected after 2 to 3 years, for which reason this project has been identified for the mid-term.

Activities:

From the lessons learnt from the Danida project, the following activities are likely to be included:

- Installation of monitoring equipment, including R.S. and G.I.S..
- Staff training in use of equipment and selected methodology, as well as the processes leading to land degradation and desertification
- Monitoring of selected indicators of land-, water- and vegetation quality.
- Monitoring of selected natural and anthropogenic parameters that are known to be of crucial importance for the long-term quality and sustainability of uses of renewable natural resources.
- Analysis of ongoing trends.
- Communication and reporting.

Duration:

3 years

Costs:

International Personnel	1.620.000 USD
Mongolian staff	240.000 USD
Local Travel	45.000 USD
Int. Travel	42.000 USD
Training	45.000 USD
Equipment	500.000 USD
Reporting	15.000 USD
Miscellaneous	20.000 USD
Unforeseen	273.000 USD

TOTAL 2.800.000 USD

Project 9

Project title:

Setting up a National Extension Service on desertification and land degradation at the Sum level.

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to education of environment and development available to people and provide locally trained and recruited environmental technicians. This project is based on the programme areas of Chapter on "Education Capacity Building for Sustainable Development" of Agenda-21.

Project objectives:

It is the project's objective to install a national network of extension workers with the individual elements manned by field staff at the Sum level. The Sum extension workers should be working directly with the target group, i.e. serving as partners in the discussion on general land- and water use, and should be advising the population specifically on issues related to degradation and desertification.

Problem to be solved:

Presently there is no such a structure as an extension service in Mongolia, although technicians charged with environmental tasks or with food and agricultural tasks may fulfil such a role on an individual basis. Mongolia is faced with new challenges, often triggered by demographic pressure and general economic development. A structure is urgently needed to discuss and pass on messages both ways: From the central to the local level and vice-versa where information from traditional sources of knowledge can be matched with more modern insights in order to assist local resource-users in well-balanced decision making on their activities.

Expected output:

- A series of technical officers at each Sum trained in extension techniques and management aspects of land-and water use, including technical, socio-economical and organisational measures.
- Equipment and material, like brochures etc., to enable the extensionworkers to achieve their tasks.
- Regular reports from extension workers on the situation in the field, enabling the central agencies to adapt their policies and to attune their plans to the needs mostly felt in the field.
- Results of experiments to pass on to the resource-users: booklets, brochures, utility of voluntary extension workers recruited from the rural organisations, etc.. and recommendations for future ameliorations.

Target beneficiaries:

Sum government technical staff and organisations of local users of renewable natural resources.

Strategic considerations:

At this moment it is not possible to say whether government funding will permit the recruitment of new extension officers in the nearby future. If such recruitment is not possible, a first task of the project would be to identify its target group within the Sum staff. The environmental inspectors are generally not well placed to serve as extension workers. Their controlling tasks can only with difficulties be combined with extension tasks for which a basis of confidence is needed. If however there is no alternative, the project should design and test appropriate methods to overcome this problem, f.i. by putting more emphasis on voluntary extension workers selected amongst the organisations of rural land users. Extension workers will need a regular backstopping from their respective chiefs. Therefore also at the Aimag- and central levels structures need to be created to follow up extension activities at the lower

levels.

A phased approach will be necessary. In a first phase, methodologies will need to be developed that can be implemented country-wide in a second phase.

The formulation mission should explicitly look into the institutional aspects of the selection of the counterpart organisation for the extension services. For reasons of land-and water conservation, the Ministry of Nature and Environment would be a logical choice, but the exploitative nature of many of the users' activities means that also the Ministry of Food and Agriculture should be associated. Alternatively, an extension service could be set up through the MOFA, and different specialists could be trained at each Sum through the MNE for matters concerning land use and degradation. In that case only activities related to these environmental specialists would be part of the National Action Plan to Combat Desertification. That work could then be subcontracted to an organisation like the National Institute on Land Policy.

Although the extension service would be the full responsibility of the Mongolian government, its set-up will need important international input in both phases from extension specialists and from organisational experts.

The formulation mission should specifically inform itself about the progress with the activity of MAP 21 where the affectation of environmental advisors at the Aimag level is foreseen as well as with the Poverty Alleviation Programme that also plans to operate with local advisors at the Aimag level.

Activities:

Activities include:

- Setting up of a supporting and coordination unit at the central level.
- Selection of pilot Sums and Aimags.
- Selection of extension workers at the Sum level.
- Training of extension workers.
- Selection and training of Aimag extension staff.
- Visiting extension workers in the field.
- Pilot extension activities: extension materials, organisation of target groups, selection and training of representatives of target groups as voluntary extension workers, etc..
- Implementation of pilot activities on a larger scale, after evaluation.

Duration:

First phase: 3 years. Second phase 5 years.

Costs:

Only an indication can be given. It will be in the order of magnitude of 2.000.000 USD for the first phase covering about 12 pilot Sums in 3 Aimags. Costs for the second phase should be calculated after the results of the first phase permit firm conclusions on its set-up.

Project 10

Project title:

Development of a general Environmental and Natural Disaster Database cum Information Centre.

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to set up information network of environment that could be used for the management and decision making of sustainable development. This project is based on the programme area of Chapter "Education and Capacity Building for Sustainable Development" of Agenda-21.

Project objectives:

To construct a database cum information centre with all data describing the state of Mongolia's environment in one, readily accessible system, open for use to all persons and organisations dealing with management and use of natural resources

Problem to be solved:

As in many other countries where desertification and land degradation problems exist, data on these phenomena are scattered, and not readily accessible. As a result, efforts are duplicated, important results get lost, or experts spend an important amount of their precious time going from one place to the other collecting documents, interviewing persons, etc.. This problem is not typical for data on desertification and related subjects alone, there is a general lack of information existing environmental data.

Expected output:

- A computerised database, covering all historically collected series of environmental data with procedures to assure that newly collected data are constantly incorporated. Links to other data bases with relevant information are also present.
- A documentation centre where all published information on Mongolia's environment can be found and consulted.
- Competent staff of Database and Documentation Centre to assist visiting researchers, planners etc. in finding the information they are looking for.
- Regularly published bulletins with information about and from the Database and Documentation Centre.

Target beneficiaries:

Target beneficiaries are:

- Government staff in charge with planning of integrated development issues.
- Research institutes and their staff, visiting experts that work on Mongolia's ecosystems and their uses.
- Policy-makers who have accepted to take balanced decisions to the benefit of the country, and have committed themselves to (inter-)national treaties, -conventions and other policy documents requiring sustainable use of Natural Resources.

Strategic considerations:

This project has already been identified in the National Environmental Action Plan that was revised with assistance from the World Bank. Its institutional setting should be parallel to the MAP 21 institutional framework since the results of this project, although it is fully within the competence of the Ministry of Nature and Environment, are of great importance to most other ministries and other governmental- and non-governmental agencies.

To construct user-friendly but very large databases is a time consuming and highly specialised job. It will need high level expertise from abroad and, amongst other things, an intensive training programme.

Activities:

- Data base construction.
- Selection of relevant data.
- Selection of Documents to be collected for the Documentation Centre.
- Training.
- Publication of a monthly bulletin.
- Etc.

Duration:

5 years

Costs: 6.000.000 USD

Project 11**Project title:**

Ongoing research.

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to carry out survey on desertification and resource use, identify the causes of degradation of nature and environment, it's implication for the future action on sustainable development. This project is based on the programme areas of Chapters on "Combating Desertification" and "Conservation and Sustainable Use of Natural Resources" of Agenda-21.

Objectives:

- To stimulate applied research in Mongolia on desertification issues.
- To reinforce the Mongolian Institutional Memory on desertification issues.

Problem to be solved:

The results of research and other projects of the first phase of the NPACD will identify new areas of research as well as recommendations for continuing ongoing research activities.

Expected output:

- Reports describing research results on desertification and its implication for future activities on combatting desertification.
- A substantial critical mass of Mongolian researchers, employed by Mongolian research institutes and -universities with relevant expertise on desertification and degradation issues, and integrated into a national and international network of scientists on the same subjects.

Target beneficiaries:

(Staff of) Mongolian research institutes and -universities. The results of their works under this project will be of importance to the Mongolian population as a whole.

Strategic considerations:

This project can be considered a continuation of earlier projects initiated by the Desertification Office or other MAP 21 structure in charge with the implementation of the NPACD. However, this time the D.O. should consider subcontracting their research as a **programme** to the Mongolian Academy of Science, transferring its management expertise on such a programme to the Academy. The need for international backstopping should be very minimal.

Activities:

The formulation of research activities under this project will have to await the results and recommendations of research in the short run.

Apart from the research issues mentioned under Projects 2 and 3 which may need to be continued, already may be mentioned:

- Analysis of carrying capacities, based on new insights and the results of sophisticated monitoring techniques, and using modern technology for analysis.
- An analysis of groundwater resources.
- Even though it has been stated above that this project is about applied research, a limited parts of the funds (10%) could be allocated for more fundamental issues regarding natural resources: It often inspires future research which can be of a more applied nature.

Duration:

3 years, with prolongation

Costs:

Subcontract to the Mongolian Academy of Science: 300.000 USD

Project 12**Project title:**

Sustainable management of renewable natural resources: Project(s) in areas prone to land degradation and desertification in the Central and Eastern steppe ecological zone.

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to formulate the management and planning system of natural resources for sustainable development, to demonstrate the model of rural community utilization of resources. The project is based on the programme area of Chapter on "Conservation and Sustainable Use of Natural Resources" of Agenda-21.

Project objectives:

The project(s) should organize resource-users and assist them to manage and exploit "their" resources sustainably.

Problem to be solved:

Although the state of Mongolia's renewable natural resources is not yet presenting major problems to the country, signs of degradation and even desertification are not uncommon, indicating that present management may not be in line with what is required for sustainable management and exploitation of these resources. This is notably true for the management of rangelands, where the large majority of rural Mongolia derives its main sources of income from through livestock activities.

Expected output:

- A management plan drawn up with the local residents, combining their knowledge with lessons learnt from other projects in Mongolia and elsewhere
- Local management committees representing the different users' groups, capable of implementing the management plan
- Execution of a number of measures foreseen in the management plan, and of a number of starter activities.

Target beneficiaries:

The residents of the areas where the projects are implemented: nomadic and/or sedentary members of the rural communities.

Strategic considerations:

This project description provides a kind of framework for different projects on sustainable management of natural resources in the Central and Eastern Steppe ecological zone. It does not specify an area where it should be implemented. Such will be the joint task of donors and Mongolian Government in advance of a formulation mission.

These projects should profit from the lessons of the first phase of anti-desertification projects initiated in the short run, as well as of some other projects like the GTZ project in the Northern Gobi Protected Area, or the Dutch financed MACNE project in and around Khustain Nuruu Mountain steppe reserve.

The projects will follow the programme approach, combining base-line surveys and starter activities in the first years while drafting the management plan, and implementation of the plan after this initial phase.

They will require a long-term commitment.

Activities:

Depending on the lessons learnt in the short run of NPACD projects, activities may include:

- Delimitation of the area, identification of users' groups.
- Organization of users' groups and leasing of resources (land, water, vegetation) to these groups according to the modalities set in the country's environmental legislation
- Training of users' groups' representatives in modern land use management, training of local government staff
- Development of ecotourism.
- Zonation of the area, including special zones for grazing reserves, hay-making, pedigree livestock breeding, preservation of resources, rotational grazing, etc..
- Implementation of the management plan with activities of controlled grazing, range improvement, and credit facilities and marketing when needed to mobilise the population, etc..

Duration:

5 years with prolongation if results are evaluated positively

Costs:

About 2.000.000 USD per project

Project 13**Project title:**

Pilot project on sustainable rangelands management in the zones surrounding the Northern Gobi Protected Area.

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to implement a comprehensive degradation prevention and control programme in semidesert areas, to promote the participation of indigenous people in practise sustainable development and development decisions that affect them and in creation of protected areas. The project is based on the programme area of Chapters on "Combating Desertification" and "Public Participation in Sustainable Development" of Agenda-21.

Project objectives:

To develop and implement an integrated management plan to prevent degradation and desertification

for the area surrounding the Northern Gobi Protected Area, with the full participation of the local residents.

Problem to be solved:

The project complements a GTZ-financed project that seeks to protect the resources of the Northern Gobi Protected Area. This GTZ project also has a land-use component in it for the development of Bufferzone management inside the protected area. The experience from this component might be used and elaborated upon in the area bordering the protected area at the same time effectively providing a better protection of the reserve against degradation coming from outside.

Expected output:

- A management plan drawn up with the local residents, combining their knowledge with lessons learnt from other projects in Mongolia and elsewhere.
- Local management committees representing the different users groups, capable of implementing the management plan.
- Execution of a number of measures foreseen in the management plan, and of a number of starter activities.

Target beneficiaries:

The residents of the areas bordering the Northern Gobi Protected Area: nomadic and/or sedentary members of the rural communities.

Strategic considerations:

This project should profit from the lessons of the first phase of desertification control projects initiated in the first phase of the NPACD, as well as of the presence of the GTZ project in the Northern Gobi Protected Area.

The project will follow the programme approach, combining base-line surveys and starter activities in the first years while drafting the management plan, and implementation of the plan later on.

It will require a long-term commitment.

Activities:

Depending on the lessons learnt in the first years of the implementation of NPACD, and the priorities identified by the resource users, activities may include:

- Delimitation of the rangelands, identification of users' groups.
- Organization of users' groups and leasing of resources (land, water, vegetation) to these groups according to the modalities set in the country's environmental legislation.
- Training of users' groups' representatives in modern land use management, training of local government staff.
- Development of ecotourism.
- Zonation of the area, including special zones for grazing reserves, hay-making, pedigree livestock breeding, preservation of resources, rotational grazing, etc..
- Implementation of the management plan with activities of controlled grazing, range improvement, but also credit facilities and marketing activities needed to mobilise the population, etc..

Duration:

5 years, with prolongation if results are positive

Costs:

In the order of magnitude of 2.000.000 USD

Project 14

Project title:

Bufferzone management around the Khustain Nuruu Mountain Steppe Reserve.

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to introduce a management plan for sustainable use of the bufferzones of mountain areas, to create home to Przewalski horses and develop eco-tourism. The project is based to programme area of Chapter on "Conservation and sustainable use of Natural Resources" of Agenda-21.

Project objectives:

To achieve sustainable exploitation and management of renewable natural resources for the agricultural and forested lands around the Khustain Nuruu Mountain Steppe reserve.

Problem to be solved:

In recent years the Khustain Nuruu Mountain Steppe reserve, managed by the Mongolian NGO MACNE has received international attention through the reintroduction of Przewalski Horses. Contrary to earlier reports, the area turned out to be of importance for winter grazing lands. Given its proximity to Ulaanbaatar, the conversion of larger areas of grazing lands north of the reserve into croplands and the presence of a major marketing route for cattle to Ulaanbaatar through the Tool River Valley South of the reserve, the bufferzone's vegetation is showing many signs of stress.

The croplands have the same problems as elsewhere in the country and so do the former state farms: Erosion, lowering yields, abandonment, etc.. A large dairy farm North to the reserve has been privatised, with as result that it has disintegrated. No small scale initiatives or other have taken over and milk production is very low, even when the Ulaanbaatar market is nearby. Some families have taken to pig-farming. The dutch financed MACNE project has taken the initiative to identify and execute some socio-economic activities in the bufferzone such as a cheese-making factory and a public health service system, as well as some reforestation trials. However much more needs to be done when a sustainable development is to be achieved that takes care of both man and his environment.

Expected output:

- A management plan for the sustainable use of the bufferzones of Hustain Nuruu Mountain Steppe reserve, answering to environmental and developmental needs of the zone.
- Rural organisations capable of managing their resources, and backed by the local authorities.
- A number of small scale models of economic activities that has proven to be viable, including food processing, animal husbandry, gardening, forestry, artisanal and marketing activities.
- Modalities to integrate the realities of the Khustain Nuruu mountain Steppe Reserve into the development of the zone in which it is situated.

Target beneficiaries:

- The population of the bufferzone of Khustain Nuruu.
- MACNE, the responsible organisation for the management of the reserve.

Strategic considerations:

Since the bufferzones of Khustain Nuruu are divided over 3 different Sums, it would be logical to make three separate management plans according to the administrative boundaries.

The project should follow the programme-approach (with full scale participation of all actors), using the first years for base-line studies, starter activities, organisation and training of representatives of the local population, awareness raising and drafting of the management plans. The MACNE project has already initiated a number of starter activities. Cooperation with this project -through MACNE- is therefore

essential in order to mutually reinforce each other's efforts towards the population.

Implementation of the management plans should start after acceptance of the draft management plans by all concerned: Organisations of rural users' groups, private enterprises, Sum authorities, NGO's, and others.

It would be of particular interest if some small scale, appropriate approaches for agricultural and other activities could be developed as alternatives for the large scale developments of a not too far away past, still going on elsewhere. Results of action research of the projects initiated at the short term might be of particular use for that.

During the first years more permanent international assistance with expertise in integrated rural development is foreseen. During the last years of this project regular backstopping by such experts should be sufficient.

Activities:

Depending on the lessons learnt in the short run in the first phase of the NPACD activities may include:

- Delimitation of the area of users' groups.
- Organization of users' groups and leasing of resources (land, water, vegetation) to these groups according to the modalities set in the country's environmental legislation.
- Training of users' groups' representatives in modern land use management, training of local government staff.
- Development of ecotourism.
- Zonation of the area, including special zones for grazing reserves, hay-making, livestock breeding, preservation of resources, rotational grazing, etc..
- Implementation of the management plan with activities like controlled grazing, range improvement, combined with credit facilities, marketing, etc.in order to mobilise the population for anti-degradation activities.
- Development of alternative employment opportunities
- Etc.

Duration:

5 years with prolongation if results are evaluated positively.

Costs: About 2.000.000 USD

Project 15

Project title:

Sustainable, integrated management of oases in the Gobi-desert

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to develop management plan of oasis of the desert area and inabling maintain the Gobi ecosystems, species and population. It will contribute to Mongolian Combating Desertification for sustainable development. This project was developed in accordance with Chapter on " Combating Desertification" of Mongolia.

Project objectives:

The formulation and implementation of a participatory management plan of a number of oases in the Gobi desert.

Problem to be solved:

Due to uncontrolled exploitation of natural resources, but also to ill-conceived interventions such as

irrigation works leading to groundwater depletion and salinisation, many oases are in such a state that action is needed to prevent further damage and, when feasible, to reverse downward trends

Expected output:

- A management plan for each oasis, including its surroundings, with emphasis on sustainable use and management of its water-, land- and vegetation resources.
- Implementation of the management plan by organisations of users, mastering the techniques of modern sustainable management, including a number of concrete results in the institutional, socio-economical and physical environment such as: Management committees trained to their tasks, marketing opportunities, small scale irrigation works, measures to prevent destabilisation of sands, etc.

Target beneficiaries:

Resource users of Gobi-oases.

Strategic considerations:

Oases should not be dealt with separately from their surroundings. They are the main focal point for human activities in desert regions like the Gobi. In their immediate surroundings most of the depletion of resources takes place such that an effort although limited in space may give valuable results from which onwards integrated management activities covering a much larger area may take place.

The project should benefit from the experiences from other projects active in the Gobi, combining the more sectoral approaches into a real integrated package.

Project headquarters should be in an Aimag centre, manned by a Mongolian director with an international counterpart as Chief Technical Advisor. For the fieldwork, teaming up of more junior Mongolian technicians with associate experts or UN-volunteers should be considered.

This project should follow the programme approach. The first years should be used for base-line surveys, starter activities (to gain the confidence of the population), rural organisation-, awareness raising- and management plan formulating activities. The project approach requires a long term commitment from all partners.

Activities:

Although the activities in the management plan will be decided upon with input from the population in the decision taking process, they may include some of the following.

In the physical environment :

- Soil-, water- and vegetation conservation techniques.
- Development of appropriate small-scale irrigation techniques.

In the socio-economic environment :

- Provision of good-quality drinking water, when possible using appropriate technologies for demineralising the water.
- Use of alternative sources of energy.
- Marketing and credit facilities in order to mobilise the population for anti-desertification activities.

In the institutional environment :

- Organisation of the population.
- Training of resource users and key local government staff.
- Participatory formulation and -implementation of a management plan .

Duration:

3 years, with 5 years (or more) prolongation if results are evaluated positively.

Costs:

Mongolian Staff	200.000 USD
International staff	540.000 USD
(ass.experts/UN-volunteers	p.m.)
Local travel	10.000 USD
International travel	15.000 USD
Training	15.000 USD
Equipment, supplies, use of	
machinery	300.000 USD
Village-funds	150.000 USD
Reporting	9.000 USD
Miscellaneous	50.000 USD
Unforeseen	211.000 USD
TOTAL	1.500.000 USD

Project 16**Project title:**

Stabilisation of sandy soil grazing land to protect Zamyn Uud border railway station and town.

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to improve settlement, environment, introduce the practical achievement of stabilization of sandy and protect the infrastructures. This project is in accordance with programme areas of Chapters on "Population and Sustainable Human Settlement" and "Sustainable Development of Industry, Transportation and Communication" of Agenda-21.

Project objectives:

- To stabilise the sands around the town of Zamyn Uud to protect the town's infrastructures and the railway.
- To prevent and reverse further degradation.
- To increase awareness amongst the population of Mongolia about desertification, its causes, consequences and remedies.

Problem to be solved:

The presence of infrastructures at the border town of Zamyn Uud has increased the human presence in the area. As a result of stress on natural resources, both from human as from natural causes (drought) sands have started to move, threatening the same infrastructures.

Expected output:

- Moving sands stabilised around the town and railway line of Zamyn Uud.
- A reversal in the degradation process through the implementation of anti-degradation measures, designed and executed with the participation of the resource users and local government.
- An exemplary model of combatting desertification to be used for public awareness raising

Target beneficiaries:

The population of Zamyn Uud and its surroundings.
The Mongolian public for the awareness aspects

Strategic considerations:

Although the project deals mainly with rehabilitation, there are several strategic reasons to execute it:

- It will have a high potential for awareness raising since many passengers on the train to and from Beijing will see its effects.
- the project seems to have a strong political backing.
- It will protect highly valued infrastructures.

Because of the first two reasons the project can not afford a failure, in other words: it is not a case for a pilot project. For that reason it has been placed under the mid-term programme of the NPACD so that its eventual implementation can benefit from the experiences of the first phase.

The project should also design and implement measures to prevent further degradation, fully associating the local resource users to such activities.

The project should be fully executed by Mongolian organisations like MACNE (who also participated at earlier attempts to stabilise the sands of Zamyn Uud), the backstopping being delivered by the Desertification Office or other MAP-21 structure in charge with NPACD.

(For more detailed information is referred to Dr. Sheehy's document, The first draft of NPACD, of July 1994.)

Activities:

- Sand stabilisation measures as experimented elsewhere that have given proof to be applicable in Mongolian circumstances.
- Training of local government staff in sand stabilisation techniques.
- Awareness raising amongst users of the resources of Zamyn Uud.
- Identification and implementation of measures to prevent further degradation of the area adjacent of Zamyn Uud, such as: Grazing control measures and improvement of the road system. Also fencing of the area could be considered. Pastoral resources that develop inside could be used for hay-making to the benefit of the local livestock owners.
- General education of the Mongolian Public on rehabilitation of decertified lands, using the results of the project for demonstration purposes.

Duration:

3 years.

Costs:

Mongolian staff	30.000 USD
Local travel	3.000 USD
Training and awareness raising	3.000 USD
Use of Machinery	30.000 USD
Equipment and supplies	100.000 USD
Unforeseen	34.000 USD
TOTAL	200.000 USD

N.B. In case major construction activities are necessary e.g. for road construction, a supplementary budget will be needed such to the judgement of a formulation mission.

Project 17

Project title:

Pilot project on the rehabilitation of land-and water resources at a selected Goldmine.

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to develop method to restoration of renewable natural resources, corresponding management system for the recovery of valuable resources. The project is based on the programme area of Chapter on "Sustainable Development of Industry, Transportation and Communication of Agenda-21.

Project Objectives:

To design and implement an integrated management plan of areas directly or indirectly affected by the exploitation of goldmines, with the full participation of the goldmine enterprise itself, its staff, the local authorities and last but not least, the traditional users of local resources.

Problem to be solved:

Goldmines not only thoroughly change the landscape and locally upset the hydrology and geomorphology of an area, they also employ a larger number of staff that may come with their own herds. Moreover, the infrastructure provided by goldmines like permanent buildings, bore- and waterholes and roads attract a larger number of people even after the goldmines will be closed, causing degradation.

Expected Output:

- A former goldmine where the facilities and infrastructures installed have been modified in such a way as to benefit the region instead of damaging it.
- Organisations of rural residents able to manage sustainably the surroundings and the area of the former goldmine, backed by the local administration
- A management plan for the former area of the goldmine and its surroundings based on the principles of sustainability

Target beneficiaries:

The local residents of the goldmine area.

Strategical considerations:

A larger number of gold mining enterprises is active in the country. It might be expected that sooner or later their activities will come under criticism for the damage they inflict on the environment. They should be obliged to limit their environmental impact, following environmental legislation but also to "keep their image clean". The required EIA should involve mitigating and compensating measures that this project seeks to develop. However it is felt that both the Mining firms as well as the local governments will need some assistance on how to deal with these affairs and how to turn good intentions into practice. The lessons from the first goldmine to implement a project like this, will be of great use to other areas where the same problems may arise. It is thought reasonable for such a pilot project to provide additional funding to the inputs coming from the goldmine itself. The exact amount may have to be negotiated.

Goldmining as an economic activity is chosen because a large number of smaller mines exist (300 according to the latest newspaper reports, nov. 1995). Other mines (like oil exploitations) operating on a larger scale ought to be able to cover costs of rehabilitation and mitigation themselves.

Activities:

Activities may include:

- Drafting of an integrated management plan.
- Installing of a management committee, composed of representatives of the local users' groups, administrative authorities and the mining firms..
- Implementation of the management plan with activities like landscaping, arranging access to waterresources and rangelands, tree planting, ecotourism, small scale irrigation, etc..

Duration:

3 years

Costs:

To be negotiated with the mining firm. An estimate:

Personnel (all Mongolian)	20.000 USD
Training of local staff and herdsmen	2.000 USD
Implementation of management plan	60.000 USD
Unforeseen	18.000 USD

TOTAL	100.000 USD
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N.B. It is felt that for permanent Mongolian staff, local travel costs, reporting etc.. the company itself should be expected to provide the funding.

Project 18**Project title:**

Agro-sylvo-pastoral development of the Ughtal State Farm

Project Scope and Relationship to Mongolian Agenda-21:

This project aims to develop optimal agricultural production system while ensuring the protection and sustainable management of natural resources. The project is based on the programme area of Chapter on "Conservation and sustainable use of Natural Resources" of Agenda-21.

Project objectives:

The project's objective is to provide an alternative management of the area of a large state farm in order to sustainably improve crop growing conditions and the socio-economic environment as well as to conserve the production base (land, water and natural vegetation).

Problem to be solved:

The large scale conversion of range lands towards cropland in the northern and central Aimags of Mongolia, has locally created a series of problems amongst which can be cited:

- The degradation of the soil cover especially through wind erosion.
- The loss of good grazing land, putting stress on the remaining resources surrounding the farm fields.
- Inappropriate technologies in the present socio-economic circumstances.
- Problems with marketing of products and supply of inputs after the socialist era.
- Low yields.
- Etc.

Until today many have described the problems in different ways, but no alternative has as yet been tested at the scale of a (former) state farm.

Further reference is made to the first draft of the NPACD (Sheehy, July 1994).

Expected output:

- A model of integrated use of the resources of a state farm, including measures in its socio-economic and institutional setting.
- Conclusive results regarding a number of rehabilitation techniques of abandoned or otherwise

degraded farmlands, including the results of integrated agro-sylvo-pastoral activities: Shelterbelts and windbreaks, use of animal manure for croplands, processed agricultural by-products for fodder, etc..

- Both technical and management staff of the farm trained in modern techniques at their level.
- A farm where the trends of degradation have effectively been reversed.

Target beneficiaries:

Personnel of the Ugtaal state farm.

Strategical considerations:

It is felt that only an integrated approach, where activities in the field of livestock and rangelands management are combined with activities of reforestation and crop growing, completed by activities to create an enabling environment (management capabilities, marketing opportunities, credit facilities, available inputs,...) may sustainably alter the situation and reverse the actual downwards trends.

Since this is a complicated matter, and the problems on farms as the Ugtaal State Farm are of a large scale demanding important inputs, it is felt that it is wise to attend the results of the projects identified in the short term, especially of the different Action-Research activities.

The farm is run as an enterprise. Training in management techniques of staff of enterprises of that scale in a market economy might probably be needed. Such training includes the management of personnel and the consultation of the employees for decision making. The drafting of the management plan should be considered an excellent opportunity to let the staff of all levels effectively participate in decisions that may thoroughly alter the ways of operation of the enterprise. This process could favourably support the change of mentality needed to make this innovative way of management a success, and responsibilise the employees for their part in the transition process.

High level consultancy services are foreseen to give the management the necessary support to implement this process. For the more technical matters like soil-and water conservation, it is felt that sufficient expertise will be available in Mongolia itself.

In many ways this project can be seen as a pilot project, for which it is justified to assist the private sector (albeit a state farm) in realising the much needed changes, provided that the results will be made available to other enterprises in similar conditions.

Activities:

Activities include:

- Training in modern management and marketing techniques for the farm's management team.
- Consultation of the farms' personnel.
- Inventarisation and analysis of input- and output markets.
- Drafting of the management plan based on realistic estimates for sustainable inputs and outputs at an economically feasible level.
- Discussions on the draft.
- Decision making on the plan, and implementation.

Duration:

5 years

Costs:

International expertise (first 3 years)	540.000 USD
Mongolian expertise(additional staff only)	54.000 USD
Int. consultants (last 2 yrs.)	50.000 USD
International travel	25.000 USD
Training	25.000 USD

Equipment, use of machinery, etc.	500.000 USD
Subcontracts	50.000 USD
Miscellaneous	50.000 USD
Unforeseen	206.000 USD
TOTAL	1.500.000 USD

N.B. It is felt that for the permanent Mongolian staff, local travel costs, reporting etc., the farm itself should be expected to provide the funding.

Project 19

Project title:

Watershed Management in the Northern Mountainous zones.

Project Scope and Relationship to Mongolian Agenda-21:

This project seeks to prevent degradation of land and water resources in watershed northern areas of Mongolia, which has valuable natural resources, introduce the sustainable development strategy through a watershed ecosystem improvement and protect its unique biodiversity. The specific objective addressed by this project is to protect the eco-environment in Baikal lake. It is based on the programme areas of Chapters on "Protecting and Managing Fresh Water", "Managing Land Sustainability" and "Conservation of Biological Diversity" of Agenda-21.

Project objectives:

To prevent further degradation of land-and waterresources in the upper watersheds of Mongolia causing among other things major environmental problems downstreams.

Problem to be solved:

Deforestation of the Northern Watersheds will have serious consequences for the condition of water-and land resources in the watershed itself and downstreams, including lake Baikal in Russia which has high biodiversity and other values.

Expected output:

- A watershed management plan of the upper watershed of one of Mongolia's major rivers draining into lake Baikal.
- Inventories of land and water resources, and land-and water uses in the upper watershed and analysis of their interactions
- Pilot activities of implementation of the watershed management plan, with emphasis on conservation and sustainable exploitation of the Forest resources
- Training and public awareness activities

Target beneficiaries:

- Government staff, both local and central, charged with the conservation of Mongolia's water-, land- and forest resources.
- Local users of these resources, specifically forest exploitation enterprises and their staff.

Strategic considerations:

Already, the number of devastating peak floods is increasing. An analysis of hydrological data may reveal some major causes for such (and other) hydrological imbalances that should be addressed by the project. The project will partly depend on the results of research activities in earlier stages of the

NPACD that will permit to reverse ongoing trends more efficiently. But the project will still have some major research components itself, mainly in connection with forest exploitation and water resources.

The formulation mission for this project should look explicitly into the institutional set-up of the project since the implementation of it will cross ministerial boundaries.

The Mongolian organisation that is charged with this project should be linked up with counterpart organisations having extensive experience in water management projects such as some larger international consultancy firms or applied hydrological research organisations.

Structural contacts should be established with resource users downstreams, including Russia, in order to integrate their interests into the overall planning of land- and water uses in the watershed.

Activities:

- Formulation of a management plan for a selected watershed where problems are the most acute. This formulation phase includes consultation, research and training activities.
- Implementation of the plan including pilot-activities on improved forest management. (Both formulation and execution of the plan should be with the full and effective participation of all actors involved with water-and land use in the selected watershed, and downstream users of natural resources.)

Duration:

3 years, with prolongation of 5 years if results will be positively evaluated

Costs:

Mongolian personnel costs	100.000 USD
International expertise	1.080.000 USD
Consultancies	50.000 USD
Local travel	30.000 USD
International Travel	30.000 USD
Training	30.000 USD
Equipment and supplies	70.000 USD
Reporting	30.000 USD
Miscellaneous	36.000 USD
Unforeseen	144.000 USD
TOTAL	1.600.000 USD