UNITED NATIONS ENVIRONMENT PROGRAMME
SUB-PROJECT ACTION SHEET

Title of Sub-Programme: Climate Change: Enabling Activities

Title of Sub-Project: **Mongolia:** Preparation of Second National Communication under the UN Framework Convention on Climate Change (UNFCCC)

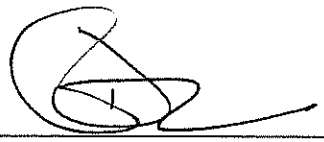
Project Number
Sub-Project Number: IMIS: GFL-2328-2724-4948
PMS: GF/2010-04-94
Main Project Number: IMIS: GFL-2328-2724-4769
PMS: GF-2010-04-06

Geographical Scope: Mongolia

Implementation:
GEF Implementing Agency: United Nations Environment Programme
Project Executing Agency: Ministry of Nature and Environment (MNE)
National Agency for Meteorology, Hydrology and Environment Monitoring (NAMHEM)
Tel. /Fax: +976 11 264317
E-mail: meteoins@magicnet.mn

Duration: 36 months
Commencing: September 2006
Completion: August 2009

This Action Sheet, which is transmitted with a copy of the project document, lists the actions required from UNEP in connection with the implementation of the project. It constitutes the authority from UNEP to the Budget and Financial Management Service (BFMS) to effect the disbursement listed therein.

Signature: 

David Hastie
Chief, Budget and Financial Management Service-UNON

Date: 07 SEP 2006

Date:	Action	Responsible Office
September 2006	Record this new Project Record new Commitments as follows in US$:	SSS, UNON, BFMS

	2006	2007	2008	2009	Total
Cost to GEF Trust Fund	100,200	134,000	97,000	73,800	405,000
Total Cost	**100,200**	**134,000**	**97,000**	**73,800**	**405,000**

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UNITED NATIONS ENVIRONMENT PROGRAMME
SUB-PROJECT DOCUMENT

SECTION 1: SUB- PROJECT IDENTIFICATION

1.1 **Title of Sub-Programme:** Climate Change – Enabling Activities

1.2 **Title of Project:** **Mongolia:** Preparation of Second National Communication under the UN Framework Convention on Climate Change (UNFCCC)

1.3 **Sub-Project Number:**
Sub-Project: IMIS: GFL-2328-2724-4948
PMS: GF/2010-04-94
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1.4 **Geographical Scope:** Mongolia

1.5 **Implementation:**
GEF Implementing Agency: United Nations Environment Programme
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Tel./Fax : +976 11 264317
E-mail : meteoins@magicnet.mn

1.6 **Duration:** 36 Months
Commencing: September 2006
Completion: August 2009

1.7 **Cost of Project:** (Expressed in US Dollars)

	2006	2007	2008	2009	Total	(%)
Cost to GEF Trust Fund	100,200	134,000	97,000	73,800	405,000	86.17
Government in-kind Contribution	10,000	15,000	15,000	5,000	45,000	9.57
UNESCAP in-kind contribution	8,000	4,000	4,000	4,000	20,000	4.26
Total Cost	**118,200**	**153,000**	**116,000**	**82,800**	**470,000**	**100**

1.8 **Project Summary:**

The main objective of this proposal is to enable Mongolia to fulfil its commitments and obligations as required by Articles 4.1 and 12.1 of the Convention by preparing and reporting its Second National Communication (SNC) according to the recommended guidelines adopted at COP 8 (decision 17/CP.8) in 2002 and the format recommended by the *Operational Procedures for the Expedited Financing of National Communications from non-Annex I Parties* provided by the GEF in 2003. Through the process, Mongolia, as a land-locked country, will build its institutional, scientific, technical, informational and human capacity at all levels as highlighted in Decision 2/CP.7 of the COP 7, so as to facilitate the country's effective implementation of the Convention in a sustainable manner.

Mongolia: Preparation of Second National Communication under the UN Framework Convetion on Climate Change (UNFCCC)

Sub-project: GFL-2328-2724-4948
GF/2010-04-94

Signature
For the
Government of Mongolia

Dr. Ichinkhorloo ENDENEBAATAR
Minister
Ministry of Nature and Environment
Mongolia

Date: 25 · 08 · 06.

Signature
For the
United Nations Environment Programme

David Hastie
Chief, Budget and Financial Management
Service, UNON

Date: 25/08/2006

Climate-related disasters

6. Heavy rains, snowfall, strong winds, sandstorms, snowstorms, hails and flooding often bring substantial damages to life and property of the community. In 1998 and 1999, the total economic damage caused by disasters such as strong wind, blizzard, hail and thunderstorms, floods and hot weather conditions was estimated as 30 billion Tugriks, which is about 3% of GDP (NAMHEM, 2001).

7. Devastating weather hazards, such as dzud and drought, are a well-known affliction of the nomadic herder. Dzud is the Mongolian term for an extraordinarily harsh winter that deprives livestock of grazing, a specific phenomena that takes its toll in the winter-spring season as high numbers of livestock die of starvation. As a result of the dzud in 1999/2000, 2.4 million livestock were killed and economic losses reached to 104 billion Tugriks by 1 June 2000. The social costs of the dzud are difficult to estimate (NAMHEM, 2001).

8. Drought in the spring and summer periods occur about every five years in the Gobi desert area, and once in every 10 years over most of the parts of the country. Drought induces forest and steppe fires, which have become more frequent and the size of burned areas has also increased. The El Niño-Southern Oscillation (ENSO) seems probably to have influenced the frequency and magnitude of drought.

9. With rapid desertification, the dust and sand storms originating from the Gobi desert severely affects Mongolia's neighbouring countries, China, Korea as well as Japan and sometimes, even as far as to the west coast of the Pacific.

10. There is clear indication that the frequency and magnitude of natural disasters are increasing due to global climate change (NAMHEM, 2001). In order to reduce disaster risk, the Government has adopted the Law on Disaster Protection in June 2003. In addition, the National Disaster Management Agency was created in January 2004, with a view to moving away from civil defense to disaster preparedness and management.

Land use patterns

11. In general, as of 2004, land cover in Mongolia can be broken down as follows: 73.8% used for agriculture land (of which approximately 0.8% is cultivated, 1.6% is used for hay making, and 97.6% is pasture land); 0.28% is occupied by cities and settlements; 15.66% for state special needs (which includes land allocated for the state security and defence purposes, special protected areas, roads, and communication network of national importance); 9.39% is forest and shrubland; 0.62% is covered by water, and 1.7% is unused or not suitable for usage.

12. Soil erosion, desertification and other forms of land degradation are considered high priority issues, in view of the strong dependence of Mongolia's economy and food supply on agriculture, and the reliance of other sectors, including mining, on land resources. The degraded area is growing year to year. The development of strip mines and the deposition of overburden, spills and tailings all degrade land resources. Domestic and industrial construction and other forms of waste are currently deposited on the soil surface in overly-large, designated dumping sites on the outskirts of cities and towns.

13. The Environmental Assessment Report for 2004-2005 estimated that about 80% of the nation's rangelands were subject to a desertification, of which 20% to moderate desertification, and 4% to severe or very severe desertification. Soil degradation caused mostly by wind and water erosion after vegetation has been removed and the topsoil damaged by overgrazing, grasshoppers, Brandt's voles, compaction by animals or vehicles, and removal by mining or deforestation. Good understanding of land capability for different uses is urgently needed to guide decision making and actions including water resource management , grassland and soil management, and selection of potential protection or ecotourism areas.

14. Until about 1960, the area under cultivation remained a very small proportion of the country's land area. However, since that time an aggressive agricultural programme, including a "virgin lands" programme to spread primarily wheat farming to vast areas of steppe land, was undertaken. The area under crops

tripled in 30 years, and the total land under cultivation at the present time is around 1.3 million ha. Dry land farming is the prevailing practice. A considerable area is taken up by livestock feeds and fodder crops. However, after 1990 the total cultivated area has decreased significantly because of economic crisis and political reform in the country.

15. Forests are poorly managed. The current legal cut is 1.3 times the sustainable level. With illegal logging, it is 4 times sustainable level. Clearly, this spells disaster for Mongolia's forests – north and south alike. Ways to vastly improve forest management include use of market instruments to encourage efficient use of timber resources and alternatives to wood consumption, enforcing the laws and regulations formulated to ensure forest sustainability, and allocating forest areas to local communities for them to manage.

16. Deforestation, caused by unsustainable logging, wildfire, insect and disease infestation, animal grazing and climate change, is a growing problem.

17. Mining, agriculture and deforestation have resulted in substantial lowering of river flows and water tables with the result that aggravated desertification, salinization and poor water quality are major problems in the arid and semi-arid regions. Water shortage is one of Mongolia's major socio-economic and ecological problems, but large quantities of water are wasted via leaks in supply pipes and water consumption rates are very high.

Population.

18. The population of the country was 2.5331 million at the end of 2004, with an average population density of about 1.6 persons per km^2. Although the population has more than doubled since 1960, the average population density remains the lowest in Asia. The urban and rural population accounts for 59.1% and 40.9% respectively (2004). The capital Ulaanbaatar, with a population of 928,500, accounts for about 62% of all urban population and 36.65% of the total population (Mongolian Statistical Yearbook 2004).

19. Mongolia's population growth rate was one of the highest in Asia: 2.1-2.5% per year before the 1990s. However, it has been decreasing during the last decades. There is a strong trend toward urbanisation of the population, and the country has undergone rapid economic development and industrialisation in the past four decades. The accelerating growth in population, therefore, has been matched by an increase in the per-capita rate of natural resource consumption. The sustainable rates of use or loss of renewable natural resources, including surface water, ground water, forest, soil, fishery and rangeland resources, have already been exceeded in some areas; this situation is likely to become more widespread if current trends continue, and measures to conserve and manage natural resources need to be strengthened and implemented.

Economy

20. Mongolia belongs to the group of Land-locked Developing Countries (LLDCs), but does not qualify for Least Developed Country (LDC) status, nor is it formally one of the Economies in Transition (EIT), although it shares many of the same transition and liberalization challenges.

21. Mongolia began in 1990 the difficult process of democratising its governance and transforming its economy from one directed by central planning to one guided by the open market. Since1991, Mongolia has followed a policy of economic liberalization, including privatisation, financial liberalization and capital account convertibility. At the same time, the total private sector share of GDP increased from being nearly absent to 75% in 2002.

22. Mongolia joined the WTO in 1997 and reduced import tariffs to a flat rate of 5%, except on some items such as alcohol. The share of manufacturing output in total production has fallen considerably since 1997, indicating increasing economic vulnerability. From 1990 to 2003, the share of industry in domestic output declined from 41% to 20%. The share of agriculture on the other hand increased from about 15% in 1990 to a high of 38% in 1998 before declining again to some 22% in 2003. This process is often referred to as deindustrialization. It increases economic vulnerability by increasing the relative weight of the agricultural and pastoral sectors which are diminishing-returns activities subject to volatility because of climate and other unforeseen factors.

23. Economic development faces serious challenges as Mongolia is navigating the difficult transition from a centrally planned to a market oriented economy, and overcoming considerable geographical obstacles to development, including being super-landlocked with an extreme continental climate. Under these tough circumstances, the Government has committed itself to market reform through an active privatisation programme, trade and investment liberalization and the unification of exchange rates. These policies have born fruit to a certain extent: declining growth rate of 1990 to 1993 has been reversed since 1994.

24. Exports are concentrated in mineral-based commodities, accounting for 40.7% of total exports in 2004, while natural or cultured pearls, precious metal and jewellery accounts for 28%, and textiles and related articles account for 22.7%. Annual increase of real GDP was 5.6% and 10.6% in 2003 and 2004 respectively. The GDP per capita in 2004 was estimated as 717 340.9 Tugrigs (or about US$ 700), compared to 460,055.3 Tugrigs in 2001 (Mongolian Statistical Yearbook 2004).

Water resources

25. Surface and groundwater resources play vital roles in the country's economy, especially in agriculture, forestry, fisheries, livestock production, industrial and domestic water supplies, as well as to sanitation and health.

26. The total water resource of the country is estimated as 599 km^3 composed of waters stored in lakes (500 km^3) and glaciers (62.9 km^3). Only 4% and 2% of total water resources are other surface and groundwater, respectively.

27. The rivers in Mongolia originate from three large mountain ranges: Mongol-Altai, Khangai-Khuvsgul and Khentein. The rivers are divided into three main basins, depending on their drainage system: the Arctic Ocean Basin (AOB), the Pacific Ocean Basin (POB), and the Internal Drainage Basin (IDB) of Central Asia. Some of the largest rivers of the world such as Yenisei, Lena and Amur take their origin from the Mongolian's mountain ranges. Therefore, river water resources have an international significance. 60% of annual runoff formed in the Mongolian territory drains to Russia and China.

28. There are 3060 lakes with a surface area of more than 0.1 km^2. Of these, four have surface areas larger than 1,000 km^2, 16 have surface areas larger than 100 km^2, and 27 have surface areas larger than 50 km^2. There are 262 glaciers in Mongolia, occupying a total area of 659 km^2. The majority of the glaciers is located in the Mongol-Altain mountain.

29. Fresh water resources consist of 85% of total and the Khuvsgul lake contains 93.6% of total fresh water resources in the country. Annual average specific discharge varies from 0.01 litre/sec km^2 in desert area to around 20 litres/sec km^2 in mountain ranges. Renewable water resource varies from 23 km^3 in low flow year to 69.5 km^3 in high flow year. The ground water aquifers are extensively used for domestic water supply, livestock and pasture watering in steppe and desert areas.

30. Salinization and poor water quality is a major problem in arid and semi-arid regions. Salinisation is caused by a combination of poor drainage and high evaporation rates that concentrate salts in the surface layers of soil, lakes and groundwater aquifers. Natural water quality problems related to saline waters and seasonal freezing and droughts limit the use of water resources in Mongolia.

31. Although the actual water use seems small compared to the water resources available, in the southern part of Mongolia (Gobi) the water availability is 10 times less than the world average, because water resources are unevenly distributed over the country.

Energy resources

32. Socio-economic development is very much dependent on access to energy. Mongolia's power supply is separated into two parts. First, the major part of the country, in terms of population, is supplied by the interconnected grid operated by the Central Energy System (CES). Second, in the more remote areas of the country, non-interconnected power stations - mainly diesel powered, are installed. There are five coal-fired Combined Heat and Power (CHP) plants and 18 provincial enterprises that operate isolated energy systems.

33. Coal, mainly lignite, made up to 80% of primary energy supply. It was mined in the country and delivered by rail to the electricity generating and heating plants that consume 65%of the coal mined (Mongolian Statistical Yearbook 2004). Some 49% of total energy supplied to the heat and power plants was lost in conversion processes and 11% was lost in transmission, distribution and the operation of power stations. Thus, only 40% of the heat is lost in distribution via above ground, leaking and poorly maintained pipes. The net result is that only about 25% of the energy as coal was finally consumed as heat and electricity.

34. Apart from the inefficient use of coal resources, the main issues with respect to coal are damage to the environment at and around mine sites, and pollution from the electricity/heating plants. For example, air pollution from the three coal-fired thermal power stations in Ulaanbaatar have been an issue of great public concern, especially during winter when temperature inversion that restricts the air dispersion from the Ulaanbaatar basin is frequent and pronounced.

35. Since 1995, there has been a steady increase in the electricity generation and consumption. The total electricity generation was 3,303.4 million kilowatt-hours in 2004. However, only 2,357.0 million kilowatt-hours were consumed, of which industry and construction consumed 1,458.8 million kilowatt-hours (or about 61.9%); transport and communication consumed 98.5 million kilowatt-hour (or about 4.2%); agriculture consumed 25.6 million kilowatt-hours (or about 1.1%); and communal housing consumed 567.6 million kilowatt-hours (or about 24.1%) (Mongolian Statistical Yearbook 2004). However, losses in transmission and distribution accounted for 480.4 million kilowatt-hours in 2004, or about 14.5% of the total electricity produced.

36. With poor incentives for efficient consumption of energy, its use per unit of production is 1.5 times that of developed economies. Heat loss in buildings reaches 30%. Mongolia consumes more commercial energy per capita than any other developing country in the region. This is partly due to the severe climate but more to sheer wastage.

37. Mongolia does not produce natural gas and oil, and therefore, all requirements for petroleum products are met entirely by imports, primarily from Russia. Petroleum products, which are consumed mostly in the transport sector, represent an important source of vulnerability for Mongolia. Transportation consumes 26% of the total energy used. (Mongolian Statistical Yearbook 2002)

38. The non-commercial primary energy sources include fuel wood and animal dung, which are used in households for heating and cooking.

39. The rich renewable energy resources have not been exploited significantly. At present, there are only five small scale hydropower plant in the northwest, four of which can only be operated in summer because the river freezes in winter. Only the Mankhan plant in Khovd completed in 1998 is operated throughout the year (Batima *et. al.*, 2000). Mongolia's hydropower potential needs to be considered carefully in the light of climate change, declining river flows, environmental impacts and total life-cycle costs. It may be prudent to restrict hydro-electric developments to small-scale and run-of-river projects. On the other hand, there is considerable potential to supply many nomadic families in the Gobi desert with small portable PV or wind generation systems. There are 43 geothermal sites in the Altai, Khangai and Khentii mountains where infrastructure is not yet developed. These areas are suitable for holiday homes, sanitariums and greenhouse heating (Batima *et. al.*, 2000).

40. Some 33% of the population currently lacks access to electricity and 43% lacks access to central heating. The Government of Mongolia intends to improve energy supply equity so that the around 40% of the population living below the poverty line will obtain minimal access to modern energy sources. In 2001, the Government of Mongolia approved the *Mongolia Sustainable Energy Sector Development Strategy for the period 2002-2010*, a key policy document that outlines major policy guidelines and actions to be taken in short and mid-term.

Industry

41. Industry was developed after the independence in 1921. Traditionally, the economy has been based on agricultural production, namely livestock husbandry. Over the last few decades, heavy industries such as

power, coal and gold mining, fuel and others have been established and developed. By the end of 2004, the gross industrial output was composed of mining and quarrying, 64.7%; manufacturing (including food products and beverages; textiles; paper and paper products; wearing apparel dressing and dyeing of fur; tanning and dressing of leather, luggage handbags, wood and wood products; chemical and chemical products; among others), 22.0%; and electricity, thermal energy and steam, 12.0%, and collection, purification and distribution of water, 1.3% (Mongolian Statistical Yearbook 2004).

Agriculture

42. Livestock husbandry is the base for the economy. The livestock population has reached 28 027.9 thousands in 2004, of which goats, sheep, horse, cattle and camel account for 12,238 thousands, 11,686 thousands, 2,005.3 thousands, 1,841.6 thousands and 256.6 thousands, respectively. Due to the privatization of the domestic livestock industry, the number of livestock has increased in the last few years. Most of this growth has been the increase in goats, as the demand for cashmere wool has increased significantly. However, most Mongolian livestock is an indigenous breed of animals, grazing all year on natural pastures, with very low productivity and they body sizes are small compared to other breeds of animals in the world. Intensive livestock activities, such as pig production, poultry, and dairy do not play an important role in the livestock sector. But, livestock population depends directly on weather conditions. For instance, almost 9 million of livestock were killed because of the drought and dzud (extremely harsh winter) condition which occurred during the spring and winter seasons of 1999 to 2002.

43. Traditionally, crop production has not been a major agricultural activity in Mongolia. Intensive land cultivation only began in 1958. The area of arable lands was increasing up to the 1990s when about 1.3 million ha was under cultivation every year. However, since 1991 the area has been decreasing due to the economic crisis, as marginal croplands that had been growing wheat have been taken out of production. The agricultural areas totalled 115,303.6 thousand ha in 2004, of which meadows and pastures accounts for 112,823 ha (or about 97.8%), arable land natural accounts for 705.7 thousands ha (or about 0.61%), and sown area accounts for 200.5 thousands ha (or about 0.17%) (Mongolian Statistical Yearbook 2004). The main crops are cereals, potatoes, vegetables and fodder crops.

Environmental Policy and Sustainable Development

44. As mentioned above, prior to 1990 the centrally-planned development led to very substantial resource and environmental degradation. Since that time the critical economic conditions have resulted in very limited funding for infrastructure, institution and programme development in the area of natural resource management and environmental protection, thereby reducing the capability of the new government to rectify the environment and resource problems it had inherited. At the same time, faced with overwhelming economic problems, the government has not perceived the environment as a high priority.

45. In common with most other centrally planned, command-driven economies, particularly those of the former Soviet Union, environmental and resource management considerations played virtually no effective role. Inadequate attention was given to planning natural resource utilisation, to the development of sustainable natural resource use policies, to resource restoration and protection, and to resource quality protection. This led not only to the loss and depletion of natural resources, but also to the degradation of environmental quality. Industries and population centres were developed without environmental safeguards. Atmospheric, surface water and soil contamination, concentrated primarily around urban centres, has significantly affected the local environment, and often exceeding health-based criteria. Deforestation and land degradation

46. The new Constitution, adopted in 1992, establishes the right of Mongolian citizens to live in a safe and healthy environment and states that all land and natural resources of Mongolia are subject to state protection. It includes provisions that established the new institutions such as the Ministry of Nature and Environment (MNE), which is mandated to facilitate a coordinated approach to Mongolia's response measures to environmental degradation, as well as the protection, and if possible, the rehabilitation of natural habitats at the national level. MNE has developed new environmental

policies, legislation and programmes[1] that promote the sustainable use of natural resources, and has sought natural resource assistance from bilateral and multilateral donors[2]. However, extreme financial constraints limit the possibilities for implementation of these laws and regulations.

47. The National Council for Sustainable Development (NCSD) developed the *Mongolian Action Programme for the 21st Century (MAP-21)*, with associated Aimag Action Plans, in 1999. The National Climate Committee (NCC) was established in 2000 to provide guidance to all climate change activities and to evaluate projects related to climate change.

48. In the past few years, the Government has been initiating a number of reform programmes in the management of natural resources, such as the *Land Reform*, *Water Reform-21* and *Forest Reform* programmes, which were declared in 2003, 2004 and 2005 respectively. In order to support these programmes, the *Green Belt* programme, to be implemented during 2005-2030, was announced in 2005 for improving the environmental quality and reducing soil erosion by wind and human activities.

49. The government has identified a critical need to strengthen the institutional environmental framework, and to build the human capacity for achieving effective action on environmental issues. Steps are being taken to complete and implement the *Capacity 21 Programme* with assistance from UNDP.

50. Other ministries, such as Ministry of Infrastructure, Ministry for Agriculture and Food, and Ministry of Health have developed Master Plans that have implications for the environment, including the *National Development Concept, Road Master Plan, Power Sector Master Plan, Tourism Master Plan,* and *Renewable Energy Master Plan.*

51. Mongolia ratified the UN Framework on Climate Change (UNFCCC) on 30 September 1993 and its Kyoto Protocol on 15 December 2000. Apart from the UNFCCC, Mongolia has signed, acceded or ratified, among others, the following international and regional environmental agreements:

    - Vienna Convention for the Protection of the Ozone Layer (1985) (ratified on 7 March 1996) and its Montreal Protocol on Substances that Deplete the Ozone Layer (ratified on 7 March 1996);
    - Convention on Biological Diversity (CBD) (ratified on 30 September 1993) and Biosafety Protocol (22 July 2003);
    - United Nations Convention to Combat Desertification (UNCCD) (ratified on 3 September 1996);
    - Convention on wetlands of international importance especially as waterfowl habitat (Ramsar) 1971 (Ramsar Convention) (ratified on 5 June 1996);
    - Convention of International Trade in Endangered Species of Wild Fauna and Flora (ratified on 5 January 1996);

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[1] These include the *National Policy on Environment Protection* adopted in 1997, which sets its main goal as the restoration and conservation of natural resources and the creation of safe and healthy living conditions, the1994 National Security Concept of Mongolia, the 1997 National Concept for Ecology, the 1995 National Environmental Action Plan (NEAP – updated in 2000), the 1996 Biodiversity Action Plan (BAP), the 1997 State Environmental Policy, the 1997 National Action Plan to Combat Desertification (NAPCD), the 1998 National Action Plan for Protected Areas, the 2000 National Action Plan for Climate Change, the 1998 National Water Programme, the 1998 National Forestry Program, the 1999 National Plan on Waste Management, the 1999 National Programme on Natural Disaster Reduction, the 1998 Programme for the Protection of Air, the 1997 Environmental Education Programme, and finally the 1999 Program for the Protection of Ozone Layer. In 2000, the Law on *The Rate of Expenditure for Environment Protection and Natural Resources Restoration from the Natural Resources Use Payment* was approved. This law is of great importance because it provides financial sources for restoration activities. State Ikh Khural has approved the new *Law on Land* and *Land Privatization Law to Mongolian Citizens* in 2002. The Mongolian Government has approved the law on Land Fee in 2005.

[2] These include funding from the GEF/World Bank, GEF/UNDP, GEF/UNIDO, FAO, the Government of the Netherlands, GTZ, JICA, and IDRC.

- The Convention for the Protection of the World Culture and Natural Heritage (2 February 1990);

- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989) (ratified 15 April 1997);

- Rotterdam Convention on the Prior Informed Consent Procedure for Hazardous Chemicals and Pesticides in International Trade (8 March 2001);

- Stockholm Convention on Persistent Organic Pollutants (30 April 2004).

Project objectives

52. Mongolia officially submitted its Initial National Communication (INC) to the UNFCCC in December 2001 at COP7 held in Marrakech, Morocco. While some capacity has been built during the preparation of the INC, the national communication process is a continuous process. Thus, the main objective of this proposal is to enable Mongolia to fulfil its commitments and obligations as required by Articles 4.1 and 12.1 of the Convention by preparing and reporting its Second National Communication (SNC) based on the recommended guidelines adopted at COP 8 (decision 17/CP.8) in 2002 and the format recommended by the *Operational Procedures for the Expedited Financing of National Communications from non-Annex I Parties* provided by the GEF in 2003. Through the process, Mongolia will further build its institutional, scientific, technical, informational and human capacity as highlighted in Decision 2/CP.7 at all levels, so as to facilitate the country's effective implementation of the Convention in a sustainable manner.

Stocktaking and Stakeholders Consultation

53. In accordance with the recommendation of the GEF *Operational Procedures for the Expedited Financing of National Communications from non-Annex I Parties* (GEF, 2003), and in order to better prepare the project proposal for the preparation of SNC, a one-day Expert Group Meeting (EGM) was organized by the National Agency for Meteorology, Hydrology and Environment Monitoring (NAMHEM) on 2 March 2006. NAMHEM was responsible for the preparation of Initial National Communication in 1998-2000. The EGM was followed by a one-day National Workshop for Stocktaking and Stakeholders Consultation, which was organized jointly by NAMHEM and the Ministry of Nature and Environment, and held at MNE on 3 March 2006.

54. Thirteen experts[3] participated in the EGM, which was moderated by Dr Damdin Dagvadorj, Deputy Director-General of NAMHEM. He briefly introduced the objective and the TOR of the meeting, as well as the reporting requirements of the SNC. This was followed by a comprehensive review of past and existing activities, including the major results and outcomes of the USCSP, ALGAS, INC project and the Phase II project for measures for capacity-building in priority areas, AIACC project, as well as other relevant regional activities. Discussion was focusing on the following thematic areas: GHG inventory (discussion led by Ms B. Bujidmaa); Vulnerability and Adaptation (V&A) Assessment (discussion led by Dr L. Natsagdorj) and GHG Mitigation (discussion led by Dr J. Dorjpurev). Issues on technology transfer needs in the energy sector, research and systematic observation related to V&A activities, as well as capacity-building, have also been discussed. New activities in these thematic areas for the SNC were then proposed.

55. About 30 people[4], including representatives from relevant ministries and institutes, private sector,

[3] They are from NAMHEM, MNE, Ministry of Fuel and Energy, University of Science and Technology, University of Agriculture, Institute of Meteorology and Hydrology (IMH), Automobile Service Centre, Energy Conservation Consulting Company and independent consultant.

[4] These included participants from MNE, NAMHEM, Ministry of Industry and Trade, Ministry of Food and Agriculture, Aviation Meteorological Centre, Institute of Meteorology and Hydrology (IMH), Ministry of Fuel and Energy, National Emergency Agency, Agency for Water Problems, University of Science and Technology, University of Agriculture, Energy

NGOs, and former key experts of the INC projects, as well as experts from other climate change and related projects, participated in the National Workshop for Stocktaking and Stakeholders Consultation. Dr B. Bayasgalan, Director of the Sustainable Development and Environment Department, MNE, chaired the Workshop. H.E. Dr Ichinkhorloo Endenbaatar, the Minister of Nature and Environment, kindly gave an opening statement at the Workshop.

56. Four presentations were given: the first by Dr D. Dagvadorj, who outlined the objective and the aims of the Stocktaking and Stakeholder Consultation, and discussed the UNFCCC and Mongolia's obligations under the Convention. He also gave an overview of the climate change and related activities that has been undertaken in Mongolia after 2001. Ms B. Bujidmaa of the Institute of Meteorology and Hydrology then gave a presentation on the current status of the National GHG Inventory, including the objective of the inventory, and some results from the 1990-1998 GHG data. She highlighted the improvement made for the estimation of CO_2 and CO emissions from the transportation sector using country-specific mass emission factors, and for the estimation of methane emission from the waste sector using the improved statistical data and other parameters such as waste coefficient (Gg/million people/year), fraction of MSW at solid waste disposal sites and degradable organic carbon (fraction) (kg C/ kg SW) where data were obtained based on local information sources. She further highlighted the gaps and the needs for future improvement. This was followed by the joint presentation of Dr L. Natsagdorj and Dr P. Batima on the *Vulnerability and Adaptation: Achieved Results and Future Needs.* In particular, Dr Natsagdorj first reported on the main results of the IPCC Third Assessment Report, and then discussed the historical and present-day climate change in Mongolia, including updated temperature and precipitation trends, climate change scenarios up to 2099, and the potential impacts of climate change in Mongolia, especially on water resources and the increasing frequency and magnitude of extreme weather events, such as drought and dzud, as well as feasible adaptation options. Dr Batima discussed the results of the vulnerability and adaptation assessment for grassland ecosystem and animal husbandry. The final presentation was given by Dr L. Dorjpurev, who discussed the issues related to GHG mitigation, including the technology needs assessment in the energy sector.

57. Each presentation was followed by questions and answers. The participants were then allowed two hours to provide comments on all the presentations, including issues relating to energy, industrial pollution, capacity-building, research and systematic observation, integration of climate change concerns into sectoral planning, and education and public awareness, among others. A Summary Report on the workshop is attached as Annex 2.

58. After the Workshop, Dr Dagvadorj, the facilitator for the preparation of this project document, held two further informal meetings with key members of the thematic working groups on GHG inventory, V&A Assessment and GHG Mitigation on 27 March 2006 and 6 April 2006 respectively, based on the results and outcomes of the Workshop, with a view to gathering further information for the preparation of the SNC project proposal. In the first informal meeting, general issues that may relate to the SNC components were discussed. In the second informal meeting, specific activities and its indicators for GHG Inventory, V&A Assessment and GHG mitigation components of the SNC were identified. The inputs from these national experts have formed the basis for the preparation of this project proposal.

59. The matrix that was used to assist in stocktaking of activities financed under the GEF enabling activities and other efforts is attached as Table 1. The cells marked with "x" simply means that some activities had been undertaken under the INC, the Phase II project and other past and existing activities, but new and additional activities are still needed. Blank cells mean that no activities have been undertaken so far.

60. The National Workshop for Stocktaking and Stakeholders Consultation specifically took note that the warming tendency in the country has been continuing and that the country has experienced several natural weather and climate extreme events that were particularly severe. These extreme

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Conservation Consulting Company, Automobile Service Centre, "Info" Newsletter, news media (Mongolian National TV and Mongolian Radio journalists).

events have severely affected Mongolia's aggressive economic development trend. The increase in frequency and magnitude of these extreme events would have enormous implications for Mongolia's sustainable development. It was agreed during the Workshop that these aspects would be comprehensively assessed and highlighted in the SNC.

Linkages with other climate change and environmental activities

61. The proposed project will build on the past and existing activities on climate change[5]. It will be ensured that there will be no duplication of past and existing activities.

62. As climate change is a sustainable development issue that links to all socio-economic and environmental issues, this proposed project will complement other environmental activities, especially those undertaken under the Montreal Protocol on Substances that Deplete the Ozone Layer, the CBD and the UNCCD.

Project activities, outputs and indicators

63. This proposal is formulated in accordance to the Guidelines adopted at COP 8 (Decision 17/CP.8) in 2002 and the GEF Operational Procedures for the Expedited Financing of National Communications from non-Annex I Parties (GEF, 2003). It consists of 12 clearly defined components, each of which is briefly described as follows. Each component first highlights the previous activities, identifies the major gaps, and then proposes new activities to be undertaken within the framework of the project with an indicative cost, as well as expected major outputs and indicators of achievement. These are largely based on the results of the EGM and the National Workshop on Stocktaking and Stakeholders Consultation, as well as the guidance provided by the Regional Adviser of UNESCAP during the preparation of this project document.

Component 1: Institutional framework for project implementation and Project Management

64. A Project Management Team (PMT) and a National Study Team (NST) will be reconstituted under the auspices of NAMHEM in consultation with MNE and other relevant ministries.

65. The NST will comprise five Thematic Working Groups (TWG) dealing with (i) GHG Inventory and Mitigation Options Analysis; (ii) Vulnerability and Adaptation (V&A) Assessment; (iii) Development and Transfer of Environmentally Sound Technologies; (iv) Research and Systematic Observation; and (v) Education, Training and Public Awareness. Each working group is composed of a number of experts drawing from both public and private sectors, academic institutions and NGOs, as appropriate. The NST will be coordinated by a National Project Coordinator (NPC), who will be designated by NAMHEM to coordinate the day-to-day project activities, and responsible for the overall operational management and financial management of the project, among others (see TOR in Annex 1).

66. The NPC, together with the leader of each TWG, will form the PMT, which will be administratively supported by a secretary/administrative assistant. The PMT and each TWG will have adequate and appropriate computer and telecommunication facility, including Internet, to enable them to efficiently and effectively undertake their activities.

67. The institutional framework for the proposed project is shown in Figure 2. The project will be executed by NAMHEM, which is responsible among others for climate change related issues, with the support of various related ministries as well as private sector, local communities and NGOs. The NAMHEM is under the supervision of the Minister for Nature and Environment. The Ministry of

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[5] These include USCSP (1994-1996); ALGAS project (1997-1998); Climate Change Studies (1998-2001) funded by the Government of the Netherlands; INC project (1998-2001) and Phase II project on *Assessment of Technology Transfer Needs in Mongolia Energy Sector* (2001-2002); partial participation in the Regional Project on *Capacity Building for Improving National GHG Inventories* (2004-2006) funded by GEF/UNDP; the project on *Potential Impacts of Climate Change and V&A Assessment for Grassland Ecosystem and Livestock Sector in Mongolia* (2002-2004) under the GEF/UNEP/START and TWAS project: *Assessments of Impacts & Adaptation to Climate in Multiple Regions & Sectors (AIACC).*

Nature and Environment is the operational focal point for multilateral environmental agreements (MEAs).

68. The National Climate Committee (NCC) established in 2000 will be revitalized to provide policy advice and guidance to the proposed project. The Minister of Nature and Environment chairs the inter-ministry NCC, which has memberships from the MNE, Ministry of Fuel and Energy, Ministry of Food and Agriculture, Ministry of Finance, Ministry of Foreign Affairs, Ministry of Industry and Trade, and NAMHEM, which acts as the Secretary for the Committee.various relevant ministries.

69. The PMT will report to NAMHEM, which will report to the National Climate Committee (NCC), and the NCC will report to MNE. The MNE will ensure that the recommendations of the project are to be integrated into the overall national development planning process. The effective coordination and cooperation between NAMHEM, NCC, MNE, PMT and NST are crucial in ensuring the successful implementation of the project. Partnership will be formed with relevant national research institutes as appropriate so as to maximize the efficient use of the project resources.

70. A total of **US$81,000** (US$6,000 + 75,000) is requested from the GEF for establishment of institutional framework and project management for three years (see Table 3). This includes the salaries for the Project Coordinator and a secretary/administrative assistant.

Major output and indicator

71. The major output and indicator of this Component will be the successful establishment of the institutional arrangement for the implementation of the proposed project, including the reconstitution of the PMT and NST, which, with appropriate resources, will be fully committed to the successful implementation of the project.

Component 2: National Greenhouse Gas (GHG) Inventory

72. GHG inventory is an important component of national communication, as it forms the basis for mitigation measures. A reliable and accurate GHG inventory would also be very useful for the formulation of any projects for further bilateral and multilateral funding, including those under the Clean Development Mechanism (CDM) of the Kyoto Protocol, so that appropriate baseline for emission reduction can be derived.

Previous activities

73. Preliminary national GHG Inventory for 1990 was undertaken for the U.S. Country Studies Program (USCSP) during 1994-1996, using the *1994 IPCC Guidelines for National Greenhouse Gas Inventories*. The inventory includes emissions of carbon dioxide, methane, nitrous oxide, nitrogen oxides and carbon monoxide in five sectors: Energy, Industrial Processes, Agriculture, Land Use Change and Forestry, and Waste. Although data were limited, this study did provide opportunities for some institutional and human capacity-building.

74. On the basis of the USCSP, the national GHG Inventory for 1990 was revised and updated with a slightly expanded scope in the ALGAS project during 1997-1998 using the *1994 IPCC Guidelines for National* Greenhouse *Gas Inventories*. The inventory covered the emission of carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) in the same five sectors, namely: *Energy* (all energy for direct greenhouse gases CO_2, CH_4 and N_2O, and indirect greenhouse gases NO_x and CO emissions only; also fugitive emissions from solid fuel for CH_4 emission only); *Industrial Processes* (cement and lime production for CO_2 emission only), *Agriculture* (i.e., enteric fermentation and manure management for CH_4 emission only); *Land-Use Changes and Forestry* (i.e., changes in forest and other woody biomass stocks for both CO_2 emission and removal); forest and grassland conversion for CO_2 emission; and abandonment of managed land for CO_2 removal only) and *Waste* (CH_4 emission only for solid waste disposal on land and for wastewater treatment). Bunker fuel emission was also estimated. Based on this inventory, the GHG emissions in terms of CO_2-equivalent from the energy, forestry and agriculture sectors was projected for 1993, 2000, 2010 and 2020, and the potential

mitigation options and opportunities, including technical and economic feasibility, as well as the emission reduction potential and policy barriers, were identified and assessed. On the whole, the GHG inventory in the ALGAS project was much improved and reliable compared to that in the USCSP project because of improved emission factors used in fuelwood and dung combustion based on local research, as well as improved carbon uptake figures of logged forest and planted forest based on the review of the local and international literature. However, the lack of reliable data in some areas remains the main obstacle for a comprehensive inventory to be undertaken.

75. On the basis of the ALGAS project, the GHG inventory was further updated for the period 1990-1998 under the INC project using the *IPCC 1996 Revised Guidelines for National Greenhouse gas Inventories*. The inventory basically covered the same range of GHGs and the five source categories as those in the ALGAS project. Once again, the lack of data or the lack of reliable activity data and appropriate emission factors in some sources remain the main obstacle for a comprehensive estimation to be undertaken. For example, accurate emission inventory in the waste sector proved difficult due to the lack of information and poor waste management, including insufficient activity data on the proper collection, transportation, separation and recycling of wastes, and the extent of landfill coverage, etc. Also, only industrial processes for cement and lime production were estimated as in the ALGAS project while other industrial activities, such as the production of metallic and non-metallic products, chemical products, were not included.

76. Another major uncertainty is the emission of GHGs from the forest and steppe fires. There were 101 and 219 forest fires in 1992 and 1997, in which 1,668.4 thousand ha and 16,201.4 thousand ha were burned, respectively. Steppe fires were also frequent in dry season. These fires were largely human induced, and they could be a major source of GHG emission. In view of this, in the INC project, the emission of CO_2, CH_4, N_2O, NO_x and CO from forest fires were estimated for the period 1990-1995 based on the default emission factor for savanna burning provided by the IPCC Guidelines. These results needed to be re-evaluated with more appropriate emission factors. However, steppe fires were not included, and this needs to be considered in the SNC. The preliminary results in the INC project indicate that if forest and steppe fires are included in the GHG inventory, it would be the most significant source of CO_2 emission.

77. In 2005, under the Regional Project on *Capacity Building for Improving National GHG Inventories* (2004-2006) funded by GEF/UNDP, a local expert team has measured the country-specific mass emission factor for the estimation of CO_2 and CO from the exhausts of both petrol and diesel engines motor vehicles. The improved emission factor has resulted in a reduction of CO_2 remission by 11.2% for petrol engine vehicles and 8.2% for diesel engine vehicles as compared to those estimations using the IPCC default values. Similarly, estimation of methane emission from the waste sector was improved based on local statistical data and other parameters, such as waste coefficient (Gg/million people/year), fraction of municipal solid waste (MSW) at waste disposal sites and degradable organic carbon (fraction) (kg C/ kg SW).

Gaps

78. The major gaps are:

(i) Activity data of CO_2, CH_4 and N_2O, NO_x and CO in the five main source categories need to be updated and extended based on the COP 8 Guidelines;

(ii) Emissions of Non-Methane Volatile Organic Compounds (NMVOC), as well as sulfur dioxide (SO_2), hydro fluorocarbons (HFCs), per fluorocarbons (PFCs), and sulfur hexafluoride (SF_6) need to be estimated;

(iii) Existing GHG database needs to be updated and improved to make it user-friendly;

(iv) Inventory was not as extensive and comprehensive due to the lack of data or poor data quality in certain source categories (e.g., not all industries and industrial processes were considered);

(v) The previous emissions from energy consumption in different sectors were calculated using the reference approach only and there is a need for the sectoral or bottom-up approach for emission estimation;

(vi) Lack of country-specific emission factors (e.g., enteric fermentation, soils, waste disposals, forest and steppe fires, etc.);
(vii) The uncertainties for sources and sinks were not estimated;
(viii) User-friendly software for GHG emission projection is needed;
(ix) Capacity-building in IPCC methodologies for GHG Inventory, including the application of good practice guidance and uncertainty management, especially IPCC 2006 methodology is very much needed.
(x) QA/QC procedures needed to be developed and applied, especially in the direction of cross-checking between the different sources of activity data.
(xi) GHG reporting and documentation in respective sectors need to be improved;

Proposed activities

79. On the basis of the previous inventory, national GHG Inventory for direct greenhouse gases such as carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) and for indirect greenhouse gases such as carbon monoxide (CO), nitrogen oxides (NO_x) will be updated for the period 1999-2002 in five main source/sink categories – energy; industrial processes; agriculture; land-use change and forestry; and waste, using the *IPCC 1996 Revised Guidelines for National Greenhouse Gas Inventories* or *IPCC 2006 Revised Guidelines* when they will become available. Previous inventory data for 1990-1998 will be re-calculated based on the new methodology as appropriate so as to facilitate comparison and trend analysis. The emission of NMVOC, which was not previously considered before, will also be estimated. In addition, the emissions of methane and nitrous oxide from international bunkers and aviation will also be estimated.

80. The activity data of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6), which are controlled by the Kyoto Protocol, will also be collected for the same period 1999-2002 where available.

81. Appropriate national or regional emission/sink factors will be used to estimate GHG emissions/sinks where available and appropriate, so as to reduce the uncertainties and enhancing the data quality. In particular, country-specific emission GHG factors for forest and steppe fires, as well as methane emission factor for the waste sector[6], and as well as for the enteric fermentation for cattle of all ages from birth up to complete maturity, will be developed.

82. Quality assurance and quality control (QA/QC) procedures based on the IPCC Good Practice Guidance *and Uncertainty Management in National Greenhouse Gases Inventories* and the *IPCC Good Practice Guidance on Land Use, Land Use Change and Forestry* will be adopted to ensure data reliability. The reduction of uncertainties in the national GHG inventory will allow the re-calculation of the previous GHG inventory data for 1990-1998, as well as the re-assessment of the mitigation options proposed in the INC.

83. An efficient and user-friendly database system, together with a user manual, will be developed for archiving, updating and maintaining the GHG inventory data, including emission factors and other relevant data and information.

84. Table 1 as provided by the COP 8 Guidelines further indicate the sectors and sub-sectors where previous work has been undertaken. The cells marked with "**X**" in the tables mean that some activities had been undertaken under the INC and other projects, but new and additional activities are still needed. Blank cells mean that no activities have been undertaken so far. These two tables will also be used for reporting the national GHG inventory in the SNC.

[6] To improve inventory in the waste sector, more research on the "First order decay model" (FOD) introduced in IPCC guidelines may be needed. In addition, more precise information is needed on waste management activities by the Ministry of Infrastructure and municipalities, including collection, transportation, separation, recycling, and disposal.

85. A review workshop will be held during mid-term and at the end of the proposed activities to assess progress. Policy makers and other stakeholders will be invited to participate in the workshop, so as to enhance their awareness on the importance of GHG inventory, which should be taken into consideration in national development planning. If possible, a long-term programme on the improvement of future GHG inventories will be developed.

86. This activity will be coordinated with other national efforts and any regional efforts whenever and wherever possible. Partnerships on emission factors research activities with national and regional research institutes will be explored.

87. The above activities will be undertaken by the GHG Inventory Group members, who will have opportunities to strengthen their technical capacity on the application of IPCC methodology, including data collection, analysis and management. They would also have opportunities to participate in the subregional, regional and international training workshops, so as to share experiences and lessons learned with other countries. In addition, training workshops on the application of the IPCC methodology, including data collection, analysis and management, as well as the *IPCC Good Practice Guidance and Uncertainty Management in National GHG Inventories*, and the *IPCC Good Practice Guidance on Land Use, Land Use Change and Forestry* and related applications of geographic information systems (GIS) and remote sensing techniques, will be organized or arranged for the Group members.

88. This activity will include training in and capacity building on the use and application of the IPCC 2006 Revised Guidelines for National Greenhouse Gas Inventories, the IPCC Good Practice Guidance on National Greenhouse Gas Inventories and Uncertainty Management, and the IPCC Good Practice Guidance on Land Use, Land Use Change and Forestry and related applications of geographic information systems (GIS) and remote sensing techniques.

89. In view of the fact that some expertise and experiences have been gained in the INC and other projects, a total of **US$55,000** is requested to undertake the above proposed activities, including the costs for capacity-building, equipment, survey and transportation, over the 3-year project cycle (Table 3). This is very modest in view of the scope and extent of the proposed activities.

Major outputs and indicators

90. The major outputs and indicators of this Component will be:

(i) Reconstitution of the TWG on GHG inventory based on the INC project;
(ii) Updated and improved inventory data for CO_2, N_2O, CH_4, CO and NO_x, and new inventory data for NMVOC, SO_2, HFCs, PFCs and SF_6 for the period 1999-2002, and these data will be used as a basis for assessment and selection of mitigation options;
(iii) New activity data for Industry, Land-Use Changes and Forestry and Agriculture sectors;
(iv) Improved emission/sink factors in various sources/sinks where possible (e.g., methane emission factors from enteric fermentation for cattle and for solid waste sector);
(v) An updated, improved and user-friendly GHG inventory database and user manual;
(vi) An updated GHG inventory report for the period 1999-2002, including technical annexes that detail the inventory procedures and calculations;
(vii) Further identification of shortcomings and gaps of the IPCC Guidelines in relation to the local conditions; and recommendations on areas of targeted research to improve future inventories and to suggest revisions to the existing IPCC GHG inventory methodology;
(viii) A description of further research needed to develop and/or apply new emission factors for specific activities;
(ix) Strengthened human, scientific, technical and institutional capacity for GHG inventory;
(x) The reports of the review workshops, including major papers presented;
(xi) Possible publications in scientific journals;
(xii) Chapter on GHG Inventory to be included in the SNC.

Component 3: Programmes Containing Measures to Facilitate an Adequate Adaptation to Climate Change

91. The impact and vulnerability assessment conducted in the INC and other related projects showed that Mongolia is highly vulnerable to the adverse impacts of climate change, not only on the natural environment, but also on all spheres of socio-economic sectors. The findings have generated a better understanding on the climate change issues among the policy and decision-makers and other key stakeholders.

92. In Mongolia the risk of climate change and/or expected increase in the frequency, persistence and magnitude of extreme climatic events could have dramatic impacts on the economy and natural systems. Particularly vulnerable is the rangeland and livestock sector, which occupies about 80% of Mongolia's territory. As land use intensity and the frequency and magnitude of climate variability rise, the resilience and adaptive capacity of traditional networks and land use systems to cope with climate variability/extremes weaken.

93. In addition, melting of glaciers and permafrost because of increasing air temperature[7] and the changes in precipitation patterns[8] would have significant implication for water resources, which, in turn, would affect the environment and other socio-economic sectors. In view of these projected changes and impacts, further target research and assessment of vulnerability of climate change in Mongolia will be undertaken focusing on specific sectors using outputs of appropriate regional circulation models. Based on the vulnerability assessement, appropriate adaptation measures will be proposed.

Previous Activities

94. Four previous studies have undertaken some aspects of vulnerability and adaptation assessment: (i) the US Country Study Program (USCSP) (1993-1995); (ii) the *Climate Change Studies* (1998-2001) funded by the Netherlands Government; (iii) the INC project (1998-2001); and (iv) the project on *Potential Impacts of Climate Change and V&A Assessment for Grassland Ecosystem and Livestock Sector in Mongolia* (2002-2004) under the GEF/UNEP/START and TWAS project: *Assessments of Impacts & Adaptation to Climate in Multiple Regions & Sectors (AIACC).* In addition, a UNDP-Government of Luxembourg-funded project on *Strengthening the Disaster Mitigation and Management System in Mongolia* (late 2002-2005) has strengthened the capacity of the disaster management authorities in mitigating disasters, which could be climate induced.

95. In the USCSP (1993-1995)[9], only a preliminary vulnerability and impact assessment, which covered spring wheat, water resources, and grassland/livestock (cattle) sectors, was undertaken. However, local scientists concerned that the General Circulation Models (GCMs) used to predict climate change did not accurately reflect the baseline conditions in Mongolia. Moreover, only one crop (spring wheat) was examined and very few sites were studied. Therefore, the results of this study should only be considered only as preliminary and not sufficient for policy development. However, some technical capacity has been built in the application of the assessment methodologies within the scope of the financial and technical assistance of this project.

96. The *Climate Change Studies* (1998-2001) had assessed the vulnerability of crop planting (spring wheat), the shift in natural zones and water resources (few river basins) was undertaken and potential

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[7] During the last 60 years, the annual mean air temperature in Mongolia has increased by 1.56°C. The winter temperature has increased by 3.61°C, and the spring-autumn temperature by 1.4-1.5 °C. In contrast, summer temperatures have decreased by 0.3 °C. This summer cooling has been observed predominantly in June and July. These changes in temperature are spatially variable: winter warming is more pronounced in the high mountains and wide valleys between the mountains, and less so in the steppe and Gobi regions. Also, Gobi presents an exception to the summer cooling trend (NAMHEM, 2001).

[8] There is a slight trend of increased precipitation during the last 60 years. The country's average precipitation rate increased by 6% between 1940-1998. This trend is not seasonally consistent: while summer precipitation increased by 11%, spring precipitation decreased by 17% (NAMHEM, 2001).

[9] The USCSP (1993-1995) aimed to enhance the capabilities of the country to assess its vulnerabilities to climate change, and evaluate the options available to it to mitigate and adapt to climate change.

adaptation measures were identified. As a result of this project, a *National Action Programme on Climate Change* was developed and approved by the Government in 2000. The *National Action Programme* establishes an implementation strategy for priority response measures and gives an opportunity to integrate climate change concerns into other development plans and programmes. Implementation of the identified measures and actions should not have an adverse impact on national sustainable development goals and concepts.

97. In the INC project, future seasonal climate change over Mongolia was projected using different climate models with respect to the baseline 1961-1990 period in 2020 (2011-2040), 2050 (2041-2070) and 2080 (2071-2100). Among the four special emissions GHG scenarios (SRES A1, A2, B1, B2), middle high A2 and low B2 have been chosen based on future trends of world socio-economic, population and technology development. Mongolia's future climate change (temperature and precipitation) for the periods 2000-2040 and 2040-2070 were developed based on selected General Circulation Models (GCMs) scenarios. A vulnerability assessment was undertaken for different geographical zones[10] (e.g., mountain zone, forest-steppe, desert-steppe, etc.); and socio-economic sectors, such as water resources; grassland; forestry; animal husbandry, arable farming; snow cover; permafrost, soil quality and erosion using the outputs of the General Circulation Models (GCMs) based on the global GHG emission scenarios (IS92a and IS92b) for the region. All GCM models give results, which temperature and precipitation is generally increased in both seasons. However, summer temperature will be increased more intensity than the winter and winter precipitation will be increased more intensity than the summer with respect to their climate baseline period. Integrated impacts were also assessed. Priority adaptation measures, including both technical and policy, were identified.

98. The *Potential Impacts of Climate Change and V&A Assessment for Grassland Ecosystem and Livestock Sector in Mongolia* (2002-2004) of the AIACC project aims to comprehensively assess the impacts, vulnerability, and adaptive capacity of the rangeland and livestock sector in Mongolia to climate change. The impacts were evaluated through the quantitative and qualitative estimation of potential productivity of under different climate change scenarios. A combination of ecosystem modeling, remote sensing data, analysis of existing long-term plant dynamics and climate databases, and field surveys were used to investigate climate and land use changes effects on grassland ecosystem structure and function. Particular priority was placed on the study of interactions between climate, grassland and pastoral systems, and social institutions in order to assess vulnerability and adaptive capacity of the integrated system and ultimately support environmental planning and decision-making.

Gaps

99. Although a lot of information has been generated from the above-mentioned studies, many gaps still exist, as follows:

    (i) Most of the previous V&A assessments were either preliminary or not conducted in a holistic and integrated manner;

    (ii) Inadequate or lack of data for assessing climate change vulnerability, including data for evaluation (including cost-benefit analysis, cost-effective analysis) of various adaptation options and adaptation technologies, strategies and measures.

    (iii) Systematic data collection, monitoring, research and analysis on a continuous basis are needed, with the scope of the assessment expanded to include more biophysical components and social (health, income and livelihood of rural people, etc.) and economic (arable farming, tourism and recreation, etc.) sectors and biophysical components (water resources, including surface and underground water, forests, soil moisture resource, ice cover of glaciers, etc.);

    (iv) The need for capacity-building in the field of V&A assessment and integrated assesment (including integrated assessment modelling), including training in the application of appropriate methodologies and tools for conducting V&A assessment at the national,

[10] Holdridge life zone classificaion model was used.

community and sectoral levels, and the downscaling of outputs from the GCMs to reflect projected changes in specific sectors and/or communities within timeframes that are relevant and appropriate for decision-making.

(v) The need for assessment of the climate variability and climate change in Mongolia, including their trends and impacts;

(vi) The need for strengthening existing, and where appropriate develop data management systems to ensure that a vulnerability and adaptation assessment is carried out on continuous basis.

(vii) Evaluation (including cost-benefit analysis), prioritization and costing of adaptation options, strategies and measures.

(viii) Incorporation of V&A assessment into development planning, including climate-related disaster risk reduction;

(ix) Integrating climate change issues in sustainable development planning processes in Mongolia;

(x) Dissemination of V&A assessment results to raise public awareness of the climate change impacts.

Proposed Activities

100. Based on previous assessment and other existing studies, the following activities are proposed:

(i) Relevant global and/or regional circulation models[11] may be used to generate climate change scenarios for the region that includes Mongolia. Detailed climate scenarios for Mongolia up to the year 2100 based on "downscaling" of the outputs provided by these models will be developed to assess the vulnerability of the key socio-economic sectors to climate change;

(ii) A comprehensive integrated vulnerability assessment for key socio-economic sectors, such as water resources (including surface and underground water); arable farming and food security; ecosystems (biodiversity, ice cover of glaciers, soil moisture, etc.); and human health, culture/tradition, among others. Integrated Assessment Modelling (IAM) may be used to assess the impacts of climate change in Mongolia in a holistic and integrated manner where possible. Based on these quantitative analyses, appropriate cost-effective adaptation options and measures will be assessed. The impacts of climate change on national development strategies, plans and programmes will be evaluated. Appropriate policy framework will be developed, and options will be identified for response strategies;

(iii) Assessment of the effects of climate variability, as well as the impacts of increased probability of extreme weather events (flood, drought, dzud) associated with climate change on the key socio-economic sectors;

(iv) Assessment of the effects of ENSO on the climate of Mongolia, especially on the relation between the phases of ENSO with extreme climate of Mongolia, such as flood and drought; and prediction of climate using ENSO information and disseminate the knowledge on ENSO to the general public;

(v) Development and construction of vulnerability maps for key socio-economic sectors and in key areas which are most vulnerable under various climatic scenarios;

(vi) Development, evaluation and prioritization of adaptation measures based on vulnerability assessment on key socio-economic sectors.

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[11] For example, MAGICC-SCENGEN - a user-friendly interactive software suite that allows users to investigate future climate change and its uncertainties at both the global-mean and regional levels may be used. MAGICC carries through calculations at the global-mean level using the same upwelling-diffusion climate model that has been and is employed by the IPCC. The latest version gives the same global-mean warming and sea-level rise results as published in the IPCC Third Assessment Report (TAR). SCENGEN uses these results, together with results from a set of coupled Atmosphere/Ocean General Circulation Models (AOGCMs) and detailed baseline climatology, to produce spatially-detailed information regarding future changes in temperature and precipitation, changes in their variability, and a range of other statistics.

101. The above activities will be coordinated with other national efforts funded by other international agencies and donors, as well as with any regional efforts as appropriate. For example, an UNDP project for strengthen national capacity for disaster prevention and other related environmental projects.

102. Based on the above assessment, a draft *National Adaptation Strategy* for key socio-economic sectors will be developed. The *National Adaptation Strategy* will include: (i) the review of both analysis of measures and technologies for minimizing damages and for mitigating adverse impacts of climate change; (ii) the identification of cost-effective adaptation measures for climate change and related extreme events; (iii) the development of interactive mechanism between key socio-economic sectors, and their sub-sectors, as well as between public and private sectors on climate change impacts and adaptation; (iv) the development of special information materials (e.g., maps, diagrams, decision matrices) for policy makers; (v) a list of top priority measures recommended for inclusion in sustainable development strategy; (vi) analysis of barriers and necessary actions for integration of adaptation measures in the mid-term and long-term national development plans, including climate-related disaster risk reduction.

103. A review workshop will be held during mid-term to assess progress, and at the end of the assessment, another workshop will be held to review the results and the draft *National Adaptation Strategy* . Policy makers and other stakeholders will be invited to participate in the workshop, so as to enhance their awareness on the climate change impacts and various adaptation options, which should be mainstreamed into national development planning.

104. The V&A Group will undertake the above tasks. Available methodologies[12] that may be able to reflect the national situation will be used to undertake the assessment. The application of integrated assessment methodology, such as IAM, which is an important tool for assessing impacts and adaptation options for climate change at the global, regional and national levels, will be explored. This will also include the development of integrated vulnerability indices for key socio-economic sectors where possible.

105. Participation by communities in the assessment will be encouraged and promoted so as to ensure that the adaptation options, strategies and measures developed are viable and culturally acceptable by the communities.

106. Capacity building for the V&A Group on the application of various assessment methodologies, including data collection, analysis and management, will be needed. This may include the participation of the V&A Group members in the subregional, regional and international training workshops, so as to share experiences and lessons learned with other countries.

107. At the end of the proposed activities, further gaps, constraints and research needs, as well as related financial, technical, institutional and capacity building needs will be identified and highlighted.

108. A total of **US$ 120,000 is** requested to undertake the above proposed activities, including the costs for capacity building, equipment and transportation, over the 3-year project cycle (Table 3). This is very modest in view of the scope and extent of the proposed activities.

Outputs and indicators

109. The major outputs and indicators of this component will be:

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[12] These include the *IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptations* (Carter *et. al.*, 1994); the *UNEP Handbook on Methods for Climate Change Impact Assessment and Adaptation Strategies* (Feenstra *et al.*, 1998); the *International Handbook on Vulnerability and Adaptation Assessments* (Benioff *et al.*, 1996); *Developing Socio-Economic Scenarios for Vulnerability and Adaptation Assessments*; *Methodologies and Tools to Evaluate Strategies for Adaptation to Climate Change* (UNFCCC, 2000; see www.unfccc.int/issues/meth_tools.html); the *MAGICC/SCENGEN Climate Scenario Generator: Version 2.4, Technical Manual* (Wigley *et al.*, 2000); and the *Compendium of Decision Tools to Evaluate Strategies for Adaptation to Climate Change* (May, 1999), and other regional methodologies where appropriate,

(i) Strengthened human, scientific, technical and institutional capabilities and capacities to undertake V&A assessment;

(ii) Adaptation options, strategies and measures developed are viable and culturally acceptable by local communities;

(iii) Enhanced awareness of the risks imposed by climate change and climate variability;

(iv) Improved understanding of the key vulnerabilities and the risks imposed by climate change and climate variability on key socio-economic sectors, including communities and infrastructure;

(v) Analyses (i.e., cost-benefit analyses, evaluation and prioritization) of the various adaptation options, strategies and measures for priority socio-economic sectors based on established methodologies, including possible least-cost adaptation options and adaptation technologies;

(vi) Identification of targeted research on climate variability, climate change, drought and dzud and extreme weather events;

(vii) Policy options for adequate adaptation and response strategies for climate change impacts on key socio-economic sectors, including a draft National Adaptation Strategy;

(viii) Identification of the country's needs and priorities with respect to adapting to the adverse impacts of climate change including vulnerabilities to current climate variability and future climate change, specific human systems (livelihood), areas or sectors that are most critical, difficulties or barriers to adaptation in critical areas or sectors and opportunities and priorities for adaptation;

(ix) Consideration of the broad implications for the country as a whole and integration of effects including the most important sectoral linkages and associated effects, based on current understanding and the needs for a better understanding of indirect and cumulative effects;

(x) Identification of gaps, constraints and research needs, as well as specific financial, technical and institutional and research needs for capacity-building; and

(xiii) The reports of the review workshops, including major papers presented;

(xiv) Possible publications in scientific journals;

(xv) Chapter on Programmes Containing Measures to Facilitate an Adequate Adaptation to Climate Change to be included in the SNC.

Component 4: Programmes Containing Measures to Mitigate Climate Change

110. Mitigation options assessment includes both the assessment of cost-effective options for GHG emission reduction and enhancement of sinks. These could be technical, technological and policy options. Mitigation technologies include both hardware and software (technical knowhow and best practices) technologies. Information on cost-effective mitigation options is relevant for sustainable development and useful for policy makers.

Previous Activities

111. Several studies related to the GHG mitigation option analyses in Mongolia have been undertaken. These are:

(i) The USCSP (1993-1995), which had assessed the mitigation options for the energy sector and the Land Use and Land-Use Change and Forestry (LULUCF). In the energy sector, the Long-range Energy Alternative Planning (LEAP) model was used to estimate the amount of GHG

emission reduction. In the LULUCF sector, the COMAP (Comprehensive Mitigation Analysis Process) model was used to identify mitigation options.

(ii) The ALGAS project (1997-1998), in which a range of potential GHG mitigation options for the energy sector of Mongolia was identified. These include energy conservation and efficiency improvements, both in the supply and demand sides; as well as renewable energy options. Analysis shows that in case of Mongolia, the primary areas for GHGs emissions mitigation are the energy and forestry sectors. These include. The EFOM-ENV Model was used to assess quantitatively the GHGs reduction potential and cost-effectiveness of the highest priority mitigation options. The identified forestry options were assessed using the Comprehensive Mitigation Analysis Process (COMAP) model.

(iii) The *Climate Change Studies* (1998-2001) funded by the Netherlands Government also included the GHG mitigation studies, focusing on the energy and industry sectors. As a result of this study, a report on the *Greenhouse Gases Mitigation Potentials in Mongolia* was published in 2000 (Batima *et. al.*, 2000).

(iv) The INC project (1998-2001), in which mitigation options were analyzed for both the energy supply and demand sectors, as well as for the transportation, agriculture, land–use change and forestry, and waste sectors. The MEDEE/S-ENV (demand side) and EFOM-ENV (supply side) models were used to project the CO_2 emissions from the energy sector up to the year 2020. Because of the lack of data, the year 1993 (instead of the recommended base year 1994) was used as a base year for the analysis (NAMHEM, 2001).

Gaps

112. The major gaps are:

(i) Lack of a national strategy for GHG mitigation;

(ii) Legal and economic instruments need to be strengthened for mitigation measures;

(iii) Lack of updated and improved cost-effective mitigation options assessment including appropriate mitigation technologies;

(iv) Lack of suitable analytical models for transport sector;

(v) The need for improved models for energy sector and forestry sector;

(vi) Lack of knowledge of relevant mitigation technologies;

(vii) Lack of consideration of mitigation options based on the enhancement of carbon sinks;

(i) The need for further strengthening technical capacity in quantitative mitigation options analysis, including application of relevant methodologies.

Proposed activities

113. Building on the previous activities, the Thematic sub-Working group on Mitigation will assess and evaluate the most realistic, practical and cost-effective mitigation options in Mongolia based on the updated and improved GHG inventory data. Relevant analytical tools and methodologies[13] will be used to undertake the analysis.

[13] These include (a) *Technologies, Policies and Measures for Mitigating Climate Change (IPCC Technical Paper I);* (b) *Greenhouse Gas Mitigation Assessment: A Guidebook by the U.S. Country Studies Programme*; and (c) *Climate Change 2001: Mitigation* (Contribution of Working Group III to the Third Assessment Report of the IPCC).

114. Appropriate economic mathematical models may be identified and used for assessing the various cost-effective mitigation options. These may include macro-economic models, such as MARKAL (MARKet ALlocation) - a partial equilibrium bottom-up energy system technology optimization model, ENPEP, as well as the MEDEE/S-ENV (demand side) and EFOM-ENV (supply side) models, which were used in the INC project for the energy sector. Further improvement or research on the above-mentioned methodologies based on the local conditions and situations may be needed. In addition, LEAP (Long-range Energy Alternatives Planning)[14] model may also be used for assessing least-cost mitigation options.

115. Mitigation options based on the enhancement of carbon sinks will also be assessed. These may include the rehabilitation of degraded grasslands, afforestation and reforestation.

116. Based on the above analyses, a draft *National GHG Mitigation Strategy* will be developed. This *Strategy* will include programmes containing measures to mitigate climate change. It will highlight the barriers for adopting cleaner technologies, as well as for promoting cleaner production and consumption. Both legal (e.g., law and legislation) and economic (e.g., tax incentives) instruments may be necessary for promoting mitigation measures. A list of environmentally friendly mitigation technologies, including renewable energy technologies, will be identified and assessed. Appropriate mitigation projects will also be identified for bilateral and multilateral funding, including those under the CDM of the Kyoto Protocol. Mechanisms will be explored to promote the participation of private sector in mitigation measures, perhaps through a public-private sector partnership.

117. Capacity-building for members of the Thematic sub-Working Group on Mitigation on the application of the appropriate methodologies and tools, including data collection, analysis and management, will be further strengthened and enhanced. This may include the participation of the team members in the subregional, regional and international training workshops, so as to share experiences and lessons learned with other countries. Training workshop on the application of macro-economic models and relevant energy models will be organized with the assistance of both national and, where appropriate, regional or international consultants. In particular, the expertise of the UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC) based in Denmark and other relevant regional and international agencies will be tapped as appropriate. In addition, capacity-building is needed for members of the Thematic sub-Working group on Mitigation to identify, assess, develop, monitor and evaluate mitigation projects for bilateral and multilateral funding, including the opportunities that are available under the CDM of the Kyoto Protocol.

118. At the end of the proposed activities, a workshop will be held to review the results and the draft *National Mitigation Strategy*. Policy makers and other stakeholders will be invited to participate in the workshop, so as to enhance their awareness on the importance of GHG emission reduction, which should be mainstreamed into national development planning. Further gaps, constraints and research needs, as well as related financial, technical, institutional and capacity-building needs will be identified and highlighted.

119. A total of **US$50,000** is requested to undertake the proposed activities, including capacity-building, equipment and transportation costs, for three years (Table 3). This is very modest in view of the scope and extent of the proposed activities.

Major outputs and indicators

120. The major outputs and indicators of this Component will be:

(i) Important baseline data for key socio-economic sectors required for assessing GHG mitigation options;

[14] In particular, LEAP 2000 has many features that may make it ideal for least-cost mitigation analysis and hence for GHG mitigation action plan. For example, it is capable of detailed analysis and tracking of all costs associated with a GHG mitigation action plan, including capital, operating and maintenance, and fuel costs, and any indirect costs such as taxes associated with emissions. It can also track the externality co-benefits arising from the avoided emissions of criteria pollutants.

(ii) A comprehensive quantitative mitigation options assessment for key socio-economic sectors based on established methodologies, including cost-effective mitigation options and environmentally friendly mitigation technologies;
(iii) A draft *GHG Mitigation Strategy*, including appropriate legal and economic instruments, and development of public-private partnership for mitigation measures;
(iv) Programmes containing measures to mitigate climate change;
(v) Strengthened human, scientific, technical and institutional capacity;
(vi) The review workshop report, including major papers presented.
(vii) Possible publications in scientific journals;
(viii) Chapter on Programmes Containing Measures to Mitigate Climate Change to be included in the SNC.

Component 5: Development and Transfer of Environmentally Sound Technologies (ESTs)

Previous activities

121. Mongolia implemented a GEF Climate Change Enabling Activity (Part II) project for *Assessment of Technology Transfer Needs in Mongolia Energy Sector* during January 2001-September 2002, which focused on the assessment of technology transfer needs in the energy sector, including its current situation and sources and resources (coal, oil and renewable energy). It was found that existing technologies in energy and industry sectors are very obsolete, inefficient and ineffective. Based on this assessment and the results of basic survey of priority sectors, the technology needs for energy supply and demand sub-sectors, including combined heat and power plants, district heating system, individual heat suppliers, renewable energy and industry sectors were identified. A case study of technology needs in selected industry sub-sectors, such as Erdenet copper mining and cement industry were conducted.

Gaps

122. The major gaps are:

(i) Technology needs assessment for other socio-economic sectors, such as industry, agriculture, waste management sectors;
(ii) Lack of assessment on adaptation technologies;
(iii) Lack of user-friendly database on ESTs, including endogenous technologies;
(iv) Lack of human and institutional capacity in assessing, evaluating and verifying ESTs;
(v) Further identification of barriers to the transfer and adoption of ESTs
(vi) Removal of barriers to the transfer and adoption of ESTs.

Proposed activities

123. Agenda 21 defines "Environmentally sound technologies" (ESTs) as technologies (these include both hardware and software - knowledge and know-how) that "protect the environment, are less polluting, use all resources in a more sustainable manner, recycle more of their wastes and products, and handle residual wastes in a more acceptable manner than the technologies for which they were substitutes". Thus, ESTs encompass technologies that have the potential for significantly improved environmental performance relative to other technologies. ESTs are the focus of the CDM projects under the Kyoto Protocol.

124. The TWG on Technology Transfer will undertake the following activities:

a) A comprehensive review, analysis and assessment of the country-specific technological requirements and opportunities of their use, transfer and introduction in key socio-economic sectors, as well as their social, economic and environmental impacts for adaptation and mitigation;
b) Assessment of existing endogenous ESTs so that they could be promoted or further developed;
c) The barriers to the adoption of ESTs in Mongolia will be further identified, with a view to facilitating their removal. Special attention will be paid on the following barriers:

- Access to and dissemination of information on ESTs;
- Institutional development for technological change;
- Enabling environment (including legal and economic instruments);
- Appropriateness of technology to the local condition, Including socio-economic, environmental and cultural consideration;
- Adaptive capacity; and
- Financial and partnership arrangement.

d) Based on the mitigation and adaptation technologies that have been identified in Components 3 and 4 above, a database for ESTs, and their potential for development and transfer to Mongolia, will be established. To this end, it is proposed to adopt the EST information system (ESTIS) that has been developed by UNEP's International Environmental Technology Centre (IETC) based in Osaka, Japan (see: *http://www.entis.net*). Capacity-building for the ESTs Group members will be needed to learn how to use this system, and a national system may then be developed based on ESTIS as appropriate. Other regional and international technology information databases, including UNFCCC Secretariat's TT:CLEAR will be consulted where appropriate. Indeed, a study of technology information networking with relevant regional and international organizations will be an important activity for this proposed project.

e) Establishment of national information clearing house on ESTs through Internet and other appropriate means with regional and global networks;

f) Mainstreaming ESTs into national science and technology policy.

125. It is necessary to build or strengthen the human, scientific, technical and institutional capacity for identifying, assessing, designing, developing, monitoring, evaluating and hosting technological projects, including targeted research projects, for bilateral and multilateral funding. Training workshops on UNEP IETC's ESTIS will be needed with the support of UNEP IETC. The ESTs Group members may participate in relevant subregional, regional and international training workshops and conferences to share experiences and lessons learned, as appropriate.

126. At the end of the proposed activities, a workshop will be held to review the results and outcomes, which will serve as important inputs for both the *National Adaptation Strategy* and the *National GHG Mitigation Strategy*. Further gaps, constraints and research needs, as well as related financial, technical, institutional and capacity building needs will be identified and highlighted.

127. A total of **US$6,000** is requested to undertake the proposed activities, including capacity-building and other relevant expenses over the 3-year project cycle (Table 3). This is very modest indeed in view of the scope and extent of the proposed activities.

Major outputs and indicators

128. The major outputs and indicators of this Component will be:

(i) A comprehensive updated report on technology needs assessment for mitigation and adaptation;
(ii) A user-friendly database for ESTs based on ESTIS developed by UNEP IETC;
(iii) A list of emission reduction projects based on ESTs for bilateral and multilateral funding, including those for CDM under the Kyoto Protocol;
(iv) Important inputs for both the *National Adaptation Strategy* and the *National GHG Mitigation Strategy*.
(v) Establishment of national information clearing house for ESTs;
(vi) Technology information networks for knowledge management;
(vii) Mainstreaming of ESTs into the national science and technology policy;
(viii) Various public awareness programmes focusing on the benefits of environmentally sound technologies (e.g., rain water harvesting initiatives, CFL rather than incandescent lights, eco-labeling, etc).
(ix) Strengthened human, scientific, technical and institutional capacity;
(x) The review workshop report, including major papers presented;
(xi) Possible publications in scientific journals;

(xii) Chapter on Development and Transfer of ESTs to be included in the SNC.

Component 6: Research and Systematic Observation

129. Systematic meteorological observations in Mongolia have been officially set up since 1924. Current network consists of 120 meteorological surface stations and hundreds of other specialized hydrological, upper air sounding, agrometeorological and environmental monitoring stations and posts, and the NAMHEM under the MNE is responsible for their management and development. The NAMHEM also provides information on weather, climate and hydrological forecasts and warnings for natural disaster prevention and preparedness, as well as for social and economic activities.

130. The data collected from the hydro-meteorological station network are processed, archived and studied to monitor the changes, variations and trends of climate characteristics, such as temperature, precipitation, severe weather events, water level and discharge, and other parameters in the whole country. The research into climate change in Mongolia based on the observations of the last 65 years has shown that:

- Annual mean temperature has increased during this period with the rate of 1.9°C;
- There are large variations in rainfall without clear trends in most part of the country;
- The magnitude and frequency of extreme weather and climate events have been increasing.

Gaps

131. The major gaps are:

(i) Climate data quality needs to be further enhanced;
(ii) Inadequate technical and financial resources for maintaining an appropriate systematic observation network;
(iii) Lack of analysis of existing hydrological and meteorological data by local expertise;
(iv) Inadequate computing facilities to run regional Global Circulation Models (GCMs) for development of climate change scenarios and downscaling into regional level;
(v) Inadequate human and institutional capacity in climate data monitoring and analysis.

Proposed activities

132. The TWG on Research and Systematic Observation (RSO) will report on all ongoing research and systematic observation activities related to climate change and its scenarios, including the research undertaken by other technical expert groups in this proposed project, especially the V&A assessment, as well as mitigation options and ESTs assessment. The Group members may also undertake some research in collaboration with the V&A group where appropriate. In particular, the following issues need attention:

- Improvement in data collection, analysis and management, with emphasis on data quality assurance, building on the data recovery programme supported by the World Meteorological Organization (WMO);
- Updating current climate change trends in Mongolia;
- Strengthening of early warning systems for drought and dzud (extremely harsh winter) and extreme weather events as part of the work on vulnerability and adaptation assessment;
- Analysis of the impact of climate change on the frequency and magnitude of extreme climatic events. This work will also be part of the vulnerability and adaptation assessment work;
- Analysis of rainfall (including floods and drought) under future climate change scenarios and current climate change. This work will be carried out in close collaboration with the V&A thematic working group;

- Participation in and contribution to the activities and programmes, as appropriate, of regional and global research networks and observing systems, such as the Central Asia-Global Climate Observing System (GCOS) programme, which aims to establish a robust and sustainable climate observation and application system that meets the climate change and variability observations and application needs of the country and region as well as the GCOS requirements;
- Climatic information networking with relevant regional and international organizations;
- Preparation of a draft *National Strategy for Research and Systematic Observation and Early Warning Systems*, with special focus on drought and dzud, so as to provide technical and policy guidance for a more sustainable programme. Further gaps and constraints, as well as related financial, technical, institutional and capacity-building needs will be identified and highlighted in this *National Strategy*.

133. The capacity of the RSO Group members will be strengthened where necessary, including their participation in sub-regional/regional/international workshops on data collection, analysis, management and climate monitoring, as well as sharing of experiences and lessons learned, as appropriate.

134. At the end of the proposed activities, a workshop will be held to review the results and outcomes, including the draft *National Strategy for Research and Systematic Observation and Early Warning Systems*, and the draft Chapter on Research and Systematic Observation (if available by then), with the participation of all stakeholders from both public and private sectors, including NGOs, communities and civil societies.

135. A total of **US$12,000** is requested to undertake the proposed activities, including the costs for capacity building and other appropriate expenses over the 3-year project cycle (Table 3). This is very modest in view of the scope and extent of the proposed activities.

Major outputs and indicators:

136. The major outputs and indicators of this Component will be:

(i) Improved climate database;
(ii) Specific research relating to climate change and its scenarios, drought, dzud and extreme weather events;
(iii) Early warning systems for drought and dzud established;
(iv) Participation in and contribution to the regional GCOS programmes;
(v) Climate information networks with regional and international organizations;
(vi) Draft *National Strategy for Research and Systematic Observation and Early Warning Systems;*
(vii) Strengthened human, scientific, technical and institutional capacity;
(viii) The review workshop report, including major papers presented;
(ix) Possible publications in scientific journals;
(x) Chapter on Research and Systematic Observation to be included in the SNC.

Component 7: Education, Training and Public Awareness

137. Article 6 (a) of the UNFCCC requires the Parties to, among others, "*promote and facilitate at the national and, as appropriate, subregional and regional levels, and in accordance with national laws and regulations, and within their respective capacities*": (i) "*The development of implementation of educational and public awareness programmes on climate change and its effects*"; (ii) "*Public access to information on climate change and its effects*"; (iii) "*Public participation in addressing climate change and its effects and developing adequate responses*"; and (iv) "*Training of scientific, technical and managerial personnel.*"

Previous Activities

138. The INC has reported that "*at present, (the) knowledge and (the) understanding of current climate change and its consequences among the public and even decision-makers is very limited*" (NAMHEM, 2001). The INC has identified the following specific target groups for education and public awareness activities: (a) decision makers; (b) national technical experts; (c) stakeholders; (d) public; (e) students and school children; and recommended that "*pilot projects on adaptation to climate change and on mitigation actions be initiated*", and "*materials used for educational and public awareness activities should be continuously developed, and a library/database maintaining materials for distribution, such as educational videos, should be set up to facilitate these activities.*"

139. Although no special mass media programme has been developed previously, some outreach materials were distributed at the seminar or workshops organized during the preparation of the INC, and an articles and information materials were published in newspapers with a view to raising public awareness on climate change issues.

140. In the GEF Climate Change Enabling Activity (Part II) project (January 2001-September 2002), some education and public awareness activities have been undertaken. These include the publication of two simplified books in Mongolian, namely *Climate Change* and *Greenhouse Effects and Greenhouse Gases*; and a climate change posters and CD contained climate change related materials.

Gaps

141. The major gaps are:

(i) Lack of a national strategy and programme on climate change education, training and public awareness;

(ii) There is also a need to introduce or strengthen climate change science at the primary, secondary and universities levels and through non-formal public education;

(iii) Inadequate outreach materials (especially in Mongolian language) on climate change issues, especially those for children and young people;

(iv) Lack of public awareness on climate-induced disaster preparedness; hence there is a need to introduce and strengthen community education on climate change and climate-induced disaster preparedness;

(v) Education, training and public awareness on climate change have not yet become social activities, and partnerships between the public and private sectors, including community groups and NGOs, are needed.

(vi) Lack of financial resources for climate change outreach programmes and activities.

Proposed activities

142. The Thematic Working Group on Education, Training and Public Awareness (ETPA) will provide information on activities relating to climate change education, training and public awareness that has been undertaken in the country. In addition, the Group proposes to undertake the following activities:

(a) *A National Programmes* on education, training and public awareness on climate change will be developed;

(b) Outreach materials in Mongolian language (leaflets, booklets, calendars, posters, video, CD) will be further developed and disseminated through mass media (TV, radio, newspapers, magazines, Internet, etc.). The information provided by relevant sources would be used for outreach activities where appropriate;

(c) A special 25-30 minutes video documentary on the vulnerability of Mongolia to climate change and its potential impacts, as well as possible adaptation options may be produced and shown at all central and local TV stations and educational institutions;

(d) A user-friendly database will be established with the inputs of other Working Groups;

(e) Enhancement of an existing website for climate change. This will facilitate information dissemination and sharing of experiences and lessons learned among communities. Capacity-

building for updating and maintaining this website is essential in order to ensure its sustainability even after the completion of the project;

(f) Strengthening of education on climate change at the primary, secondary and university levels;
(g) Continuous public awareness campaigns in Ulaanbaatar and all provinces;
(h) Strengthening of the institutions involved in climate change related studies both in terms of resource facility, including information materials and personnel, and promoting the use of this resource facility by the general public;
(i) Encouragement of scientific and policy research relating to climate change at the universities and research institutes through scholarship and/or fellowship programmes;
(j) Incorporation of climate change issues into non-formal education and into the different levels of curricula of the formal education systems;
(k) Further gaps, constraints and research needs, as well as related financial, technical, institutional and capacity building needs in Education, Training and Public Awareness will be identified and highlighted.

143. In order to achieve the above proposed activities, which will be undertaken nationally throughout the project cycle by the TWG on ETPA, reasonable financial resources will be needed, not only for human and institutional capacity strengthening, but also for the acquisition of certain relevant communication equipment.

144. At the end of the proposed activities, a workshop will be held to review the results and outcomes. Further constraints and specific financial, technical and institutional needs for capacity-building on public awareness, education and training will be identified and highlighted at the end of the activities.

145. A total of **US$ 16,000** is requested to undertake the proposed activities, including the costs for capacity building, outreach materials and other relevant expenses over the 3-year project cycle (Table 3). This amount is very modest indeed in view of the scope and extent of the proposed activities.

Major outputs and indicators

146. The major outputs and indicators of this Component will be:

(i) Educational and public awareness programmes at national, provincial and local levels;
(ii) Outreach materials in English and in Mongolian;
(iii) Enhanced scientific and policy research relating to climate change;
(iv) Strengthened curriculum on climate change at primary and secondary schools and university levels;
(v) Strengthened climate change focal point offices in MNE and NAMHEM;
(vi) Strengthened human, scientific, technical and institutional capacity;
(vii) The review workshop report, including major papers presented;
(viii) Possible publications in scientific journals;
(ix) Chapter on Education, Training and Public Awareness to be included in the SNC.

Component 8: Integration of Climate Change Concerns into Sustainable Development Strategy

Previous activities

147. Climate change is a sustainable development issue that has significant implications for all socio-economic sectors. Thus it is important to integrate climate change concerns into national sustainable development strategy and plan. Indeed, during the preparation of the MAP-21, discussion on the importance of this issue had been held several times.

148. During the INC project, there was no seminar or workshop specially organized for policy and decision makers to raise their awareness on the impacts of climate change on socio-economic development. However, just before the National Action Programme on Climate Change (NAPCC)

was considered by the Cabinet, a national workshop on the NAPCC was held in the Government House for members of the parliament and high-level officials of the Government.

The main objectives of the workshop were to provide the members of the Parliament and high level officials with the information on:

- Current Climate change and its future projections,
- Potential Impacts of climate change on major biophysical components and key economic sectors of the country and adaptation options,
- GHG mitigation issues,
- National climate change response policies.

Outreach materials on climate change were distributed at the workshop.

Gaps

149. The major gaps are:

(i) Lack of policy measures to integrate climate change concerns into national long-term socio-economic and environmental planning;

(ii) Lack of technical capacity to effectively integrate V&A assessment and mitigation options analysis into sustainable development programmes, and hence to develop national adaptation and mitigation programmes of action.

Proposed activities

150. National planners and policy makers play an important role to ensuring that climate change concerns will be taken into consideration in their planning and decision-making processes. Thus, they must be made aware of the results of the V&A assessment in key socio-economic sectors. To this end, training workshops will be organized for the national and local planners, as well as policy and decision makers from all relevant ministries and government agencies, especially those of the Ministry of Finance.

151. There is a need to review and analyse existing national programmes on sustainable development, and based on the review and analysis, a national climate change policy, as well as a national strategy to integrate climate change concerns into sustainable development programmes for various key socio-economic sectors, including strengthening the cooperation between the public and private sectors, will be developed.

152. The national climate change policy and strategy will be submitted to the Cabinet for review and consideration, with a view to developing relevant legislation for integrating climate change concerns into the national environmental legislation, as well as into the development planning process.

153. Further gaps, constraints and research needs, as well as related financial, technical, institutional and capacity building needs in integrating climate change concerns into sustainable development strategy will be identified and highlighted.

154. The above activities will be undertaken by the PMT, which will work closely with NAMHEM, MNE and NCC

155. A total of **US$5,000** is requested to undertake the proposed activities, including capacity-building and other relevant expenses over the 3-year project cycle (Tables 3). This amount is very modest in view of the e scope and extent of the proposed activities.

Major outputs and indicators

156. The major outputs and indicators of this Component will be:

(i) Capacity-building programmes that integrate climate change concerns into sustainable development plans and programmes for national planners, policy and decision makers at the national and local levels;
(ii) *Draft National Climate Change Policy* and a *National Strategy* to integrate climate change concerns into sustainable development programmes for various key socio-economic sectors;
(iii) Strengthened human, scientific, technical and institutional capacity;
(iv) The reports of the training workshops that include the papers presented;
(v) Possible publications in climate change policy journals;
(vi) Chapter on Integration of Climate Change Concerns into Sustainable Development Strategy to be included in the SNC.

Component 9: Information and Networking

Previous activities

157. Access to and the use of information technology, such as Internet, will be essential to ensure efficient exchange and sharing of information both within and outside the country. Information networking is an important activity in this proposed project.

158. During the INC project, a temporary Climate Change Office was established and members of thematic working groups had opportunities to exchange information and share their knowledge. In addition, within the Phase II project, a web site: *www.mongolclimate.mn* on climate change issues was established to facilitate information sharing and exchanging. However, this website is no longer operational because of the lack of financial support.

Gaps

159. The major gaps are:

(i) Computers and Internet access to all project team members can be improved;
(ii) Difficulty and time-consuming (because of slow connection) in accessing Internet
(iii) Inadequate` information networking.

Proposed activities

160. The following activities are proposed:

(i) Establishment of Internet facilities for all project team members so as to facilitate their information networking;
(ii) Re-establishment of the web site: *www.mongolclimate.mn*;
(iii) Participation in and contribution to subregional and regional information networks on climate change issues, especially those relating to national communication;
(iv) Compilation of a roster of national experts, who have participated in the past and current climate change and other environmental projects;
(v) Assessment of current capacity in information communication technologies (ICT);
(vi) Institutional strengthening, including human resources development, technical and technological capabilities, on the use of information communication technologies for sharing of climate change information;
(vii) Further gaps, constraints and research needs, as well as related financial, technical, institutional and capacity building needs in Information and Networking will be identified and highlighted.

161. The above activities will be coordinated by the Project Coordinator in consultation with the PMT members.

162. A total of **US$3,000** is requested to undertake the proposed activities, including capacity-building and other relevant expenses over the 3-year project cycle (Tables 3). This amount is very modest in view of the scope and extent of the proposed activities.

Major outputs and indicators

163. The major outputs and indicators of this Component will be:

(i) Information networks for the project team members;
(ii) Web site: *www.mongolclimate.mn*;
(iii) Strengthened human, scientific, technical and institutional capacity in information networking;
(iv) Chapter on Information and Networking to be included in the SNC

Component 10: Capacity-Building

Previous activities

164. The past climate change project activities[15] have provided the respective national project team members with various opportunities for capacity-building, including training. However, how to keep the trained national experts from leaving the government positions or even the country remains one of the major challenges in terms of the sustainability of capacity-building.

165. The process of the preparation of the INC has highlighted the limited human, scientific, technical, technological, and institutional and resources capabilities in Mongolia for fulfilling its commitments, including the reporting requirements. Based on the results of a survey, the INC project has identified the following capacity-building needs. These are:

- Improve understanding and knowledge of scientific and technical personnel, as well as policy makers, in the field of climate change.
- Strengthen institutional capacity to carry out research and training on climate change issues to satisfy reporting requirements
- Improve understanding and interpretation of local and regional climate changes and its impacts.
- Expand ability of technical personnel to convey clear and concise information on climate change issues to policy-makers.

Gaps

166. The major gaps are:

(i) Limited capacity at all levels (human, scientific, technical, technological, organizational, institutional and resources capabilities) relating to climate change issues;
(ii) Limited capacity in climate change negotiations in international fora;
(iii) Limited capacity in preparation of climate change projects for bilateral and multilateral funding;
(iv) Limited capacity in assessing the impacts of both technological and policy measures for mitigation and adaptation;
(v) Limited capacity in effective implementation of various multilateral environmental agreements, including the UNFCCC.

Proposed activities

167. Within the constraint of the limited financial resources, this Component aims to address the specific capacity-building needs to the extent possible, taking into consideration of decision 2/CP.7,

[15] Please see Footnote 5.

which provides that "*Capacity building is a continuous, progressive and iterative process, the implementation of which should be based on the priorities of developing countries.*" One important issue that needs to be addressed is the coordination and sustainability of capacity-building activities.

168. It is expected that a significant portion of the requested funding will be used for capacity-building activities in Components 2 to 9. An integrated approach will be used to harmonize the capacity-building activities between the components. In particular, the new and young expert team members will receive special attention on capacity-building. However, those study team members with more experienced will also be given opportunities to further strengthen of their capacity in their respective thematic areas. Capacity-building activities through South-South cooperation with other institutions in developing countries of the region and elsewhere will be promoted and developed.

169. As far as capacity-building is concerned, it would be appropriate to maximize the synergies for implementing the UNFCCC and other global environmental agreements, such as the Convention on Biological Diversity (CBD) and United Nations Convention to Combat Desertification (UNCCD).

170. In addition, a *Capacity-Building Strategy* that highlights the priorities and options, including the coordination and sustainability of capacity-building activities, as well as the South-South capacity-building programmes, will be developed.

171. This above activities will be coordinated by the Project Coordinator in consultation with NAMHEM and MNE. All information on capacity-building activities will be disseminated through the project web site.

172. A total of **US$3,000** is requested to undertake the proposed activities over the 3-year project cycle (Tables 3). This is very modest in view of the e scope and extent of the proposed activities.

Major outputs and indicators

173. The major outputs and indicators of this Component will be:

(i) Strengthened human, scientific, technical and institutional capacity at all levels on major aspects relating to climate change;

(ii) A *Capacity-Building Strategy*.

Component 11: Constraints and gaps, and related financial, technical and capacity needs

174. During the preparation of SNC, new constraints and gaps relating to financial, technical and capacity needs will be encountered and these will be reported under this Component. Indeed, at the end of the proposed activities in each Component described above, "further constraints, gaps and specific needs", will be identified and reported. This Component will provide a brief summary of these constraints, gaps and specific needs, and propose ways and means to address these issues. These include the opportunities, barriers for the implementation of adaptation and mitigation measures.

175. In addition, the information on the financial resources and technical support provided by various bilateral and multilateral sources, as well as further financial needs for future climate change activities, including proposed projects for financing or in preparation for arranging support; will also be reported.

176. The above activities will be coordinated by the Project Coordinator in consultation with NAMHEM and MNE.

177. A total of **US$1,000** is requested to undertake the proposed activities over the 3-year project cycle (Tables 3).

Major outputs and indicators

178. The major outputs and indicators of this Component will be:

(i) Further constraints and gaps, related financial, technical and capacity-building needs identified;

(ii) Chapter on *Constraints & Gaps, related financial, technical and capacity-building needs* to be included in the SNC

Component 12: Preparation and presentation of the Second National Communication (SNC)

179. Based on Components 1 to 10 as described above, the SNC will be compiled, edited and prepared. This task will be coordinated by the Project Coordinator. It will involve all members of the Thematic working groups, each of which will prepare the relevant sections/chapters of the SNC.

180. The proposed contents of the SNC are as follows:

Executive Summary (not more than 10 pages)
Chapter1: Introduction
Chapter 2: National Circumstances
Chapter 3: GHG Inventory
Chapter 4: Programmes containing measures to facilitate adequate adaptation to climate change (i.e., V&A Assessment on key socio-economic sectors)
Chapter 5: Programmes containing measures to mitigate climate change (i.e., mitigation options analysis on key socio-economic sectors)
Chapter 6: Development and Transfer of Environmentally Sound Technologies
Chapter 7: Research and Systematic Observation
Chapter 8: Education, Training and Public Awareness
Chapter 9: Integration of Climate Change Concerns into Sustainable Development Programmes
Chapter 10: Information and Networking
Chapter 11: Capacity-building
Chapter 12: Other Information Considered Relevant to the Achievement of the Objective of the Convention
Chapter 13: Constraints and Gaps, and Related Financial, Technical and Capacity Needs
Chapter 14: Conclusions and Recommendations
Annex: List of projects for bilateral and multilateral funding

181. The draft SNC will be first reviewed by all members of TWGs. Based on this review, a revised version will be produced. A workshop, with the participation of all members of TWGs, PMT and NCC, policy and decision makers, private sector, communities, and NGOs, will then be organized to review this revised draft SNC before it is finalized, printed and submitted to the UNFCCC Secretariat. The SNC will be translated into Mongolian for wider dissemination.

182. A total of **US$15,000** is requested to undertake the proposed activities, including translation to Vietnamese language and printing cost.

Major output

183. The major output of this Component will be a comprehensive SNC based on the COP 8 Guidelines, which will be submitted to the UNFCCC Secretariat by June 2009.

Technical Support

184. UNEP, as the GEF Implementing Agency for the project, will be consulted on all aspects during the execution of the project. It will be fully informed of all activities and invited to actively participate in all technical and policy workshops related to the project, so that it can provide useful inputs and contributions to ensure the successful implementation of the project.

185. In addition, technical assistance will also be sought from UNESCAP, which has assisted NAMHEM in drafting the present project document in April 2006.

186. Technical support will also be sought from the National Communication Support Programme (NCSP) based in UNDP/GEF New York, where appropriate.

187. Technical support from other national, regional or international organizations and consultants will also be sought where and when necessary and appropriate.

Proposed work schedule

188. It is expected that the proposed 3-year project will commence in July 2006 and end in June 2009. The preliminary plan for allocation of funding for each proposed activity for a 3-year project cycle is shown in Table 3, while the estimated timeline for executing each of the proposed activities within the 3-year project cycle is shown in Table 4. **However, this plan and time schedule are only indicative at this stage, and adjustments will likely be needed after the Project Inception Workshop and during the implementation of the project as new circumstances arise. UNEP will be fully consulted and informed of any future revision of the work plan.** The matrix of proposed activities, outputs/outcomes and indicators is shown in Table 5.

189. The proposal has also been critically reviewed by UNESCAP and UNEP. It has been ensured that there will be no duplication of effort for this project with the past and existing activities.

Appropriate sequencing

190. The proposed activities will be undertaken in appropriate sequence so as to maximize the synergies between each component of the proposed activities, as well as the efficiency and cost-effectiveness for the implementation throughout the project cycle. Some proposed activities that are not directly related to each other, such as GHG inventory and vulnerability assessment will be undertaken in parallel, as indicated in Table 4.

Good practices in project implementation

191. Good practices in project implementation, such as the efficient use of financial and human resources, the engagement of qualified local and regional consultants, public participation throughout the project cycle, will be adopted where appropriate. Established guidelines will be followed, while established tools and methodologies will be used.

Project financing, budget and justifications

192. As the proposed activities are standard enabling activities required for the preparation of national communication, so the incremental cost for undertaking these activities are also full cost, and hence no incremental cost analysis is required.

193. As a *land-locked and transit* country (Article 4.8 (i)) "*with arid and semi-arid areas, forested areas and areas liable to forest decay*; (Article 4.8 (c)), "*with areas prone to natural disasters*" (Article 4.8 (d)), "*with areas liable to drought and desertification*" (Article 4.8 (e), "*with areas of high urban atmospheric pollution*" (Article 4.8 (f)); "*with areas with fragile ecosystems, including mountainous*

ecosystems" (Article 4.8 (g)); *"whose economies are highly dependent on income generated from the production, processing and export, and/or on consumption of fossil fuels and associated energy-intensive products"* (Article 4.8 (h)), Mongolia deserves special consideration under Article 4, paragraph 8 of the Convention, including necessary actions related to funding, insurance and the transfer of technology, to meet its specific needs and concerns arising from the adverse effects of climate change and/or the impact of the implementation of response measures.

194. Thus, the total requested funding of **US$405,000** as indicated in Tables 2 and 3 reflects the current real needs and concerns of the country in order to fulfilling its commitments for the preparation of its SNC. Due to limited capacity, a significant portion of the funding would be used for human and institutional capacity-building, with a view to building up a solid technical team that would be responsible for preparing future national communications in a sustainable manner.

195. The proposed budget for each proposed component of activities has been realistically estimated by NAMHEM in consultation with relevant ministries and other stakeholders, and thoroughly reviewed by UNESCAP and UNEP before it is fully endorsed by the national GEF Operational Focal Point and the UNFCCC Focal Point.

196. The in-kind contribution of the Government of Mongolia, which is estimated to be **US$45,000** over the three-year project cycle, will include some logistical support, basic communication and office facilities, library and information facilities, among others. UNESCAP is expected to contribute **US$20,000** in-kind through its technical advisory services during the project cycle.

Rationale for GEF support

197. This is a standard enabling activities proposal that will facilitate the preparation of the SNC of Mongolia based on the COP 8 Guidelines as provided by decision 17/CP.8, and hence it will assist Mongolia to fulfil its reporting requirements under the UNFCCC. As GEF is the international entity entrusted to operate the financial mechanism for the UNFCCC, the proposed activities are eligible for GEF funding.

Sustainability and public participation

198. The Government of Mongolia is fully committed to the implementation of the UNFCCC, and hence the goals and objectives of this project. The strengthening of scientific, technical and institutional capacity of Mongolia in various aspects of the proposed activities, as well as the leading role taken by the NAMHEM to execute the project would enable the country to fulfil its obligations and commitments to the UNFCCC on a sustainable basis. Indeed, the whole project management structure is designed in such a way that full participation by local experts in all aspects of activities are ensured, so that further activities in the future are sustainable.

199. Public participation in certain aspects of the project activities will be encouraged where appropriate and possible. For example, the promotion and development of endogenous technologies in Component 5 would require the participation of local communities and the private sector. The outreach activities to be undertaken in Component 7 would also need the extensive support of the local communities and NGOs in order for the activities to be effective and successful. Local communities, NGOs and the media will be invited to participate in all workshops as appropriate.

200. On the completion of this project, it is expected that further institutional and technical capacity of the country would have been considerably strengthened to enable Mongolia to better respond to the challenges and opportunities presented by climate change, as well as to better fulfil its commitments under the UNFCCC.

Issues and risks

Issues

201. In order to successfully implement the project, close coordination and consultation between the PMT, TWGs, NCC, MNE, NAMHEM and relevant stakeholders, including policy and decision makers, are essential.

Risks

202. The potential risks which may mask the objectives and goals of the project are:

i. Longer time period than expected to establish the technical working groups, as highly-skilled professionals who are knowledgeable may not be easy to find due to the unattractiveness to the remuneration that may be offered;

ii. Longer time than expected for the collection and analysis of the data and the preparation of the SNC;

iii. Inadequate or lack of consultations between PMT, TWGs, NCC, MNE, NAMHEM and other relevant stakeholders;

iv. Inadequate or lack of a number of approved sectoral development programmes and uncertainties related to national development trends.

v. Lack of standardized methodology for economic assessment of projects;

vi. Inadequate or lack of involvement of high-level policy and decision makers in the formulation of various strategies;

vii. Inadequate or lack of reliable data for V&A assessment and mitigation options analysis in certain socio-economic sectors,

viii. Lack of young specialists who can participate in the various modelling exercises, such as the LEAP, WEAP and the Integrated Assessment Modelling (IAM), and longer time taken to build capacity in such modelling activities.

203. Necessary action will be undertaken by NAMHEM to avoid all the risks mentioned above.

Monitoring and evaluation

204. The project will be monitored and evaluated according to UNEP/GEF rules and procedures throughout the project cycle. The NAMHEM will prepare annual work plans, Quarterly Operational Reports (QORs) and Annual Progress Reports (APRs) on the technical and substantive progress of the project. The National Project Coordinator will provide regular progress reports to the Project Manager, UNEP, and to all members of the Steering Committee.

205. These reports will enable NAMHEM/MNE and UNEP to evaluate the progress of the project on a regular basis and identify difficulties and shortcomings at an early stage. They will be reviewed by UNEP for their quality and standard, comprehensiveness, and conformity to the proposed terms of reference and dates of completion. If possible, these reports may be compiled into electronic newsletters and distributed to all participating institutions. A mid-term review between UNEP and NAMHEM may be conducted. An independent evaluation by a qualified consultant will be conducted at the end of the project.

206. Local consultants and experts will submit monthly progress reports to the NPC and the Steering Committee. The NAMHEM and MNE will ensure that all consultants/experts involved in project

activities submit progress reports on a timely basis. These include surveys, trainings, workshops, meetings and field activities.

207. The Project Steering Committee will meet every three months to review project implementation and provide scientific, technical, policy, and strategic guidance. The minutes of these meetings will be shared with all participating institutions.

208. The NAMHEM/MNE and Project Steering Committee will monitor the activities of the project by assessing progress at all stages, analyzing situations to determine the causes for any major deviations from the plan and deciding necessary actions to remedy the situations as appropriate.

209. The GEF procedures require the Project Implementation Revision (PIR) to be carried out annually. The Project Coordinator will prepare the preliminary project report for revision and, where necessary, specific recommendations will be made for any revisions that may be required during the course of the implementation of the project.

210. The Project Coordinator will monitor the work of the PMT and TWGs based on the project's Annual Work Plan and its indicators, and informed the UNEP of any delays or difficulties faced during implementation so that appropriate support or corrective measures can be under taken in a timely manner.

Project review meetings

211. A detailed schedule of project review meetings will be developed by the PMT, in consultation with project implementation partners and stakeholders representatives and incorporated in the Project Inception Report. Such a schedule will include: (i) tentative time frames for NCC meetings, including relevant advisory and/or coordination mechanisms; and (ii) project related Monitoring and Evaluation activities.

212. A total of **US$10,000** is allocated for monitoring and evaluation, including the mid-term review and the final evaluation at the end-of the project.

Day-to-Day Monitoring of Implementation Progress

213. This will be the responsibility of the National Coordinator based on the project's Annual Work Plan and its indicators. The NAMHEM/MNE will inform the UNEP of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

Project Reporting

214. The project's National Coordinator in conjunction with the UNEP-GEF team will be responsible for the preparation and submission of the following reports that form part of the monitoring process.

(a) Inception Report (IR)

215. A Project Inception Report will be prepared immediately following the Inception Workshop. It will include a detailed First Year Work Plan divided in quarterly timeframes detailing the activities and progress indicators that will guide implementation during the first year of the project. The Report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 months time-frame.

216. The Inception Report will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may effect project implementation.

217. When finalized the report will be circulated to project counterparts who will be given a period of one calendar month in which to respond with comments or queries. Prior to this circulation of the IR, the UNEP will review the document.

(b) Quarterly Progress Reports

218. Short reports outlining main updates in project progress will be provided quarterly to the UNEP by the project management team.

(c) Technical Reports

219. Technical Reports are detailed documents covering specific areas of analysis or scientific specializations within the overall project. As part of the Inception Report, the project management team will prepare a draft Reports List, detailing the technical reports that are expected to be prepared on key areas of activity during the course of the Project, and tentative due dates. Where necessary this Reports List will be revised and updated, and included in subsequent Annual Project Reports (APR). Technical Reports may also be prepared by external consultants and should be comprehensive, specialized analyses of clearly defined areas of research within the framework of the project. These technical reports will represent, as appropriate, the project's substantive contribution to specific areas, and will be used in efforts to disseminate relevant information and best practices at the local, national, and international levels.

Audit arrangement

220. An annual audit of the project resources will be carried out by an accredited auditor who shall, in addition to the national government requirements, pay particular attention to the UNEP financial regulations, policies and procedures that apply to projects; the project document and work plans, including activities, management arrangements, expected results, monitoring, evaluation and reporting provisions; and the key considerations for management (indicators and outputs), administration and finance. The audit shall not cover expenses incurred by the UNEP.

221. During the implementation of the project, regular financial statements will be prepared by NAMHEM/MNE and provided to UNEP for accessing funds for project activities.

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Executive Summary of the AIACC project for *Potential Impacts of Climate Change and V&A Assessment for Grassland Ecosystem and Livestock Sector in Mongolia* (2002-2004), 2006

Figure 2. Institutional framework for project management.

Figure 1. Institutional framework for project management.

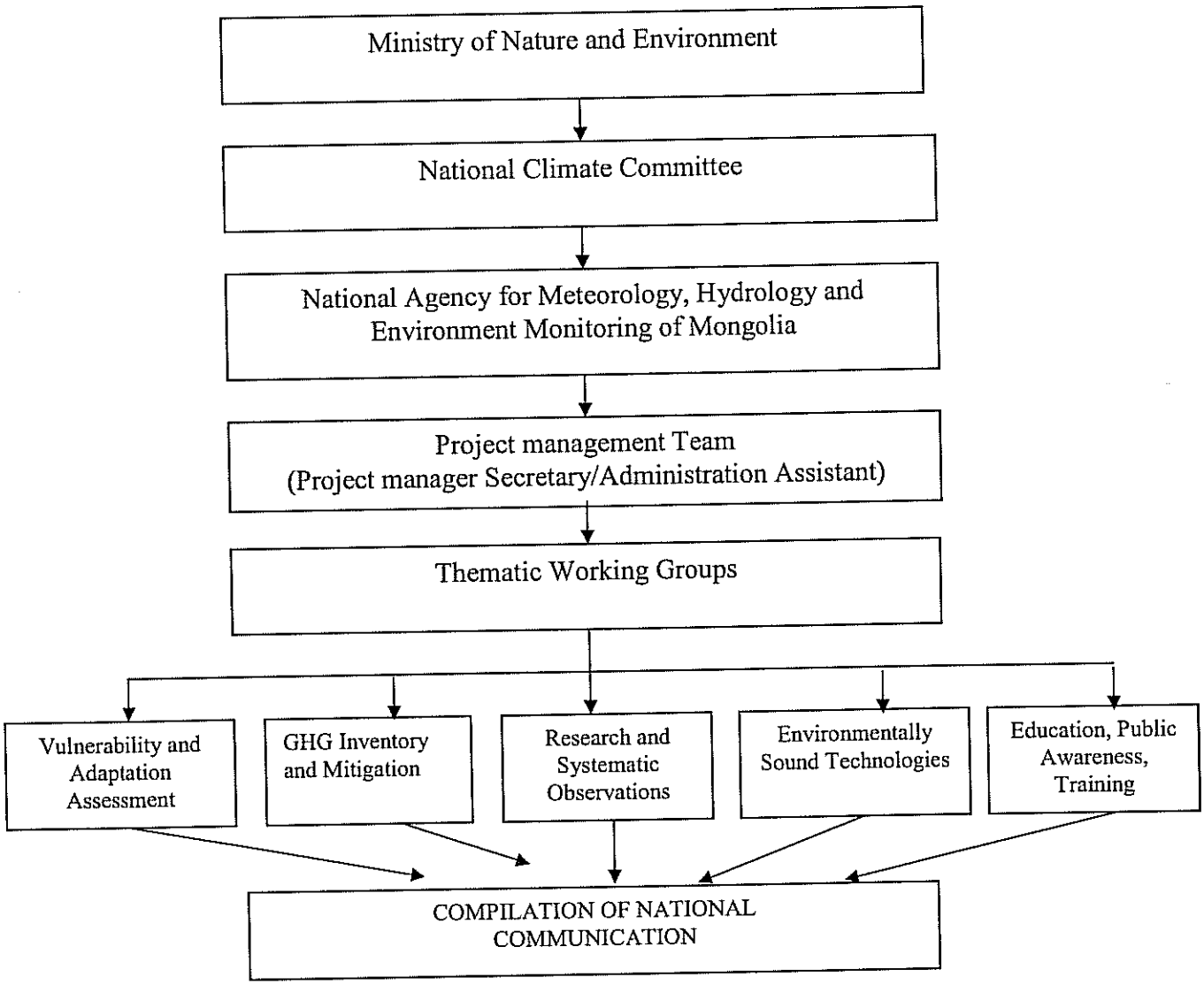

Table 1. Matrix to assist in assessing past activities financed under GEF enabling activities and other efforts.

The boxes marked with a "x"simply means that some activities had been undertaken under the INC and other projects. However, new and additional activities that can be fully justified will be undertaken during the process of the preparation of Initial National communication, and it will be ensured that there will be no duplication of activities.

Activity in Second National Communications	NAPAs	NCSAs	Phase II	INC	Other
II. NATIONAL CIRCUMSTANCES					
Description of development priorities, objectives and circumstances, etc.				X	
Description of existing institutional arrangements for preparing communications continuously				X	
III. NATIONAL GREENHOUSE GAS INVENTORIES					
Estimation of national GHG Inventories for 1990-1998, depending on circumstances				X	X[1]
Formulation of cost-effective programs to develop country-specific emission factors and activity data					X[1]
Description of arrangements to collect and archive data to make inventory preparation a continuous process				X	
Information on the level of uncertainty associated with the inventory data					
IV. GENERAL DESCRIPTION OF STEPS					
Description of steps taken towards formulating programs containing measures to facilitate adequate adaptation				X	
Information on vulnerability to the adverse effects of climate change and on adaptation measures being taken				X	
Information on evaluation of strategies and measures for adapting to climate change				X	X[2]
Policy frameworks, national adaptation programmes, plans and policies for developing and implementing adaptation strategies					
Description of steps taken for formulating programs containing measures to mitigate climate change					X[2]
V. OTHER RELEVANT INFORMATION					
Information on integrating climate change considerations into social, economic and environmental policies and actions					
Information on transfer of, and access to ESTs and know-how, development of endogenous capacities; measures to enhance enabling environment for transfer of technologies			X		
Information on Climate change research and systematic observation				X	X[1]
Information on CC education, training and public awareness			X		
Capacity Building Activities, Options and Priorities				X	
Information on efforts to promote information sharing and networking					
VI. CONSTRAINTS AND GAPS; RELATED FINANCIAL, TECHNICAL, AND CAPACITY NEEDS					
Constraints and Gaps and related financial, technical and capacity needs, and activities for overcoming gaps and constraints for national communications, and climate change measures and programs				X	

Financial resources and technical support for preparing national communications provided by themselves, GEF, Annex II Parties, bilateral or multilateral institutions			X	X	
Financial resources and technical support provided by various sources					
List of projects proposed for financing or in preparation for arranging technical/financial support				X	
Opportunities, barriers for implementation of adaptation measures, including pilot and/or demonstration projects				X	
Country-specific technology needs and assistance received from developed country Parties and the GEF, and how assistance was utilized					

Note for the column "Other"

1- Project for "Potential Impacts of Climate Change and V&A Assessment for Grassland Ecosystem and Livestock Sector in Mongolia" under the GEF/UNEP/START and TWAS Climate Change Enabling Activity "Assessments of Impacts & Adaptation to Climate in Multiple Regions & Sectors (AIACC)".

2- A project for Climate change studies in Mongolia under the support of the Government of the Netherlands

Table 2. Proposed budget for the proposed activities in Mongolia.

Activities in Second National Communication	Total (US$)
I. PROJECT SNCEPTION WORKSHOP	**4,000**
II. MID-TERM REVIEW WORKSHOP	**4,000**
III. END OF PROJECT WORKSHOP	**4.000**
IV. ESTABLISHMENT OF INSTITUTIONAL FRAMEWORK – MEETINGS OF THE PMT, NST AND NCCC	**6,000**
V. NATIONAL CIRCUMSTANCES	**1,000**
Development Priorities, objectives and circumstances, etc and existing arrangements for preparing communications continuously	
VI. NATIONAL GREENHOUSE GAS INVENTORIES	**55,000**
National GHG Inventories for 1999-2002	20,000
Cost-effective programs to develop country specific emission factors	15,000
Arrangements to collect and archive data for the preparation of national inventories on a continuous basis	15,000
Level of uncertainty associated with the inventory data	5,000
VII MEASURES TO FACILITATE ADEQUATE ADAPTATION (GENERAL DESCRIPTION OF STEPS) Vulnerability assessment and Adaptation to the adverse effects of climate change (sub activities 1-10)	**115,000**
VIII MEASURES TO MITIGATE CLIMATE CHANGE (GENERAL DESCRIPTION OF STEPS) Steps for formulating programs to mitigate climate change (including least-cost mitigation options analysis) (sub activities 1-8)	**50,000**
IX TRANSFER OF, AND ACCESS TO EST'S, DEVELOPMENT OF ENDOGENOUS CAPACITIES; ENABLING ENVIRONMENTS (OTHER RELEVANT INFORMATION)	**6,000**
X. CLIMATE CHANGE RESEARCH AND SYSTEMATIC OBSERVATIONS (OTHER RELEVANT INFORMATION)	**12,000**
XI. CLIMATE CHANGE EDUCATION, TRAINING AND PUBLIC AWARENESS (OTHER RELEVANT INFORMATION)	**16,000**
XII. INTEGRATING CLIMATE CHANGE CONSIDERATIONS INTO SOCIAL, ECONOMIC ENVIRONMENTAL POLICIES AND ACTIONS OTHER RELEVANT INFORMATION	**5,000**
XIII. CAPACITY BUILDING ACTIVITIES, OPTIONS AND PRIORITIES (OTHER RELEVANT INFORMATION)	**3,000**
XIV. EFFORTS TO PROMOTE INFORMATION SHARING AND NETWORKING (OTHER RELEVANT INFORMATION)	**3,000**
XV. CONSTRAINTS & GAPS, RELATED FINANCIAL, TECHNICAL & CAPACITY BUILDING NEEDS	**1,000**
XVI. PREPARATION AND PRESENTATION OF THE SNC	**15,000**
XVII. TECHNICAL ASSISTANCE	**15,000**
XVIII. PROJECT MANAGEMENT (BASED ON 3 YEARS DURATION)	**75,000**
XIX. MONITORING AND REPORTING	**15,000**
TOTAL	**405,000**

Table 3. Indicative budget for proposed activities over three years for the preparation of Second National Communication of Mongolia

Proposed activities under the Second National Communication	2006 US$	2007 US$	2008 US$	2009 US$	TOTAL US$
I. Project Inception Workshop (3 days)	**4,000**	-	-		**4,000**
II. Project Mid-Term Review Workshop (all working groups) (3 days)	-	**4,000**	-		**4,000**
III. End of Project Review Workshop (all working groups) (3 days)	-	-	-	**4,000**	**4,000**
VI: Establishment of Institutional Framework	**2,000**	**2,000**	**2,000**		**6,000**
Activity : Establishment of PMT and NST					
Activity 2: NCC quarterly meetings and TWGs leaders meetings	2,000	2,000	2,000		6,000
V. NATIONAL CIRCUMSTANCES	-	-	**1,000**		**1,000**
Activity 1.: Review of national circumstances based on most updated data and draft relevant chapter			500		500
Activity 2: Validate information gaps identified under stocktaking exercise in respect of national circumstances. Identify relevant sources of information, establish links to obtain relevant the data as appropriate, update with new and additional information.			200		(200)
Activity 3. Preparation of the 'Chapter 2: National Circumstances' under the SNC.			300		300
VI: National GHG Inventory	**17,400**	**25,400**	**12,200**		**55,000**
Activity 1: Establishment of TWG on GHG Inventory and Mitigation, including regular team meetings (e.g., review of past and existing data)	4000	400	200		1000
Activity 2: Collection of activity data for GHG inventory (sources for CO_2, N_2O, CH_4, HFCs, PFCs and SF_6, as well as for CO, NO_x, NMVOC, SO_2) for the year 1999-2002; and further identification of shortcomings and gaps of the IPCC Guidelines in relation to the local conditions; a description of any original research needed to develop and/or apply new emission factors for specific activities; recommendations on areas of targeted research to improve future inventories and to suggest revisions to the existing IPCC GHG inventory methodology and to prepare a GHG inventory report (including country's circumstances and the technical annexes that detail the inventory procedures and estimations); *(Note: fees for national experts are included)*	4000	8000	8000		20000
Activity 3: *Development of new emission factors for specific activities:* It will be improved CH_4 emission factors from enteric fermentation for cattle category using the Tier 2 approach (regional or sub-regional software and emission factors will be used) and development of new methane emission factor from waste sector (will be carry out cooperative research activities with institutions of the country and regional experts)	4000	11000			15000
Activity 4: A user-friendly GHG inventory database will be established during the inventory compilation. Including, sources and sinks for carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), oxides of nitrogen (NO_x), carbon monoxide (CO), non-methane volatile organic compounds (NMVOCs) and sulphur dioxide (SO_2). Database of sources and sinks of hydrofluorocarbon (HFCs), perfluorocarbon (PFCs) sulphur hexafluoride (SF_6) will be established, where appropriate.	2000	500	500		3000
Activity 5. Training workshop on IPCC Technical guidelines and IPCC Good Practice Guidance applications and others (Guidelines for preparation of emissions inventories for use in Modeling transboundary Air Pollution) including uncertainties assessment and QA/QC procedures for each sector.	2000	2000	-		4000
Activity 6: Strengthening of human, scientific, technical and institutional capacity, including computers, software, internet service and regional/subregional workshops and expert training	3000	2000	2000		7000
Activity 7. Estimation of CO, NOx, NMVOC and PM (2.5 and 10) emissions from forest and grassland fires of Mongolia using Guidelines for preparation of emissions inventories for use in Modeling		1000			1000

Proposed activities under the Second National Communication	2006 US$	2007 US$	2008 US$	2009 US$	TOTAL US$
transboundary Air Pollution developed from Stockholm Environment Institute in 2000.					
Activity 8: Preparation of the Chapter on GHG Inventory to be included in SNC and send it for international review.			1000		1000
Activity 9: Acquisition of computer, printer and consumables	2000	500	500		3000
VII: Programmes Containing Measures to Facilitate an Adequate Adaptation to Climate Change (General description of steps)	**32,300**	**41,600**	**27,600**	**13,500**	**115,000**
Activity 1: Establishment of TWG on V&A, including regular team meetings (e.g., review of past and existing data)	300	600	600	500	3000
Activity 2: Collection and analysis of baseline data for key socio-economic sectors such as water resources (including surface and underground water); arable farming and food security and livelihood; ecosystems (biodiversity, ice cover of glaciers, soil degradation, soil moisture, etc.); and human and public health, culture/tradition among others required for assessing the vulnerability of Mongolia to climate change and its adaptation options	2000	2000	2000		6000
Activity 3: A comprehensive integrated and quantitative V&A assessment for key socio-economic sectors, such as water resources (including surface and underground water); arable farming and food security; ecosystems (biodiversity, ice cover of glaciers, soil degradation, soil moisture, etc.); and human and public health, culture/tradition among others based on established methodologies, including integrated assessment modelling, possible least-cost adaptation options and adaptation technologies *(Note: fees for national experts are included).*	10000	18000	10000	9000	47000
Activity 4: Integrated vulnerability indices and maps for above mentioned key socio-economic sectors where appropriate.		2000	1000	2000	5000)
Activity 5: Policy options for adequate adaptation and response strategies for climate change impacts on key socio-economic sectors, including a draft *National Climate Change Adaptation Plan*		3000	3000	2000	8000
Activity 6. Training on GCMs, including MAGICC-SCENGEN and "downscaling" methodologies	5,000	5,000	2,000		12,000
Activity 7: Training on new versions of WEAP, Century, SPUR, DSSAT models, Integrated Assessment (IA) and IA Modelling and gathering these models	5,000	5,000	5,000		15,000
Activity 8: Strengthening of human, scientific, technical and institutional capacity, including, internet access and regional/subregional workshops and training	6,000	5,000	2,000		13,000
Activity 9: Preparation of the chapter on *Programmes Containing Measures to Facilitate an Adequate Adaptation to Climate Change* to be included in the SNC			1,000		1,000
Activity 10: Acquisition of computer, printer and consumables (x 2)	4,000	1,000	1,000		6,000
VIII: Programmes Containing Measures to Mitigate Climate Change (General description of steps)	**11,500**	**18,500**	**10,000**	**10,000**	**50,000**
Activity 1: Establishment of TWG on GHG inventory and Mitigation *(jointly with the above activity 2)* , including regular team meetings (e.g., review of past and existing data)	500	300	200		1,000
Activity 2: Important baseline data for key socio-economic sectors required for assessing GHG mitigation options	1,000	700	300		2,000
Activity 3: A comprehensive quantitative mitigation options assessment for key socio-economic sectors based on established methodologies, including possible cost-effective mitigation options and environmentally friendly mitigation technologies *(Note: fees for national experts are included)*		8,000	5,000	9,000	22,000
Activity 4: A draft *National Plan on GHG Emission Reduction*, including appropriate legal and economic instruments, and public-private partnership for mitigation measures		2,000	1,000	1,000	4,000
Activity 5: Training on LEAP and MARKAL and other models	2000	2000			4,000

Proposed activities under the Second National Communication	2006 US$	2007 US$	2008 US$	2009 US$	TOTAL US$
Activity 6: Strengthening of human, scientific, technical and institutional capacity, including, internet and regional/subregional workshops and training	6,000)	5,000	2,000		13,000
Activity 7: Preparation of the chapter on *Programmes Containing Measures to Mitigate Climate Change* to be included in the SNC			1,000		1,000
Activity 8: Acquisition of computer, printer and consumables	2,000	500	500		3,000
IX: Development and Transfer of Environmentally Sound Technologies (Other relevant informat6ion) *(Note: This task may be subcontracted to a university or academy research group)*	**700**	**2,700**	**2,200**	**400**	**6,000**
Activity 1: Establishment of TWG on Transfer of Environmentally Sound Technologies including regular team	200	100	200		500
Activity 2. A comprehensive adaptation and mitigation technology needs assessment, including endogenous technologies in related sectors such as industry, transport, agriculture and waste management sectors and fields of adaptation.		2,000	1,000		3,000
Activity 3: A database for ESTs based on UNEP IETC's ESTIS, including training on the use of ESTIS. The database will also include a list of emission reduction projects based on ESTs for bilateral and multilateral funding, including those for CDM under the Kyoto Protocol		300	300	400	1,000
Activity 4: Establishment of technology information networks and information clearing house	500	300	200		1,000
Activity 5: Preparation of the chapter on *Development and Transfer of Environmentally Sound Technologies* to be included in the SNC			500		500
X: Research and Systematic Observation (Other relevant informat6ion) (Note: This task may be led by National Agency for Meteorology, Hydrology and Environment Monitoring)	**6,300**	**2,200**	**3,500**	**0**	**12,000**
Activity 1: Review of all climatic data available in Mongolia, including rainfall and temperature data, magnitude and frequency of extreme climatic events in relation to climate change; trends analysis	300	200			500
Activity 2: Targeted research on climate variability, climate change, extreme weather events, drought and dzud.	500	500	500		1,500
Activity 3: Development of Climate change scenarios for Mongolia and its surrounding region using outputs of global/regional GCMs and "downscaling" methodologies.	500	300	200		1,000
Activity 4:. Training on GCMs, including MAGICC-SCENGEN and "downscaling" methodologies	2,000				2,000
Activity 5: Climatic information networking with relevant regional and international organizations	1,000	500	500		2,000
Activity 6: Preparation of a draft *National Strategy for Research and Systematic Observation*, with special focus on extreme weather events, dust and sand storms, drought and dzud. Further gaps and constraints, as well as related financial, technical, institutional and capacity-building needs will be identified and highlighted in this Strategy.			1,000		1,000
Activity 7: Strengthening of human, scientific, technical and institutional capacity, including, internet and subregional/regional/global workshops and training on research networks and observing systems	500	500	500		1,500
Activity 8: Preparation of the chapter on *Research and Systematic Observation* to be included in the SNC			500		500
Activity 9: Acquisition of computer, printer and consumables	1,500	200	300		2,000
XI: Education, Training and Public Awareness (Other relevant informat6ion) (This task may be undertaken with NGOs)	**4,000**	**6,800**	**4,800**	**400**	**16,000**
Activity 1: Development of eeducation, training and public awareness programmes at national, provincial and local levels, including strengthening of curriculum on climate change at formal (primary, secondary and university levels) and non-formal education systems	1,000	500	500		2,000
Activity 2: Development of outreach materials in both English and Mongolia	1,000	4,000	2,000		7,000

Proposed activities under the Second National Communication	2006 US$	2007 US$	2008 US$	2009 US$	TOTAL US$
Activity 3: Public awareness survey	500	500			1,000
Activity 4: Continuous public awareness campaigns in all provinces, including establishment of billboards to publicize climate change issues	1,000	800	800	400	3,000
Activity 5: Strengthening of knowledge of high level officials in MNE and other ministries, NCC and National Agency for Meteorology, Hydrology and Environment Monitoring	500	1,000	500		2,000
Activity 6: Preparation of the chapter on *Education, Training and Public Awareness* to be included in the SNC			1,000		1,000
XII: Integration of Climate Change Concerns into Sustainable Development Plans and Programmes(Other relevant informat6ion)	**500**	**1,000**	**2,500**	**1,000**	**5,000**
Activity 1: Capacity-building programmes that integrate climate change concerns into sustainable development plans and programmes for national planners, policy and decision makers at the national and local levels, including the UNFCCC and Kyoto Protocol negotiation processes	500	500	500	500	2000)
Activity 2: *Draft Recommendation on integration of Climate Change concerns* into sustainable development programmes for various key socio-economic sectors		500	1,000	500	2,000
Activity 3: Preparation of the chapter on *Integration of Climate Change Concerns into Sustainable Development Plans and Programmes* to be included in the SNC			1,000		1,000
XIII: Information and Networking(Other relevant informat6ion)	**1,500**	**500**	**1,000**	**0**	**3,000**
Activity 1: Assessment and enhancement of information communication technologies	500				(500)
Activity 2: Establishment of information networks, including internet access for project team members	1,000	500	500		2,000
Activity 3: Preparation of the chapter on *Information and Networking*			500		500
XIV: Capacity-building (Other relevant informat6ion)	**500**	**1,300**	**1,200**		**3,000**
Activity .1: Capacity-building needs assessment	500				500
Activity .2: Preparation of a Capacity-Building Strategy, including options and priorities		300	200		500
Activity 3: Enhancement of international negotiation skills		1,000	500		1,500
Activity 4: Preparation of the chapter on *Capacity-Building* to be included in the SNC			500		500
XV: Constraints & Gaps, related financial, technical and capacity-building needs	-	-	**1,000**		**1,000**
Activity 1: Constraints, gaps and needs, and activities for overcoming gaps, etc.			200		200
Activity 2: Financial resources and Technical support provided by various sources			100		100
Activity 3: Proposed projects for financing or in preparation for arranging support			200		200
Activity 4: Opportunities, barriers for implementation of adapting and mitigating measures			100		100
Activity 5: Country specific technology needs and assistance received			200		200
Activity 6: Preparation of the chapter on *Constraints & Gaps, related financial, technical and capacity-building needs* to be included in the SNC			200		200
XVI: Preparation and presentation of the SNC	-	-		**15,000**	**15,000**
Activity 1: Compilation and preparation of SNC, including a National consultant for compilation and preparation of SNC for 6 months				7,000	7,000
Activity 2: Translation of SNC into Mongolian language and printing				5,000	5,000
Activity 3: Submission of SNC at a COP/UNFCCC				3,000	3,000
XVII. TECHNICAL ASSISTANCE	**5,000**	**5,000**	**5,000**		**15,000**
XVIII. PROJECT MANAGEMENT	**14,500**	**23,000**	**23,000**	**14,500**	**75,000**

Proposed activities under the Second National Communication	2006 US$	2007 US$	2008 US$	2009 US$	TOTAL US$
Activity 1 Project Coordinator	4,500	10,800	10,800	6,300	32,400
Activity 2 Project Secretary/Administrative Assistant	2,250	5,400	5,4000	3,150	16,200
Activity 3. Independent Audit					1,500
Activity 4 Part-time Accountant	250	500	500	250	1500
Activity 5 Staff Travel	2,500	2,500	2,500	1,900	9,400
Activity 6 Equipment (2 PCs + laser printer) including consumables	4,000	800	800	400	6,000
Activity 7 Operational expenses (e.g., transportation, communication, etc)	1,000	3,000	3,000	1,000	8,000
XIX. MONITORING AND EVALUATION	-	-		**15,000**	**15,000**
TOTAL	**100,200**	**134,000**	**97,000**	**73,800**	**405,000**

Table 4. Estimated timeline for the implementation of project activities (activity numbers are based on those in Table 4; Q1 is first quarter and Q2 is second quarter, etc.)

Proposed activities under the Second National Communication	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
I. Project Inception Workshop (3 days)	X											
II. Project Mid-Term Review Workshop (all working groups) (3 days)							X					
III. End of Project Review Workshop (all working groups) (3 days)												X
IV. NATIONAL CIRCUMSTANCES												
Activity 1.: Review of national circumstances based on most updated data and draft relevant chapter											X	
Activity 2.: Validate information gaps identified under stocktaking exercise in respect of national circumstances. Identify relevant sources of information, establish links to obtain relevant the data as appropriate, update with new and additional information.												
Activity 3. Preparation of the 'Chapter 2: National Circumstances' under the SNC.												
V. PROPOSED ACTIVITIES												
Activity 1: Establishment of Institutional Framework												
Activity 1.1: Establishment of PMT and NST	X	X	X	X	X	X	X	X	X	X	X	X
Activity 1.1: NCC quarterly meetings and TWGs leaders meetings	X	X	X	X	X	X	X	X	X	X	X	X
Activity 2: National GHG Inventory												
Activity 2.1: Establishment of TWG on GHG Inventory and Mitigation, including regular team meetings (e.g., review of past and existing data)	X	X	X	X	X	X	X	X	X	X	X	X
Activity 2.2: Collection of activity data for GHG inventory (sources for CO_2, N_2O, CH_4, HFCs, PFCs and SF_6, as well as for CO, NO_x, NMVOC, SO_2) for the year 1999-2002; and further identification of shortcomings and gaps of the IPCC Guidelines in relation to the local conditions; a description of any original research needed to develop and/or apply new emission factors for specific activities; recommendations on areas of targeted research to improve future inventories and to suggest revisions to the existing IPCC GHG inventory methodology and to prepare a GHG inventory report (including country's circumstances and the technical annexes that detail the inventory procedures and estimations); *(Note: fees for national experts are included)*	X	X	X	X	X	X	X					
Activity 2.3: *Development of new emission factors for specific activities:* It will be improved CH_4 emission factors from enteric fermentation for cattle category using the Tier 2 approach (regional or sub-regional software and emission factors will be used) and development of new methane emission factor from waste sector (will be carry out cooperative research activities with institutions of the country and regional experts)	X	X	X	X	X	X	X	X	X			
Activity 2.4: A user-friendly GHG inventory database will be established during the inventory compilation. Including, sources and sinks for carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), oxides of nitrogen (NO_x), carbon monoxide (CO), non-methane volatile organic compounds (NMVOCs) and sulphur dioxide (SO_2). Database of sources and sinks of hydrofluorocarbon (HFCs), perfluorocarbon (PFCs) sulphur hexafluoride (SF_6) will be established, where appropriate.								X	X	X	X	X

Activity 2.5. Training workshop on IPCC Technical guidelines and IPCC Good Practice Guidance applications and others (Guidelines for preparation of emissions inventories for use in Modeling transboundary Air Pollution) including uncertainties assessment and QA/QC procedures for each sector.	X	X	X	X								
Activity 2.6: Strengthening of human, scientific, technical and institutional capacity, including computers, software, internet service and regional/subregional workshops and expert training	X	X	X	X	X	X	X	X	X	X	X	X
Activity 2.7. Estimation of CO, NOx, NMVOC and PM (2.5 and 10) emissions from forest and grassland fires of Mongolia using Guidelines for preparation of emissions inventories for use in Modeling transboundary Air Pollution developed from Stockholm Environment Institute in 2000.	X	X	X	X	X	X	X	X				
Activity 2.8: Preparation of the Chapter on GHG Inventory to be included in SNC and send it for international review.								X	X	X	X	
Activity 2.9: Acquisition of computer, printer and consumables	X											
Activity 3: Programmes Containing Measures to Facilitate an Adequate Adaptation to Climate Change												
Activity 3.1: Establishment of TWG on V&A, including regular team meetings (e.g., review of past and existing data)	X	X	X	X	X	X	X	X	X	X	X	X
Activity 3.2: Collection and analysis of baseline data for key socio-economic sectors such as water resources (including surface and underground water); arable farming and food security and livelihood; ecosystems (biodiversity, ice cover of glaciers, soil degradation, soil moisture, etc.); and human and public health, culture/tradition among others required for assessing the vulnerability of Mongolia to climate change and its adaptation options	X	X	X	X	X	X	X	X	X			
Activity 3.3: A comprehensive integrated and quantitative V&A assessment for key socio-economic sectors, such as water resources (including surface and underground water); arable farming and food security; ecosystems (biodiversity, ice cover of glaciers, soil degradation, soil moisture, etc.); and human and public health, culture/tradition among others based on established methodologies, including integrated assessment modelling, possible least-cost adaptation options and adaptation technologies *(Note: fees for national experts are included).*		X	X	X	X	X	X	X	X	X		
Activity 3.4: Integrated vulnerability indices and maps for above mentioned key socio-economic sectors where appropriate.									X	X	X	
Activity 3.5: Policy options for adequate adaptation and response strategies for climate change impacts on key socio-economic sectors, including a draft *National Climate Change Adaptation Plan*										X	X	
Activity 3.6. Training on GCMs, including MAGICC-SCENGEN and "downscaling" methodologies	X	X	X	X								
Activity 3.7: Training on new versions of WEAP, Century, SPUR, DSSAT models, Integrated Assessment (IA) and IA Modelling and gathering these models		X	X	X	X	X						
Activity 3.8: Strengthening of human, scientific, technical and institutional capacity, including computers, internet access and regional/subregional workshops and training	X	X	X	X	X	X	X	X	X	X	X	X

Activity 3.9: Preparation of the chapter on *Programmes Containing Measures to Facilitate an Adequate Adaptation to Climate Change* to be included in the SNC											X	X
Activity 3.10: Acquisition of computer, printer and consumables (x 2)	X											
Activity 4: Programmes Containing Measures to Mitigate Climate Change												
Activity 4.1: Establishment of TWG on GHG inventory and Mitigation *(jointly with the above activity 2)* , including regular	X	X	X	X	X	X	X	X	X	X	X	X

team meetings (e.g., review of past and existing data)												
Activity 4.2: Important baseline data for key socio-economic sectors required for assessing GHG mitigation options	X	X	X	X	X							
Activity 4.3: A comprehensive quantitative mitigation options assessment for key socio-economic sectors based on established methodologies, including possible cost-effective mitigation options and environmentally friendly mitigation technologies *(Note: fees for national experts are included)*						X	X	X	X	X		
Activity 4.4: A draft *National Plan on GHG Emission Reduction*, including appropriate legal and economic instruments, and public-private partnership for mitigation measures										X	X	
Activity 4.5: Training on LEAP and MARKAL and other models		X	X	X	X	X						
Activity 4.6: Strengthening of human, scientific, technical and institutional capacity, including computers, internet and regional/subregional workshops and training	X	X	X	X	X	X	X	X	X	X	X	X
Activity 4.7: Preparation of the chapter on *Programmes Containing Measures to Mitigate Climate Change* to be included in the SNC											X	X
Activity 4.8: Acquisition of computer, printer and consumables	X											
Activity 5: Development and Transfer of Environmentally Sound Technologies *(Note: This task may be subcontracted to a university or academy research group)*												
Activity 5.1: Establishment of TWG on Transfer of Environmentally Sound Technologies including regular team	X	X	X	X	X	X	X	X	X	X	X	X
Activity 5.2. A comprehensive adaptation and mitigation technology needs assessment, including endogenous technologies in related sectors such as industry, transport, agriculture and waste management sectors and fields of adaptation.				X	X	X	X	X	X			
Activity 5.3: A database for ESTs based on UNEP IETC's ESTIS, including training on the use of ESTIS. The database will also include a list of emission reduction projects based on ESTs for bilateral and multilateral funding, including those for CDM under the Kyoto Protocol					X	X	X	X	X	X		
Activity 5.4: Establishment of technology information networks and information clearing house								X	X	X	X	
Activity 5.5: Preparation of the chapter on *Development and Transfer of Environmentally Sound Technologies* to be included in the SNC											X	X
Activity 6: Research and Systematic Observation (Note: This task may be led by National Agency for Meteorology, Hydrology and Environment Monitoring)												
Activity 6.1: Review of all climatic data available in Mongolia, including rainfall and temperature data, magnitude and frequency of extreme climatic events in relation to climate change; trends analysis	X	X	X	X								
Activity 6.2: Targeted research on climate variability, climate change, extreme weather events, drought and dzud.			X	X	X	X	X	X	X			
Activity 6.3: Development of Climate change scenarios for Mongolia and its surrounding region using outputs of global/regional GCMs and "downscaling" methodologies.				X	X	X	X	X	X			
Activity 6.4: Training on GCMs, including MAGICC-SCENGEN and "downscaling" methodologies		X	X	X								
Activity 6.5: Climatic information networking with relevant regional and international organizations				X	X	X	X	X	X	X	X	
Activity 6.6: Preparation of a draft *National Strategy for Research and Systematic Observation*, with special focus on extreme weather events, dust and sand storms, drought and dzud. Further gaps and constraints, as well as related financial, technical, institutional and capacity-building needs will be identified and highlighted in this Strategy.										X	X	

Activity 6.7: Strengthening of human, scientific, technical and institutional capacity, including computers, internet and subregional/regional/global workshops and training on research networks and observing systems	X	X	X	X	X	X	X	X	X	X	X	X
Activity 6.8: Preparation of the chapter on *Research and Systematic Observation* to be included in the SNC											X	X
Activity 6.9: Acquisition of computer, printer and consumables	X											
Activity 7: Education, Training and Public Awareness (This task may be undertaken with NGOs)												
Activity 7.1: Development of education, training and public awareness programmes at national, provincial and local levels, including strengthening of curriculum on climate change at formal (primary, secondary and university levels) and non-formal education systems	X	X	X	X								
Activity 7.2: Development of outreach materials in both English and Mongolia	X	X	X	X	X	X	X	X	X	X	X	X
Activity 7.3: Public awareness survey	X	X	X	X								
Activity 7.4: Continuous public awareness campaigns in all provinces, including establishment of billboards to publicize climate change issues	X	X	X	X	X	X	X	X	X	X	X	X
Activity 7.5: Strengthening of knowledge of high level officials in MNE and other ministries, NCC and National Agency for Meteorology, Hydrology and Environment Monitoring	X	X	X	X	X	X	X	X	X	X	X	X
Activity 7.6: Preparation of the chapter on *Education, Training and Public Awareness* to be included in the SNC											X	X
Activity 8: Integration of Climate Change Concerns into Sustainable Development Plans and Programmes												
Activity 8.1: Capacity-building programmes that integrate climate change concerns into sustainable development plans and programmes for national planners, policy and decision makers at the national and local levels, including the UNFCCC and Kyoto Protocol negotiation processes			X			X			X			X
Activity 8.2: *Draft Recommendation on integration of Climate Change concerns* into sustainable development programmes for various key socio-economic sectors									X	X	X	
Activity 8.3: Preparation of the chapter on *Integration of Climate Change Concerns into Sustainable Development Plans and Programmes* to be included in the SNC											X	X
Activity 9: Information and Networking												
Activity 9.1: Assessment and enhancement of information communication technologies	X	X										
Activity 9.2: Establishment of information networks, including internet access for project team members	X	X	X	X	X	X	X	X	X	X	X	X
Activity 9.3: Preparation of the chapter on *Information and Networking*											X	X
Activity 10: Capacity-building												
Activity 10.1: Capacity-building needs assessment											X	X
Activity 10.2: Preparation of a Capacity-Building Strategy, including options and priorities											X	X
Activity 10.3: Enhancement of international negotiation skills											X	X
Activity 10.4: Preparation of the chapter on *Capacity-Building* to be included in the SNC												
Activity 11: Constraints & Gaps, related financial, technical and capacity-building needs												
Activity 11.1: Constraints, gaps and needs, and activities for overcoming gaps, etc.											X	
Activity 11.2: Financial resources and Technical support provided by various sources											X	

Activity 11.3: Proposed projects for financing or in preparation for arranging support											X	
Activity 11.4: Opportunities, barriers for implementation of adapting and mitigating measures											X	
Activity 11.5: Country specific technology needs and assistance received											X	
Activity 11.6: Preparation of the chapter on *Constraints & Gaps, related financial, technical and capacity-building needs* to be included in the SNC											X	
Activity 12: Preparation and presentation of the SNC												
Activity 12.1: Compilation and preparation of SNC, including a National consultant for compilation and preparation of SNC for 6 months											X	X
Activity 12.2: Translation of SNC into Mongolian language and printing											X	X
Activity 12.3: Submission of SNC at a COP/UNFCCC												X
VI. TECHNICAL ASSISTANCE	X	X	X	X	X	X	X	X	X	X	X	X
VII. PROJECT MANAGEMENT												
VII.1 Project Coordinator	X	X	X	X	X	X	X	X	X	X	X	X
VII.2 Project Secretary/Administrative Assistant	X	X	X	X	X	X	X	X	X	X	X	X
VII.3. Independent Audit							X					X
VII.4 Staff Travel												
VII.5 Equipment (2 PCs + laser printer) including consumables				X				X				X
VII.6 Operational expenses (e.g. transportation, communication, etc)	X	X	X	X	X	X	X	X	X	X	X	X
VIII. MONITORING AND EVALUATION	QR	QR	QR	AR	QR	QR	QR M	AR	QR	QR	QR	AR E

Note: QR = Quarterly report; AR = Annual report; M = Mid-term independent review; E = End of project independent evaluation

Table 5. Matrix of activities, outputs/outcomes and indicators

Proposed activities under the Second National Communication	Outputs/Outcomes	Indicators
I. Project Inception Workshop (3 days)	Working groups discussion and reports; detailed annual and 3-year work plans; workshop reports	Stakeholders representation; active participation of certain number of stakeholders
II. Project Mid-Term Review Workshop (all working groups) (3 days)	Workshop reports; identification of gaps	Stakeholders representation; active participation of certain number of stakeholders
III. End of Project Review Workshop (all working groups) (3 days)	Workshop reports; further identification of gaps and needs	Stakeholders representation; active participation of certain number of stakeholders
IV. NATIONAL CIRCUMSTANCES		
Activity 1.: Review of national circumstances based on most updated data and draft relevant chapter	Review report; updated information	Collected official data sources, reports,
Activity 2.: Validate information gaps identified under stocktaking exercise in respect of national circumstances. Identify relevant sources of information, establish links to obtain relevant the data as appropriate, update with new and additional information.	List of data and information should be updated, identification sources	National and international organizations reports
Activity 3. Preparation of the 'Chapter 2: National Circumstances' under the SNC.	Chapter on National Circumstances	Input for SNC
V. PROPOSED ACTIVITIES		
Activity 1: Establishment of Institutional Framework		
Activity 1.1: Establishment of PMT and NST	PMT and NST established	PMT and NST operational
Activity 1.1: NCC quarterly meetings and TWGs leaders meetings	NCC, TWG meetings reports	NCC and TWGs operational
Activity 2: National GHG Inventory		
Activity 2.1: Establishment of TWG on GHG Inventory and Mitigation, including regular team meetings (e.g., review of past and existing data)	TWG on GHG and mitigation established	TWG operational
Activity 2.2: Collection of activity data for GHG inventory (sources for CO_2, N_2O, CH_4, HFCs, PFCs and SF_6, as well as for CO, NO_x, NMVOC, SO_2) for the year 1999-2002; and further identification of shortcomings and gaps of the IPCC Guidelines in relation to the local conditions; a description of any original research needed to develop and/or apply new emission factors for specific activities; recommendations on areas of targeted research to improve future inventories and to suggest revisions to the existing IPCC GHG inventory methodology and to prepare a GHG inventory report (including country's circumstances and the technical annexes that detail the inventory procedures and estimations); *(Note: fees for national experts are included)*	GHG inventory activity data and emission factors	Input for chapter
Activity 2.3: *Development of new emission factors for specific activities:* It will be improved CH_4 emission factors from enteric fermentation for cattle category using the Tier 2 approach (regional or sub-regional software and emission factors will be used) and development of new methane emission factor from waste sector (will be carry out cooperative research activities with institutions of the country and regional experts)	New emission factors developed	Input for GHG inventory
Activity 2.4: A user-friendly GHG inventory database will be established during the inventory compilation. Including, sources and sinks for carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), oxides of nitrogen (NO_x), carbon monoxide (CO), non-methane volatile organic compounds (NMVOCs) and sulphur dioxide (SO_2). Database of sources and sinks of hydrofluorocarbon (HFCs), perfluorocarbon (PFCs) sulphur hexafluoride	User-friendly GHG database established	Database useful for project team and other relevant stakeholders

(SF_6) will be established, where appropriate.		
Activity 2.5. Training workshop on IPCC Technical guidelines and IPCC Good Practice Guidance applications and others (Guidelines for preparation of emissions inventories for use in Modeling transboundary Air Pollution) including uncertainties assessment and QA/QC procedures for each sector.	Training workshop completed	GHG group members familiar with IPCC methodologies and Good Practice Guidance
Activity 2.6: Strengthening of human, scientific, technical and institutional capacity, including computers, software, internet service and regional/subregional workshops and expert training	Human, scientific, technical and institutional capacity strengthened	Enhancement of human, scientific, technical and institutional capacity, including certain number of project team members trained
Activity 2.7. Estimation of CO, NOx, NMVOC and PM (2.5 and 10) emissions from forest and grassland fires of Mongolia using Guidelines for preparation of emissions inventories for use in Modeling transboundary Air Pollution developed from Stockholm Environment Institute in 2000.	Estimations of GHGs and dusts from wild fires	Contribution for SNC and IPCC
Activity 2.8: Preparation of the Chapter on GHG Inventory to be included in SNC and send it for international review.	Chapter on *National GHG Inventory* prepared	Input for SNC
Activity 2.9: Acquisition of computer, printer and consumables	Computer, printer and consumables acquired	The work of GHG group facilitated
Activity 3: Programmes Containing Measures to Facilitate an Adequate Adaptation to Climate Change		
Activity 3.1: Establishment of TWG on V&A, including regular team meetings (e.g., review of past and existing data)	V&A team established	V&A team operational
Activity 3.2: Collection and analysis of baseline data for key socio-economic sectors such as water resources (including surface and underground water); arable farming and food security and livelihood; ecosystems (biodiversity, ice cover of glaciers, soil degradation, soil moisture, etc.); and human and public health, culture/tradition among others required for assessing the vulnerability of Mongolia to climate change and its adaptation options	Baseline data for key socio-economic sectors and environmental components collected	Database used for V&A assessment
Activity 3.3: A comprehensive integrated and quantitative V&A assessment for key socio-economic sectors, such as water resources (including surface and underground water); arable farming and food security; ecosystems (biodiversity, ice cover of glaciers, soil degradation, soil moisture, etc.); and human and public health, culture/tradition among others based on established methodologies, including integrated assessment modelling, possible least-cost adaptation options and adaptation technologies *(Note: fees for national experts are included).*	Integrated V & A Assessment completed	Basis for V&A assessment; Input for chapter; results used for policy development and national planning and development
Activity 3.4: Integrated vulnerability indices and maps for above mentioned key socio-economic sectors where appropriate.	Integrated vulnerability indices and maps developed	Input for chapter; results used for policy development and national planning and development
Activity 3.5: Policy options for adequate adaptation and response strategies for climate change impacts on key socio-economic sectors, including a draft *National Climate Change Adaptation Plan*	Adaptations options developed	Policy options used for national planning and development
Activity 3.6. Training on GCMs, including MAGICC-SCENGEN and "downscaling" methodologies	Training undertaken and completed	V&A group members familiar with relevant models and methodologies
Activity 3.7: Training on new versions of WEAP, Century, SPUR, DSSAT models, Integrated Assessment (IA) and IA Modelling and gathering these models	Training undertaken and completed	V&A group members familiar with WEAP model, IA and IAM

Activity 3.8: Strengthening of human, scientific, technical and institutional capacity, including computers, internet access and regional/subregional workshops and training	Human, scientific, technical and institutional capacity strengthened	Enhancement of human, scientific, technical and institutional capacity, including certain number of project team members trained
Activity 3.9: Preparation of the chapter on *Programmes Containing Measures to Facilitate an Adequate Adaptation to Climate Change* to be included in the SNC	Relevant chapter prepared	Input for SNC
Activity 3.10: Acquisition of computer, printer and consumables (x 2)	Computer, printer and consumables acquired	The work of V&A group facilitated
Activity 4: Programmes Containing Measures to Mitigate Climate Change		
Activity 4.1: Establishment of TWG on GHG inventory and Mitigation *(jointly with the above activity 2)* , including regular team meetings (e.g., review of past and existing data)	TWG established	Mitigation Options Group operational
Activity 4.2: Important baseline data for key socio-economic sectors required for assessing GHG mitigation options	Baseline data collected	Input for mitigation options analysis
Activity 4.3: A comprehensive quantitative mitigation options assessment for key socio-economic sectors based on established methodologies, including possible cost-effective mitigation options and environmentally friendly mitigation technologies *(Note: fees for national experts are included)*	Cost-effective mitigation options assessed	Input for policy options
Activity 4.4: A draft *National Plan on GHG Emission Reduction*, including appropriate legal and economic instruments, and public-private partnership for mitigation measures	*National Plan on GHG Emission Reduction developed*	Input for national planning and development
Activity 4.5: Training on LEAP and MARKAL and other models	Mitigation Options Analysis Group members trained	Mitigation Options Analysis Group members familiar with relevant models
Activity 4.6: Strengthening of human, scientific, technical and institutional capacity, including computers, internet and regional/subregional workshops and training	Human, scientific, technical and institutional capacity strengthened	Enhancement of human, scientific, technical and institutional capacity, including certain number of project team members trained
Activity 4.7: Preparation of the chapter on *Programmes Containing Measures to Mitigate Climate Change* to be included in the SNC	Relevant chapter	Input for SNC
Activity 4.8: Acquisition of computer, printer and consumables	Computer, printer and consumables acquired	The work of Mitigation Options Analysis Group facilitated
Activity 5: Development and Transfer of Environmentally Sound Technologies *(Note: This task may be subcontracted to a university research group)*		
Activity 5.1: Establishment of TWG on Transfer of Environmentally Sound Technologies	TEST established	Group operational
Activity 5.2. A comprehensive adaptation and mitigation technology needs assessment, including endogenous technologies in related sectors such as industry, transport, agriculture and waste management sectors and fields of adaptation.	Technology needs assessment completed	Input for chapter
Activity 5.3: A database for ESTs based on UNEP IETC's ESTIS, including training on the use of ESTIS. The database will also include a list of emission reduction projects based on ESTs for bilateral and multilateral funding, including those for CDM under the Kyoto Protocol	ESTIS database established	Database useful for project team and other relevant stakeholders
Activity 5.4: Establishment of technology information networks and information clearing house	Technology information networks and information clearing house established	The work of project team facilitated
Activity 5.5: Preparation of the chapter on *Development and Transfer of Environmentally Sound Technologies* to be included in the SNC	Relevant chapter prepared	Input for SNC

Activity 6: Research and Systematic Observation (Note: This task may be led by Department of Meteorology and Hydrology)		
Activity 6.1: Review of all climatic data available in Mongolia, including rainfall and temperature data, magnitude and frequency of extreme climatic events in relation to climate change; trends analysis	Literature and database review report completed	Input for chapter
Activity 6.2: Targeted research on climate variability, climate change, extreme weather events, drought and dzud.	Research on climate change completed	Input for national planning and development
Activity 6.3: Development of Climate change scenarios for Mongolia and its surrounding region using outputs of global/regional GCMs and "downscaling" methodologies.	Climate change scenarios generated	Input for chapter
Activity 6.4:. Training on GCMs, including MAGICC-SCENGEN and "downscaling" methodologies	National experts trained	Experts familiar with relevant models
Activity 6.5: Climatic information networking with relevant regional and international organizations	Climatic information networking established	The work of experts facilitated
Activity 6.6: Preparation of a draft *National Strategy for Research and Systematic Observation*, with special focus on extreme weather events, dust and sand storms, drought and dzud. Further gaps and constraints, as well as related financial, technical, institutional and capacity-building needs will be identified and highlighted in this Strategy.	Draft *National Strategy for Research and Systematic Observation* prepared	Input for national planning and development
Activity 6.7: Strengthening of human, scientific, technical and institutional capacity, including computers, internet and subregional/regional/global workshops and training on research networks and observing systems	Human, scientific, technical and institutional capacity strengthened	Enhancement of human, scientific, technical and institutional capacity, including certain number of project team members trained
Activity 6.8: Preparation of the chapter on *Research and Systematic Observation* to be included in the SNC	Chapter on RSO prepared	Input for SNC
Activity 6.9: Acquisition of computer, printer and consumables	Computer, printer and consumables acquired	The work of RSO Group facilitated
Activity 7: Education, Training and Public Awareness (This task may be undertaken with NGOs)		
Activity 7.1: Development of eeducation, training and public awareness programmes at national, provincial and local levels, including strengthening of curriculum on climate change at formal (primary, secondary and university levels) and non-formal education systems	Eeducation, training and public awareness programmes developed	Comprehensiveness of relevant programmes
Activity 7.2: Development of ooutreach materials in both English and Mongolia	Outreach materials developed	Extent of information dissemination
Activity 7.3: Public awareness survey	Public awareness survey undertaken	Input for chapter
Activity 7.4: Continuous public awareness campaigns in all provinces, including establishment of billboards to publicize climate change issues	Public awareness campaigns undertaken	Extent of enhancement of public awareness on climate change issues
Activity 7.5: Strengthening of knowledge of high level officials in MNE and other ministries, NCC and National Agency for Meteorology, Hydrology and Environment Monitoring	Related agencies and bodies strengthened	Frequent use of their contribution by stakeholders
Activity 7.6: Preparation of the chapter on *Education, Training and Public Awareness* to be included in the SNC	Chapter on *Education, Training and Public Awareness* completed	Input for SNC
Activity 8: Integration of Climate Change Concerns into Sustainable Development Plans and Programmes		
Activity 8.1: Capacity-building programmes that integrate climate change concerns into sustainable development plans and programmes for national planners, policy and decision makers at the national and local levels, including the UNFCCC and Kyoto Protocol negotiation processes	Capacity-building programmes for policy and decision makers on climate change issues developed	Extent of enhancement of capacity of policy and decision makers on climate change issues, including number of people trained
Activity 8.2: *Draft Recommendation on integration of Climate Change concerns* into sustainable development programmes for various key socio-economic sectors	*Draft Recommendation* developed	Input for national planning and development

Activity 8.3: Preparation of the chapter on *Integration of Climate Change Concerns into Sustainable Development Plans and Programmes* to be included in the SNC	Relevant chapter prepared	Input for SNC
Activity 9: Information and Networking		
Activity 9.1: Assessment and enhancement of information communication technologies	ICT assessed and enhanced	The work of project team facilitated
Activity 9.2: Establishment of information networks, including internet access for project team members	Information networks established	The work of project team facilitated
Activity 9.3: Preparation of the chapter on *Information and Networking*	Relevant chapter prepared	Input for SNC
Activity 10: Capacity-building		
Activity 10.1: Capacity-building needs assessment	Capacity-building needs assessed	Input for national planning and development
Activity 10.2: Preparation of a Capacity-Building Strategy, including options and priorities	*Capacity-Building Strategy* prepared	Input for national planning and development
Activity 10.3: Enhancement of international negotiation skills	International negotiation skills enhanced	Active participation of negotiators in COP process
Activity 10.4: Preparation of the chapter on *Capacity-Building* to be included in the SNC	Chapter on *Capacity-Building* prepared	Input for SNC
Activity 11: Constraints & Gaps, related financial, technical and capacity-building needs		
Activity 11.1: Constraints, gaps and needs, and activities for overcoming gaps, etc.	Relevant constraints, gaps and needs identified	Input for SNC and for future activities
Activity 11.2: Financial resources and Technical support provided by various sources	Financial resources and technical supports identified	Input for SNC and for bilateral and multilateral technical assistance
Activity 11.3: Proposed projects for financing or in preparation for arranging support	Project proposals developed	Input for SNC and for bilateral and multilateral technical assistance
Activity 11.4: Opportunities, barriers for implementation of adapting and mitigating measures	Opportunities and barriers identified	Input for SNC and for adaptation and mitigation measures
Activity 11.5: Country specific technology needs and assistance received	Technology needs and assistance identified	Input for SNC and for bilateral and multilateral technical assistance
Activity 11.6: Preparation of the chapter on *Constraints & Gaps, related financial, technical and capacity-building needs* to be included in the SNC	Relevant chapter prepared	Input for SNC
Activity 12: Preparation and presentation of the INC		
Activity 12.1: Compilation and preparation of SNC, including a National consultant for compilation and preparation of SNC for 6 months	SNC prepared	SNC issued for translation and printing
Activity 12.2: Translation of SNC into Mongolian language and printing	Translation of SNC in Mongolian completed and printed	Dissemination of INC (in Mongolian) to stakeholders
Activity 12.3: Submission of SNC at a COP/UNFCCC	SNC issued	SNC submitted to the UNFCCC Secretariat
VI. TECHNICAL ASSISTANCE	Consultants recruited	Project team capacity developed
VII. PROJECT MANAGEMENT		
VII.1 Project Coordinator	PC recruited	PC functioning
VII.2 Project Secretary/Administrative Assistant	Secretary/AA recruited	Secretary/AA functioning
VII.3. Independent Audit	Audit report	Good practice certified

VII.4 Staff Travel	Mission report	Results from missions implemented
VII.5 Equipment (2 PCs + laser printer) including consumables	Computer, printer and consumables acquired	The work of PMT facilitated
VII.6 Operational expenses (e.g., transportation, communication, etc)	Operational expenses provided	The work of PMT facilitated
VIII. MONITORING AND EVALUATION	Quarterly and annual reports; Mid-term and end of project evaluations conducted	Project implementation met all objectives and goals

SECTION III: WORKPLAN AND TIME TABLE, BUDGET AND FOLLOW UP

222. **Workplan and Timetable**:

Please see Table 4: *(Timeline for the implementation of project activities)*

223. **Budget.**

Please see Table 3: *(Budget for Proposed activities for the preparation of the Second National Communication)*

SECTION IV: INSTITUTIONAL FRAMEWORK AND EVALUATION

Institutional framework

224. The Ministry of Nature and Environment (MNE), as the Executing Agency, will be responsible for the implementation of the project in accordance with the objectives and activities outlined in Section 2 of this document. UNEP, as the GEF Implementing Agency, will be responsible for overall project supervision to ensure consistency with the GEF and UNEP policies and procedures, and will provide guidance on linkages with related UNEP and GEF funded activities. The UNEP/DGEF Coordination will monitor implementation of the activities undertaken during the executing of the project. The UNEP/DGEF Coordination will be responsible for clearance and transmission of all financial and progress reports to the Global Environment Facility.

225. Prior to contracts, sub-contracts, or letters of agreement being entered into by the Ministry of Nature and Environment (MNE) will submit to UNEP/DGEF Coordination copies of all these documents. Within ten working days, UNEP/DGEF Coordination will review, provide guidance and give the Ministry of Nature and Environment (MNE) substantive clearance on the technical content of these contracts, sub-contracts and letters of agreement.

226. In the recruitment of all senior project personnel, a selection panel/committee consisting of representatives from the Ministry of Nature and Environment (MNE) and UNEP/DGEF will conduct the evaluation of the candidates, and based on the recommendations of the panel/committee the Ministry of Nature and Environment (MNE) will issue contracts whose terms and conditions will be cleared by the panel.

Correspondence:

227. **All correspondence regarding substantive and technical matters should be addressed to:**

UNEP:

Olivier Deleuze
Officer-In-Charge,
Division of GEF Coordination
UNEP
P.O. Box 30552
Nairobi, Kenya
Fax: +254-20-7624041

With a copy to:

George Manful
Senior Task Manager, Climate Change Enabling Activities
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Fax: 254-20-7624324
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For MONGOLIA

Damdin Dagvadorj
Director
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228. **All correspondence related to financial administrative and financial matters related to this sub-project should be addressed to: -**

At UNEP:

Mr. David Hastie
Chief
Budget and Financial Management Service (BFMS)
United Nations Office at Nairobi
P.O. Box 67578, Nairobi Kenya
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Fax: +254-20-7623755

With a copy to:

Mr. Victor Ogbuneke
Fund Management Officer
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Nairobi, Kenya
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Damdin Dagvadorj
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Administration Division
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Tel./Fax : +976 11 264317
E-mail : meteoins@magicnet.mn

229. **Evaluation**

The Ministry of Nature and Environment (MNE) will maintain systematic overview of the implementation of the project by means of monthly project monitoring meetings or other form of consultation, as well as by regular quarterly progress reports. A terminal/final report of the project will be prepared by the Ministry of Nature and Environment (MNE) at the end of the project.

Following development of detailed work-plan, the following steps will be undertaken: review of the project, review/definition of defects, gaps, identification of problems that might impede the project implementation. Furthermore, the review is aimed to define potential partners and sources of information for the project.

The implementing agency will oversee implementation of contracted project activities. With this purpose, project coordinator in co-operation with the National Steering Committee will prepare work-plan for project implementation.

SECTION V: MONITORING AND REPORTING

Management Reports

230. **Quarterly Progress Reports**

Within 30 days of the end of the reporting period, the Ministry of Nature and Environment (MNE) will submit to UNEP, using the format given in **Annex 4**, quarterly progress reports as at 31 March, 30 June, 30 September and 31 December, to the UNEP/GEF Division Director, with copies to the Chief, BFMS, on the progress in project execution.

231. **Terminal Report**

Within 60 days following the end of the project, the Ministry of Nature and Environment (MNE) shall submit a Terminal Report in the UNEP format **(Annex 6)** to the Director, Division of GEF Co-ordination and the Chief, Budget and Financial Management Service and the Chief, Program Coordination and Management Unit. The report should indicate the principal factors, which have determined the success or failures of the project in meeting the objectives set forth in the project document. This report will serve as a source of initial lessons for the country's experience and can recommend follow-up activities.

232. **Substantive Reports:**

(i) At the appropriate time, the Ministry of Nature and Environment (MNE) will submit to UNEP three copies in draft of any substantive project reports(s) and, at the same time, inform UNEP of its plans for publication of that text. UNEP will give the Ministry of Nature and Environment (MNE) substantive clearance of the manuscript, indicating any suggestions for change and such wording (recognition, disclaimer, etc.) as it would wish to see figure in the preliminary pages or in the introductory texts.

(ii) UNEP will equally consider the publishing proposal of the Ministry of Nature and Environment (MNE) and will make comments thereon as advisable.

(iii) UNEP may request, the Ministry of Nature and Environment (MNE) to consider the publication on a joint imprint basis. Should the Ministry of Nature and Environment (MNE) be solely responsible for publishing arrangements, UNEP will nevertheless receive an agreed number of free copies of the published work in each of the agreed languages, for its own purposes.

233. **Financial Reports (National Project Expenditure Accounts)**

(i) All financial reports and audit reports should be in US dollars. Details of project expenditures will be reported, on an activity by activity basis, in line with project budget codes as set out in the project document, as at 31 March, 30 June, 30 September and 31 December using the format given in **Annex 3**. All expenditure accounts will be dispatched to UNEP within 30 days of the end of the quarter to which they refer, certified by a duly authorised official of the Ministry of Nature and Environment (MNE).

(ii) In addition the total expenditures incurred during the year ending 31 December certified by a duly authorised official, should be reported in an opinion by a recognized firm of public accountants and should be dispatched to UNEP within 180 days, (i.e. by 30 June). In particular, the auditors should be asked to report whether, in their opinion:

- Proper books of account and records have been maintained;
- All project expenditures are supported by vouchers and adequate documentation;
- Expenditures have been incurred in accordance with the objectives outlined in the project document;

- The Expenditure reports provide a true and fair view of the financial condition and performance of the project

(iii) Within 180 days of the completion of the project, the Ministry of Nature and Environment (MNE) will supply UNEP with a final statement of account in the same format as for the quarterly statement, certified by a recognized firm of public accountants.

If requested the Ministry of Nature and Environment (MNE) shall facilitate an audit by the United Nations Board of Auditors and/or the Audit Service of the accounts of the project.

(iv) Any portion of cash advances remaining unspent or uncommitted by the Ministry of Nature and Environment (MNE) on completion of the project will be reimbursed to UNEP within one month of the presentation of the final statement of accounts. In the event that there is any delay in such disbursement, the Ministry of Nature and Environment (MNE) will be financially responsible for any adverse movement in the exchange rates.

TERMS AND CONDITIONS

234. Inventory of Non-expendable equipment purchased against UNEP projects

The Ministry of Nature and Environment (MNE) will maintain records of non-expendable equipment (items costing US$1,500 or more as well as items of attraction such as pocket calculators, cameras, computers, printers) purchased with UNEP funds (or Trust funds or Counterpart funds administered by UNEP), and submit an inventory of such equipment to UNEP as at 31 March, 30 June, 30 September, and 31 December following the format contained in **Annex 5**, attached to the quarterly progress report, indicating description, serial number, date of purchase, original cost, present condition, location of each item.

Within 60 days of completion of the project, the Ministry of Nature and Environment (MNE) will submit to UNEP a final inventory of all non-expendable equipment purchased under this project indicating description, serial number, original cost, present condition, location and a proposal for the disposal of the said equipment.

Non-expendable equipment purchased with funds administered by UNEP remains the property of UNEP until its disposal is authorised by UNEP, in consultation with the Ministry of Nature and Environment (MNE).

The Ministry of Nature and Environment (MNE) shall be responsible for any loss or damage to equipment purchased with UNEP administered funds. The proceeds from the sale of equipment (duly authorised by UNEP) shall be credited to the accounts of UNEP, or of the appropriate trust fund or counterpart funds. A duly authorised official of the Ministry of Nature and Environment (MNE) should physically verify the inventory.

235. Responsibility for Cost Over-runs

Total Project cost to the GEF Trust Fund cannot exceed the approved budget as shown on page 1 of the project document. Any cost overrun (expenditure in excess of the amount budgeted in each budget sub line) shall be met by the organization responsible for authorizing the expenditure, unless written agreement has been received in advance, from UNEP. In cases, where UNEP has indicated its agreement to a cost overrun in a budget sub line to another, a revision to the project document amending the budget will be issued by UNEP.

236. **Claims by Third Parties against UNEP**

The Ministry of Nature and Environment (MNE), shall be responsible for dealing with any claims which may be brought by third parties against UNEP and its staff, and shall hold UNEP and its staff non-liable in case of any claims or liabilities resulting from operations carried out by the Ministry of Nature and Environment (MNE), under this National Project document, except where it is agreed by the Ministry of Nature and Environment (MNE), and UNEP that such claims or liabilities arise from gross negligence or willful misconduct of the staff of UNEP.

237. **Cash Advance Requirement**

Initial cash advance of **US$56,350** will be made upon signature of the project document by both parties and will cover expenditures expected to be incurred by the Ministry of Nature and Environment (MNE) during the first three months of the project implementation. Subsequent advances are to be made quarterly, subject to:

(i) Confirmation by the Ministry of Nature and Environment (MNE) at least two weeks before the payment is due, that the expected rate of expenditure and actual cash position necessitate the payment, including a reasonable amount to cover "lead time" for the next remittance; and

(ii) The presentation of

- A satisfactory financial report showing expenditures incurred for the past quarter, under each project activity (See format in **Annex 3**).
- Timely and satisfactory reports on project implementation **(Annex 4).**

Requests for subsequent cash advances should be made using the standard format provided in **Annex 2.**

238 **Amendments**

The Parties to this project document shall approve any modification or change to this project document in writing.

239. **United Nations Security Council Resolution on the fight against terrorism**

The United Nations Security Council Resolution 1373 of 28 September 2001 on the fight against terrorism shall be adhered to by the Executing Agency, failure to which shall, without prejudice to other legal actions, lead to the immediate cancellation of the project.

LIST OF ANNEXES

Annex 1 (BUDGET IN UNEP FORMAT)

Preparation of the Second National Communication Under the UNFCCC in the United Republic of Mongolia
IMIS No: GFL-2328-2724-4948
PAS No: GFL-2010-04-94

	2006	2007	2008	2009	Total
10 PROJECT PERSONNEL COMPONENT					
1100 Project Personnel					
1101 National Coordinator	4,500	10,800	10,800	6,300	32,400
1199 Sub-total	**4,500**	**10,800**	**10,800**	**6,300**	**32,400**
1200 Consultants					
1201 National Circumstances	-	-	1,000	-	1,000
1202 National GHG Inventories (Data collection and estimation of of CO_2, N_2O, CH_4, HFC, etc for the years 1999-2002); estimation of CO, Nox, NMVOC and PM (2.5 and 10) emissions from forest and grassland fires of Mongolia, ……..	4,000	9,000	8,000	-	21,000
1203 National GHG Inventories (Development of new emission factors for specific activities)	4,000	11,000	-	-	15,000
1204 National GHG Inventories (Development and maintenance of a user friendly inventory database for CO_2, CH_4 etc)	2,000	500	500	-	3,000
1205 National GHG Inventory (Preparation of the National Inventory Report)	-	-	1,000	-	1,000
1206 Programmes containing measures to facilitate adequate adaptation (Collection and analysis for baseline data for key socio-economic sectors such as water resources, agriculture, ecosystems, human and public health, etc)	2,000	2,000	2,000	-	6,000
1207 Programmes containing measures to facilitate adequate adaptation(Integrated and quantitiative V&A assessments, etc)	10,000	18,000	1,000	18,000	47,000

Annex 1 (BUDGET IN UNEP FORMAT)

Preparation of the Second National Communication Under the UNFCCC in the United Republic of Mongolia
IMIS No: GFL-2328-2724-4948
PAS No: GFL-2010-04-94

1208 Programmes containing measures to facilitate adequate adaptation (Integrated vulerability indices and maps for key socio-economic sectors)	-	2,000	1,000	2,000	5,000
1209 Programmes containing measures to facilitate adequate adaptation(Policy options for adequate adaptation and response strategies, etc, including drafting of National Climate Change Adaptation Strategy)	-	3,000	3,000	2,000	8,000
1210 Programmes containing measures to facilitate adequate adaptation(Preparation of a chapter on Programme containing measures to facilitate adequate adaptation to climate change to be included in SNC)	-	-	1,000	-	1,000
1211 Programmes containing measures to mitigate Climate Change (Collection of important baseline data for key socio-economic sectors for assessing GHG mitigation options)	1,000	700	300		2,000
1212 Programmes to mitigate Climate Change (Comprehensive quantitative assessment of GHG mitigation options)	-	8,000	3,000	11,000	22,000
1213 Programmes conating measures to mitigate Climate Change (Draft a national strategy on GHG emission reduction)	-	2,000	1,000	1,000	4,000
1214 Programmes to mitigate Climate Change (Preparation of a chapter on Programme containing measures to mitigate climate change to be included in SNC)	-	-	1,000	-	1,000
1215 Other Relevant Information (*Integrating climate change concerns into sustainable development)*	500	1,000	2,500	1,000	5,000
1216 Other Relevant Information (Environmentally sound technologies)	500	2,600	2,000	400	5,500
1217 Other Relevant Information (Education, Training and Public Awareness)	3,500	5,800	4,300	400	14,000
1218 Other Relevant Information (Capacity-Building)	500	1,300	1,200	-	3,000

Annex 1 (BUDGET IN UNEP FORMAT)

Preparation of the Second National Communication Under the UNFCCC in the United Republic of Mongolia
IMIS No: GFL-2328-2724-4948
PAS No: GFL-2010-04-94

1219 Other Relevant Information (Information and Networking)	1,500	500	1,000	-	3,000
1220 Other Relevant Information (Research, systematic observations and early warning systems)	3,800	1,700	3,000	-	8,500
1221 Constraints and gaps, related financial, technical and capacity needs	-	-	1,000	-	1,000
1299 Sub-total	**33,300**	**69,100**	**38,800**	**35,800**	**177,000**
1300 Administrative Support					
1301 Project Secretary/ Administrative Assistant	2,250	5,400	5,400	3,150	16,200
1302 Accountant (part time)	250	500	500	250	1,500
1381 Independent Audit (Paid by UNEP directly from project funds)	-	-	-	1,500	1,500
1382 Monitoring and Evaluation	-	-	-	15,000	15,000
1383 Support to the operations of national CC committee and thematic technical working groups	3,400	3,400	3,200	500	10,500
1399 Sub-total	**5,900**	**9,300**	**9,100**	**20,400**	**44,700**
1600 Travel On Official Business					
1601 Staff Travel (International)	2,500	2,500	2,500	1,900	9,400
1699 Sub-total	**2,500**	**2,500**	**2,500**	**1,900**	**9,400**
1999 Component Total	**46,200**	**91,700**	**61,200**	**64,400**	**263,500**

Annex 1 (BUDGET IN UNEP FORMAT)

Preparation of the Second National Communication Under the UNFCCC in the United Republic of Mongolia
IMIS No: GFL-2328-2724-4948
PAS No: GFL-2010-04-94

30 TRAINING COMPONENT					
3200 Training					
3201 National GHG Inventory (Strengthening of national capacities including participation in regional/international training workshops)	3,000	2,000	2,000	-	7,000
3202 National GHG Inventories (Organize two training workshops)	2,000	2,000	-	-	4,000
3203 Programmes to faciliate Adequate Adaptation (Organization of training on GCMs, including MAGICC-SCEGEN and downscalling methodologies)	7,000	5,000	2,000	-	14,000
3204 Programmes to faciliate Adequate Adaptation (Organization of training on new versions of WEAP model, Century, SPUR, DSSAT models, Integrated Assessment (IA) and IA modelling)	5,000	5,000	5,000	-	15,000
3205 Programmes to faciliate adequate Adaptation (Strengthening of national capacities including participation in regional/international training workshops)	6,000	5,000	2,000	-	13,000
3206 Programmes to measure to mitigate climate change (Strengthening of national capacities including participation in regional/international training workshops)	6,000	5,000	2,000	-	13,000
3207 Programmes to measure to mitigate climate change (Training on LEAP and MARKAL models)	2,000	2,000			4,000
3208 Technical Assistance	5,000	5,000	5,000	-	15,000
3209 Other Relevant Information (Research, systematic observations and early warning systems) and Education, Training and Public Awareness - strengthening of national capacities including participation in regional/international training workshops	1,000	1,500	1,000	-	3,500
3399 Sub-total	**37,000**	**32,500**	**19,000**	**-**	**88,500**

Annex 1 (BUDGET IN UNEP FORMAT)

Preparation of the Second National Communication Under the UNFCCC in the United Republic of Mongolia
IMIS No: GFL-2328-2724-4948
PAS No: GFL-2010-04-94

3300 Meetings/Conferences					
3301 Organization of a Project Inception workshop	4,000	-	-	-	4,000
3302 Mid term review workshop for all working groups 3 days		4,000			4,000
3303 End of project review workshop for all working groups 3 days			4,000		4,000
3304 Compilation and Preparation of Communication	-	-	7,000	-	7,000
3305 Submission/presentation of SNC to COP of UNFCCC	-	-	-	3,000	3,000
3399 Sub-total	**4,000**	**4,000**	**11,000**	**3,000**	**19,000**
3999 Component Total	**41,000**	**36,500**	**30,000**	**3,000**	**107,500**
40 EQUIPMENT AND PREMISES COMPONENT					
4200 Non-Expendible Equipment					
4201 Equipment (PCs + printers) including consumables and logistical expenses for 3 years for project management team and thematic groups	12,000	2,800	2,800	400	18,000
4299 Sub-total	**12,000**	**2,800**	**2,800**	**400**	**18,000**
4999 Component Total	**12,000**	**2,800**	**2,800**	**400**	**18,000**
50 MISCELLANEOUS COMPONENT					
5200 Reporting Cost					
5201 Publication of the final version of the SNC in English and Mongolian languages in hard and e-copies	-	-	-	5,000	5,000

Annex 1 (BUDGET IN UNEP FORMAT)

Preparation of the Second National Communication Under the UNFCCC in the United Republic of Mongolia
IMIS No: GFL-2328-2724-4948
PAS No: GFL-2010-04-94

5299 Sub-total	-	-	-	5,000	5,000
5300 Sundry					
5301 Communication Cost (internet, telephone, fax and courier service)	1,000	3,000	3,000	1,000	8,000
5399 Sub-total	**1,000**	**3,000**	**3,000**	**1,000**	**8,000**
5999 Component Total	**1,000**	**3,000**	**3,000**	**6,000**	**13,000**
99 GRAND TOTAL	**100,200**	**134,000**	**97,000**	**73,800**	**405,000**

Note:

Please note that the funds in the following project budget lines are administered by UNEP on behalf of the project:

BL 1381 Independent Audit (Paid by UNEP directly from project funds)
BL 1382 Support to the operations of the PAC
BL 1383 Monitoring and Evaluation

ANNEX 2: CASH ADVANCE STATEMENT

Statement of cash advance as at: {Reporting end date}

Cash requirements for the period: From: {Starting date} To: {Ending date}

Name of Executing Agency: {Insert name of Executing Agency}

Project No.: IMIS: GFL-2328-2724-4948
PMS: GF/2010-04-94

Project title: {Insert exact title of the project}

I. Cash statement

1. Opening cash balance as at {Insert project commencement date} US$ NIL

2. Add: cash advances received:

	Number	Date	Amount
First cash advance		{Insert date}	{Insert amount}
Second cash advance		{Insert date}	{Insert amount}
Third cash advance		{Insert date}	{Insert amount}
Fourth cash advance		{Insert date}	{Insert amount}
Fifth cash advance		{Insert date}	{Insert amount}

3. Total cash advanced to date US$ {Insert amount}

4 Less: total cumulative expenditures incurred to date US$ {(Insert amount)}

5. Closing cash balance as at US$ (reporting end date)

II. Cash Requirements forecast

6. Estimated disbursements for period
ending {Insert date} US$ {Insert amount}

7. Less: closing cash balance (see item 5 above) US$ {Insert amount}

8. **Total cash requirements** for period
from: {Insert date} to: {Insert date} US$ **{Insert amount}**

Prepared by: _____ Date: _____

Request approved by: _____ Date: _____

NB: To be completed by duly authorized officials of {Insert name of Executing Agency}

Appendix 1 to Annex 2: EXPLANATIONS ON THE PLANNED USE OF THE REQUESTED FUNDING FOR THE NEXT REPORTING PERIOD BASED ON WHICH THE CASH ADVANCE STATEMENT OF THIS REPORT WAS MADE

Executing Agency: {Insert name of Executing Agency}

Project No. {GFL/2328-2724-4948}
Project title: {Insert the full title of the project here}
Project commencing: {Insert commencement date}
Project ending: {Insert completion date}

DESCRIPTION FOR THE CODES	EXPENDITURE ESTIMATES	CLARIFICATION/BREAKDOWN
1100 Project personnel		
1200 Consultant		
1300 Project admin/Accountant personnel		
1400 Volunteer		
1600 Travel on official business		
2100 Sub-contract (with IAs)		
2200 Sub-contract (with SOs)		
2300 Sub-contract (business entity)		
3100 Fellowship		
3200 Group training		
3300 Meeting/Conference		
4100 Expendable equipment		
4200 Non-expendable equipment		
4300 Premises		
5100 Operation and maintenance		
5200 Reporting		
5300 Sundry		
5400 Hospitality		
5500 Evaluation		
99 TOTAL		

NB: Object of expenditure in the report should be exactly as required, in order to substantiate the "estimated disbursement" reflected in item 6. of the cash advance statement. The above is simply an example with one code in each class. In the actual projects there may be more than one code in a class and some classes may even not be there.

Annex 3: FORMAT OF QUARTERLY PROJECT EXPENDITURE ACCOUNTS FOR SUPPORTING ORGANIZATIONS

Quarterly project statement of allocation (budget), expenditure and balance (Expressed in US$) covering the period from.....to.....

Project No.:..... Supporting organization.....

Project title:.....

Project commencing:..... Project ending:.....

Object of expenditure in accordance with UNEP budget codes	**Project budget Allocation for Year**		**Expenditure Incurred**				**Unspent balance of budget allocation for year.....**
			For the quarter		**Comulative expenditures this Year**		
	m/m	**Amount**	**m/m**	**Amount**	**m/m**	**Amount**	**m/m**
1101 National Coordinator							
1201 National Circumstances							
1202 National GHG Inventories (Data collection and estimation of of CO_2, N_2O, CH_4, HFC, etc for the years 1999-2002); estimation of CO, Nox, NMVOC and PM (2.5 and 10) emissions from forest and grassland fires of Mongolia, ……..							
1203 National GHG Inventories (Development of new emission factors for specific activities)							
1204 National GHG Inventories (Development and maintenance of a user friendly inventory database for CO_2, CH_4 etc)							
1205 National GHG Inventory (Preparation of the National Inventory Report)							
1206 Programmes containing measures to facilitate adequate adaptation (Collection and analysis for baseline data for key socio-economic sectors such as water resources, agriculture, ecosystems, human and public health, etc)							
1207 Programmes containing measures to facilitate adequate adaptation(Integrated and quantitiative V&A assessments, etc)							
1208 Programmes containing measures to facilitate adequate adaptation (Integrated vulerability indices and maps for key socio-economic sectors)							
1209 Programmes containing measures to facilitate adequate adaptation(Policy options for adequate adaptation and response strategies, etc, including drafting of National Climate Change Adaptation Strategy)							

1210 Programmes containing measures to facilitate adequate adaptation(Preparation of a chapter on Programme containing measures to facilitate adequate adaptation to climate change to be included in SNC) 1211 Programmes containing measures to mitigate Climate Change (Collection of important baseline data for key socio-economic sectors for assessing GHG mitigation options) 1212 Programmes to mitigate Climate Change (Comprehensive quantitative assessment of GHG mitigation options) 1213 Programmes conating measures to mitigate Climate Change (Draft a national strategy on GHG emission reduction) 1214 Programmes to mitigate Climate Change (Preparation of a chapter on Programme containing measures to mitigate climate change to be included in SNC) 1215 Other Relevant Information (*Integrating climate change concerns into sustainable development)* 1216 Other Relevant Information (Environmentally sound technologies) 1217 Other Relevant Information (Education, Training and Public Awareness) 1218 Other Relevant Information (Capacity-Building) 1219 Other Relevant Information (Information and Networking) 1220 Other Relevant Information (Research, systematic observations and early warning systems) 1221 Constraints and gaps, related financial, technical and capacity needs 1301 Project Secretary/ Administrative Assistant 1302 Accountant (part time) 1381 Independent Audit (Paid by UNEP directly from project funds) 1382 Monitoring and Evaluation 1383 Support to the operations of national CC committee and thematic technical working groups 1601 Staff Travel (International) 3201 National GHG Inventory (Strengthening of national capacities including participation in regional/international training workshops) 3202 National GHG Inventories (Organize two training workshops) 3203 Programmes to faciliate Adequate Adaptation (Organization of training on GCMs, including MAGICC-SCEGEN and downscalling methodologies)								

3204 Programmes to faciliate Adequate Adaptation (Organization of training on new versions of WEAP model, Century, SPUR, DSSAT models, Integrated Assessment (IA) and IA modelling) 3205 Programmes to faciliate adequate Adaptation (Strengthening of national capacities including participation in regional/international training workshops) 3206 Programmes to measure to mitigate climate change (Strengthening of national capacities including participation in regional/international training workshops) 3207 Programmes to measure to mitigate climate change (Training on LEAP and MARKAL models) 3208 Technical Assistance 3209 Other Relevant Information (Research, systematic observations and early warning systems) and Education, Training and Public Awareness - strengthening of national capacities including participation in regional/international training workshops 3301 Organization of a Project Inception workshop 3302 Mid term review workshop for all working groups 3 days 3303 End of project review workshop for all working groups 3 days 3304 Compilation and Preparation of Communication 3305 Submission/presentation of SNC to COP of UNFCCC 4201 Equipment (PCs + printers) including consumables and logistical expenses for 3 years for project management team and thematic groups 5201 Publication of the final version of the SNC in English and Mongolian languages in hard and e-copies 5301 Communication Cost (internet, telephone, fax and courier service)							
99 GRAND TOTAL							

Signed:_____

Duly authorized official of supporting organization

NB: The expenditures should be reported in line with the specific object of expenditure as per project budget.

Annex 4 – Format for Quarterly Progress Report
As at 31 March, 30 June, 30 September and 31 December
(Please attach a current inventory of outputs/Services when submitting this report)

1. Background Information

1.1 Project Number:

1.2 Project Title:

1.3 Supporting Organization (if relevant):

1.4 Reporting Period (the three months covered by this report):

1.5 Staffing Details of Supporting Organization (Applies to personnel / experts/ consultants paid by the project budget):

Functional Title	Nationality	Object of Expenditure (1101, 1102, 1201, 1301 etc.)

1.6 Sub-Contracts (if relevant):

Name and Address of the Sub-Contractee	Object of Expenditure (2101, 2201, 2301 etc.)

2. Project Status

2.1 Information on the delivery of outputs/services

	Output/Service (as listed in the approved project document)	Status (Complete/ Ongoing)	Description of work undertaken during the reporting period	Description of problems encountered; Issues that need to be addressed; Decisions/Actions to be taken
1.				
2.				

2.2 If the project is not on track, provide reasons and details of remedial action to be taken:

3. Discussion acknowledgment (To be completed by UNEP)

Project Coordinator's General Comments/Observations	UNEP Task Manager (or its Equivalent) Approval
NAME: _____ DATE: _____ SIGNATURE: _____	NAME: _____ DATE: _____ SIGNATURE: _____

Appendix 1 to Annex 4

Attachment to Quarterly Progress Report: Format for Inventory of Outputs/Services

Meetings (UNEP-convened meetings only)

No	Meeting Type (note 4)	Title	Venue	Dates	Convened by	Organized by	# Participants	List attached Yes/No	Report issued as doc no	Language	Dated
1.											
2.											
3.											

List of Meeting Participants

No.	Name of the Participant	Nationality

Printed Material

No	Type (note 5)	Title	Author(s)/Editor(s)	Publisher	Symbol	Publication Date	Distribution List Attached Yes/No
1.							
2.							
3.							

Technical Information / Public Information

No	Description	Date
1.		
2.		
3.		

Technical Cooperation

No	Type (note 6)	Purpose	Venue	Duration	For Grants and Fellowships		
					Beneficiaries	Countries/Nationalities	Cost (in US$)
1.							
2.							
3.							

Other Outputs/Services (e.g. Networking, Query-response, Participation in meetings etc.)

No	Description	Date
1.		
2.		
3.		

10. NOTE 4
Meeting types (Inter-governmental Meeting, Expert Group Meeting, Training Workshop/Seminar, Other)

14. NOTE 5
Material types (Report to Inter-governmental Meeting, Technical Publication, Technical Report, Other)

15. NOTE 6
Technical Cooperation Type (Grants and Fellowships, Advisory Services, Staff Mission, Others)

Annex 5 – Format for Inventory of Non-Expendable Equipment

PURCHASED AGAINST UNEP PROJECTS UNIT VALUE US$1,500 AND ABOVE AND ITEMS OF ATTRACTION

As at _____

Project No._____

Project Title _____

Executing Agency: _____

Internal/SO/CA (UNEP use only) _____

FPMO (UNEP) use only) _____

Description	Serial No.	Date of Purchase	Original Price (US$)	Purchased / Imported from (Name of Country)	Present Condition	Location	Remarks/recommendation for disposal

The physical verification of the items was done by:

Name: _____

Signature: _____

Title: _____

Date: _____

Annex 6 – Format for Terminal Report

TERMINAL REPORT

1. Background Information

1.1 Project Number

1.2 Project Title

1.3 Implementing Organization

2. Project Implementation Details

2.1. Project Activities (*Describe the activities actually undertaken under the project, giving reasons why some activities were not undertaken, if any)*

2.2. Project Outputs (*Compare the outputs generated with the ones listed in the project document*)

2.3. Use of Outputs (*State the use made of the outputs)*

2.4. Degree of achievement of the objectives/results (*On the basis of facts obtained during the follow-up phase, describe how the project document outputs and their use were or were not instrumental in realizing the objectives / results of the project)*

2.5. Determine the degree to which project contributes to the advancement of women in Environmental Management and describe gender sensitive activities carried out by the project.
2.6. Describe how the project has assisted the partner in sustained activities after project completion.

3.1 Conclusions

3.1 Lessons Learned (*Enumerate the lessons learned during the project's execution. Concentrate*

on the management of the project, including the principal factors which determined success or failure in meeting the objectives set down in the project document)

3.2 Recommendations (*Make recommendations to (a) Improve the effect and impact of similar projects in the future and (b) Indicate what further action might be needed to meet the project objectives / results*)

4. Attachments

4.1 Attach an inventory of all non-expendable equipment (value over US$ 1,500) purchased under this project indicating Date of Purchase, Description, Serial Number, Quantity, Cost, Location and Present Condition, together with your proposal for the disposal of the said equipment

4.2 Attach a final Inventory of all Outputs/Services produced through this project

APPENDIX 1 OF ANNEX 6

ATTACHMENT TO TERMINAL REPORT: FORMAT FOR INVENTORY OF OUTPUTS/SERVICES

Meetings (UNEP-convened meetings only)

No	Meeting Type (note 4)	Title	Venue	Dates	Convened by	Organized by	# of Participants	List attached Yes/No	Report issued as doc no	Language	Dated
1.											
2.											
3.											

List of Meeting Participants

No.	Name of the Participant	Nationality

Printed Materials

No	Type (note 5)	Title	Author(s)/Editor(s)	Publisher	Symbol	Publication Date	Distribution List Attached Yes/No
1.							
2.							
3.							

Technical Information / Public Information

No	Description	Date
1.		
2.		
3.		

Technical Cooperation

No	Type (note 6)	Purpose	Venue	Duration	For Grants and Fellowships		
					Beneficiaries	Countries/Nationalities	Cost (in US$)
1.							
2.							
3.							

Other Outputs/Services (e.g. Networking, Query-response, Participation in meetings etc.)

No	Description	Date
1.		
2.		
3.		

13. NOTE 4
Meeting types (Inter-governmental Meeting, Expert Group Meeting, Training Workshop/Seminar, Other)
14. NOTE 5
Material types (Report to Inter-governmental Meeting, Technical Publication, Technical Report, Other)
15. NOTE 6

ANNEX 7

TERMS OF REFERENCE

PROJECT MANAGEMENT

National Project Coordinator (NPC)

I. Project background information

In 2001, Mongolia completed its first national communication and submitted it to the UNFCCC Secretariat. The preparation of first national communication was supported through a GEF-funded enabling activity for the preparation of first national communications of the Republic of Mongolia.

Under the enabling activity, Mongolia was required to establish appropriate institutional arrangements to implement the various activities/tasks in the preparation of the national communication. In accordance with this requirement, the Climate Change Coordinator was housed within the National Agency for Meteorology, Hydrology and Environment Monitoring which is under the Ministry of Nature and Environment.

The project for the preparation of the SNC on climate change is a logical continual step towards further implementation of the UNFCCC at the national level. Its main objective is to prepare a comprehensive report on climate change related issues. The analysis conducted within the INC will be updated and extended, which will result in preparation of a comprehensive national report. Furthermore, it will work towards ensuring that climate change issues are not considered as separate to national and local environmental concerns by integrating objectives into national and local strategic planning processes.

Duration of the project is 36 months.

II. Scope of the assignment

The NPC will manage the project on a day-to-day basis and is accountable to the executing agency for the planning, management, quality control, timeliness and effectiveness of the activities carried out, as well as for the use of funds. The NPC will ensure the regular monitoring and feedback from activities already under implementation. The NPC will be located within the National Agency for Meteorology, Hydrology and Environment Monitoring. The NPC will work closely with the UNFCCC focal point, the Senior Task Manager, UNEP/GEF, and the National Climate Committee.

III. Duties and Responsibilities

The National Project Coordinator (NPC) will have the following duties:

- Prepare a detailed work plan and budget;
- Prepare and submit to the UNEP, regular progress and financial reports;
- Coordinate and oversee the preparation of the outputs of the SNC;
- Ensure effective communication and adequate information flow with the relevant authorities, institutions and government departments in close collaboration with the NCC;
- Ensure appropriate stakeholder participation in the project implementation and coordinate the work of all stakeholders under the guidance of the NCC and in consultation with the UNEP office;
- Ensure that information is available to the NCC about all Government, private and public sector activities, which impact on capacity development;
- Maintain and establish additional links with other related national and international programs and other Enabling Activities;

- Prepare the Terms of Reference for consultants and experts and ensure their timely hiring;
- Guide the work of consultants and experts and oversee compliance with agreed work plan and timely completion of tasks;
- Organize and coordinate the procurement of services and goods under the project;
- Coordinate, manage and monitor the implementation of the Project activities/tasks undertaken by the various thematic working groups, local experts; consultants, sub-contractors and co-operating partners;
- Assume overall responsibility for the proper handling of logistics related to all project workshops and events;
- Manage the Project finance, oversee overall resource allocation and where relevant submit proposals for budget revisions with the help of the UNEP;
- Undertake any other actions related to the Project as requested by the NAMNEM and UNEP.

IV. Qualifications and skills

- Advanced university degree in the fields related to climate change and/or environmental management;
- Minimum of 5 years of working experience in the area relevant to the project;
- Involvement in the preparation of the national GHG inventory, vulnerability and adaptation assessment and the preparation of the INC - not necessary, but highly recommended;
- Demonstrated ability in managing projects, and in liaising and cooperating with all project stakeholders including government officials, scientific institutions, NGOs and private sector;
- Familiarity with international organizations operations and structure;
- Substantial experience in Government and in interdepartmental procedures;
- Familiarity with international negotiations and processes under the UNFCCC;
- Fluent written and oral communication in English and Mongolian;
- Strong communications and interpersonal skills;
- Excellent computer knowledge (MS Office, Internet); and
- Of Mongolian descent.

THEMATIC WORKING GROUPS

1. JOINT THEMATIC WORKING GROUP ON GHG INVENTORY AND MITIGATION

1.1. THEMATIC SUB-WORKING GROUP ON GHG INVENTORY

A joint Thematic working group on GHG Inventory and Mitigation will be established. This joint group will consist of two sub- groups, namely Thematic sub-Working Group on GHG Inventory and Thematic sub-Working Group on Mitigation.

I. Scope of Work

The sub-Thematic Working Group on National GHG Inventory will be formed to carry out the inventory of GHG emissions and mitigation analysis in Mongolia. The group will consist of experts from relevant ministries, institutions and agencies of government and non-government organizations. The group will ensure that specific tasks relating to the national GHG inventory is carried out in a timely manner and will ensure efficient coordination of outputs of consultants and national institutions. The activities undertaken by the national institutions will contribute to strengthening institutional arrangements for compiling, archiving, updating and managing GHG inventorie.

II. Duties and Responsibilities

Particular duties may be as follows:

- Undertake national GHG inventories for the year 1999-2002, according to the guidelines for the preparation of National Communications (17/CP.8)
- Participate in the training workshop on the use of IPCC guidelines, and GPG including one for the LULUCF;
- Include information on the other non-direct GHGs such HFCs, PFCs and SF6 as well as CO, NOx, SOx and NMVoCs;
- Revise the input data, taking into consideration data gaps and areas needing improvement identified in the stocktaking exercise;
- Collect/gather available activity data from national sources to fill inventory data gaps;
- Identify and develop methods for overcoming inventory data gaps if there is no available data;
- Identify barriers to obtaining existing data for key sources and propose solutions;
- Archive relevant data for the project duration;
- Calculate emissions for the year 1999-2002 for all sectors;
- Describe procedures and arrangements undertaken to collect and archive data for the preparation of national GHG inventories, as well as efforts to make this a continuous process, including information on the role of the institutions involved;
- Utilize the deliverables under the regional project; and
- Organize (in cooperation with the NCCC) workshop for presentation and discussion on the results obtained from the GHG Inventory.

III. Qualifications and Skills

The institutions and/or expert individuals contracted for undertaking project activities should meet the following minimum criteria:

- Sound and broadly-recognized scientific expertise on climate related research in Mongolia;
- Familiarity with the UNFCCC and IPCC technical guidelines; and

- Prior experience in inventory preparation, through involvement in the First National Communication recommended.

vi. Expected output:

National GHG Inventory, in accordance with the UNFCCC guidelines. The report should include information on other non- direct GHGs: HFCs, PFCs and SF_6 as well as CO, NOx, SOx.

1.2. THEMATIC SUB-WORKING GROUP ON MITIGATION

A joint Thematic working group on GHG inventory and mitigation will be established. This joint group will consist of two sub- groups, namely Thematic sub-Working Group on GHG Inventory and Thematic Working Group on Mitigation.

I. Scope of Work

The thematic Working Group on Mitigation will be responsible for carrying out GHG mitigation analyses and identifying mitigation options for Mongolia. It will ensure timely and effective implementation of specific activities outlined below, as well as coordination with the outputs of other consultants engaged outside the institution.

II. Duties and Responsibilities

- Based on the results from the GHG Inventory and future development plans, particularly in the energy and land use change and forestry sectors, develop a baseline and mitigation scenarios to abate the increase of GHG emissions;
- Consider the main national economic and social development trends in the analysis, including expected GHG emissions in energy, agriculture, land-use change and forestry and waste management;
- Extend the analysis on the side of energy consumption, including energy consumption in the industry (for heating, for technological processes), in the public sector and in the residential sector;
- Revise the measures contained in the INC according to the latest economic development, including quantitative measures in all sectors;
- Identify, formulate and prioritize programs containing measures to mitigate climate change within the framework of sustainable development;
- Finalize the GHG mitigation analysis using the selected tools and additional background information in order to finalize the cost-benefit analysis of the different measures, develop a series of mitigation scenarios to abate the increase of the GHG emissions;
- Liaise and consult with the Technical Working Groups on GHG Inventory and Technology Transfer and Research and Systematic Observation on matters relating to GHG inventories and on technology needs for mitigation;
- Formulate a final national action plan to abate the GHG Emissions including information cost analysis, assessment of technology options for the different mitigation options in various sectors, institutional capacity-building needs to sustain mitigation work, and the related legal and institutional frameworks;
- Organize (in cooperation with the NCCC) a workshop to present the results of the GHG Mitigation and draft national action plan; and
- Prepare final report on GHG mitigation and national action plan, including comments from the stakeholders.

III. Qualifications and skills

The institutions contracted for undertaking project activities should meet the following minimum criteria:

- Sound and broadly-recognized scientific expertise on climate related research in Mongolia;
- Experience in preparing scenarios for GHG mitigation through involvement in the First National Communication recommended;
- Qualified scientists working in the related areas: Energy, Agriculture, Land Use Change and Forestry, Waste; and
- Familiarity with the UNFCCC, software modeling tools such as LEAP, ENPEP, MARCALL, etc.

IV. Expected output:

A Completed GHG Mitigation report and National action plan for effective response to the GHG emissions.

The proposed activities will be undertaken in appropriate sequence so as to maximize the synergies between each component of the proposed activities, as well as the efficiency and cost-effectiveness for the implementation throughout the project cycle. Some proposed that are not related to each other, such as GHG inventory and vulnerability assessment, will be undertaken in parallel.

Good practices in project implementation, such as the efficient use of financial and human resources, the engagement of qualified local and regional consultants, public participation throughout the project cycle, will be adopted where appropriate. Established guidelines will be followed, while established tools and methodologies will be used.

2. THEMATIC WORKING GROUP ON VULNERABILITY ASSESSMENT AND ADAPTATION

I. Scope of Work

The group will ensure implementation of specific activities outlined below, as well as coordination of the outputs of other consultants engaged outside the institution. The activities undertaken by the national institutions will also strengthen institutional arrangements for systematic climate observation, data management and control, processing and updating of meteorological and hydrological services data.

II. Duties and Responsibilities

Particular duties may be as follows:

- Participate in the training workshop on V&A methods and tools available for V&A assessment work;
- Analyze the climate changes for the period 1940-2005 for existing stations of the following parameters: temperature, precipitation, wind, cloudiness and sunshine hours;
- Identify the data needs, availability and suitability, and establish datasets baselines of the assessment;
- Analyze the existing climate data and parameters, by months and years;
- Prepare climate maps using GIS technology;
- Review the vulnerability assessment of the following sectors: agriculture, water resources, natural ecosystems, forestry, and human health, including identification of vulnerable areas that are most critical;

- Describe links between climate, and socio-economic baseline conditions of the country in the most vulnerable sectors;
- Based on the output of the vulnerability assessment, evaluate the feasibility of available adaptation measures to meet their specific needs and concerns arising from the adverse effects from the climate change;
- Prepare a national adaptation action plan to implement those measures being of highest priority including clear distinction of responsibilities among the relevant stakeholders, timeframe for fulfillment/implementation of the recommended measures, financial means for implementation of the measures, and identification of possible barriers and risks;
- Liaise and consult with the Technical Working Group on Technology Transfer and Research and Systematic Observation on issues relating to technology needs assessment and climatic conditions of Mongolia;
- Organize (in cooperation with the NPC) a workshop to present the results from V&A;
- Prepare comprehensive report on the vulnerability assessment and national adaptation Action plan; and
- Prepare a chapter on "Programs containing measures to facilitate adequate adaptation to climate change," in accordance with the UNFCCC guidelines.

III. Qualifications and Skills

The institutions and experts contracted for undertaking project activities should meet the following minimum criteria:

- Sound and broadly-recognized scientific expertise on climate related research in Mongolia;
- Prior experience in vulnerability assessment and adaptation process, through involvement in the INC recommended;
- Highly qualified scientists working in the fields of climate observation and vulnerability analysis in the specific sectors; and
- Familiarity with the UNFCCC, IPCC methodology, MAGICC/SCENGEN and other methods.

IV. Expected output:

Completed report on vulnerability assessment and adaptation strategy for the following sectors: agriculture, water resources, natural ecosystems, forestry and human health.

3. THEMATIC WORKING GROUP ON TECHNOLGY TRANSFER

I. Scope of Work

The thematic Working Group on Technology Transfer will be responsible for carrying out technology needs assessment for mitigation and adaptation in Mongolia. The group will ensure timely and effective implementation of specific activities outlined below, as well as coordination with the outputs of other consultants engaged outside the institution.

II. Duties and Responsibilities

- Participate in a training workshop on the technology needs assessment;
- Carry out technology needs assessment for Mongolia;
- Liaise closely and consult with the TWGs on GHG inventory, Vulnerability and Adaptation, and Mitigation on issues of relevance, especially on climate data, technologies and capacity-building;
- Provide substantive input to the work of TWGs on Vulnerability and Adaptation and Mitigation;

- Formulate an action plan for technology needs for mitigation and adaptation including assessment of technology options in various sectors, institutional capacity-building needs, related legal and institutional frameworks;
- Organize (in cooperation with the NPC) a workshop to present the results of the technology needs assessment
- Prepare final report on technology transfer issues, including comments from the stakeholders

III. Qualifications and Skills

The institutions and or expert individuals contracted for undertaking project activities should meet the following minimum criteria:

- Sound and broadly-recognized scientific expertise on various technologies in Mongolia;
- Experience in preparing a report on technology through involvement in the INC preferable;
- Familiarity with the methodologies for technology needs assessment and the UNFCCC guidelines.

IV. Expected output:

A completed technology needs assessment report for Mongolia including emerging needs and priorities.

4. THEMATIC WORKING GROUP ON RESEARCH AND SYSTEMATIC OBSERVATION

I. Scope of Work

The thematic Working Group on Research and Systematic Observation will be responsible for carrying out activities on research and systematic observation in Mongolia. The group will ensure timely and effective implementation of specific activities outlined below, as well as coordination with the outputs of other consultants engaged outside the institution.

II. Duties and Responsibilities

- Participate in a training workshop on the use of the UNFCCC guidelines on research and systematic observation;
- Undertake an assessment of the needs and priorities for research and systematic observation in close collaboration with Central Asia – Global Climate Observing System (GCOS) initiatives;
- Prepare an analysis of the climatic conditions of various stations in Mongolia;
- Liaise closely and consult with the TWGs on GHG inventory, Vulnerability and Adaptation, and Mitigation on issues of relevance, especially on climate data, technologies and capacity-building;
- Provide substantive input to the work of TWGs on Vulnerability and Adaptation and Mitigation;
- Organize (in cooperation with the NPC) a workshop to present the results of the research and systematic observation
- Prepare final report on research and systematic observation, including comments from the stakeholders

III. Qualifications and Skills

The institutions and or expert individuals contracted for undertaking project activities should meet the following minimum criteria:

- Sound and broadly-recognized scientific expertise on climate research in Mongolia;
- Experience in preparing a report on research and systematic observation through involvement in the INC preferable;

- Qualified scientists working on issues relating to climate, weather, meteorology and hydrological services;

IV. Expected output:

A completed a final report on Research and systematic observation including emerging needs and priorities.

5. THEMATIC WORKING GROUP ON EDUCATION, TRAINING AND PUBLIC AWARENESS, INFORMATION AND NETWORKING

I. Scope of work

The group will examine ways to promote climate change education, training and public awareness building on the work already done on this issue during INC activities. The group will ensure timely and effective implementation of specific activities outlined below, as well as coordination with the outputs of other consultants engaged outside the institution.

II. Duties and responsibilities

- Compile and analyze information on activities/tasks relating to the implementation of the New Delhi work program on Article 6 of the Convention;
- Compile and analyze information on activities/tasks relating to the implementation of the Capacity-building framework of the UNFCCC;
- Identify the needs and priorities for climate change education, training and public awareness and capacity-building as they relate to GHG inventory, vulnerability and adaptation assessment, mitigation, technology transfer, research and systematic observation and other emerging priorities;
- Liaise and consult with the various TWGs under the SNC project and the National Capacity Self Assessment;
- Prepare a draft National plan for implementation of Article 6 of the Convention and the UNFCCC capacity building framework;
- Identify technology needs for information and networking;
- Conduct a workshop (in collaboration with NPC) on ways to promote climate change education, training and public awareness;
- Prepare a chapter on: (i) Education, Training and Public Awareness, (ii) Information and Networking, (iii) capacity-building for inclusion in the compilation of the SNC.

Annex 8

Summary Report on the Stocktaking and Stakeholders Consultation for the preparation of the Second National Communication of Mongolia to the United Nations Framework Convention on Climate Change

2-3 March 2006, Ulaanbaatar, Mongolia

Introduction

1. The GEF *Operational Procedures for the Expedited Financing of National Communications from non-Annex I Parties* (GEF, 2003) recommended the developing countries to organize the Stocktaking and Stakeholders Consultation to better prepare the project proposal for the preparation of the Second National Communication (SNC). In accordance with this recommendation, a one-day Expert Group Meeting (EGM) was organized by the National Agency for Meteorology, Hydrology and Environment Monitoring (NAMHEM) on 2 March 2006. NAMHEM was responsible for the preparation of Initial National Communication in 1998-2000. The EGM was followed by a one-day National Workshop for Stocktaking and Stakeholders Consultation, which was organized jointly by NAMHEM and the Ministry of Nature and Environment (MNE), and held at MNE on 3 March 2006.

Attendance

2. Thirteen experts involved in past and ongoing climate change projects, including INC project participated in the EGM. About 30 people, including representatives from relevant ministries and institutes, private sector, NGOs participated in the National Workshop for Stocktaking and Stakeholders Consultation. The participants were former members/experts participated in of the Initial National Communication (INC) project, members of national study team and stakeholders, representatives, policy makers, scientists, researchers, experts of MNE, NAMHEM, Ministry of Industry and Trade, Ministry of Food and Agriculture, Aviation Meteorological Centre, Institute of Meteorology and Hydrology (IMH), Ministry of Fuel and Energy, National Emergency Agency, Agency for Water Problems, National University, University of Science and Technology, University of Agriculture, Energy Conservation Consulting Company and Automobile Service Centre. Also, journalists from mass media such as "Info" Newsletter, the Mongolian National TV and the Mongolian Radio attended the workshop. Principal researchers and team leaders were interviewed by the journalists and their interviews were showed or transmitted in or at the information programmes of National TV and Radio.

3. The list of participants is attached to this report.

Background:

4. Mongolia signed the United Nations framework Convention on Climate Change (UNFCCC) on 12 June 1992 at the Rio Summit and ratified it on 30 September 1993. The Parliament of Mongolia ratified the Kyoto Protocol of the Convention on 15 December 2000. Mongolia compiled and submitted its Initial National Communication (INC) to the UNFCCC Secretariat in 2001. The Ministry of Nature and Environment (MNE) was assigned by the Government as a National Focal point institution for implementing the UN Environmental Conventions, including UNFCCC and KP in Mongolia. The National Agency for Meteorology, Hydrology and Environment Monitoring (NAMHEM) which is under the MNE is managing and coordinating the implementation of all climate change related activities under UNFCCC and KP. The NAMHEM is also responsible for the preparation of the SNC of Mongolia to the UNFCCC.

Objectives:

5. The main objectives of the EGM and the stocktaking and stakeholder consultations were to:

- Identify climate change related activities being implemented or completed and analyse the results and outputs of these activities,

- Identify existing gaps and future needs

- Prepare a description of existing institutional arrangements relevant to the preparation of their national communication.

- Collate information on financial resources and technical support for the preparation of national communication provided by themselves, the GEF and other agencies, Annex II Parties, or bilateral and multilateral institutions, for inclusion in the SNC.

- Discuss the objectives and activities to be included in the project proposal for preparation of the SNC

Opening addresses:

6. H.E. Dr Ichinkhorloo Endenbaatar, the Minister of Nature and Environment, kindly gave an opening statement at the Workshop. In his address, firstly, he warmly welcomed all participants to the workshop and emphasized on the reporting obligations of Mongolia received under the UNFCCC. He also highlighted efforts made by Mongolia in addressing climate change issues, both nationally and internationally, underscored the importance of the workshop and highly appreciated the close cooperation between MNE and other related ministries, agencies, organizations, including NGOs and private sector. He also expressed sincere thanks to GEF, UNEP, UNESCAP and other concerned international organizations and several donor countries for their financial and technical support to the implementation of climate change activities, the INC in the past and the preparation of the SNC of Mongolia in the coming period. He believed that the workshop will contribute significantly to the SNC project proposal of Mongolia to UNFCCC. Finally, the Minister wished a good success for the work of the workshop. H.E. Minister Dr. I.Erdenebaatar kindly stayed for one and half hours to hear all presentations made at the workshop.

Conduct of the Workshop:

7. The overall workshop was chaired by Dr. B.Bayasgalan, Director-General of the Sustainable Development and Environment, and Ms B.Bujidmaa, GHG inventory team leader served as the Secretary for the workshop.

8. Programmes of the meeting and workshop are attached.

Main activities of the EGM and Workshop

9. Dr Damdin Dagvadorj, Deputy Director-General of NAMHEM moderated the Expert group meeting. He briefly introduced the objective of the meeting, as well as the reporting obligations under the convention. He also explained TOR of the Workshop for Stocktaking and Stakeholders Consultation to be held on 3 March 2006.

10. Then a comprehensive review of past and existing activities, including the major results and outcomes of the USCSP, ALGAS, INC projects and the Phase II project for measures for capacity-building in priority areas, the AIACC project, as well as other relevant regional activities. Discussion was focusing on the following thematic areas: GHG inventory (discussion led by Ms B. Bujidmaa); Vulnerability and Adaptation (V&A) Assessment (discussion led by Dr L. Natsagdorj) and GHG Mitigation (discussion led by Dr J. Dorjpurev) was followed. Issues on technology transfer needs in the energy sector, research and systematic observation related to V&A activities, as well as capacity-building, have also been discussed.

11. Each task group provided with results and achievements in their responsible areas up to date. New activities in these thematic areas for the SNC were then proposed.

12. Dr B. Bayasgalan, Director of the Sustainable Development and Environment Department, MNE, chaired the stakeholders workshop. Four presentations were given at the workshop: the first by Dr D. Dagvadorj, who outlined the objective and the aims of the Stocktaking and Stakeholder Consultation, and discussed the UNFCCC and Mongolia's obligations under the Convention. He also gave an overview of the climate change and related activities that has been undertaken in Mongolia after 2001.

13. Ms B. Bujidmaa of the Institute of Meteorology and Hydrology then gave a presentation on the current status of the National GHG Inventory, including the objective of the inventory, and some results from the 1990-1998 GHG data. She also highlighted the improvements made for the estimation of CO_2 and CO emissions from the transportation sector using country-specific mass emission factors, and for the estimation of methane emission from the solid waste sector using the improved statistical data and other parameters such as waste coefficient (Gg/ million people/year), fraction of MSW disposed to solid waste disposal sites and degradable organic carbon (fraction) (kg C/ kg SW) where data were obtained based on domestic information sources. She highlighted the gaps and the needs for future improvement and update.

14. Then Dr L. Natsagdorj and Dr P. Batima of the IMH presented a joint presentation on the *Vulnerability and Adaptation: Achieved Results and Future Needs.* In particular, Dr Natsagdorj first reported on the main results of the IPCC Third Assessment Report, and then discussed the historical and current climate change in Mongolia, including updated temperature and precipitation trends, climate change scenarios up to 2099, and the potential impacts of climate change in Mongolia, especially on water resources and the increasing frequency and magnitude of extreme weather events, such as drought and dzud, as well as feasible adaptation options. Dr Batima introduced the results of the vulnerability and adaptation assessment for grassland ecosystem and animal husbandry undertaken within the AIACC project. They highlighted the existing gaps and the needs for future improvement and update.

15. The final presentation was given by Dr L. Dorjpurev, who discussed the issues related to GHG mitigation, including the technology needs assessment in the energy sector. He introduced the results of GHG mitigation analysis for energy, forestry, transport and industry sectors and cost-efficient and environmentally sound mitigation options. He also highlighted the existing gaps and the future needs.

16. Each presentation was followed by questions and answers. At the end of the workshop, the participants were then allowed two hours to provide comments on all the presentations, including issues relating to energy, industrial pollution, capacity-building, research and systematic observation, integration of climate change concerns into sectoral planning, and education and public awareness, among others. Representatives of the ministries and agencies, in particular the Ministry of Fuel and Energy and the Ministry of Industry and Trade pointed out the importance of integration of GHG mitigation issues with the sectoral development plans and programmes.

17. The matrix that was used to assist in stocktaking of activities financed under the GEF enabling activities and other efforts is attached as Table 1. The cells marked with "x" simply means that some activities had been undertaken under the INC, the Phase II project and other past and existing activities, but new and additional activities are still needed. Blank cells mean that no activities have been undertaken so far.

18. The National Workshop for Stocktaking and Stakeholders Consultation specifically took note that the warming tendency in the country has been continuing and that the country has experienced several natural weather and climate extreme events that were particularly severe. These extreme events have severely affected Mongolia's aggressive economic development trend. The increase in frequency and magnitude of these extreme events would have enormous implications for Mongolia's sustainable development. It was agreed during the Workshop that these aspects would be comprehensively assessed and highlighted in the SNC.

After consultation activities

19. After the Workshop, Dr Dagvadorj, the facilitator for the preparation of this project document, held two further informal meetings with key members of the thematic working groups on GHG inventory, V&A Assessment and GHG Mitigation on 27 March 2006 and 6 April 2006 respectively, based on the results and outcomes of the Workshop, with a view to gathering further information for the preparation of the SNC project proposal. In the first informal meeting, general issues that may relate to the SNC components were discussed. In the second informal meeting, specific activities and its indicators for GHG Inventory, V&A Assessment and GHG mitigation components of the SNC were identified. The outputs of these informal discussions are used as the basis for the preparation of this project proposal.

Previous activities

20. Based on the presentations made by thematic working group leaders and discussions followed, the stakeholders consultation identified the following activities implemented up to date: :

21. *Activities undertaken in National GHG Inventory are*:

- Preliminary national GHG Inventory for 1990 was undertaken for the U.S. Country Studies Program (USCSP) during 1994-1996, using the *1994 IPCC Guidelines for National Greenhouse Gas Inventories.* The inventory includes emissions of carbon dioxide, methane, nitrous oxide, nitrogen oxides and carbon monoxide in five sectors: Energy, Industrial Processes, Agriculture, Land Use Change and Forestry, and Waste. Although data were limited, this study did provide opportunities for some institutional and human capacity-building.

- On the basis of the USCSP, the national GHG Inventory for 1990 was revised and updated with a slightly expanded scope in the ALGAS project during 1997-1998 using the *1994 IPCC Guidelines for National Greenhouse Gas Inventories.* The inventory covered the emission of carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) in the same five sectors, namely: *Energy* (all energy for direct greenhouse gases CO_2, CH_4 and N_2O, and indirect greenhouse gases NO_x and CO emissions only; also fugitive emissions from solid fuel for CH_4 emission only); *Industrial Processes* (cement and lime production for CO_2 emission only), *Agriculture* (i.e., enteric fermentation and manure management for CH_4 emission only); *Land-Use Changes and Forestry* (i.e., changes in forest and other woody biomass stocks for both CO_2 emission and removal); forest and grassland conversion for CO_2 emission; and abandonment of managed land for CO_2 removal only) and *Waste* (CH_4 emission only for solid waste disposal on land and for wastewater treatment). Bunker fuel emission was also estimated. Based on this inventory, the GHG emissions in terms of CO_2-equivalent from the energy, forestry and agriculture sectors was projected for 1993, 2000, 2010 and 2020, and the potential mitigation options and opportunities, including technical and economic feasibility, as well as the emission reduction potential and policy barriers, were identified and assessed. On the whole, the GHG inventory in the ALGAS project was much improved and reliable compared to that in the USCSP project because of improved emission factors used in fuelwood and dung combustion based on local research, as well as improved carbon uptake figures of logged forest and planted forest based on the review of the local and international literature. However, the lack of reliable data in some areas remains the main obstacle for a comprehensive inventory to be undertaken.

- On the basis of the ALGAS project, the GHG inventory was further updated for the period 1990-1998 under the INC project using the *IPCC 1996 Revised Guidelines for National Greenhouse gas Inventories*. The inventory basically covered the same range of GHGs and the five source categories as those in the ALGAS project. Once again, the lack of data or the lack of reliable activity data and appropriate emission factors in some sources remain the main obstacle for a comprehensive estimation to be undertaken. For example, accurate emission inventory in the waste sector proved difficult due to the lack of information and poor waste

management, including insufficient activity data on the proper collection, transportation, separation and recycling of wastes, and the extent of landfill coverage, etc. Also, only industrial processes for cement and lime production were estimated as in the ALGAS project while other industrial activities, such as the production of metallic and non-metallic products, chemical products, were not included.

- Another major uncertainty is the emission of GHGs from the forest and steppe fires. There were 101 and 219 forest fires in 1992 and 1997, in which 1,668.4 thousand ha and 16,201.4 thousand ha were burned, respectively. Steppe fires were also frequent in dry season. These fires were largely human induced, and they could be a major source of GHG emission. In view of this, in the INC project, the emission of CO_2, CH_4, N_2O, NO_x and CO from forest fires were estimated for the period 1990-1995 based on the default emission factor for savanna burning provided by the IPCC Guidelines. These results needed to be re-evaluated with more appropriate emission factors. However, steppe fires were not included, and this needs to be considered in the SNC. The preliminary results in the INC project indicate that if forest and steppe fires are included in the GHG inventory, it would be the most significant source of CO_2 emission.
- In 2005, under the Regional Project on *Capacity Building for Improving National GHG Inventories* (2004-2006) funded by GEF/UNDP, a local expert team has measured the country-specific mass emission factor for the estimation of CO_2 and CO from the exhausts of both petrol and diesel engines motor vehicles. The improved emission factor has resulted in a reduction of CO_2 remission by 11.2% for petrol engine vehicles and 8.2% for diesel engine vehicles as compared to those estimations using the IPCC default values. Similarly, estimation of methane emission from the waste sector was improved based on local statistical data and other parameters, such as waste coefficient (Gg/million people/year), fraction of municipal solid waste (MSW) at waste disposal sites and degradable organic carbon (fraction) (kg C/ kg SW).

22. *Activities conducted in the field of impact and adaptation assessment are*:

- Four previous studies have undertaken some aspects of vulnerability and adaptation assessment: (i) the US Country Study Program (USCSP) (1993-1995); (ii) the *Climate Change Studies* (1998-2001) funded by the Netherlands Government; (iii) the INC project (1998-2001); and (iv) the project on *Potential Impacts of Climate Change and V&A Assessment for Grassland Ecosystem and Livestock Sector in Mongolia* (2002-2004) under the GEF/UNEP/START and TWAS project: *Assessments of Impacts & Adaptation to Climate in Multiple Regions & Sectors (AIACC).* In addition, a UNDP-Government of Luxembourg-funded project on *Strengthening the Disaster Mitigation and Management System in Mongolia* (late 2002-2005) has strengthened the capacity of the disaster management authorities in mitigating disasters, which could be climate induced.

- In the USCSP (1993-1995), only a preliminary vulnerability and impact assessment, which covered spring wheat, water resources, and grassland/livestock (cattle) sectors, was undertaken. However, local scientists concerned that the General Circulation Models (GCMs) used to predict climate change did not accurately reflect the baseline conditions in Mongolia. Moreover, only one crop (spring wheat) was examined and very few sites were studied. Therefore, the results of this study should only be considered only as preliminary and not sufficient for policy development. However, some technical capacity has been built in the application of the assessment methodologies within the scope of the financial and technical assistance of this project.

- The *Climate Change Studies* (1998-2001) had assessed the vulnerability of crop planting (spring wheat), the shift in natural zones and water resources (few river basins) was undertaken and potential adaptation measures were identified. As a result of this project, a *National Action Programme on Climate Change* was developed and approved by the Government in 2000. The *National Action Programme* establishes an implementation

strategies for priority response measures and gives an opportunity to integrate climate change concerns into other development plans and programmes. Implementation of the identified measures and actions should not have an adverse impact on national sustainable development goals and concepts.

- In the INC project, future seasonal climate change over Mongolia was projected using different climate models with respect to the baseline 1961-1990 period in 2020 (2011-2040), 2050 (2041-2070) and 2080 (2071-2100). Among the four special emissions GHG scenarios (SRES A1, A2, B1, B2), middle high A2 and low B2 have been chosen based on future trends of world socio-economic, population and technology development. Mongolia's future climate change (temperature and precipitation) for the periods 2000-2040 and 2040-2070 were developed based on selected General Circulation Models (GCMs) scenarios. A vulnerability assessment was undertaken for different geographical zones (e.g., mountain zone, forest-steppe, desert-steppe, etc.); and socio-economic sectors, such as water resources; grassland; forestry; animal husbandry, arable farming; snow cover; permafrost, soil quality and erosion using the outputs of the General Circulation Models (GCMs) based on the global GHG emission scenarios (IS92a and IS92b) for the region. All GCM models give results, which temperature and precipitation is generally increased in both seasons. However, summer temperature will be increased more intensity than the winter and winter precipitation will be increased more intensity than the summer with respect to their climate baseline period. Integrated impacts were also assessed. Priority adaptation measures, including both technical and policy, were identified.

- *The* Potential Impacts of Climate Change and V&A Assessment for Grassland Ecosystem and Livestock Sector in Mongolia *(2002-2004) of the AIACC project aims to comprehensively assess the impacts, vulnerability, and adaptive capacity of the rangeland and livestock sector in Mongolia to climate change. The impacts was evaluated through the quantitative and qualitative estimation of potential productivity of under different climate change scenarios. A combination of ecosystem modeling, remote sensing data, analysis of existing long-term plant dynamics and climate databases, and field surveys were used to investigate climate and land use changes effects on grassland ecosystem structure and function. Particular priority was placed on the study of interactions between climate, grassland and pastoral systems, and social institutions in order to assess vulnerability and adaptive capacity of the integrated system and ultimately support environmental planning and decision-making.*

23. *Activities undertaken in GHG mitigation analyses are*:

- The USCSP (1993-1995), which had assessed the mitigation options for the energy sector and the Land Use and Land-Use Change and Forestry (LULUCF). In the energy sector, the Long-range Energy Alternative Planning (LEAP) model was used to estimate the amount of GHG emission reduction. In the LULUCF sector, the COMAP (Comprehensive Mitigation Analysis Process) model was used to identify mitigation options.

- The ALGAS project (1997-1998), in which a range of potential GHG mitigation options for the energy sector of Mongolia was identified. These include energy conservation and efficiency improvements, both in the supply and demand sides; as well as renewable energy options. Analysis shows that in case of Mongolia, the primary areas for GHGs emissions mitigation are the energy and forestry sectors. These include. The EFOM-ENV Model was used to assess quantitatively the GHGs reduction potential and cost-effectiveness of the highest priority mitigation options. The identified forestry options were assessed using the Comprehensive Mitigation Analysis Process (COMAP) model.

- The *Climate Change Studies* (1998-2001) funded by the Netherlands Government also included the GHG mitigation studies, focusing on the energy and industry sectors. As a result of this study, a report on the *Greenhouse Gases Mitigation Potentials in Mongolia* was published in 2000 (Batima *et. al.*, 2000).

- The INC project (1998-2001), in which mitigation options were analyzed for both the energy supply and demand sectors, as well as for the transportation, agriculture, land–use change and forestry, and waste sectors. The MEDEE/S-ENV (demand side) and EFOM-ENV (supply side) models were used to project the CO_2 emissions from the energy sector up to the year 2020. Because of the lack of data, the year 1993 (instead of the recommended base year 1994) was used as a base year for the analysis (NAMHEM, 2001).

Gaps identified

24. Based on the work in the INC and projects implemented after its submission, the presenters pointed out the following major gaps:

25. *The major gaps in National GHG Inventory are*:

- Activity data of CO_2, CH_4 and N_2O, NO_x and CO in the five main source categories need to be updated and extended based on the COP 8 Guidelines;
- Emissions of NMVOC and SO_x and Non-methane volatile organic compounds (NMVoC), as well as sulfur dioxide (SO_2), hydro fluorocarbons (HFCs), per fluorocarbons (PFCs), and sulfur hexafluoride (SF_6) are not estimated.
- Existing GHG database needs to be updated and improved to make it user-friendly;
- Inventory was not as extensive and comprehensive due to the lack of data or poor data quality in certain source categories (e.g., not all industries and industrial processes were considered);
- The previous emissions from energy consumption in different sectors were calculated using the reference approach only and there is a need for the sectoral or bottom-up approach for emission estimation;
- Lack of country-specific emission factors (e.g., enteric fermentation, coal, mining, soils, waste disposals, etc.);
- GHG Inventories were prepared for 1990-1998. Therefore, it was agreed during the stocktaking exercise that a GHG inventories should be updated for 1999 - 2002, and GHG inventories for 1990-1998 should be re-calculated.
- The uncertainties for sources and sinks were not estimated;
- User-friendly software for GHG emission projection is needed;
- Capacity-building in IPCC methodologies for GHG Inventory, including the application of good practice guidance and uncertainty management, especially new IPCC 2006 methodology is very much needed.
- QA/QC procedures needed to be developed and applied, especially in the direction of cross-checking between the different sources of activity data.
- On the stage of sectoral report preparation, reporting and documentation should be improved;

26. *The major gaps in V&A are:*

- Although a lot of information has been generated in the area of vulnerability and adaptation assessments during the INC and other projects, many gaps still exist in the area of data collection, monitoring, expertise, skills and know-how required to conduct vulnerability and adaptation assessments on a continuous basis and for some social and economic sectors and biophysical components. Therefore, there are needs for additional V&A assessments in certain social (health, income and livelihood of rural people, etc.) and economic (arable farming, tourism and recreation, etc.) sectors and biophysical components (water resources, including surface and underground water, forests, soil moisture resource, ice cover of glaciers, etc.), as well as training and capacity building;

- Use of appropriate methodologies and tools for conducting vulnerability and adaptation assessments at the national, community and sectoral levels. The training would include downscaling of outputs from global circulation models to reflect projected changes in specific sectors and/or communities within timeframes that are relevant and appropriate

for decision-making. This should lead to an assessment of the climate variability and climate change in Mongolia, including their trends and impacts.

- Strengthen existing, and where appropriate develop data management systems to ensure that a vulnerability and adaptation assessment is carried out on continuous basis.
- Evaluation (including cost-benefit analysis), prioritization and costing of adaptation options, strategies and measures.
- Incorporation of vulnerability and adaptation assessment work into development planning including risk-based assessment methods.
- Collection, analysis and dissemination of data and information on research and systematic observation in accordance with Article 5 of the UNFCCC.
- Integrating climate change issues in sustainable development planning processes in Mongolia.

27. *The major gaps in GHG mitigation are:*

- Lack of a national strategy for GHG mitigation;
- legal and economic instruments for mitigation measures;
- Lack of updated and improved cost-effective mitigation options assessment including appropriate mitigation technologies;
- Lack of suitable analytical models for transport sector
- The need for improved models for energy sector and forestry sector;
- Lack of knowledge of relevant technologies

28. *The major gaps in Transfer of technology are:*

- There are still necessary to conduct an technology assessments for other sectors, such as industry, agriculture, waste management sectors.

- Big gap in technology needs assessment is that there is not any technology or methodology assessment in field of adaptation in Mongolia. Therefore, one of the tasks of this objective is an assessment of technologies, knowledge and know-how than can be used for development and transfer of technologies in adaptation issues.

29. *The major gaps in Research and Systematic Observations are*:

- Climate data quality needs to be further enhanced;
- Inadequate technical and financial resources for keeping an appropriate systematic observation network;
- Lack of analysis of existing hydrological and meteorological data by local expertise;
- Inadequate computing facilities to rum regional Global Circulation Models (GCMs) for development of climate change scenarios and downscaling into regional level;
- Inadequate human and institutional capacity in climate data monitoring and analysis.

30. The major gaps in Education, Training, Public Awareness, Information and Networking are:

- Lack of a national strategy and programme on climate change education, training and public awareness;
- There is also a need to introduce or strengthen climate change science at the primary, secondary and universities levels and through non-formal public education;
- Inadequate outreach materials (especially in Mongolian language) on climate change issues, especially those for children and young people;
- Lack of public awareness on climate-induced disaster preparedness; hence there is a need to introduce and strengthen community education on climate change and climate-induced disaster preparedness;

- Education, training and public awareness on climate change have not yet become social activities, and partnerships between the public and private sectors, including community groups and NGOs, are needed.
- Lack of financial resources for climate change outreach programmes and activities.

31. Based on the results and findings of previous implemented projects, objectives and activities to be undertaken within the SNC project were discussed. The participants in the consultation expressed their interests to participate in implementation of the activities planned within the SNC.

32. Table 1 included in the project document shows the matrix to assist in stocktaking of activities financed under GEF enabling activities and other efforts.

33. The following contents of the SNC, which has been included in the project document, was discussed during the workshop:

    i. National Circumstances
    ii. National Greenhouse Gas Inventories
    iii. General Description of Steps
    iv. Other Relevant Information
        - Information on integrating climate change considerations into social, economic and environmental policies and actions
        - Information on transfer of, and access to ESTs
        - Information on Climate change research and systematic observation
        - Information on Climate Change education, training and public awareness
        - Information on Capacity Building Activities, Options and Priorities
        - Information on efforts to promote information sharing and networking

    v. Constraints and Gaps; Related Financial, technical, and capacity needs

34. In conclusion, the Chairperson summarized the results of the stoktaking and stockholders consultations workshop. On behalf of the MNE, he expressed his deep gratitude to relevant ministries and agencies, the GEF and UNEP, and thematic working group leaders and participants from various national institutions, for their active participation in the consultation and discussions. The chaiperson also expressed his hopeness that all relavant ministries and agencies, and other institutions will collaborate productively within the SNC project.

Conclusions and recommendations:

35. The two-day expert group meeting and Workshop on stocktaking and stakeholders consultation was successfully held. It proved to be an useful forum to share information and lessons learned, as well as to identify issues, gaps, barriers and constraints, with a view to proposing future activities for the preparation of the SNC.
36. The Workshop recognized that the preparation of the SNC will enable Mongolia to fulfill its commitments and obligations as required by Article 4.1 and 12.1 of the Convention.
37. The workshop recommended NAMHEM, in close cooperation with related ministries and agencies, to formulate the project proposal for the preparation of the SNC soon, so that it can be submitted to GEF/UNEP for funding by mid-April 2006.