ADAPTATION FUND

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PROJECT/PROGRAMME PROPOSAL

PART I: PROJECT INFORMATION

PROJECT/PROGRAMME CATEGORY:	Regular Project
COUNTRY/IES:	Mongolia
TITLE OF PROJECT/PROGRAMME:	Ecosystem Based Adaptation Approach to Maintaining Water Security in Critical Water Catchments in Mongolia (UNDP PIMS 4505)
TYPE OF IMPLEMENTING ENTITY:	MIE
IMPLEMENTING ENTITY:	United Nations Development Programme
EXECUTING ENTITY/IES:	Ministry of Nature, Environment and Tourism
AMOUNT OF FINANCING REQUESTED:	US$ 5,500,000 (IN U.S Dollars Equivalent)

BACKGROUND AND CONTEXT:

Geographic and Environmental Context

Mongolia is a land-locked nation covering 1.564 million square kilometers. The country shares extensive borders with Russia and China. Mongolia has several major eco-regions. The Altai, Khangai, Sayan, and Khentei Mountains traverse the nation's west, central and northern landscapes. The nation's highest point, Khuiten Peak, reaches 4,374 m. Although the southern expanse of the Siberian Taiga extends into Mongolia, only 8% of the country is covered by closed forest. The Great Gobi desert extends across the country's south and central territory. Relatively pristine steppe grasslands stretch across hundreds of kilometers of eastern Mongolia. Rare and significant species include Snow leopard, Brown bear, Saiga and Mongolian gazelle, Wild Bactrian camel, Saker falcons, and numerous species of crane. There are 61 protected areas in Mongolia covering approximately 14% of the territory.

The country is a globally important watershed with three major water systems: the closed "Central Asian Internal Drainage Basin ("Great Lakes Basin") in the west, the Arctic Ocean Basin in the north, and the Pacific Ocean Basin in the east. The nation has over 5,000 streams and eighty-five percent of the water is fresh. Total surface water resources are estimated at 599 km^3 stored in lakes (500 km^3), glaciers (62.9 km^3) and rivers (34.6 km^3). Ground water resources, although not rigorously quantified, are estimated at 10.8 cubic km. In spite of these resources, Mongolia is water scarce. Classified as semi-arid to hyper-arid, precipitation ranges between 50 to 400 mm with highest rainfall in the north and lowest in the south. Approximately 90% of the precipitation evaporates and 10% forms surface runoff with only partial ground water recharge. The country has high temperature fluctuations with long, cold winters and brief, hot summers. The annual mean air temperature is 0.7°C. There is an average of 260 sunny days per year.

Social and Economic Context

The current human population is estimated at 2.9 million. The nation remains the world's most sparsely populated country with an average 1.7 people per kilometer. Nearly sixty-percent of the population is under the age of 30. Mongolia is becoming urbanized with increasing rural to urban migration. Sixty percent of Mongolians now live in towns. Fifty-percent of the population resides in only three cities: Darhan (75,000), Erdenet (95,000), and the capital, Ulaanbaatar (1.5 million).

In 2007, the mining sector accounted for 20% of GDP and 69% of exports. Mining has experienced a monumental boom in recent months. The 2009 GDP decreased by 1.3% compared to the preceding year. Mining helped stimulate 2010 real GDP growth of more than 7% (World Bank). This was accompanied by increased inflation. Billions of dollars of international investment are now flowing into mega-projects such as Oyu Tolgoi and Tavan Tolgoi. Simultaneously, small-scale mining for gold

and other precious metals by both legal and quasi-legal operators is expanding rapidly. Thousands of mineral claims are now littered across Mongolia's countryside. However, the nation's rapid economic growth has not lifted most Mongolians out of poverty. More than 35% of Mongolia's population remains impoverished. While urban poverty is decreasing to approximately 27%, rural poverty is rising. In the last five years, the number of rural dwellers classified as living in deep poverty increased from 42% to 50%.

Agriculture produced only 21% of GDP in 2009 and 12% of export earnings. However, the agriculture sector employs between 35% - 40% of the Mongolia's workforce (MOFALI 2011). The nation has relatively little cultivated land. Current estimates are 380,000 ha. The primary crop is wheat. The total amount of irrigated land is approximately 43,000 ha, mostly for vegetable production. Cultivation contributes 3% to the nation's GDP. The primary economic activity in rural Mongolia is livestock grazing. Over 200,000 nomadic and semi-nomadic herding families still dominate this rural economy. They rely upon their livestock as both a source of capital and subsistence. Mongolian's have herded livestock for thousands of years and the sector could be highly sustainable. However, as discussed below, both traditional and government managed grazing regimes have largely collapsed due to drastic political changes. As a result, the number of herders and the intensity of herding practices have increased. The total national herd doubled in the last three decades alone. The national herd reached 44 million head in 2009 and was reduced to 33 million during the 2010 dzud. Herd structures have also altered. For instance, the percentage of goats grew quickly during the 1990's to supply the expanding cashmere market. This exponential herd growth has resulted in a drastic alteration of the landscape. Over-grazing is evinced by declining biodiversity, pasture health, herd fitness, and degraded soil and water systems.

Institutional and Policy Context

Mongolia transitioned into a democratic state in the early 1990's and adopted a new constitution in 2006. The Environmental Protection Law passed in 2006 guides natural resource use and conservation. This law is supported by additional legislation such as the Protected Areas Law (2006), Forest Law (2007), and Water Law (2004). A Pastureland Management Law has been under review for some time and has yet to meet legislative approval.

On the national level, natural resource management is governed by a variety of agencies. The Ministry of Nature, Environment and Tourism (MNET) is responsible for resource conservation, including protected area management, water conservation, biodiversity conservation and monitoring. The Ministry of Roads, Transportation, Construction and Urban Development (MRTCUD) oversees land use planning. The Ministry of Mineral Resources and Energy (MOME) retains authority over mineral extraction and regulates hydropower development. The Ministry of Food, Agriculture, and Light Industry (MOFALI) regulates rural water supply, livestock management and agricultural development. Divergent management approaches are coordinated somewhat under requirements for environmental impact assessments, sectoral committees such as the National Water Committee, and sectoral policies such as the National Water Program, National Biodiversity Action Plan, National Action Programme for Climate Change and Combatting Desertification and the State Policy for Herders.

Under an increasingly de-centralized governance structure, the nation's 21 Aimags (provinces) and 329 Soums (districts) have immediate authority over many natural resource use and access issues. The national government sets broad natural resource use parameters while Aimag (province) and Soum (district) governments have immediate authority over ecosystem management within their territory. Local government agencies must respond to the directions of national authorities and are largely responsible for coordinating national-level development priorities. There is no formal requirement and/or mechanism for local governments to coordinate this decision-making to maintain ecosystem function and services and most local level governments do not have the capacity and tools necessary for this task. In most cases, Soums may determine the location and extent of grazing activities, water use and extraction, and the consumption levels of many biological resources. For instance, Soums determine whether to allow new herding families into their territories and frequently describe where these families may graze. Soums and Aimags also approve most water extraction activity.

Prior to 1990, natural resource use – including water use, grazing, hunting and forestry – was managed according to fairly specific planning frameworks guided by national objectives. This management system collapsed along with communism. Several projects implemented over the past

twenty years have attempted to build planning capacity for various natural resource sectors. For instance, projects and programs have supported protected area planning, species planning, forestry planning, and livestock planning. None have worked to create an operational model for ecosystem level monitoring, assessment, and planning that fully integrates climate change vulnerability.

Most natural resources management in Mongolia is relatively limited. Grazing is de facto open access. Nearly all of Mongolia's land-base, including pastureland, is publicly owned. Prior to 1991, grazing was regulated by a centralized system that maintained traditional nomadic patterns while regulating herd structures, grazing locations, and times. Approximatly 70% of all livestock were owned by the State. After 1991, herds were completely privatized and most grazing regimes collapsed. Grazing is now defined largely by an open access system with retention of some traditional management practices and limited government oversight. Policies promote increased production and herd size.

Regulation and management of water resources is inadequate. Ground water extraction requires only a simple permit from the National Water Authority. Surface water use is largely un-regulated. Many surface water bodies are monitored for both quality and quantity and the Government is moving forward to support IWRM principles and practices. This includes fostering the development of River Basin Councils and supporting water resource use plans for 14 of 29 basins. River Basin Councils were authorized by a 2004 revision to the existing Water Law. The revisions allow for the creation of River Basin Councils to act as stakeholder advisory groups to forward the concept of Integrated Water Resources Management (IWRM). Basin Councils are voluntary and consist of representatives of water users and consumers, government, nongovernmental, and specialized or professional organizations. They have the authority to devise non-binding water IWRM plans. The Khovd-Buyant and Onon-Balj river systems are making good progress with water basin planning.

The National Climate Committee (NCC) established in 2002 is responsible to provide policy advice and guidance regarding climate change related issues. The NCC is chaired by the Minister for Nature, Environment and Tourism and has representatives from a variety of relevant ministries and the Mongolian Academy of Science, National Council for Sustainable Development, and NGOs. The National Climate Change Authority (NCCA) was established with 7 staff recently within the MNET to facilitate daily operations and coordinate climate change related activities within various sectors. Three CDM projects are registered with 11 projects endorsed by the DNA. The MNET is responsible for preparation of GHG inventories and national communications under the UNFCCC with the support of a variety of academic, private, NGO, and government partners.

Description of the Climate-Change-induced Problem

Problem to be Addressed

Mongolia's geographic location, fragile ecosystems and socioeconomic conditions make the country highly vulnerable to climate change[1]. Unsustainable agriculture and development practices already maximize Mongolia's natural resource use beyond sustainable limits. Mongolia's ecosystems do not have the resilience and reserves required to cope with any further stress. If current trends continue and unsustainable management practices persist, the vulnerability of Mongolia's rural communities will increase as climate change accelerates the deterioration of land and water resources and associated ecosystem services. The additional impacts represented by climate change will very likely dismantle Mongolia's already vulnerable ecosystem services.

Evidence of Climate Change

Mongolia is witnessing significant alterations to water and ambient air temperatures and precipitation patterns. Both the frequency and severity of extreme weather events are increasing. Mongolia experienced three historic harsh winter weather events in the past decade. Each resulted in catastrophic losses. Flash flooding during the summer of 2009 claimed several lives in Ulaanbaatar. From 1940 to 2007, the annual mean air temperature in Mongolia increased by approximately 2.14^0C. This is three times higher than the global average. Warming is projected to further incline by 5^0C by the end of the 21st century.[2] Average water temperature for all three basins (Arctic, Pacific, Internal

[1] Government of Mongolia, 2007, Assessments of Impacts and Adaptations to Climate Change (AIACC)

[2] Ministry of Nature, Environment and Tourism, 2009, Mongolia: Assessment Report on Climate Change (MARCC). The projection is based on the HadCM3 model using SRES A2 scenario.

Drainage) has increased approximately 2 degrees from 1940 to 2008. Mongolian scientists anticipate that overal water tempartures will increase another 2 degrees Celcius by 2020.

The pace of glacier loss has quickened in recent years. The total glacier area in Mongolia decreased by approximately 22% over the last sixty years. The total loss from 1940 to 1992 was 12%. Mongolia's glacier's shrunk by an astounding 10% from 1992 to 2002. Surface water is actually increasing in Mongolia's mountainous north and west as climate change quickens permafrost and glacier melt. In these areas, water stores and riparian areas are gaining. This trend will continue for several decades until frozen water reserves are depleted. In the remainder of the country, suface water is already decreasing. The 2007 water inventory reveals that 852 rivers and streams out of a total of 5,128 have dried up; 2,277 springs out of a total of 9,306 have dried up; 1,181 lakes and ponds out of a total of 3,747 have dried up; and, 60 springs out of a total of 429 have dried up.[3] Even The entire country relies primarily upon summer rains to provide moisture. From 1940 and 2007, the average annual precipitation decreased by 7 percent. In particular, the amount of precipitation has decreased during the summer months. There is an increasing tendency for precipitation to fall in short heavy bursts, instead of several moderate ones. It is projected that precipitation will decrease in the short term by 4 percent between 2010 and 2039. It is then projected to increase from 2040 to 2080 but with greater geographical variability and most models predict that increases will tend to occur in the cold season.[4] Altered summer rainfall and the reduced duration of winter ice formation is changing once reliable river flow patterns.

Climate change will intensify Mongolia's already perilous situation. Climate change will likely decrease pasture biomass by an additional 6 – 37.2% in the forest-steppe and steppe region by 2080.[5] A national vegetation zone study using biomass and dryness indices estimated that the Gobi desert will likely creep northwards by 350-450 km by 2070.[6] Changes in spatial and temporal precipitation patterns and ambient air temperatures and humidity, coupled with melting of glaciers and permafrost will further impact the hydrological regime. Scientistis predict that precipitation will continue to decrease by an additional 4 percent between 2010 and 2039. They then prognosticate an increase from 2040 to 2080 accompanied by greater geographical variability and fewer summer rains.[7] A decrease in streamflows is likely in steppe and desert regions. Increased surface evaporation rates will cause a further decline of availabile water.[8] Advancing desertification and land degradation, including diminished wetlands and reduced land cover, will lower soil infiltration rates and water storage and aquifer recharge capacity. A desertification impact assessment showed barren areas were increased by 46% from 1992-2002 and grassland productivity fell by 20-30% during the past 40 years.[9] The Gobi continues to expand northwards into more productive zones.

Climate Change Accelerants and Impacts

The maintenance of ecosystem functions and water provisioning services are critical for the survival of rural communities and the national economy. The nation depends upon the ecosystem's ability for natural retention, quantity and quality regulation and reticulation services to maintain adequate surface and groundwater. Their loss will impact key development sectors such as biodiversity, mining, agriculture, and tourism. Mongolia's highly valuable ecosystem services are already vulnerable. The combination of existing land and water degradation multiplied by climate change will almost certainly result in substantial ecological and social challenges.

Mongolia's wildlife – including terrestrial, avian, and aquatic species – are dependent upon extensive, intact ecosystems for their survival. The harsh climate and low-productivity landscape necessitate the consideration of a far larger scale in order to ensure species survival. In the early 1990's, the nation was internationally recognized for its large and relatively intact landscapes and rapid expansion of protected areas. Now many species are vulnerable due to over-harvest, resource competition with domestic livestock, and habitat loss from mining and other rural developments. Mongolia's protected areas are increasingly isolated and disintegrating into conservation islands surrounded by a sea of

[3] MARCC, 2009.

[4] MARCC, 2009. The projection is based on the HadCM3 model using SRES A2 scenario

[5] AIACC, 2007, Government of Mongolia

6 Government of Mongolia, 2009, National Study for Climate Risk Management and Action Plan of Mongolia

[7] See footnote 3.

[8] MARCC, 2009

[9] Bolortsetseg, B. 2002. Impact of recent and past climate change on rangeland productivity in Mongolia: Potential Impacts of Climate Change, Vulnerability and Adaptation Assessment for Grassland Ecosystem and Livestock Sector in Mongolia project. AIACC.

degradation. The addition of climate change will only accelerate the devaluation of ecosystem and protected area functionality. Altered water temperatures and flow, depleted forest cover, and hastened land degradation will further challenge the integrity of ecosystems and the continued existence of Mongolia's rich biodiversity legacy.

In 1993, approximately 20,000 international visitors came to Mongolia. By 2010, this number grew to more than 550,000. Biodiversity, pristine open spaces, and a functioning nomadic culture are the bedrocks of Mongolia's expanding and vibrant tourism industry. Most tourists invest in "green" sectors such as protected areas and biodiversity conservation. They also support cultural survival. If climate change and resource degradation bring about any further loss of ecosystem services, Mongolia's substantial tourism gains will be alleviated.

Although crop farming is relatively limited and primarily non-irrigated, the sector is growing in both scope and economic importance. Irrigation schemes are advancing rapidly particularly in the mountainous west with many streams already over-appropriated. In some areas, wasteful water management practices by crop producers creates water logging and a severe reduction of in-stream flows. In the steppe regions, tillage is being pursued aggressively. With the advent of climate change, this risks increased desertification, encroachment of invasive species, and loss of globally significant grasslands. Intact grasslands sequester significant amounts of carbon and are therefore a highly important mitigation tool.

Mongolia now looks to mining as a core development engine. Mining and associated refining processes generally require vast amounts of water to maintain operations. The mining sector is prone to land degradation and to waste and degrade water resources. These operations are quickly absorbing large quantities of ground and surface water. There are plans to develop large hyrdo-electric projects to supply needed energy. This will significantly alter water resource integrity. As land and water resources are further degraded by poor management practices and climate change moves forward, this nationally critical economic driver will face severe water shortages. Demands that cannot be satisfied using natural flow enhancement, e.g., improved land management practices, will be addressed through increasingly intrusive water storage and conveyance schemes.

Some freshwater systems are impacted by urban pollution and run-off. Unsustainable tree harvest and inappropriate collection of firewood along riparian areas and upland watersheds increases erosion and dimishes water resource security. These are each significant issues.

Livestock grazing is currently the most substantial and prevalent contributor to both land and water degradation. Several national and international studies have concluded that over 75% of Mongolia's pasturelands now suffer from degradation caused by over-grazing. In 1980, there were approximately 23 million head of livestock in Mongolia. The total herd reached 44 million in 2009. Most current estimates are 33 million head. In spite of this one-year drop, recruitment will outpace consumption with herd size rebounding quickly. Mongolia is a meat-consuming nation. However, the country slaughters less than fifteen million head of livestock each year. As stock numbers increased, the total amount of pastureland decreased from 130 million hectares in 1930 to 112 million hectares in 2007.[10] Still, nearly 80% of Mongolia's landscape is grazed. Livestock numbers far outweigh capacity on most of this range. Overstocking in the Great Lakes Basin alone is considered to be five times greater than the carrying capacity. Over-grazing accelerates desertification and pastureland vulnerabilities. Over-grazing of riparian areas increases flooding, run-off rates, erosion and siltation. Over-grazing degrades wetlands and destroys riparian vegetation. The loss of upland forest and riparian lands disrupts water flow regimes, reduces natural temparature moderation, and destroys habitat for a host of important wildlife species. Over-grazing impacts the status of surface and groundwater resources, facilitates deforestation and desertification, depletes biodiversity by increasing competition and creates pathways for encroachment of invasive and low energy plants.

Ironically, the livestock sector is perhaps the greatest contributor to climate change vulnerability and the sector most exposed to climate change risk. There are certainly some very wealthy livestock producers in Mongolia. However, Mongolia's rural dwellers are proportionately the country's poorest population sector. There are two primary reasons for this situation. First, there are relatively few revenue generation opportunities beyond agriculture. Second, the current livestock management approach

[10] "Livelihoods Study of Herders in Mongolia" Swiss Agency for Development, 2010.

supports or at least tolerates a constant maximization of available resources. The result is a continually increasing number of livestock competing for continually decreasing amount of productive grasslands. This is a nearly untenable situation.

The livestock sector is the lynchpin that determines the health and resilience of almost all things rural Mongolia. Livestock management is both an ecological and social welfare issue. Over forty-percent of Mongolia's population relies upon livestock for subsistence and capital. These are Mongolia's poorest and most traditional residents. They have subsisted for centuries upon the ecosystem services provided by unencumbered pastures and abundant fresh water. Within the last twenty years, these services and the associate rural economy have been driven to the point of near collapse. Livestock numbers continue to increase and no significant changes to grazing protocols have been adopted in spite of visibly diminished water quality/quantity and creeping desertification. Government policies continue to reward livestock producers for increasing herd size rather than improving herd quality. Few models and incentives exist to promote improved production, lower stocking rates, and adopt more ecologically friendly production regimes. There is little capacity to protect, improve and properly utilize pastureland let alone internalize climate change vulnerability within integrated natural resource management frameworks.

The drought/dzud events of the last decade forewarn of the possible social, ecological, and financial catastrophe that awaits rural Mongolia once the full impacts of climate change take root. Mongolia experienced extreme droughts in consecutive summers during 1999-2002. In the winters of 2000-2003 and 2010, severe *dzuds*[11] hammered the country and made global headlines. The 2010 dzud affected 50-70% of the total territory of Mongolia and caused a loss of 9.7 million livestock. Biodiversity losses where not well tabulated, but expected to be high. The Central Bank of Mongolia estimated that the 2009 – 2010 dzud cut economic growth in half, limiting what would have been a 14% growth rate to only 7%. Each dzud required the mobilization of massive amounts of national and international aid. More than 8,710 herder households were left without any livestock or means of support. This devastated many rural economies and caused an increased migration to already crowded urban areas. Most experts agree that dzuds are a normal part of rural Mongolian life. However, these climatic events were differentiated from the past by frequency and impact. Rarely has Mongolia experienced three dzuds in a single decade. This is attributed to climate change. The social and ecological impacts were overwhelming. This was attributed to the dire condition of Mongolia's pastureland resources. When these dzuds struck, there was a nearly total lack of ecosystem resilience.

Long Term Solution

To address the additional ecological challenges presented by climate change, there is an urgent need to conserve and rehabilitate the ecosystem services upon which Mongolia's rural economy, traditional culture, and rich biodiversity depend. This requires a paradigm shift to ensure that the very foundation of human livelihood - ecosystems and their services - is sufficiently resilient to climate change pressure, and to enable communities to adapt to climate change. Reaching this solution requires setting in place capacities and tools to remove barriers currently hindering climate risk from being actively integrated within land and water resource planning and management. The desired situation requires improving the capacity of government decision-makers and private resource users to conserve and rehabilitate natural ecosystems. Stakeholders at all management levels should be able to identify, assess and internalize climate change risks into water and land resource management. This should occur in both mountainous and steppe landscapes and accomplished at all management tiers, including eco-region and watershed. To reduce the vulnerability of communities to increasing water scarcity induced by climate change, the natural facilities of grasslands, forests, wetlands, aquifers and riparian areas to enhance water quality and quantity resilience must be strengthened. The final result should be fully operational systems for land use and water resources management that are holistic. Management approaches should embrace ecosystem wide solutions that incorporate climate change risks and provide clear avenues for adaptation and mitigation. The ultimate success of national, aimag, and soum level resource use management should be measured

[11] *Dzud* is a Mongolian term for a harsh winter with long lasting or frequent snowfall combined with cold winds and extreme low temperatures. With climate change, occurrence of Dzud may become more frequent and intense. Combined with prolonged summer drought, desertification and over-grazing, the impact on livestock has been devastating in recent years.

by the ability of ecosystems to continually provide critical services, including the abatement of land degradation and the regulation of water baseflows.

Barriers in Responding to the Climate Change-induced Problem

Mongolia is a country with deep religious and cultural ties to nature. The Government of Mongolia and its partners recognize the severity of the climate change induced challenges and are also sincerely intent on implementing a solution. They have made substantial efforts to reduce existing vulnerabilities. The country is striving to invest and orient new mineral wealth into programs and practices that promote more sustainable livelihoods. The nation has made good progress towards its pledge of setting aside 30% of its territory as a protected area. This will greatly increase climate change resilience. Mongolia developed a national framework for climate change mitigation and adaptation responses, including the establishment of the National Climate Change Committee chaired by the MNET. In spite of these and many other valid efforts, three primary barriers exist which prevent the Government and communities from addressing the climate change-induced challenges.

Barrier #1: Absence of landscape level framework for internalising ecosystem resilience to climate change in coherent land use and water resources monitoring and planning system.

There are no operational models for comprehensive eco-regional, ecosystem, and/or Soum level land and water management assessment, monitoring and planning. Because of this systemic capacity barrier, the decision-making framework necessary to meaningfully address climate change concerns is absent. This barrier also weakens resilience by perpetuating the degradation of the ecosystem services upon which rural economies depend. Critical vulnerability drivers such as grazing, fuel-wood consumption and water appropriation occur beyond the purview of any comprehensive, coherent and properly informed management structure, let alone a structure that incorporates climate change issues.

Soums may create integrated land and water use plans to guide the decision-making process. However, they lack the capacity and guidance needed. If proper planning framework was in place, it would provide an entry point to identify, monitor, and address climate change vulnerability. However, the decentralization process was not accompanied by national level guidance to properly support Aimag and Soum-level ecosystem management capacity. To date, national and Aimag government agencies have not been able to offer local government with the specific guidance, tools, and examples required to develop comprehensive, enforceable, and adaptive ecosystem management planning.

Without a proper assessment, monitoring and planning regime for the maintenance of ecosystem services, managers and users have a difficult time effectively evaluating and integrating climate change risks within decision-making processes. This leaves Mongolia highly exposed to the adverse impacts of climate change. Programs and projects hoping to improve rural livelihoods tend to promote land use decisions with a view to optimizing yields and incomes rather than maintaining the ecosystem functions that are the source of these incomes. There is very limited active public participation in decision-making. There is no formal and comprehensive framework in place for inter-Soum coordination to promote maintenance of ecosystem services. Individual Soums are left to make isolated, ad-hoc and potentially conflicting choices. There are no formal frameworks to integrate best national and international principles and practices in landscape management.

Because there is not an ecosystem-level planning framework, decision-making is too often sectoral and lacks solid information. National and regional adaptation responses do not benefit from good, broad-based information. Formal monitoring and analysis of biological, water, and land resources in rural areas is largely absent. There is an insufficient knowledge base pertaining to ecosystem dynamics under conditions of climate change, threshold (tipping points) and values, cumulative impacts of different land and water use, as well as impacts of development activities. Rigorous monitoring of even basic resource changes necessary to track and assess climate change vulnerabilities and/or the impacts of management decisions does not occur.

The likelihood of maintaining ecosystem functionality and services in light of growing climate change vulnerabilities and challenges is diminished without an appropriate planning structure supported by on-going monitoring and assessment. Until this barrier is removed, vulnerability drivers will continue

with little national, regional and/or local government oversight. Local governments must be provided with the capacity to generate and implement integrated land and water use management plans on an ecosystem level that are designed to support the maintenance of ecosystem services in light of pending climate change challenges.

Barrier #2: Inadequate demonstrated experiences in ecosystem based adaptation approaches at the landscape level.

Mongolia does not have operational, "on-the-ground" examples of technical interventions that sustainably promote long-term ecosystem resilience to climate change. Without access to replicable demonstrations, government decision-makers and resource users do not have the tools and knowledge necessary to decrease climate change vulnerability.

Over the past twenty years, major national and international development investments were made in integrated water resources management, protected areas management, alternative livelihoods, livestock productivity, and a host of other sectors. These efforts have resulted in showing limiting success with habitat restoration, improved protected areas management, reduced forest harvest, and made some promising movement towards livestock management. These are good steps forward that provide valuable lessons. However, each effort is isolated by geography or sector. The capacity needed to identify and implement "on-the-ground" interventions designed to maintain ecosystem services and meaningfully reduce climate change vulnerabilities at an eco-regional or landscape level do not exist.

Mongolia still does not have a model of success where a suite of "on-the-ground", coordinated interventions reduces climate change vulnerability on an eco-regional landscape level.

Barrier #3: Weak institutional capacity and policy framework to promote ecosystem based adaptation approach.

Mongolia has created new national and regional institutions to help address climate change issues. These include the National Climate Change Committee, the National Climate Change Authority, and various River Basin Councils. The existence of these institutions indicates the Government's serious desire to address climate change. However, these institutions are developing and still require significant capacity bolstering before they can fully execute their functions. These new and emerging agencies are not yet quipped to lead large-scale monitoring efforts and/or generate coordinated eco-region and ecosystem planning programs. They are not well positioned to facilitate the replication of best practices for enhancing climate change resilience. They are not fully capable of improving the knowledge base of national, Aimag, and Soum level decision-makers.

The need to develop the capacity of new institutions compounded by the fact that established Government agencies are not well informed about climate change adaptation constrains progress towards development of a coherent framework for rural integrated land use and water resources management necessary to maintain ecosystem services. Despite the growing understanding and evidence that maintenance of ecosystem services plays a major role in mitigating climate change and in assisting human societies to adapt to its impacts, national and local mitigation and adaptation management frameworks have heretofore paid inadequate attention to ecosystem based adaptation approaches. Existing and pending legislation, such as the draft Pastureland Management Act, do not fully incorporate the need to maintain ecosystem services. Government fiscal policies continue to incentivize production and maximization of resource use rather than conservation and maintenance of ecosystem services.

There is a need to deliver information to the lowest denominator of governance where natural resource management decisions are made. Both national and regional organizations do not yet have the capacity and tools required to offer climate change adaptation support to Soum and Aimag level agencies and resource users. Because these national organizations cannot deliver necessary rural capacity support, Soums have failed to capitalize upon resource management opportunities and climate change vulnerabilities continue to increase.

Institutions at all levels require an enhanced national program to improve capacity to guide, absorb, and assess relevant climate change data. The country promotes and generates good science. Many

institutions monitor and assess climate change trends, mitigation opportunities, and vulnerabilities. This includes substantial meteorological and surface water monitoring. Data needs should be better understood and gathered on all levels according to rigorous protocols. The data should be collated and analyzed nationally and then fed into national, eco-regional, and ecosystem level planning processes. The program should include provision for data generated and distributed on the Soum level.

Numerous opportunities exist to integrate ecosystem resilience within development activities in economic sectors such as agriculture, mining, energy, and infrastructure. However, this does not generally occur. Due to the existing institutional and policy barrier, these sectors tend to focus upon optimizing short-term yields and incomes. They do not generally consider climate change and the potential impacts to vital ecosystem functions such as the provision of highly valuable water, soils and grasslands resources. There is a notable lack of capacity to plan, monitor and enforce climate resilient land use management systems at both national and local levels.

PROJECT OBJECTIVES:

Project Objective

The project's objective is to **"maintain the water provisioning services supplied by mountain and steppe ecosystems by internalizing climate change risks within land and water resource management regimes."**

Project Strategy and Design Principles

This project will apply the principles of Ecosystem-based Adaptation (EBA) to increase climate change resilience at a landscape level. EBA is broadly defined as "a range of local and landscape scale strategies for managing ecosystems to increase resilience and maintain essential ecosystem services and reduce the vulnerability of people, their livelihoods and nature in the face of climate change. Ecosystem-based adaptation involves collective action among governments, communities, conservation and development organizations, and other stakeholders to plan and empower local action that will increase environmental and community resilience to the changing climate." (UNFCCC)

Project activity will focus upon the maintenance of water-provisioning services as a measure of broad EBA success. Project investments will alleviate vulnerabilities and dismantle identified barriers by implementing three interconnected components:

- Component 1 will establish eco-region level integrated land use and water resources monitoring and planning system and associated programme focusing on reduction of climate change vulnerability. The broad-scale strategies will be completed for two eco-regions to detail resilience challenges/opportunities and provide guidance for development sectors. The National Government and Provincial Governments will adopt the completed strategies as formal policy to guide future resource management decision-making. The process will include a series of economic valuations to summarize the project's economic impact, including opportunity costs, the potential economic impact of EBA up-scaled nationally, and the actual economic impact of the project within the two target watersheds prior to project close. This component will be co-financed with the UNDP cash co-financing to the project.

- Component 2, with the majority of the project fund invested, will support communities in two watersheds to implement a number of adaptation methods well proven to restore and/or maintain ecosystem functionality while reducing climate change vulnerability. "On-the-ground" changes within these two watersheds will improve social welfare and the security of ecosystem services. Implementation will focus upon better tactics for grazing management, restoration of riparian zones, survivability of biodiversity, and efficiency of water use. Success will be measured by how well community-level implementation improves the overall integrity of water provisioning services within each watershed relevant to climate change challenges. An ecosystem-planning program will be established within each watershed, led by the soum governments, to guide implementation and coordinate future resource management decision-making. The two programs will build upon and integrate with the adopted eco-region strategies to create a coherent management structure.

Community-level practices will integrate with National and Aimag ecosystem monitoring, assessment, and reporting. To ensure sustainability and long-term performance, the eco-system management programs and produced action plans will become legally binding with formal adoption by 17 Soum governments.

- Component 3 will strengthen the policy and institutional frameworks required to support national adoption and implementation of EBA principles and practices. This will include institutional and policy improvements to generate integrated, landscape level decision-making. The Component will stimulate coherent approaches for resilience impacting sectors such as surface and ground water management, grazing and pastureland management, and the management of riparian habitat. The ability of both existing and emerging institutions to monitor, assess, and plan for EBA will be enhanced. These institutions will be given the tools necessary to provide technical support for EBA implementation. A precise upscaling (marketing) strategy will be developed and implemented to disseminate and mainstream EBA approaches, including lessons learned from activities implemented under Components 1 and 2. Long-term policy, institutional and financial support for continuing and scaling up EBA will be secured.

The project will target two eco-regions, the Altai Mountain/Great Lakes Basin and the Eastern Steppe. These are both very large landscapes. The Altai Mountain/Great Lakes Basin covers nearly 288,000 square kilometres. The Eastern Steppe covers nearly 445,000 square kilometres. Local level interventions will target two watersheds within these broader eco-regions. The Kharkhiraa and Turgen watershed is located in the Altai. The watershed covers approximately 5,300 square kilometres and includes territories for 7 Soums with a population of 31,117. These waters begin in mountainous glaciers and end in the Uvs Lake. WWF has identified this region as containing the most important wetlands of Central Asia. The Ulz river is located in the Eastern Steppe. The watershed covers approximately 38,000 square kilometres (approximately the same size as Switzerland), and includes territories for 10 Soums with a population of 26,042. These waters begin in a series of forests and wetlands, flow through a productive landscape used for grazing and cultivation, navigate the Mongol Daguur Strictly Protected Area and end in the transboundary Daurian reserve, a vast refuge for waterfowl and migratory birds such as the globally threatened White-naped crane. The Wildlife Conservation Society identified this area and its water provisioning services as being highly threatened by the potential drying effects of climate change.

The target landscapes represent a significant portion of Mongolia's water resources and encompass an array of representative ecological, social and economic samples in the country, with potential for generating a variety of experiences and lessons. Both eco-regions and watersheds are emblematic of Mongolia's resilience barriers and concrete adaptation challenges, e.g., over-grazing, riparian disturbance, and over-appropriation. The specific locations were selected because they are: (1) "distinct", offering two very different ecological zones for establishing EBA practices; (2) "representative" of key climate change challenges; (3) appropriately scaled both in terms geographic size and population to allow for substantial, landscape level improvements within budget constraints; and, (4) strategic in that the locations are priorities for government action and allow for building upon and/or coordinating with on-going programming. For a complete description of the target eco-regions and watersheds, please see Annex VI.

The project is designed to strengthen social well being, reflecting the fact that Mongolia's rural poor are the most vulnerable to severe ecosystem degradation. Rural women headed households are typically Mongolia's poorest and forced to use the most marginal landscapes. Women are frequently left with their children in the countryside as men pursue economic opportunities in urban areas. Often, the men do not return and/or send remittances. Implementation activity will offer opportunities for these disenfranchised stakeholders to participate in decision-making, improve their business acumen, and implement EBA practices to strengthen the resilience of the ecosystem services upon which they depend.

The design is guided by the notion that societal adaptation is best achieved by ensuring the continued provision of ecosystem services and establishing the capacities required to identify and address newly arising challenges. The project is constructed to show a range of local and landscape level strategies while achieving meaningful, replicable, and sustainable results within time and budget constraints. The proposed project will contribute to the implementation of national policies and programmes and will assist Mongolia to meet its obligations under UNFCCC. The project responds to

the Adaptation Fund's objective 2 - "Increase adaptive capacity to respond to the impacts of climate change, including variability at local and national level". More specifically, it will contribute to outcome 2.3 - "Increased ecosystem resilience in response to climate change and variability-induced stress" in the strategic results framework of the Adaptation Fund.

PROJECT COMPONENTS AND FINANCING:

Please see Annex III for a detailed budget description.

PROJECT COMPONENTS	EXPECTED CONCRETE OUTPUTS	EXPECTED OUTCOMES	AMOUNT (US$)
Component 1: Landscape level integrated land use and water resources monitoring and planning system focused upon reduction of ecosystem vulnerability to climate change.	Output 1.1 Strategic environmental assessment, including climate change considerations, conducted for target landscapes to document threats to ecosystem function and resilience and provide recommendations for avoiding and mitigating impacts.	Ecosystem resilience factored into land use and water resource planning and management at the landscape level Evidence-based decision making practiced through improved knowledge and understanding on ecosystem dynamics and resilience and impact of different land uses at the landscape level	$ 250,000
	Output 1.2 Economic valuations completed summarizing landscape level costs and benefits of EBA.		$ 0[12]
	Output 1.3 Ecosystem-based Adaptation integrated within land use and water resources monitoring and decision-making system in two eco-regions.		$ 250,000
Component 2: Landscape level adaptation techniques maintaining ecosystem integrity and water security under conditions of climate change.	Output 2.1 Local level climate change adaptation assessment and monitoring implemented in two target watersheds.	Community-level implementation of EBA principles and practices integrating landscape-level land use and water resource management in two target landscapes with an increase in ecosystem resilience and increased adaptation capacity of resource users	$ 450,000
	Output 2.2: Integrated landscape level Ecosystem-based Adaptation management action plans operational within two target watersheds.		$ 690,000
	Output 2.3: Suite of physical techniques to improve ecosystem resilience established in two target watersheds.		$ 1,750,000
	Output 2.4: Regulatory and financial management techniques for improving climate change resilience implemented within two target watersheds.		$ 500,000
Component 3: Institutional and policy capacity strengthened to support Ecosystem-based Adaption replication, monitoring, and enforcement for critical watersheds	Output 3.1: Ecosystem-based adaptation approaches mainstreamed in national resource use planning and implementation mechanisms.	Ecosystem-based adaptation approach mainstreamed in the country's adaptation framework and related sector policies Decision makers, local communities and general public understand and change behaviour towards maintaining ecosystem resilience to reduce their vulnerability to climate change.	$ 200,000
	Output 3.2: Institutional support for integrating climate change risks in land and water resource management planning.		$ 200,000
	Output 3.3: Program for up-scaling best practices developed and implemented.		$ 299,124
4. Component Total			$ 4,589,124
5. Execution cost			$ 480,000
6. Total Project Cost			$ 5,069,124

[12] Covered by UNDP Co-Financing.

7. Project Cycle Management Fee charged by the Implementing Entity (8.5%)	$ 430,876
Amount of Financing Requested	**$ 5,500,000**
Co-financing by UNDP (cash)[13]	$ 500,000
Co-financing by the Government (in-kind)	$ 5,000,000

PROJECTED CALENDAR:

MILESTONES	EXPECTED DATES
Submission of Concept to AF Board	September 2010
Approval of the Concept by the AF Board	November 2010
Development of a Full Project Proposal	Jan – March 2011
Submission to AF of a Full Project Proposal	April 2011
Approval of Full Project Proposal	June 2011
Start of Project/Programme Implementation	November 2011
Mid-term Review (if planned)	May 2014
Terminal Evaluation	June 2017
Project Close	October 2017

PART II: PROJECT JUSTIFICATION

A. Describe the project components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience.

Component 1: Landscape level integrated land use and water resources monitoring and planning system focused upon reduction of ecosystem vulnerability to climate change.

Output 1.1 Strategic environmental assessment, including climate change considerations, conducted for target landscapes to document threats to ecosystem function and resilience and provide recommendations for avoiding and mitigating impacts.

The output will hone the skills of resource managers to identify, assemble and analyze EBA information. The output will commence with a national workshop to discuss best international practices for crafting integrated EBA decision-making and identify national information gaps and coordination needs. A rapid evaluation will be completed to create a foundation for integrated decision-making within the two target eco-regions, the Altai/GLB and Eastern Steppe. This will represent the first opportunity for Mongolian stakeholders to coordinate National, District, and Provincial information generation and management efforts to provide recommendations for avoiding and mitigating impacts on a cross-sectoral platform. The evaluation will focus on documenting threats to ecosystem function and resilience from climate change as well as various compounding factors. Effort will build upon and collate an existing knowledge base that is largely sectoral, e.g., biodiversity conservation, pastureland management, water resources management, infrastructure development and resource extraction. Activity will include gathering, collating, and analyzing the specific data and information needed to identify climate change trends and vulnerabilities in on an eco-regional level. This will include an assessment of physical, biological, social, and economic impacts and indicators necessary to track and assess EBA. The assessment will investigate sources of weakness at all levels from national institutions and policies, fiscal incentives, information and research needs, and local resource management practices and provide a firm foundation for strategic EBA implementation. This output will generate the detailed baseline information and establish the information management practices required to mainstream EBA into decision-making.

[13] UNDP will allocate its core programme funding throughout the duration of the project.

Output 1.2 Economic valuations completed summarizing landscape level costs and benefits of EBA.

The National Development and Innovation Committee, which directly reports to the Deputy Prime Minister's Office, will undertake a series of economic valuations to assess the costs/benefits for different climate change sensitive management measures. The first will summarize the project's economic impact, including opportunity costs, at project start. Particular attention will be paid to ecosystem services, including water provisioning. This will be completed within the first six months of project activity and will be integrated within and inform the EBA eco-regional strategies. The second will evaluate the potential economic impact of EBA up-scaled nationally. The third will evaluate the actual economic impact of the project within the two target watersheds prior to project close. This series will be integrated within and inform the EBA eco-regional strategy process. They will also be used under Component 3 to help inform and make a stronger case for mainstreaming of the EBA approach in the national and local adaptation framework. UNDP's project co-funding will be used to finance these studies.

Output 1.3 Ecosystem-based Adaptation integrated within land use and water resources monitoring and decision-making system in two eco-regions.

The project will assist the Government of Mongolia and other relevant stakeholders to complete an integrated land use and water resource management strategy and action plan for the two key eco-regions, the Altai/Great Lakes Basin and the Eastern Steppe. Integrating the results of Outputs 1.1 and 1.2, the concise strategy and action plan will identify both resilience challenges and opportunities. Best national and international principles and practices will be assessed and detailed within the strategies. The development, implementation and assessment of the strategies will serve as a learning tool for decision-makers and resource users, establishing the processes required to support integrated, EBA decision-making. The formally adopted strategies will synchronize EBA decision-making across the entire eco-region with National, Provincial, and District practices coordinated. Draft strategies will be completed and operational within the first year of the project. These initial draft strategies will help inform project implementation. Throughout project implementation, the strategies will be updated annually to reflect the current knowledge base and trends. This will include integrating lessons learned from other Components and Outputs. These strategies will benefit from the inputs of all primary stakeholders and will be made available via the project website and other media outlets. By project close, national climate change authorities will fully adopt and carry forward the EBA strategic process with mainstreaming secured by formal legal adoption supported by Component 3 activities.

Component 2: Landscape level adaptation techniques demonstrate maintenance of ecosystem integrity and water security under conditions of climate change.

Output 2.1 Local level climate change adaptation assessment and monitoring implemented in two target watersheds.

Rural resource use practices are directly responsible for both EBA success and failure. This output's activities will build the capacities needed for rural communities to generate and access the information and knowledge required to make informed EBA decisions, particularly those related to water provisioning. The communities will engage with the project through community groups, of which 600 have been established in Mongolia, including 130 in the target sites, having official agreements with government to manage natural resources in their area. Where required, additional communities will be established, and make agreements with government, develop community plans and funds[14]. The output will create a training program to build rural capacity to monitor, assess and report on resilience factors. Activities will provide Soum level stakeholders within the two target watersheds with the tools necessary to effectively design and implement integrated EBA management and planning. Soum level decision-makers, resource users and other stakeholders will be given the tools and training required to monitor the health and status of their ecosystem. This will include the ability to monitor resource use and impacts related to water quality/quantity, land degradation, biodiversity conservation/habitat restoration and economic activities such as mining, livestock and irrigation management. As possible,

[14] This community approach has been successfully demonstrated in many regions in previous projects by UNDP and others.

the EBA Soum level monitoring program will build upon and enhance existing government, NGO, and private reporting mechanisms by more fully integrating climate change concerns. This output will deliver quantifiable targets based upon scientific facts to gauge progress in enhancement of ecosystem resilience, to be achieved within the project time frame.

Mongolian and international experts will be engaged to serve as mentors in both of the target watersheds. These experts will be tasked with detailing necessary resource monitoring protocols and transferring monitoring, assessment and reporting skills to Aimag and Soum level stakeholders. These local stakeholders will include both private and government agents. Particular attention will be given to incorporating animal health services, hydro-met experts, protected area staff, schools, and agricultural interests. The assessment will be designed to monitor and assess priority information related to climate change resilience such as ground and surface water quality/quantity, status of riparian vegetation, status of keystone species, vegetation diversity/pastureland health and other issues related to livestock management. The assessments will consider elements critical to social welfare and well-being. National and international experts will be responsible to create user-friendly teaching and reference materials that can be used by constituents within the target watersheds and to support wide-scale replication. Protocols will be designed specifically to monitor and assess the climate change related impacts of Output 2.2 (EBA ecosystem management plans) and Outputs 2.3 and 2.4 (EBA demonstrations). Results will inform Component One. The project will design a rigorous community-to-community monitoring and exchange program so that throughout the project period regular (annual) inter-Soum and inter-watershed exchanges take place with Soum residents visiting and formally assessing/reporting on project supported EBA activity outside of their own territories. Experts will work with Soum level stakeholders to generate user-friendly recording and reporting mechanisms. Soum level researchers will be able to use adopted reporting mechanisms to feed data into ecosystem, Aimag, and National decision-making matrixes. Soum level reporting will be used to inform national and regional EBA planning and decision-making, linking this Output closely with those of Component 3.

As part of the training program, international and national experts will work with Soum experts to complete comprehensive Soum level baseline assessments for each target watershed. These assessments will generate the information required for sound EBA decision-making, including physical, social/economic, and biological data. The assessment will build upon, fine-tune, and integrate with the findings of Component One. The assessments will confirm successful adaptation practices identified for implementation, including lessons learned from past and on-going initiatives. The costs and benefits adaptation measures to enhance water-provisioning services will be carefully tabulated. This will include calculating revenue streams and policy/financial mechanisms necessary to incentivize private enterprises, community groups and local governments to improve water and land resource management. The preliminary Soum level assessments will be collated into a concise ecosystem assessment for each watershed. The first assessments will be completed by the close of Project Year One. The initial assessments will be revisited and updated annually during project implementation to increase data sophistication, incorporate the results of on-going project activities, and firmly establish good monitoring practices,

Output activity will include completing an EBA monitoring, assessment and business planning by the close of Project Year 3. The business plan will detail protocols, responsibilities, and long-term financing needs and sources for the sustainable operation of the established monitoring and assessment program. The business plan will consider linking the release of national government funding to the completion of Soum level monitoring and assessment. The plan will detail requirements for upscaling and replication to support Component 3. The completed business plan will lead to the adoption of a formal government policy mechanism outlining Soum-level EBA monitoring responsibilities and financing to be presented under Component 1. Output success will be measured by the ability of Soum level stakeholders to successfully and independently carry out monitoring tasks prior to project close.

Output 2.2: Integrated landscape level Ecosystem-based Adaptation management action plans operational within two target watersheds.

Soums have the authority, but not the tools and/or processes, to strategically plan for and regulate productive sector activities in order to maintain ecosystem functionality. This Output will directly address the barrier by creating and making operational EBA plans within two watersheds.

The plans delivered under this Output will address key economic, social and environmental sectors, including biodiversity conservation, human health and welfare, tourism, urbanization, mining, crop and livestock production. The broad objective of each EBA plan will be to maintain and restore ecosystem services in order to augment climate change resilience. Again, this will be measured primarily by the improvements made to the natural integrity of water provisioning services. The gauge for output success will be the ability and willingness of Mongolian organizations to successfully institutionalize and carry out the planning and management regime without project support.

Each watershed includes the territories of several Soums. The plans will be developed to encourage these Soums to consider resource management according to ecosystem scales rather than political boundaries. This will require the project to facilitate coordination and communication between Soums using Aimag level assistance. The Output will build upon opportunities to develop and strengthen River Basin Councils for both watersheds as mechanisms for EBA planning and implementation. Each plan will identify and prioritize a set of EBA demonstrations to be implemented within the watershed through Component 2. The plans will build upon past successes with livestock, forestry, protected areas, wildlife, and water resources management and will detail a set of regulatory approaches for each sector. The efforts of existing sectoral mechanisms will be integrated and coordinated, e.g. Water Basin Councils and Soum level environmental units. Each EBA management plan will operate according to a time-bound work plan developed by project experts in coordination with local authorities. This work plan will detail public involvement in the process of designing and implementing the management plans, including requirements and responsibilities for public notice and comment.

The first plans will be completed by the beginning of Project Year 2. This will allow the plans to link closely with the results of Component One. These initial plans will be trialed in both watersheds. By the close of Project Year 3, each plan will be reviewed using the tools and training set in place under Output 1.1 (monitoring and assessment capacities). Based upon this review, the plans will be updated and adapted. This process of monitoring, assessing, reporting, and updating will take place annually throughout the project life. By the close of the project, a final 4-year EBA management plan should be in place for both watersheds. This should include a clear set of guidelines for continuing implementation and financing to take place post-project.

By the close of Project Year 3, the EBA management plan will be presented to each Soum Khural (parliaments) and Darga (Governor) within the target watersheds for adoption as formal policy. Adopting the management plans as formal policy is the most efficient and effective way to guarantee implementation and shows local government support for the process. By adopting the EBA management plans as legal documents, future resource use within the watershed must conform to the Soum adopted EBA management plan. If necessary, the adopted plans will be presented to both the Aimag and National authorities for their approval.

Output 2.3: Suite of physical measures to improve ecosystem resilience established in two target watersheds.

As noted, Mongolia does not benefit from “on-the-ground” examples of EBA measures. This output will address the barrier by implementing a number of physical interventions designed to enhance climate change resilience of ecosystems within each target watershed. The project will support the placement of physical interventions that are designed to maintain and/or restore natural ecosystem functionality and the delivery of associated services. Investments will be predicated upon a respect for traditional, nomadic Mongolian culture and will be designed to maintain, rather than alter, natural ecosystem function. Effort will focus upon making certain that water provisioning is sustained through natural means. This will include efforts to reduce erosion, siltation and maintain natural temperature regulation to increase resilience.

The Output will draw upon successful national and international principles and practices showing practical methods for maintaining and restoring ecosystem functionality in sparsely populated rural areas. The initial results of Component One and Output 2.2 will fine-tune the precise extent and location of each identified intervention. Output 2.1 will be used by local residents as a monitoring and assessment tool for these community-based investments. Physical techniques will include replanting native vegetation along riparian areas and degraded lands to increase water retention and grassland

productivity, e.g. willow fascines. In locations with existing irrigation schemes, the project will invest in physical improvements to increase efficiency, reduce waste, and maintain natural in-stream flow required for biodiversity and human needs. Where ground water extraction is occurring, the project will work with stakeholders to improve extraction and application technologies while monitoring water use and increasing efficiency. The project may employ innovative cropping and ecosystem friendly agricultural production techniques such as low-till and no-till cultivation that will reduce land degradation and increase water security. Where gully erosion is taking place, the project may invest in construction of small-scale erosion controls to rehabilitate and maintain riparian habitat. This may include water harvesting with earthen weirs based upon successful international approaches designed to slow flow rates, retain soil, and restore/maintain natural flow and vegetation.

Riparian degradation is a major contributor to vulnerability of water provisioning ecosystem services. Both upland and lowland riparian damage from livestock and fuel-wood collection is pervasive in both watersheds. The project will invest in substantial exclosures along riparian areas to enhance and restore watershed health. Exclosures will be placed strategically to restore function to severely degraded riparian areas in areas of high biological value, including wetlands. Within exclosures, the project will regenerate native woodland and grassland species. Soum officials will be responsible for making certain exclosures are respected and enforcing any restrictions. Local community members may be hired to monitor and maintain exclosures.

As noted, protected areas exist within both watersheds. The project will work with stakeholders, including protected area staff, to identify if and how these protected areas should be expanded to enhance ecosystem services (e.g., protected upper watershed forested areas) and/or make certain that functional connectivity across the landscapes is secured to increase resilience. The project will identify and invest in low-cost and low-maintenance tools such as improved water monitoring stations that will increase local ability to assess climate change impacts and the status of ecosystem health. This may include providing assistance required to measure the status of grasslands, forests, water, and biodiversity resources linked to Component 1 programs.

Output activity will include the completion of a handbook detailing all aspects of the physical investments. This will describe in detail items such as site selection, individual project costs/benefits, best practices regarding local oversight and management, and EBA results. This handbook will be vetted by local participants and distributed broadly through the marketing mechanisms developed in Component 3.

Output 2.4: Regulatory and financial management techniques for improving climate change resilience implemented within two target watersheds.

The project will integrate climate change vulnerabilities within each target watershed's regulatory and financial management frameworks to model improved "on-the-ground" approaches. The techniques will evince practical, proven methods for removing local level barriers to maintaining and restoring ecosystem functionality in sparsely populated rural areas. This output is critical to addressing the absence of coherent and comprehensive local regulation and oversight. The effort will tackle the key drivers of vulnerability including the local regulation of livestock, water, forests, biodiversity, and cropping. Antiquated regulatory and fiscal tactics that currently constrain the implementation of EBA approaches will be updated. This will be linked with the national interventions implemented under Component 3. Aimag and Soum governments to build and apply the capacity necessary to identify, adopt and implement progressive regulations and fiscal policies. The effort will cover the management of water, grazing, cultivation, forestry, and/or biodiversity.

Adopted regulatory and financial techniques will draw upon best national and international principles and practices. This effort will be guided by the findings Output 2.2 (EBA management plan). Implemented practices will be monitored through Output 2.1 (monitoring and assessment program). Investments will be predicated upon a respect for traditional, nomadic Mongolian culture. They will be designed to maintain, rather than alter, natural ecosystem function. This will include improving local level regulatory mechanisms to make certain in-stream flow is maintained and restored to maintain biodiversity values in light of growing extraction demands. Interventions will be designed to maintain and/or restore natural ecosystem functionality and the delivery of associated services. Effort will concentrate upon making certain that water provisioning is sustained through natural means.

The project will support local governments to implement a number of financial mechanisms to promote a shift from currently unsustainable conditions to more EBA supportive practices. Soum and Aimag fiscal policies will be examined and modernized to integrate climate change concerns and incentivize improved natural resource use practices. The project will work with private lending institutions to endorse practices that encourage EBA supportive management, e.g., linking rural lending practices to more sustainable production models rather than basing collateral upon an increase in herd size. The project will help Soum and Aimag governments to review their natural resource use fee, price support and penalty structures to stabilize ecosystem services. Financial mechanisms will stress the need to improve the status of the most vulnerable population sectors, while creating comprehensive incentives for improved management practices. This will include implementing successful mechanisms for natural resources use payments and/or adopting incremental penalties for resource use that accelerates the loss of ecosystem services and contributes to climate change vulnerability. Output activity will include the review and upgrade of insurance schemes for rural economic sectors. The project will build the capacity of local entrepreneurs to promote a local EBA economy. This will include working with agriculture operations – both livestock and crop – to create sound business plans that increase profits and reduce risks by incorporating climate change factors. Again, a substantial focus will be upon assisting highly vulnerable, poor, rural stakeholders to build capacity for more secure business practices.

EBA models for improved livestock management will be designed and implemented to address this sector's substantial contributions to climate change vulnerability. The objective will be to uphold traditional grazing privileges while regulating livestock numbers on spatial and temporal levels that maintain and restore ecosystem services and enhance climate change resilience. The EBA grazing management approach will adapt the use of grazing association models and link these to the EBA management plan. Project activity will coordinate and integrate with several on-going efforts outside of the project areas, including the World Bank Sustainable Livelihoods Program, the SDC Green Gold Project, and the IFAD/GEF Mongolia Livestock Adaptation Project. The value added by the proposed project will be to make certain EBA principles and practices are firmly embedded within a comprehensive, Soum and inter-Soum level management framework. Approaches may include locally enforced sustainable stocking levels, diversifying herd structure and improving individual animal value, implementing rest/rotation procedures, and modeling livestock permitting regimes. The project will explore the use of ovoljoo (traditional calving/lambing corrals) as anchor points for allocation of grazing privileges. Ovoljoos are privately held under Mongolian law and may be inherited. Under an EBA scheme, the rangelands would remain publically owned while grazing privileges, including total livestock numbers and grazing locations, are predicated upon ovoljoo possession privileges. The result will be a mechanism that maintains traditional grazing regimes while regulating livestock numbers on spatial and temporal levels.

Output activity will include the completion of a handbook detailing all aspects of the trialed regulatory and fiscal demonstrations. This will include a description of costs/benefits, best practices regarding local oversight and management, and EBA results. This handbook will be vetted by local participants and distributed broadly through the marketing mechanisms developed in Component 3.

Component 3: Institutional and policy capacity strengthened to support Ecosystem-based Adaption replication, planning, monitoring, and enforcement for critical watersheds

Output 3.1: Ecosystem-based adaptation approaches mainstreamed in national resource use planning and implementation mechanisms.

This output will mainstream EBA within national resource planning and implementation along four distinct tracks. The project will increase decision-maker awareness of EBA, integrate EBA within legislation and planning frameworks, upgrade fiscal policies to promote EBA, and establish sustainable financial support for EBA programming.

During the first six project months, an analysis will be conducted to prioritize how best to integrate EBA principles and practices within national legislation and planning frameworks relevant to climate change. The analysis will assess legislative and regulatory frameworks, identify and prioritize EBA challenges/opportunities and propose integration methods. The analysis will also review the financial

policies of government agencies and private lending institutions to assess impacts to EBA behavior. The results will be presented at a national workshop and be used to inform Component One. Building upon the regulatory and financial analysis, the project will support the National Climate Change Committee to track, review and comment on proposed legislative changes and national government plans covering germane development sectors such as agriculture, livestock, water and mining. This review will analyze Ministry planning and offer precise recommendations for how best to integrate EBA principles and practices. Innovative measures will be sought to mainstream EBA within existing structures (e.g., MDG-based National Development Strategy and Central Bank of Mongolia economic policies), pending policies (e.g., Pastureland Management Act) and emerging economic development avenues (e.g., Business Council of Mongolia). A national conference will be organized during Project Year 3 to identify how best to improve national policy support for local level realization of EBA. This conference will be a forum for Aimags and Soums involved in Components 1 and 2 to formally present their findings and concerns to national level decision-makers. During Project Years 4, 5 and 6, the analysis of national legislation and planning frameworks and the analysis of government and private institution financial policies will be repeated. These follow-up assessments will quantify mainstreaming progress and identify future needs.

The MNET is currently participating in a regional project on economics of climate change response measures including adaptation activities. In addition, it is planned under Component One that UNDP co-funding will be used to complete a series of economic valuation studies to clarify the project's economic impact, including opportunity costs, to help make a stronger case for mainstreaming of the ecosystem based adaptation approach in the national and local adaptation framework.

To facilitate mainstreaming of EBA within national level decision-making structures, the project will design and implement a four-year campaign to increase national decision-maker awareness of EBA principles and practices. The campaign will be carefully devised to benefit key Parliament and Government members. These key decision-makers will be provided with critical climate change and EBA information. Awareness tools will include a brief quarterly newsletter produced by the National Climate Change Authority with project support. These concise newsletters will offer government and parliament members project activity updates. The material will provide decision-makers with information regarding important national and international climate change and EBA trends. The campaign will also work to create a cohort of Government and Parliament members to serve as EBA champions to help design and implement mainstreaming approaches.

Output 3.2: Institutional support for integrating climate change risks in land and water resource management planning.

Several pathways exist within the current governance structure for incorporating climate change risks and EBA principles and practices. However, the capacity of national institutions to capitalize upon these opportunities is limited. To make certain that project approaches to achieving this output are both efficient and effective, the project will design a comprehensive institutional capacity building strategy during the first six months of operation. Activities will focus first upon building the capacity of the Mongolia's nascent National Climate Change Authority and National Climate Change Committee and their various offices and institutions, e.g., Working Groups, National Climate Change Authority, etc. Effort will strengthen capacity for rigorous information generation, analysis, dissemination and policy formulation. The fundamental objective will be to improve abilities to better integrate knowledge necessary to improve ecosystem security. The strategy will also provide climate change adaption and training support for Soum and Aimag Governors, Khural speakers, and River Basin Councils using demonstration sites for training. The project will strengthen the knowledge base for the Aimag level climate change focal point to improve assessment, monitoring, and replication. Activity will improve knowledge management by strengthening the conduits between national level climate change monitoring programs with Soum level assessment reporting. Output 2.1 will be key to this effort.

The project will design a knowledge management strategy detailing precisely how best to build the capacity of national institutions to improve the generation, assessment, and utilization of EBA information. This will cover items such as improving data and information acquisition and use by the National Geo-information System (NGIS). The project will support the National Climate Change Committee to better fill its role as the nation's policy level coordination mechanism. The project will pay particular attention to enhancing the capacity of The Technical Working Group of the National

Climate Change Committee. This group is established with the representation of Government, external partners, academia, NGOs and CSOs. This institution will be strengthened to serve as a knowledge sharing and coordination platform for climate change adaptation initiatives. The project will support the Technical Working Group to prepare an annual "State of the Ecosystem" report summarizing relevant progress, challenges, and opportunities. The project will support preparing annual data on the state of the ecosystem that are integrated into NGIS.

Output 3.3 Program for up-scaling best practices developed and implemented.

All project activity is predicated upon the objective of creating replicable models for EBA to be up-scaled nationally. This Output concentrates upon creating the tools required to facilitate this process. Activity will include the design and implementation of a "Project Activity and Results Marketing Strategy". This strategy will detail how the project will use tools such as a website, newsletter, site visits, and interactive conferences to broadly advertise project results and foster replication and up-scaling of successes. The communication strategy will detail how project outputs such as Component 2 handbooks and other training materials will be developed and distributed nationally. Project results will be regularly monitored and collated for national distribution. The project will sponsor an interactive climate change resilience website with regular updates/reports on project progress. Marketing materials will reach all twenty-one Aimags. A National and Aimag level climate change adaptation training programming will use project demonstration activities and sites as training tools. The project will hold an annual implementation workshop where national and local project beneficiaries will be responsible to report their activities, progress, and tangible results.

By the close of Project Year 3, the project will design and commence implementation of a "National Replication and Uptake Strategy". This purpose of this strategy will be outline precise steps required to make certain project activities will be sustained after close. The strategy will detail responsible government and private institutions. A key element will be the completion of a business plan for replication and uptake. This will include an inventory of the continuation costs of successful activities and a precise detailing of where financing will be acquired to carry these activities forward. This will include proposing a national financial mechanism to support replication of best principles and practices related to climate change adaption.

B. DESCRIBE HOW THE PROJECT PROVIDES **ECONOMIC, SOCIAL AND ENVIRONMENTAL BENEFITS**, WITH PARTICULAR REFERENCE TO THE MOST VULNERABLE COMMUNITIES.

Environmental Benefits: The project will drive the improvement of management approaches across two critical water catchments supporting a significant portion of Mongolia's herding population The short and long-term benefits of setting in place comprehensive EBA programming across two of the world's most remote landscapes will be immense. Both the Eastern Steppe and Altai – Great Lakes Basin eco-regions provide habitat for a wide array of globally significant species. The project will lower competitive grazing between domestic and wild ungulates, improve water quality for endemic fish species, and maintain internationally important migratory bird habitat. Nearly two million gazelle wander freely across the Mongolian steppe. The Altai is home to Argali sheep and one of the world's last populations of Snow leopard. Both target watersheds provide habitat for these species. By improving ecosystem services, the project will increase the survivability of these animals. By building ecosystem resilience now, costly investments in large-scale restoration will be avoided. The project will result in the immediate securing of water provisioning services in two major watersheds that flow into large, wetland protected areas. The Ulz system delivers water to the Daurian Reserve, a major internationally protected wetland.

Without the proposed interventions, resource degradation will further continue to cause loss of ecosystem services, a decrease in vegetation density and available biomass, soil erosion through wind and associated dust storms that also affect neighbouring countries. With the proposed interventions, hydrological regimes will be stabilized (runoff, discharge, infiltration, storage, recharge, and associated silt and sediment loads etc.). Healthy, natural vegetation will be able to sustain biodiversity, improve pasture quality and biomass, erosion and desertification control, as well as better control of wildfire. With the integrated and holistic approach of adaptation, the equilibrium dynamics of ecosystems and their functions and services will be achieved. By promoting better

pastureland management and reducing desertification, the project will enhance water-provisioning services and generate significant carbon sequestration gains.

Social and Economic Benefits: The main beneficiaries of the project will be the national and local governments as well as a rural community members in the two eco-regional landscapes who will derive sustained benefits from resilient ecosystems and their services. The project will directly benefit approximately 58,000 inhabitants in the 17 soums in the two target watersheds, or 2% of the country's total population. The project is designed specifically to maintain the ecosystem services necessary to create a safety net for Mongolia's rural poor, the nation's most vulnerable inhabitants. Nearly 40% of Mongolia's population relies upon livestock management for subsistence. More than half of Mongolia's 200,000+ herding families are classified as living well below the poverty line. These are the poorest residents in a country where 35% of the population surives on less than US$ 1/day. Rural Mongolians rely entirely upon ecosystem services for their existence. The dzud events of the past two decades are harbingers of exactly what will happen when the reslience of these services is placed at risk. The dzuds left tens of thousands of Mongolians without the livestock and/or the financial resources required for their survival. The 2010 dzud impacted nearly 700,000 people and killed nearly 9.7 million head of livestock. More than 160,000 persons lost 50% of their livestock. More than 45,000 people lost their entire herd. These families were suddenly left without any means of support. A significant portion of these families were single parent, female headed households. A gender-balanced approach will be taken and inclusion of female-headed households will be encouraged in all demonstration activities.

Each dzud has required millions of dollars of national and international donor support. After the 2010 storm cycle, UNDP determined that nearly US$ 20 million would be required immediately to bouy communities. The dzud events touched off massive migrations from rural areas to already over-crowded urban areas. Since the first dzud of the decade, hundreds of thousands of rural poor have moved to the outskirts of Ulaanbaatar. Most new urban dwellers lack access to adequate drinking water, sanitation services, health care, and education. The massive migration is causing yet another cascade of social, economic, and environmental impacts requiring the government and international donors to invest millions more into urban relief efforts. Much of these social and ecomomic costs can be traced directly back to an ecosystem management system that allowed degradation to reach a point where ecosystem services could no longer tolerate additional strain.

There is no precise data quantifying the economic value of the project target areas. However, the Government of Mongolia and the World Bank assessed the economic value of the Upper Tuul River watershed in 2009. This watershed is proximate to Ulaanbaatar, an urban area with nearly 1.5 million residents. The watershed also houses two national parks and receives substantial tourism investment. Considering these factors, the study determined that the value of this one watershed's ecosystem services – and particularly water provisioning - to be approximately US$ 97 million per year. This project will build climate change resilience benefiting thousands of families living in two important watersheds. The eco-regions and ecosystems selected by this project have each been severly impacted by past dzuds. By securing pastureland and water provisioning services, the ability of these communities to withstand climatic events and avoid associate social and enomonomic costs will be greatly improved. An increase in awareness, and the knowledge and experience in community based integrated water management and resilience based pasture management will further strengthen the adaptive capacity of the communities. With the enhanced resilience of ecosystems, climate change induced changes and extreme events are likely to be more gradual and less severe than under a 'business as usual' scenario without any EBA measures. Well-maintained ecosystems and landscape will also increase the region's potential for expanding tourism opportunities, and providing alternative livelihoods for local herder communities with income generation and employment opportunities.

C. DESCRIBE OR PROVIDE AN ANALYSIS OF THE COST-EFFECTIVENESS OF THE PROPOSED PROJECT

The few adaptation response measures implemented in Mongolia to date have been quite isolated and site specific. They tend to be ad-hoc and small-scale interventions with less than adequate strategic alignment, particularly on an ecosystem and/or eco-region level. These fragmented responses may address an issue or yield an impact in a given locality or sector, but they often lack consideration of generating ecosystem-wide resilience to climate change. None have fully considered

and/or applied the EBA measures necessary for increasing ecosystem resilience in response to climate change. The long-term impacts of these ad-hoc approaches will not likely be strategic or sustainable with diminished efficiency and cost-effectiveness.

During project design, these and several other alternative scenarios were considered from the point of view of cost-effectiveness. These included extensive purchase of hardware and other tactical equipment, construction of major waterworks and facilities, and expensive international training programs. Stakeholders eventually abandoned these options after carefully considering conservation priorities relevant to a limited budget. In the end, the most strategic and, therefore, cost-effective investments rested on a number of principles, each integrated within the activities and expenditures of this proposed project. Paramount was the desire to build the management and financial capacity required for Mongolia to independently maintain effective EBA efforts within the target areas and to replicate these beyond the target areas. This objective of long-term sustainability makes the investment very cost-effective.

Rather than disregard past success, the project applies existing best practices from past and on-going interventions proven to be cost-effective on mainly singular resource types (water, land/pasture or biodiversity) to a much more efficient, coordinated and strategic EBA methodology. The approach proposed by this project provides an integrated package of measures appropriately scaled to the local context. The project will build upon existing biodiversity, ecosystem and socioeconomic data accumulated from previous projects, including the landscape level biodiversity conservation plans for the Eastern Steppe and Altai Mountain Regions. The project will demonstrate a range of EBA approaches to address both the supply and demand sides of land and water resource management. These will effectively and incrementally build the necessary systemic and institutional capacities, tools and information required for sound decision-making and actions for integrated resource planning and management that fully internalize climate risks.

EBA is generally considered to be cost-effective when compared with engineered or structural approaches. EBA has been proven to continuously deliver long-term environmental, social and economic co-benefits that create opportunities to adapt to unavoidable climate change while incurring relatively low recurrent costs. This is particularly true for large landscapes that include critical watersheds with vulnerable populations dependent on crucial ecosystem services. With the EBA approach, opportunities for mainstreaming climate change risks into normative frameworks – a cost-effective way to achieve changes in natural resource management sectors – will be maximized. Investment in restoring or conserving ecological infrastructure that delivers ecosystem services can significantly enhance agricultural sustainability, improve freshwater supplies, reduce the impacts of natural hazards and extreme weather events.

The project increases cost-effectiveness by following a core strategy that stimulates community-wide participation. The participatory approach of the project centres on involving local people in managing natural resources, meeting social needs (e.g., maintaining local culture, increasing opportunities for income generation, and improving health and well-being), lowering management costs, and sustaining outcomes over time. The project will also take a cost effective facilitation approach for empowerment of local actors on participatory approaches in decision making over resources by training local resource personnel. Implementing demonstration activities through community groups is highly cost-effective when compared to implementation by national professionals. Such investment can also improve skills and create decent jobs in poor communities. Required capacities for maintaining ecosystem resilience will be nurtured and tools for EBA will be accessed and utilized, creating opportunities for National, Aimag, and Soum stakeholders to efficiently identify, prioritize, and implement coordinated adaptation response measures.

During project design, ample consideration was given to the geographic and institutional scope of component activities. In the end, all stakeholders determined that the proposed project approach of catalyzing climate change adaptation within two major landscapes to be far more cost-effective compared with the option of choosing one landscape. The target landscapes represent a significant portion of Mongolia's water resources and encompass an array of Mongolia's representative ecological, social and economic samples. Both of the target watersheds within each eco-region were selected based upon criteria that included consideration of scale and implementation costs relevant to desired impact. This increases the potential for generating a variety of comparable experiences and lessons. The project tactic of combining national, eco-regional, and ecosystem level activities will help

ensure that trialed approaches deliver measurable "on-the-ground" results that adhere to national priorities. The method of simultaneously building national and regional capacities vastly improves the probability and cost-effectiveness of mainstreaming. The relatively small increase in project management costs (e.g. project personnel, office and equipment) will return incrementally larger impacts. Mobilizing and applying international and domestic EBA expertise and applying this knowledge to two distinct eco-regions will leverage funding to propel more advanced impacts.

At the operational level, the project was designed in full view of proposed and on-going sector activities. The result is a project framework that will mesh with these other investments and add value by creating a more cohesive planning and management regime that brings ecosystem based adaption to the fore. This will have the effective of stimulating much more strategic, coordinated, efficient, and cost-effective approaches across sectors. For instance, proposed demonstration interventions will be implemented in close coordination with the GEF – Small Grant Programme (SGP) funding community-initiated conservation efforts. Employment of UNDP's competitive procedures for procurement will assure value-for-money.

D. DESCRIBE HOW THE PROJECT IS CONSISTENT WITH NATIONAL OR SUB-NATIONAL SUSTAINABLE DEVELOPMENT STRATEGIES, INCLUDING, WHERE APPROPRIATE, NATIONAL OR SUB-NATIONAL DEVELOPMENT PLANS, POVERTY REDUCTION STRATEGIES, NATIONAL COMMUNICATIONS, OR NATIONAL ADAPTATION PROGRAMS OF ACTION, OR OTHER RELEVANT INSTRUMENTS, WHERE THEY EXIST.

The proposed project is fully consistent with Mongolia's national development policies and programmes. Vital parts of these policy documents reference the need to generate effective management and protection of pastureland, water and forest resources, rain and snow water harvesting and basin-based integrated water resources management. Applying an ecosystem-based holistic planning approach will contribute to specific sectoral programs and policies covering climate change adaptation, water management, forest management, biodiversity conservation, and combating desertification. The two landscapes and water bodies within the landscapes are specifically stated in programme documents such as NAPCC, NAPCD, and National Programme on Water.

Mongolia ratified the Kyoto Protocol in 1993 and the government has taken considerable steps towards the implementation of the UNFCCC, including accomplishing required commitments such as the Initial National Communication and Technology Needs Assessment. The National Action Programme for Climate Change (NAPCC) was recently updated. The NAPCC's Strategic Objective 2 states: "Ensure ecological balance and reduce socio economic vulnerabilities and risks step by step through strengthening of national adaptive capacity to climate change." The action plans for the first phase (2011-2016) include: integrated watershed management; technological and economic capacity building for water saving systems, extension of water reservoirs and basin constructions from rivers; precipitation and snow melt harvest, conservation of biodiversity vulnerable to climate change, implementation of measures for reducing pasture degradation, coordination of sector development strategies for sustainable water use, and enhancement of the greenhouse gas sequestration capacity of pasture and soil.

The 2010 State Policy on Herders specifically requires that Government to improve national preparedness to natural disasters and climate-related emergencies. Mongolia's MDG, Goal 7 is "Ensure Environmental Sustainability". The 2005 MDG-based National Development Strategy Section 3.5 calls for the creation of "a sustainable environment for development by promoting capacities and measures on adaptation to climate change, halting imbalances in the country's ecosystems and protecting them". Strategic Objective 6 states: "Promote capacity to adapt to climate change and desertification, to reduce their negative impacts."

The project will support achievement of the 2010 National Programme on Water Section 3.2.10 stating "Determine impacts of climate change and land use to the water ecosystem in large river basins, ecosystem biological indicators and monitor according to the international standards". The project was also designed to be compliant with the 2010 NAP for combating desertification, the Altai Mountains Biodiversity Conservation Strategy and the Eastern Steppe Biodiversity Conservation Strategy, the Government Plan of Action, the National Adaptation Strategy (NAS), and the National Biodiveristy Strategy and Action Plan. The concept of EBA is firmly embedded in these official

documents. However, there is still an information and capacity gap for mainstreaming the EBA approach in the adaptation framework. The Project will address this in Output 3.1.

E. DESCRIBE HOW THE PROJECT / PROGRAMME MEETS RELEVANT NATIONAL TECHNICAL STANDARDS, WHERE APPLICABLE.

UNDP supported projects are required to follow the mandatory requirements outlined in the UNDP Programme and Operational Policies and Procedures (UNDP POPP). This includes the requirement that all UNDP development solutions must always reflect local circumstances and aspirations and draw upon national actors and capabilities. UNDP supported donor funded projects are appraised before approval. During appraisal, appropriate UNDP representatives and stakeholders ensure that the project has been designed with a clear focus on agreed results. The appraisal is conducted through the formal meeting of the Project Appraisal Committee (PAC) established by the UNDP Resident Representative. The PAC representatives are independent in that they should not have participated in the formulation of the project and should have no vested interest in the approval of the project. Appraisal is based on a detailed quality programming checklist which ensures, amongst other issues, that necessary safeguards have been addressed and incorporated into the project design.

The proposed interventions will adhere to the national technical standards that are in force. Locations for any structural improvements within the two landscapes will be selected in close consultation and collaboration with the Water Agency under the MNET and other relevant authorities, as this activity will contribute to an essential part of the National Programme on Water. Any water harvesting structures (e.g., earthen weirs) will be no more than 20,000 m3 in capacity. Although Mongolian legislation will not require an EIA for such structures, UNDP will support environmental screening to ensure zero negative environmental and social impacts from any infrastructure development activities. Professional companies certified by the Decree of the Minister for Construction and Urban Development will be retained to conduct any necessary feasibility studies and engineering drawings for establishing structures. Expertise review of the design will be conducted by the Administration for Land Affairs, Construction, Geodesy and Cartography and their personnel. The main Building Codes, Norms and Standards to be followed are: Regulation for preparation and approval of engineering design drawings (BCNS -11.01.2007), Regulation on construction structure inspection (BCNS – 3.01.01-88), Construction safety techniques and standards (BCNS – 3.01.05.-90) and Regulation for constructing engineering structures and foundations (BCNS-3.02.01.-90).

F. DESCRIBE IF THERE IS DUPLICATION OF THE PROJECT WITH OTHER FUNDING SOURCES, IF ANY.

Mongolia is a large country in size and a small country in terms of population, government and donor community. A collegial and cooperative spirit generally defines all development efforts. During the formulation process, all relevant stakeholders including donor funded projects were consulted. These projects and others detailed in the Annex VII focus mainly on optimising particular sectors and/or sustainable use of specific types of natural resources. A thorough review of the projects' work, achievements, and lessons learned was conducted. This is Mongolia's first and only EBA project. During the extensive review process, the proposed project concept was met with universal support. By taking a holistic and multi-sectoral approach, the proposed project will directly build on and enhance the effectiveness of the existing initiatives and add significant value to the results. The ulitmate framework is based upon a strategy that adopts best practices, avoids duplication and builds synergies between existing and proposed interventions.

Given that 75% of the country's territory is covered by steppe grasslands used for pasture, there are several projects aiming to improve the livelihood of livestock herders. This proposed project will be taking place in areas quite distant from locations where these and other projects are piloting livestock improvement measures. Nevertheless, this project was designed to be complimentary with efforts such as the World Bank supported "Sustainable Livelihoods Program", the GIZ "Mongolia Livestock Adaptation Project/Project for Market and Pasture Management Development" recently approved by GEF. The Livestock Adaptation Project, Green Gold Project, and SLPII will be working to implement activities such as the creation of herder groups, enhancement of fodder production, formulation of

pastureland management plans, and opportunities for market improvements. Although the proposed project will derive lessons from and coordinate very closely with these other initiatives, this proposed project is the only one that is designed to explicitly focus on maintaining the resilience of ecosystem functions as an adaptation measure.

Within the Eastern Steppe region, three international conservation NGO's (WWF, TNC, and WCS) are implementing a series of programs designed to address climate change and its impacts upon biodiversity values and water provisioning services. During the project design phase, each of organizations was consulted to make certain the proposed project will be complimentary. These programs have generated substantial data about the region as well as formulated and implemented innovative adaptation techniques that lend themselves to EBA approaches. During the inception and implementation phase, the project will closely collaborate with and benefit from these on-going efforts particularly with the design of EBA strategies, plans and demonstrations. Opportunities for cooperative implementation will be maximized.

In support of the Government policies and programmes on climate change adaptation, several external partners are planning inititatives. The proposed project will be steered by the National Climate Change Committee. This committee includes representatives from all the Ministries and entities that have oversight of the existing initiatives. Through the steering committee, any potential duplication with on-going or future projects will be avoided.

G. IF APPLICABLE, DESCRIBE THE LEARNING AND KNOWLEDGE MANAGEMENT COMPONENT TO CAPTURE AND DISSEMINATE LESSONS LEARNED.

The entire project is designed to generate learning and knowledge regarding EBA and integrating climate change resilience within all sectors. Component 3, in particular, concentrates project investments upon strengthening knowledge management and disseminating lessons learned. The monitoring and assessment work generated under Component One will feed into national institutions. The "on-the-ground" demonstrations will generate examples of improved management practices to be replicated nationally. The project will also facilitate bringing in international experiences to Mongolia. The project will create a platform for continued development of increasingly sophisticated data and information. Building the capacity of national institutions to generate, absorb and utilize EBA information is a project asset. The project will act as the knowledge window for the government, resource users and the general public regarding the ecosystem based adaptation approach. Awareness raising activities targeting the decision makers and local communities will be an integral part of the knowledge component. The project will generate a substantial number of tangible products including assessment, strategic planning tools, practitioners' handbooks, and multi-media kits (e.g., website, newsletters, etc.) designed to enhance capacity and create a legacy for capturing lessons learned.

Furthermore, lessons learned and best practices demonstrated by the project will be shared in line with the knowledge management plan prepared during the first year of the project. The project will promote knowledge sharing and coordination among practitioners through two institutional mechanisms. The National Climate Change Authority will serve as a knowledge sharing and coordination platform for the climate change adaptation initiatives. This group is established with the representation of Government, external partners, academia, NGOs and CSOs. The National Climate Change Committee will be responsible to act as a broader policy level coordination mechanism.

Inter-community learning and dissemination of knowledge and experience will be fostered through experience sharing exchanges, where possible in cooperation with community associations. Workshops will be organised at both provincial and central levels, in order to disseminate findings and lessons learnt from pilot initiatives that will yield policy briefs to decision makers. The project will produce a host of strategic information materials in a form of brochures introducing the ecosystem–based adaptation approach. In addition to regular information dissemination and experience sharing through various media (print, radio, TV etc.). Output 3.3 is designed for this specific purpose. Project inception and closing workshops will be organised with a strong media presence and a joint project terminal report will be produced and disseminated to stakeholders.

H. DESCRIBE THE CONSULTATIVE PROCESS, INCLUDING THE LIST OF STAKEHOLDERS CONSULTED, UNDERTAKEN DURING PROJECT PREPARATION.

The exhausitive consultative process undertaken during the project design period involved discussing project component, outputs, and activities with all pertinent Government agenices at both national and local levels, CSO's and several private enterprises and citizens. This included aimag and soum governments officials in the demonstration landscapes, persons responsible for representing agricultural interests, mining interests, rural poor, women's organizations, business development, conservation organizations, etc.

As noted above, the project design phase included lengthy interaction with all on-going donor initiatives. This process involved discussing the project framework with stakeholders representing national, regional and local interests. These primary stakeholders defined the details of this project, including a logical framework workshop to prepare the results and resources framework.

The development process paid special attention to making certain the project fits well with Government priorities. The initiative is based on analysis and recommendations of a number of official reports and studies such as the "Mongolia: Assessment Report on Climate Change 2009" and the "National strategy for Climate Risk Management and Adaptation Plan of Mongolia" that were finalised after thorough stakeholder consultation processes.

Relevant officials at the MNET defined the scope of this initiative in close consultation with national experts. This included a series of formal and informal meetings held at all levels over a period of several months. The vision and input of the Designated National Authority for the Adapation Fund and the operational focal points for UNFCCC, UNCCD and GEF, as well as other external partners defined the final project design. These stakeholders generated the initial concept, formulatedthe proposal design, and edited each project design draft.

The following table indicates the key stakeholders and their roles under the proposed project:

Stakeholder	***Anticipated roles***
Government entities	
Ministry of Nature, Environment and Tourism	Overall conservation of nature and implementing UNFCCC and UNCCD. It is Project implementing partner and its implementing agencies , Water Agency, Forest Agency, Specially Protected Area Administration will be main counterparts
Ministry of Food, Agriculture and Light Industry	Main counterpart for pastureland management issues
Ministry of Mineral Resources and Energy	Main counterpart for mining and energy issues
Local Government (aimags and soums in the two target eco-regional landscapes)	Provides implementation support at the local level and ensures mainstreaming of local level policies
Administration for Land Affairs, Construction, Geodesy and Cartography	Main partner in land use planning and management.
State Specialized Inspection Agency	Advising on and supporting enforceability aspects of legislations
River Basin Councils	Partner in ensuring water management and conservation activities are in line with watershed/basin management plans
Academia	
Mongolian Academy of Science and research institutes	Institutes of Geo-ecology, Biology and Institute of Meteorology and Hydrology are partners in baseline and feasibility studies and continued monitoring of indicators
Communities and Private sector	
Communities	Project implementers and direct beneficiaries in the target watersheds.
National Meteorology Association	Potential partner in studies and developing land use and watershed management planning at a landscape level
National media	Information dissemination
Donors and NGOs	

Stakeholder	Anticipated roles
IFAD, World Bank, Swiss Agency for Development and Cooperation, The Nature Conservancy, Wildlife Conservation Society, World Wildlife Fund	Technical inputs into the project formulation and implementation, Ensuring complementarities and synergies with activities of other on-going and future projects

I. FUNDING JUSTIFICATION

Component 1: Landscape level integrated land use and water resources monitoring and planning system focused upon reduction of climate change vulnerability.

Baseline (without AF Resources)

Under the baseline, the capacities, tools and information required to understand climate change impacts and generate necessary ecosystem-based adaptation responses will remain absent. Sectoral planning and management approaches will continue to accelerate climate change impacts. Local governments will not have the tools and platforms necessary to internalize and respond to climate change risks.

A range of national institutions holds sway over the development and management of agriculture, mining, biodiversity/protected areas, and water resources. The country has a development planning process and a variety of sectoral policies covering mining, water, forestry, protected areas, and a host of other issues. Donor projects are supporting evolving strategies for biodiversity conservation on the Eastern Steppe and the Altai-Sayan. Water Basin Councils are emerging as an advisory forum for water management. The existing land-use planning regime is inadequate and tends to focus on smaller areas and driving production without taking a landscape-level approach. Planning for each sector and subsequent development activity generally moves forward on independent tracks. Each sector's development is defined by individual objectives rather than coordinated maintenance of ecosystem services. However, none of these existing activities generates a formal platform to oversee development activity in a consolidated manner that considers and resolves cumulative ecosystem impacts.

The existing de-centralized governance structure promotes this fragmented approach. Individual Aimags and Soums have increasing authority over resource management and the responsibility to coordinate diverse national government directives. However, they often do not have the tools and capacities required to make resource use decisions designed to promote ecosystem-based adaption. Instead, decision-making is much localized and reflects only immediate production objectives rather than long-term maintenance of shared ecosystems and associated ecosystem services.

Decision-makers do not benefit from the guidance of eco-region and/or ecosystem planning that provides a pathway for the rational internalization of climate change risks. National decision-makers do not have the tools required to make informed decisions about the economic costs/benefits of implementing various EBA strategies. Without this coordinated platform and vision, development plans and priorities that rely upon the utilization of shared land and water resources march forward with little regard for cumulative impacts. Local and national government agencies do not have access to the monitoring and assessment tools required to generate a knowledge base that delivers information regarding impacts of individual decisions upon the broader landscape. Without a platform to apply this information, there is little motivation to build the capacities required for effective monitoring and assessment of ecosystem function. The result is often fragmented and competitive resource management directives that lead to ecosystem deterioration, rather than a coordinated regime designed to enhance ecosystem services and build climate change resilience.

Additionality (with AF Resources)

The AF investment will result in a significant improvement over the current baseline. National level resource planning will become much more coherent with the design and implementation of Ecosystem-based Adaptation strategies for two major eco-regions. These broad-scale strategies will serve to coordinate currently divergent sectoral planning frameworks into a coherent approach that considers how best to synchronize existing divergence into coherent approaches designed to maintain ecosystem services and internalize climate change risks. Likewise, various development

sectors such as agriculture, livestock management, mining, forestry, protected areas, and water resource management will have the tools and information required to integrate climate change within their planning and practice. This will add the necessary climate change layer to land-use and water resource planning and management systems. Decision-makers will have the information required to make informed decisions regarding the costs/benefits of various development alternatives. The immediate result will improve adaptation and resilience across two important landscapes covering over 730,000 square kilometers. The long-term result will be government institutions and other stakeholders empowered to continue these practices long-term and upscale them to cover larger geographic areas. The broad eco-region strategies will, in turn, inform the generation of integrated ecosystem level planning for two watersheds under Component 2. Local governments will finally have a firm foundation upon which to base their individual natural resource decision-making.

Component 2: Landscape level adaptation techniques maintaining ecosystem integrity and water security under conditions of climate change.

Baseline (without AF Resources)

With a business-as-usual scenario, Mongolia's national governing bodies, climate change experts, and rural communities will have few tangible examples of successful programming that evince how best to achieve large-scale climate change resilience. They will only be able to speak of possibilities rather than point to realities. There will be a continuation of good programs by the national government and international donor community to improve grazing, protected areas management, and develop water basin authorities. As noted in this document, there are several donor initiatives focused upon increasing livestock productivity, including fodder production and marketing improvements. Each of these activities is discussed at length in Annex VII will certainly deliver tangential climate change benefits and offer an excellent baseline for this project to build upon. However, most will be sporadic and uncoordinated efforts to design small-scale conservation and develop programs for particular sectors. These sectoral approaches will not be aligned to show the potential for stabilizing and restoring ecosystem functionality and services relevant to climate change challenges. There are no projects or activities that provide local communities with the ability to implement EBA interventions on a meaningful scale. Existing and planned interventions will not deliver concerted and multi-sectoral approaches scaled to show the social and ecological advantages of comprehensively improving the ecosystem services shared by more than one Soum. They will not be coordinated, monitored and improved through strategic eco-system and ecosystem level planning systems that are set in place for the specific purpose of internalizing climate change risks. The impact of these activities will continue to be marginal. Resilience diminishing activities will continue unabated across ecosystems and dilute any localized gains. No models will be in hand showing communities how to build the capacities necessary to benefit from consolidated efforts to develop, test, monitor, record and broadly market national and international best EBA practices.

If the trends of the past two decades persist, there will not be a single ecosystem in Mongolia that is successfully demonstrating climate change adaptations at a meaningful scale. Shared water resources will be degraded by unsustainable and unregulated grazing practices. Fundamentally important upland and riparian habitat will continue to be lost with no opportunities for restoration. As the demands of irrigators, mining operations, and other extractive industries expand without examples of improved water management, the existing risks to ground and surface water will be compounded by over-appropriation and increasingly inefficient and pollution prone use. Land degradation coupled with climate change will continue to reduce wildlife habitat and movement corridors. Biodiversity losses will be accelerated and sustainable economic sectors such as tourism will suffer. This dire business-as-usual pathway will simply perpetuate the current cycle of social and ecological impoverishment that stymies Mongolia's rural population.

Additionality (with AF Resources)

Investment by the AF in this component represents a unique opportunity to assist Mongolian stakeholders to shift the current scenario towards a much more sustainable future. This component will result in two enclosed watersheds and the communities within them successfully implementing EBA approaches and realizing benefits derived from ecosystem services resilient to climate change risks. There will be a suite of coordinated investments in several sectors, showing better ways to manage livestock, agriculture, water extraction and other resource uses that protect natural water regimes and associated water provisioning services. These investments will not be ad hoc or uncoordinated, but rather they will be strategically designed based upon the planning regimes

established under Component One. Ecosystem restoration efforts to enhance water-soil infiltration rates in sensitive catchments, riparian zones, and wetlands will be demonstrated. Grazing practices will be improved so that livestock production becomes a basis for better living rather than a driver of ecological deterioration. Productive sectors such as irrigated agriculture will be provided the knowledge resources required to improve water use efficiencies so that water continues to be available even during periods of extended drought. National, Aimag, and Soum governments will have developed and implemented improved regulatory and fiscal practices that incentivize better resource management and internalize climate change risks.

Local level watershed planning implemented with project support will be guided by the eco-region wide objective of moving economic development and poverty alleviation forward while conserving the ecosystem functionality upon which this development depends. Because the ecosystem plans will be designed to cover distinct watersheds, their success will be measured by the clear and practical objective of maintaining the ecosystem's critical water provisioning services. The plans will encompass the jurisdictions of numerous Soums, allowing for individual Soums to implement their own development practices while upholding the value of shared ecosystem services. The ecological deterioration created by the cumulative impact of isolated decision-making will be alleviated. The result will be a much more synergized, efficient, and strategic use of resources that considers the cumulative impact of individual management decisions upon shared resources. Most importantly the ecosystem plans will allow Aimags and Soums to coordinate their development to reflect EBA approaches, internalize climate change risks, and build climate change resilience.

Simultaneously, the AF investment will use the development of both the eco-region and ecosystem EBA planning process to build capacities on National, Aimag, and Soum levels to monitor, assess, and respond to later arising challenges. These stakeholders will be able to engage in evidence-based decision making practices through improved knowledge and understanding on ecosystem dynamics and resilience, as well as the compounded impact of different land uses and climate change. They will have the tools required to carry forward coordinated management approaches that bring together diverse sectors through a common development platform where the efficacy of decisions is determined by the effectiveness of promoting the long-term maintenance of eco-system services upon which all development sectors rely. They will have the opportunity and platform necessary to identify and strategically prioritize interventions required to maintain and restore currently degraded land and water resources. In support of action plans for integrated landscape-level land use and water resource management, costs and benefits will be evaluated for different climate change sensitive management measures to identify and enhance ecosystems' water provisioning services and adapt water harvesting techniques.

Community members working with national and international experts will be monitoring the water resource benefits of these demonstrations. They will be able to show that interventions have visibly improved water storage, filtration, temperature regulation, and flow and quality regimes. These interventions will provide evidence that improved grazing practices can sustain rural livelihoods as well as the ecosystem services upon which they depend. Pasturelands will be delivering carbon sequestration benefits rather than advancing water and land degradation. Community members will know how to maximize resource use while minimizing climate change risks. Stakeholders will have a much better understanding of climate change risks and a set of tools at their disposal for moderating resource use in order to increase resilience, lessen the catastrophic impacts of climate change, and adapt to future arising challenges. Biodiversity resources, including internationally important wetland habitats, will be strengthened to withstand climate change impacts. The demonstrations and best practices will be well documented so that the functioning ecosystems will be able to serve as models for replication and upscaling throughout Mongolia.

The alternative scenario will result in the immediate improvement of climate change adaptation, resilience and mitigation within two watersheds covering nearly 43,000 square kilometers and the territories of 17 Soums. This will improve the long-term social welfare of 49,200 community members by creating a much more stable and reliable environment. These communities will be able demonstrate how to implement EBA to generate internalize climate change risks and maintain ecosystem services. These ecosystems will benefit from sustainable water provisioning services and be less prone to the impacts of recurring natural disasters endured over the past decade.

Component 3: Institutional and policy capacity strengthened to support Ecosystem-based Adaption replication, planning, monitoring, and enforcement for critical watersheds

Baseline (without AF Resources)

Under the baseline scenario, efforts to improve relevant policies, awareness of climate change issues, and fulfill responsibilities under important international agreements will continue. There is a growing awareness amongst national decision-makers that Mongolia faces significant climate change risks. National stakeholders realize that climate change affects most economic sectors as well as social welfare, biodiversity, and associated ecosystem services. There is a broad awareness regarding the need for comprehensive adaptation measures to reduce climate change's negative impacts. As noted, this realization has been integrated into many important policy documents. For instance, Mongolia ratified the Kyoto Protocol in 1993 and the government has taken considerable steps towards the implementation of the UNFCCC. The importance of ensuring ecological balance is recognized. However, the country's current adaptation framework places insufficient emphasis on the essential role of EBA.

Several factors contribute to the baseline dilemma. There are numerous national laws, policies, and government agencies that govern the use and management of natural resources. Although much of this oversight framework is progressive, the current regime creates a fundamentally sectoral approach. The national management framework is not set-up to automatically provide the comprehensive climate change adaptation responses and safeguards required to generate ecosystem-level conservation. Reaching this plateau requires a much greater understanding and capacity to recognize what EBA is and how best to achieve it. Once this information is widely available, policy and decision-makers will be much more likely to uptake and mainstream successful principles and practices. Under the current situation, the probability of building and applying this awareness is quite limited.

Mongolia has a highly impressive cadre of national climate change experts. There is an extensive knowledge base covering carbon sequestration, water resource status, glacial melt, meteorology and factors fundamental to understanding climate change. Centralized research institutes generate extensive data for sectors such as livestock, agriculture, and biodiversity. However, the data is not collated and reviewed based upon how best to manage entire ecosystems to maintain valuable services in light of climate change. The ability to generate, assess, and manage climate change knowledge in an integrated fashion is challenged. Because this information does not exist, it is very difficult for institutions such as the National Climate Change Authority, National Climate Change Committee, and technical working groups to use this information to inform decision-makers and improve the internalization of climate change adaptation needs within existing and emerging policies and plans. These institutional bodies responsible for climate change are relatively new. They have limited experience with EBA and the knowledge management required to promote and understand it. They have not conducted national legislative reviews specifically designed to identify regulatory gaps and capitalize upon opportunities. There is limited experience regarding the shifting of policies towards more sustainable models that internalize climate change risks.

This situation is further complicated by the absence of tangible examples for "better ways" of doing business. There are no successful national programs for ecosystem-based management that can serve as templates to inform policy and decision-making. The result is that although national stakeholders understand climate change and confronting climate change is a priority, the capacity to actually address climate change through innovative mechanisms such as EBA is absent.

The corpus of climate change knowledge currently rests almost exclusively within national institutions. The extent of climate change knowledge at the Aimag and Soum level where most immediate resource use decisions are made is extremely low. Even if the advantages and technicalities of climate change adaptation options such as EBA were widely understood, national level stakeholders do not have platforms for transferring this knowledge to the lowest common denominator. Under the baseline scenario, the capacity challenges will remain and it will be highly unlikely that these platforms for knowledge transfer will be developed.

Additionality (with AF Resources)
With the Adaptation Fund's support, the baseline will be enhanced to enable the broad range of existing Mongolian expertise to mainstream innovative EBA principles and practices within the nation's emerging adaptation framework. The AF investment will allow for the review and analysis of national level policies, programs and plans to seek out opportunities for mainstreaming climate change responses. A rigorous program to increase national decision-maker knowledge regarding climate change and EBA will be implemented. This activity will be informed by "on-the-ground" successes established through project outputs. National level decision makers will have the capacity necessary to design policy responses to climate change that enhance ecosystem resilience and support important economic sectors such as agriculture. A much more informed institutional body supported by a coherent policy regime will alleviate sectoral approaches that confound EBA measures. Mainstreaming will generate an integrated policy safety net that encourages application of EBA and offers national level decision-makers the knowledge required to prognosticate challenges and coordinate climate change responses between sectors.

Investments made into capacity building for existing national climate change institutions will generate a much stronger cohort with a proven ability to monitor, assess, and plan for climate change adaptations. With project support, these stakeholders will have the tools necessary to promote policies and practices that result in stabilized ecosystems and associated services. They will have created and gained experience using integrated data and information management systems that breakdown sectoral divisions and generate integrated analysis and solutions. These stakeholders will know from first-hand experience how to use this information to improve the level of awareness of policy and decision makers in order to mainstream climate change adaptation practices within these regimes. The strong knowledge management element will make global and regional tools and resources related to EBA available to Mongolia. This will also support the country to develop its own materials related to EBA methodologies and experiences and increase uptake of the knowledge in other landscapes.

Formal conduits will be established so that information can flow more regularly between national institutions and local governments and stakeholders. National level institutions will have the tools required to generate and distribute climate change information to broader audiences. Through project activities, national level institutions will be tasked with assisting to develop local level EBA capacities. This will be completed through both formal training delivered by national stakeholders to local stakeholders and informally through the design and implementation of various project tasks. These national level stakeholders will also be given the opportunity to actually develop and practice the implementation of sophisticated information marketing techniques. These fundamental skills implemented under the alternative will raise the level of awareness and increase substantially the probability that innovative climate change adaptation options are applied on the local level where resource use decision-making occurs on a daily basis. Simultaneously, the results of local level EBA practitioners will gain a platform for informing national level decision-making.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Adequacy of project management arrangements.

Upon the request of the Government of Mongolia, UNDP will be the Multilateral Implementing Agency (MIE) for this project. The Project will be implemented following UNDP's **National Execution Modality (NEX)**. The designated Implementing Partner of the project will be the Ministry of Nature, Environment and Tourism (MNET). MNET is responsible for implementing UNFCCC and water resource management and will hold the responsibility of the senior supplier. MNET is ultimately responsible for the timely delivery of inputs and outputs and for coordination of all other Responsible parties including other line ministries, relevant agencies, and local government Authorities. The MNET will appoint the **National Project Director**.

The Project Board (PB) is responsible for making management decisions for the project and plays a critical role in project monitoring and evaluations by quality assuring these processes and products, and using evaluations for performance improvement, accountability and learning. The PB will be composed of designated senior-level representatives of MNET, Ministry of Food and Agriculture, UNDP and local Governor's offices.

Project assurance - UNDP Mongolia will support project implementation by assisting in monitoring project budgets and expenditures, recruiting and contracting project personnel and consultant services, subcontracting and procuring equipment. The UNDP Mongolia will also monitor the project implementation and achievement of the project outcomes/outputs and ensure the efficient use of donor funds through an assigned Programme Officer in the Country Office in Ulaanbaatar.

National Project Coordinator (NPC) - He/she will be a national professional designated for the duration of the project. The NPC's prime responsibility is to ensure that the project produces the results specified in the project document to the required standard of quality and within the specified constraints of time and cost.

Project-Support - NPC will be supported by a core technical and support staff forming the **Project Implementation Unit** (PIU) located at the MNET to execute the project activities, including day-to-day operations of the project, and the overall operational and financial management and reporting. At the target demonstration sites, local coordinators will be recruited.

Table: Project Management Staff and Budget

Item	Per Week	Estimated person weeks	AF	Project Total ($)
Locally recruited staff				
National Project Coordinator	$500	288	$144,000	$144,000
Project Administrator and Financial Officer	$400	288	$115,200	$115,200
Project Assistant	$350	288	$100,800	$100,800
Driver	$125	288	$36,000	$36,000
Office facilities, equipment, vehicles and communications				
Travel			$25,000	$25,000
Workshops (e.g, inception)			$12,000	$12,000
Office facilities, equipment, vehicles, communications, data provision, utilities			$32,000	$32,000
Miscellaneous (petty cash, stationery, etc)			$15,000	$15,000
Total			**$480,000**	**$480,000**

B. Describe the measures for financial and project / programme risk management.

Key risks underlying the project have been analyzed and qualitatively assessed in connection with the context of the target sites for the project. Potential risks include:

No	Risk	Classification	Rating: Impact/Probability 1: Low 5: High	Mitigation Measure
1	Policy makers prioritize economic benefits over sustainable and resilient ecosystems	Institutional	Impact: 4 Probability: 1	Understanding of climate change risk and motivation to address these risks is quite high. The project is designed build further capacity and awareness regarding the economic benefits of ecosystem services. The GOM budget has and will likely increase significantly over the project period. Incentive issues will be alleviated by the project strategy of linking success demonstrations with comprehensive capacity building efforts, including studies showing the economic, social and ecological benefits of upscaling EBA.

2	Ineffective mitigation of non-climate drivers of ecosystem alteration	Instiutional	Impact: 4 Probability: 1	MNET (including the project management unit) and UNDP will work closely with the complementary projects that are listed I Annex VII, in order to ensure that non-climatic drivers of ecosystem alterations are sufficiently addressed. The Project will also ensure that outputs such as strategic environmental assessment, landscape level ecosystem adaptation plan, and regulatory and financial management techniques will inform other ecosystem management initiatives, and/or act as incentives for reducing non-climatic threats to ecosystems. Capacity building for ecosystem based adaptation practices at community level will directly contribute to addressing non-climatic drivers such as grazing pressure, hydropower, mining and agricultural planning.
3	Extreme natural disasters affect confidence of local community to adaptation measures	Environmental	Impact: 3 Probability: 2	As a part of adaptation measures, the project will apply a proven approach of community-based disaster risk management, thus reducing the vulnerability of communities to natural disasters. The primary units will be the herder groups or community organizations joining the efforts. Local level demonstrations will provide incentives for the local communities to cooperate towards a long-term resilience.
4	Adaptation measures increase inequity	Environmental/ Social	Impact: 3 Probability: 2	The project will ensure that the adaptation measures are gender sensitive and demonstration at the local level that they do not limit the participation of women and the disabled as beneficiaries.
5	Capacity of Aimag and Soum level stakeholders will match project activity demands	Institutional	Impact: 3 Probability: 2	This will be alleviated by a project capacity building strategy, including national/local mentoring program.

C. Monitoring and Evaluation

The monitoring and evaluation (M&E) scheme will be applied in accordance with the established UNDP procedures throughout the project lifetime. As an implementing partner, MNET, together with the UNDP Country office in Mongolia will ensure the timeliness and quality of the project implementation. The M&E plan will be implemented as proposed in Table 5. Technical guidance and oversight will be also provided from the UNDP's Regional Bureau for Asia Pacific, as well as the Project Board (PB). Audits on the project will follow UNDP finance regulations and rules and applicable audit policies.

The project will be monitored through the following M& E activities. The M& E budget is provided in the table below.

Project start: A Project Inception Workshop will be held within the first 3 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and program advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan.

The Inception Workshop will address a number of key issues including: (a) Assist all partners to fully understand and take ownership of the project. (b) Detail the roles, support services and complementary responsibilities of UNDP CO and RCU staff vis à vis the project team. (c) Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. (d) The Terms of Reference for project staff will be discussed again as needed. (e) Based on the project results framework finalize the first annual work plan. Review and agree on the indicators, targets and their means of

verification, and recheck assumptions and risks. (f) Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled. (g) Discuss financial reporting procedures and obligations, and arrangements for audits. (h) Plan and schedule Project Board meetings. Roles and responsibilities of all project organization structures should be clarified and meetings planned. The first Project Board meeting should be held within the first 2 months following the inception workshop.

An Inception Workshop report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

Quarterly: Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform. Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS. Risks become critical when the impact and probability are high. Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot. Other ATLAS logs can be used to monitor issues, lessons learned etc. The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

Annually (Annual Project Review/Project Implementation Reports (APR/PIR)): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July).

The APR/PIR includes, but is not limited to, reporting on the following: (a) Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative); (b) Project outputs delivered per project outcome (annual); (c) Lesson learned/good practice; (d) AWP and other expenditure reports; (e) Risk and adaptive management; (f) ATLAS QPR; (g) Portfolio level indicators are used by most focal areas on an annual basis as well.

Periodic Monitoring through site visits: UNDP CO and the UNDP RCU will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members.

Mid-term of project cycle: The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation. The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the UNDP Evaluation Office Evaluation Resource Center (ERC).

End of Project: An independent Final Evaluation will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP guidance. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit.

The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response which should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Center (ERC).

During the last three months, the project team will prepare the Project Terminal Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons

learned, problems met and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

Learning and knowledge sharing: Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

M & E Workplan and Budget

Type of M&E activity	Responsible Parties	Budget US$ *Excluding project team staff time*	Time frame
Inception Workshop and Report	▪ Project Manager ▪ Project Inception Specialist ▪ UNDP CO	Indicative cost: $25,000	Within first two months of project start up
Measurement of Means of Verification of project results.	▪ UNDP CO/Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members.	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on *output and implementation*	▪ Oversight by Project Manager ▪ Project team	To be determined as part of the Annual Work Plan's preparation.	Annually prior to APR/PIR and to the definition of annual work plans
APR/PIR	▪ Project manager and team ▪ UNDP CO ▪ UNDP RTA ▪ UNDP EEG	None	Annually
Periodic status/ progress reports	▪ Project manager and team	None	Quarterly
Mid-term Evaluation	▪ Project manager and team ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	Indicative cost: $45,000	At the mid-point of project implementation.
Final Evaluation	▪ Project manager and team ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	Indicative cost: $45,000	At least three months before the end of project implementation
Project Terminal Report	▪ Project manager and team ▪ UNDP CO ▪ Local consultant	None	At least three months before the end of the project
Audit	▪ UNDP CO ▪ Project manager and team	Indicative cost -per audit: $1,500	As per UNDP regulations
Visits to field sites	▪ UNDP CO ▪ UNDP RCU (as appropriate) ▪ Government representatives		Yearly
TOTAL indicative COST Excluding project team staff time and UNDP staff and travel expenses		US$ 115,000 (+/- 2% of budget)	

Note: UNDP costs will be covered by the project cycle management fees and not by the project budget.

D. Project Logical Framework Analysis

A detailed logical framework, including Outcome Indicators, quantified Output targets, as well as specific, measurable and time-bound indicators is provided in Annex II.

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT

The proposed project in line with Government of Mongolia's policies and priorities. Hence, it has been endorsed with the approval of competent authority. A copy of the endorsement letter is attached.

Damdin Dagvadorj Designated National Authority for Adaptation Fund Special Envoy for Climate Change National Focal Point for UNFCCC and KP Ministry of Nature, Environment and Tourism Government of Mongolia	Date: April 13, 2011

B. IMPLEMENTING ENTITY CERTIFICATION

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, understands that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
 Yannick Glemarec Director UNDP Environmental Finance	
Date: May 13, 2011	Tel. & Email: +1-212-906-6843; yannick.glemarec@undp.org
Project Contact Person: Midori Paxton	
Tel. & Email: +66-2288-2713; midori.paxton@undp.org	

ANNEX I: Letter of Endorsement

MINISTRY OF NATURE,
ENVIRONMENT AND TOURISM
OF MONGOLIA

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Date 13 April 2011
Ref. 10/1213

Date Rcvd: 14 APR 2011
Ref. MON/08/302
Action: BBu/KL | Info: CU
Action Taken: | B/Fwrd

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Subject: Endorsement for the project "Ecosystem Based Adaptation Approach to Maintaining Water Security in Critical Water Catchments in Mongolia"

In my capacity as designated authority for the Adaptation Fund in Mongolia, I confirm that the above national project proposal is in accordance with the national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Mongolia.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the proposal will be coordinated and implemented by the MNET with collaboration of UNDP Mongolia as MIE.

Sincerely,

Damdin Dagvadorj
Special Envoy for Climate Change,
Designated Authority for the Adaptation Fund in Mongolia

ANNEX II: LOGICAL FRAMEWORK ANALYSIS

Objective and Components	Indicator	Baseline				Targets End of Project	Source of verification	Risks and Assumptions
Project Objective: Maintain the water provisioning services supplied by mountain and steppe ecosystems by internalizing climate change risks within land and water resource management regimes.	Mean annual in-stream summer 30-day base flow maintained in two project sites[15]	Kharkhiraa River: 2.43 cms Turgen River:1.98 cms Ulz River: 0 cms[16] (at Chuluunkhoroot)				Kharkhiraa River: 3.0 cms Turgen River: 2.40 cms Ulz River: 0.20 cms	Hydrological data reported by existing monitoring stations	Hydrological reporting stations remain operational (this will be alleviated by project support) Impacts of climate change do not outpace project adaptation responses (this will be alleviated by the project's interventions targeted build resilience)
	Ground and surface water quality improved or maintained in two project sites[17]		Tur-gen	Khar-khiraa	Ulz	5% improvement on average	Surface water monitoring reports submitted by national and target site stakeholders Project reporting and evaluation	
		Suspended solids	70.0	2.0	43.2			
		Permanganate COD	0.3	0.5	6.8			
		$NH+_4$	0.28	0.07	0.31			
		Total mineral P	0.36	0.014	0.21			
		Total Fe	0.049	0.13	0.064			
		Soil nutrient, organic carbon (matter) pool	TBD	TBD	TBD			
		Biological indicators, e.g., insect and/or fish	TBD	TBD	TBD			
		Temperature	TBD	TBD	TBD			

[15] In-stream base flow is a portion of stream flow that comes from the deep subsurface flow and delayed shallow subsurface flow during the summer (un-frozen) period.

[16] As described in the Annex, the current monitoring station for the Ulz is located at a channel without water. Baseline and target numbers will be modified during project year one to accurately reflect total basin water provisioning for the Ulz.

[17] The figures are July figures which are considered most representative. Missing data will be determined during Project Year One with Output 2.1 activity.

Component 1: Landscape level integrated land use and water resources monitoring and planning system focused upon reduction of ecosystem vulnerability to climate change.	Number of eco-regional EBA strategy programs and action plans adopted by National and Aimag Governments[18]	Operational EBA Eco-Region Strategies: 0	Operational EBA Eco-Region Strategies: 2	Project reporting and evaluation	Capacity of National level stakeholders will match project activity demands (this will be alleviated by a project capacity building strategy)
	Number of Aimag governments monitoring, assessing, and reporting to National Climate Change Authority on EBA measures.	Number of EBA active Aimag Governments: 0	Number of EBA active Aimag Governments: 6	Project reporting and evaluation	
	Total hectares included within protected areas system in the two project sites[19]	Altai Mountains / GLB: 37,420 km² Kharkhiraa/Turgen Watershed: 800 km² Eastern Steppe: 42,676 km² Ulz Watershed: 3,120 km²	Altai Mountains / GLB: 39,420 km² Kharkhiraa/Turgen: 1,000 km² Eastern Steppe: 44,676 km² Ulz: 3,750 km2	National, provincial and district legislation	Protected area expansion is approved by government structures (this will be alleviated through the participatory planning processes implemented in Component One)
Outputs: • Strategic environmental assessment, including climate change considerations, conducted for target landscapes. • Economic valuations completed comparing the landscape level costs and benefits of EBA. • Ecosystem-based Adaptation strategies completed and operational for two eco-regions.					

[18] By project close, the National Government and each Aimag within the Altai/GLB and Eastern Steppe landscapes will have adopted the EBA strategic process as formal policy
[19] Indicator may include national, provincial, and/or district designated protected areas.

Component 2: Landscape level adaptation techniques maintaining ecosystem integrity and water security under conditions of climate change.	Number of Soums implementing watershed level EBA strategic programs	Total Soums with EBA strategic programs: 0	Total Soums with EBA strategic programs: 17	Project reporting and evaluation Monitoring by national and local authorities and project stakeholders	Capacity of Aimag and Soum level stakeholders will match project activity demands (this will be alleviated by a project capacity building strategy, including national/local mentoring program) Proposed interventions are able to deliver EBA results (this will be alleviated by strategic and participatory planning implemented under Component One that will identify and prioritize actions based upon local needs.)
	Water use efficiency improved to maintain ecosystem integrity as measured by: • Amount of surface water extracted for irrigation in project sites • Number of monitored wells increasing ground-water consumption efficiency in project sites[20]	Total extraction for: • Kharkhiraa/Turgen: TBD[21] • Ulz: 0 Monitored/efficient wells: • Kharkhiraa/Turgen: 0 • Ulz: 0	Total extraction for: • Kharkhiraa/Turgen: TBD • Ulz: 0 (Approx. 20% decreased) Monitored/efficient wells: • Kharkhiraa/Turgen: 12 • Ulz: 70 (Approx. 10% increase)	Monitoring by national and local authorities and project stakeholders EBA strategies and plans Project reporting and evaluation	

[20] Total number of wells: Ulz project site (747), Kharkhiraa/Turgen project site (123). Note: These are total number of wells in entire Soum territory, not exclusively the watershed. The number of wells that are operational will be determined during project implementation.
[21] To be determined Project Year One.

	Land use practices and climate change resilience improved as indicated by: • Total hectares of riparian and wetland habitat restored with native vegetation within project sites • Total number of hectares with EBA friendly livestock management practices in two project sites[22]	Total hectares restored riparian/wetland: • Kharkhiraa/Turgen: 0 ha • Ulz: 0 ha Total hectares with EBA grazing practices: • Kharkhiraa/Turgen: 0 ha • Ulz: 0 ha	Total hectares restored riparian/wetland: • Kharkhiraa/Turgen: 1,250 ha • Ulz: 2,250 ha Total hectares with EBA grazing practices: • Kharkhiraa/Turgen: 1,500 km2 • Ulz: 12,000 km2 Approx. 30% increase	Monitoring by national and local authorities and project stakeholders EBA strategies and plans Project reporting and evaluation	
	Decrease in average Rural Poverty rate for 17 Soums within the target watersheds.	Current poverty rate: Average Poverty headcount for Ulz basin 0.433, Kharkhiraa/Turgen 0.495[23]	End of Project Rate: TBD Approx. 10% average decrease	Aimag annual reports UNDP census-based poverty map Project reporting and evaluation	
Outputs • Capacities established for rural climate change adaptation assessment and monitoring in two watersheds. • Integrated landscape level Ecosystem-based Adaptation management plans operational within two watersheds. • Suite of physical techniques to improve ecosystem resilience established in two critical watersheds. • Regulatory and financial management techniques for improving climate change resilience					

[22] Determined by total hectares not exceeding annual carrying capacity limits as measured by the national carrying capacity network. Project will ground-truth findings using finer-scale vegetation plots and water course investigations to appraise pasture biomass and water resources integrity at grazing management improvement sites. Total watershed area: Ulz project site (37,962 km2), Kharkhiraa/Turgen project site (5,264 km2)

23 Mongolia census-based poverty map, UNDP, 2009

Component 3: Institutional and policy capacity strengthened to support Ecosystem-based Adaption replication, planning, monitoring, and enforcement for critical watersheds	Number of government decision-makers with increased knowledge of basic EBA principles and practices[24]	Parliament members with increased EBA knowledge: 0 Agency managers with increased EBA knowledge: 0 Aimags and Soum governments with increased EBA knowledge: • Aimags: 0 • Soums: 0 Monthly visits to EBA website: 0	Parliament members with increased EBA knowledge: 76 Agency managers with increased EBA knowledge: 30 Aimags and Soum governments with increased EBA knowledge: • Aimags: 21 • Soums: 329 Monthly visits to EBA website: 500	Project reporting and Evaluation Determined by website monitoring	National, provincial and district level stakeholders are receptive to project's EBA knowledge building approach (this will be alleviated by with project support for the design of formal information development and marketing strategies) Government is willing and capable of directing financing towards the support of EBA programming (The GOM budget has and will likely increase significantly over the project period. Incentive issues will be alleviated by the project strategy of linking success demonstrations with comprehensive capacity building efforts, including
	Number of Soums replicating EBA principles and practices within the target eco-regions[25]	Total Soums replicating EBA: 0	Total Soums replicating EBA: 15	The EBA Eco-Region strategy process implemented by the project will verify result. Project reporting and evaluations	

[24] Relevant government agencies: MFALI (Agriculture) – Department of Veterinary and Animal Breeding, MNET (Environment) – Agency for Monitoring, Water Authority, Forestry Authority, Protected Areas Services; MoH (Health) – Department of Health; MMRE (mining/energy) – Mineral Resources Authority, Energy Authority, Petroleum Authority; MECS (Education) – Agency for Education, Academy of Sciences; and, MOF (Finance) – Tax and Revenue Authority. Total number of Provinces and Districts: 21 Aimags (provinces), 329 Soums (districts). Knowledge increase will be based upon presumption that all parties will have benefitted either from targeted formal EBA training and/or EBA information materials dissemination.

[25] The EBA Strategies will be updated throughout the project cycle. The Strategies will report on emerging climate change adaptation practices within the region. This will include identifying and reporting on Soums outside of the target watersheds replicating interventions.

	National mainstreaming of EBA as indicated by: • Official government policy adopting EBA principles/practices • Amount of annual government spending to support application of EBA principles and practices nationally • Number of National Climate Change Authority EBA policy papers mainstreaming EBA within sectoral decision-making frameworks.	Number of official government EBA adoption policies: 0 Total national annual investment in EBA: $ 0 Number of NCCA Policy Papers: 0	Number of official government EBA adoption policies: 1 Total national annual investment in EBA: $ 500,000 Number of NCCA Policy Papers: 1	National government budget analysis conducted as part of the project support valuation of ecosystem services studies. May include re-alignment of existing spending to support EBA implementation. NCCA reports Project reporting and evaluations	studies showing the economic, social and ecological benefits of upscaling EBA).
Outputs • Ecosystem-based adaptation approaches mainstreamed in national resource use planning and implementation mechanisms. • Institutional support for integrating climate change risks in land and water resource management planning. • Program for up-scaling best practices developed and implemented.					

ANNEX III: BUDGETS

Total Project Budget by Component

	AF	UNDP/TRAC	Total
Component 1: Landscape level integrated land use and water resources monitoring and planning system focused upon reduction of ecosystem vulnerability to climate change.	**$500,000**	**$394,000**	**$894,000**
Output 1.1 Strategic environmental assessment, including climate change considerations, conducted for target landscapes to document threats to ecosystem function and resilience and provide recommendations for avoiding and mitigating impacts.	$250,000	$50,000	$300,000
Output 1.2 Economic valuations completed summarizing landscape level costs and benefits of EBA.	$0	$294,000	$294,000
Output 1.3 Ecosystem-based Adaptation integrated within land use and water resources monitoring and decision-making system in two eco-regions.	$250,000	$50,000	$290,000
Component 2: Landscape level adaptation techniques maintaining ecosystem integrity and water security under conditions of climate change.	**$3,390,000**	**$46,000**	**$3,436,000**
Output 2.1 Local level climate change adaptation assessment and monitoring implemented in two target watersheds.	$450,000	$0	$450,000
Output 2.2: Integrated landscape level Ecosystem-based Adaptation management action plans operational within two target watersheds.	$690,000	$46,000	$736,000
Output 2.3: Suite of physical techniques to improve ecosystem resilience established in two target watersheds.	$1,750,000	$0	$1,750,000
Output 2.4: Regulatory and financial management techniques for improving climate change resilience implemented within two target watersheds.	$500,000	$0	$500,000
Component 3: Institutional and policy capacity strengthened to support Ecosystem-based Adaption replication, planning, monitoring, and enforcement for critical watersheds	**$699,124**	**$60,000**	**$759,124**
Output 3.1: Ecosystem-based adaptation approaches mainstreamed in national resource use planning and implementation mechanisms.	$200,000	$30,000	$230,000
Output 3.2: Institutional support for integrating climate change risks in land and water resource management planning.	$200,000	$10,000	$210,000
Output 3.3: Program for up-scaling best practices developed and implemented.	$299,124	$20,000	$319,124
Component Total	**$4,589,124**	**$500,000**	**$5,089,124**
Project Management (<9.5%)	$480,000	-	$480,000
Total Project Costs	$5,069,124	$500,000	$5,569,124
Project Cycle Management Fee (8.5%)	$430,876		
Total Request from AF			**$5,500,000**
Co-financing UNDP (cash)			$ 500,000
Co-financing Government of Mongolia (in-kind)			$ 5,000,000

Total Budget and Workplan

Component	Resp. Party	SoF	UNDP B/L	UNDP B/L Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Amount Year 6 (USD)	Total (USD)
Component 1: Landscape level integrated land use and water resources monitoring and planning system focused upon reduction of ecosystem vulnerability to climate change.	UNDP	AF/ UNDP TRAC	71200	International Consultants	$150,000	$46,000	$20,000	$15,000	$15,000	$20,000	$266,000
			71200	International Consultants (UNDP)[26]	$42,000	$14,000	$7,000	$7,000	$14,000	$14,000	$98,000
			71300	National Consultants	$70,000	$32,000	$15,000	$20,000	$20,000	$20,000	$177,000
			71300	National Consultants (UNDP)	$10,000	$5,000	$4,500	$6,000	$4,500	$6,000	$36,000
			71600	Travel	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$12,000
			71600	Travel (UNDP)	$40,000	$10,000	$10,000	$10,000	$10,000	$10,000	$90,000
			72100	Service Contracts	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$6,000
			72100	Service Contracts (UNDP)	$18,000	$9,000	$5,000	$5,000	$6,000	$7,000	$50,000
			72200	Equipment	$4,000	$2,000	$1,000	$1,000	$1,000	$1,000	$10,000
			72200	Equipment (UNDP)	$50,000	$2,000	$10,000	$1,000	$3,000	$5,000	$71,000
			72300	Materials and Goods	$2,000	$500	$500	$750	$750	$500	$5,000
			73400	Rental (Vehicles)	$2,000	$0	$750	$750	$750	$750	$5,000
			74200	Audiovisual & Printing	$2,000	$1,000	$500	$500	$500	$500	$5,000
			74200	Audiovisual & Printing (UNDP)	$8,000	$2,000	$2,000	$2,000	$2,000	$4,000	$20,000
			74500	Miscellaneous	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$6,000
			74500	Miscellaneous (UNDP)	$3,000	$2,000	$1,000	$1,000	$1,000	$1,000	$9,000
			75700	Training	$1,000	$1,000	$1,000	$1,500	$1,500	$2,000	$8,000
			75700	Training (UNDP)	$6,000	$2,500	$2,500	$2,500	$2,500	$4,000	$20,000
			SUBTOTAL COMPENENT 1		**$412,000**	**$133,000**	**$84,750**	**$78,000**	**$86,500**	**$99,750**	**$894,000**
Component 2: Landscape level adaptation techniques maintaining ecosystem integrity and water security under conditions of climate	UNDP	AF/ UNDP TRAC	71200	International Consultants	$75,000	$88,000	$80,000	$80,000	$80,000	$80,000	$483,000
			71200	International Consultants (UNDP)	$3,500	$7,000	$3,500	$3,500	$3,500	$7,000	$28,000
			71300	National Consultants	$110,000	$143,125	$75,000	$65,000	$65,000	$65,000	$523,125
			71300	National Consultants (UNDP)	$1,500	$4,500	$3,000	$3,000	$3,000	$3,000	$18,000
			71600	Travel	$80,000	$50,000	$40,000	$35,000	$35,000	$35,000	$275,000
			72100	Service Contracts	$60,000	$50,000	$50,000	$30,000	$30,000	$30,000	$250,000
			72300	Materials and Goods	$50,000	$750,875	$500,000	$350,000	$30,000	$30,000	$1,710,875
			73400	Rental (Vehicles)	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$60,000

[26] These shaded budget items are financed with UNDP co-financing.

change.			74200	Audiovisual & Printing	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$30,000
			74500	Miscellaneous	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$18,000
			75700	Training	$7,000	$7,000	$8,000	$7,000	$6,000	$5,000	$40,000
			SUBTOTAL COMPONENT 2		**$405,000**	**$1,118,500**	**$777,500**	**$591,500**	**$270,500**	**$273,000**	**$3,436,000**
Component 3: Institutional and policy capacity strengthened to support Ecosystem-based Adaption replication, planning, monitoring, and enforcement for critical watersheds	UNDP	AF/ UNDP TRAC	71200	International Consultants	$28,000	$52,000	$42,000	$32,000	$28,000	$42,000	$224,000
			71200	International Consultants (UNDP)	$3,500	$9,000	$7,000	$12,000	$3,500	$7,000	$42,000
			71300	National Consultants	$30,000	$42,500	$41,000	$40,000	$38,000	$38,000	$229,500
			71300	National Consultants (UNDP)	$3,500	$3,500	$2,500	$3,500	$2,500	$2,500	$18,000
			71600	Travel	$10,000	$19,000	$18,000	$18,000	$15,000	$15,000	$95,000
			72100	Service Contracts	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$18,000
			72300	Materials and Goods	$10,000	$6,000	$8,000	$9,000	$6,000	$3,500	$42,500
			73400	Rental (Vehicles)	$3,000	$9,000	$3,000	$3,000	$3,000	$3,000	$24,000
			74200	Audiovisual & Printing	$4,000	$6,000	$7,000	$6,000	$6,000	$7,000	$36,000
			74500	Miscellaneous	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$6,000
			75700	Training	$3,000	$4,000	$0	$6,000	$6,000	$5,124	$24,124
			SUBTOTAL COMPONENT 3		**$99,000**	**$155,000**	**$132,500**	**$133,500**	**$112,000**	**$127,124**	**$759,124**
Project Management	UNDP	AF	71400	Service Contracts (Ind)	$66,000	$66,000	$66,000	$66,000	$66,000	$66,000	$396,000
			71600	Travel	$3,500	$4,500	$4,500	$4,000	$4,000	$4,500	$25,000
			74500	Miscellaneous	$24,000	$11,000	$3,000	$3,000	$3,000	$3,000	$47,000
			75700	Training (workshops)	$3,000	$2,000	$1,000	$2,500	$1,000	$2,500	$12,000
			SUBTOTAL PROJECT MANAGEMENT		**$96,500**	**$88,000**	**$73,000**	**$74,500**	**$73,000**	**$75,000**	**$480,000**
AF TOTAL					**$823,500**	**$1,419,500**	**$1,011,250**	**$822,000**	**$487,500**	**$505,374**	**$5,069,124**
UNDP TOTAL					**$189,000**	**$70,500**	**$ 58,000**	**$56,500**	**$55,500**	**$70,500**	**$500,000**
										Project Total (AF only)	**$5,069,124**
										UNDP PROJECT CYCLE FEE (8.5%)	**$430,876**
										TOTAL AF REQUEST	**$5,500,000**
										UNDP Co-financing Total	**$500,000**

Budget Notes

Note	Atlas Number	Category	6 year total	Description of Expenditures (to be finalized at project inception phase)
Component 1: Landscape level integrated land use and water resources monitoring and planning system focused upon reduction of ecosystem vulnerability to climate change. **Total: AF and UNDP/TRAC: $894,000**				
1.	71200	International Consultants	$266,000	International consultant team support for the completion, monitoring and adaptation of the strategic environmental assessment and eco-region strategy. This includes capacity and training support.
2.	71200	International Consultants (UNDP)	$98,000	International Economist and Conservation Financing Expert to support completion and adaptation of economic valuation studies.
3.	71300	National Consultants	$177,000	National consultant team support for the completion, monitoring and adaptation of the strategic environmental assessment and eco-region strategy. This includes capacity and training support.
4.	71300	National Consultants (UNDP)	$36,000	National Conservation Economist and Financing Analyst to support completion and adaptation of economic valuation studies.
5.	71600	Travel	$12,000	Local travel for Outputs 1.1 and 1.3
6.	71600	Travel (UNDP)	$90,000	International and local travel to support component effort.
7.	72100	Service Contracts	$6,000	Service contracts for Aimag/Soum support required for component activity.
8.	72100	Service Contracts (UNDP)	$50,000	Service contracts for Aimag/Soum support required for component activity.
9.	72200	Equipment	$10,000	Basic equipment required to support assessment and Eco-Region Strategy/Action Planning.
10.	72200	Equipment (UNDP)	$71,000	Equipment, including monitoring and assessment tools to be identified in the strategy.
11.	72300	Materials and Goods	$5,000	Computers and other equipment necessary to support local consultants.
12.	73400	Rental (Vehicles)	$5,000	Vehicle support for site visits.
13.	74200	Audiovisual & Printing	$5,000	Basic public awareness and information materials. Most of these will be purchased by the project under Component 3.
14.	74200	Audiovisual & Printing (UNDP)	$20,000	Printing and supplied required to create and distribute multi-generational materials developed through component activity, including assessment, valuation, and strategy.

15.	74500	Miscellaneous	$6,000	Approximately US$ 1,000 budgeted per year for ad hoc expenses.
16.	74500	Miscellaneous (UNDP)	$9,000	Approximately US$ 1,250 budgeted per year for ad hoc expenses related to economic valuation studies.
17.	75700	Training	$8,000	Training programs for Aimag, Soum, and National stakeholders on EBA assessment and strategy/action planning.
18.	75700	Training (UNDP)	$20,000	Training programs for Aimag, Soum, and National stakeholders on EBA economic valuation.
Component 2: Landscape level adaptation techniques maintaining ecosystem integrity and water security under conditions of climate change. **Total: AF and UNDP/TRAC: $3,436,000**				
19.	71200	International Consultants	$483,000	International team of consultant to help build capacities necessary to plan, implement, monitor and report on watershed level EBA.
20.	71200	International Consultants (UNDP)	$28,000	Economist/Conservation Financing Expert support of watershed level EBA.
21.	71300	National Consultants	$523,125	National team of consultant to help build capacities necessary to plan, implement, monitor and report on watershed level EBA. Will include support for local coordination unit and substantial work mentoring local stakeholders to build capacities.
22.	71300	National Consultants (UNDP)	$18,000	National Conservation Economist and Financing Analyst to support watershed level EBA
23.	71600	Travel	$275,000	International and national travel for project team. Both international travel and domestic travel are quite high in Mongolia. Budget allows for approximately 45,000/year for transport.
24.	72100	Service Contracts	$250,000	Contracts for local communities to support design and implementation of component activities, including monitoring, assessment, and reporting on activity.
25.	72300	Materials and Goods	$1,710,875	Budget allocation for purchase of equipment required to support improved water resources and land use management. This will include riparian restoration and protection, improved water resource monitoring and reporting equipment for local communities, model livestock exclosures (1km =’s US$ 10,000) and other adaptation measures designed to promote natural resilience.
26.	73400	Rental (Vehicles)	$60,000	Local vehicle hire for site visits. During project inception, the project design specialist will work with project staff to determine cost/benefit of vehicle purchase.
27.	74200	Audiovisual & Printing	$30,000	Equipment to support formal and informal training, capacity building, and awareness building, e.g., projectors, printing materials, etc.
28.	74500	Miscellaneous	$18,000	Approximately US$ 3,000/year for un-foreseen expenses.
29.	75700	Training	$40,000	Support for community-to-community information exchanges, participation in national workshops and seminars to report on progress, etc.
Component 3: Institutional and policy capacity strengthened to support Ecosystem-based Adaption replication, monitoring, and enforcement for critical watersheds **Total: AF and UNDP/TRAC: $759,124**				
30.	71200	International Consultants	$224,000	International consultant team to support completion of national capacity building efforts, including legislation and policy review and improvements, strengthening of institutional capacities, and

				design/implementation of formal project upscaling and lessons learned strategy.
31.	71200	International Consultants (UNDP)	$42,000	Economist/Conservation Financing Expert support for improvement of national fiscal policies and financing for EBA.
32.	71300	National Consultants	$229,500	National consultant team to support completion of national capacity building efforts, including legislation and policy review and improvements, strengthening of institutional capacities, and design/implementation of formal project upscaling and lessons learned strategy.
33.	71300	National Consultants (UNDP	$18,000	National Conservation Economist and Financing Analyst to support improvement of national fiscal policies and financing for EBA.
34.	71600	Travel	$95,000	International and national travel for component work.
35.	72100	Service Contracts	$18,000	Service contracts, e.g., design of marketing materials, newsletters, websites, etc.
36.	72300	Materials and Goods	$42,500	Support to build institutional capacities for information and knowledge management, including website, Aimag/Soum reporting mechanisms, etc.
37.	73400	Rental (Vehicles)	$24,000	Vehicles required for component activity, particularly field based upscaling and lessons learned through-out eco-regions.
38.	74200	Audiovisual & Printing	$36,000	Support for generation of materials to build national knowledge of and to mainstream EBA principles and practices, including newsletters and other marketing tools.
39.	74500	Miscellaneous	$6,000	Approximately US$ 1,000 per year for unforeseen expenses.
40.	75700	Training	$24,124	Implementation of workshops and other training opportunities for national, Aimag, and Soum level stakeholders. Will be particularly important for advancement of the marketing strategy.
Project Management **Total AF: $480,000**				
41.	71400	Service Contracts (Ind)	$396,000	Six years of salary for all project staff, including National Project Coordinator, Project Administrator/Financial Officer, Administrative Assistant, and Driver(s).
42.	71600	Travel	$25,000	Financial support for domestic travel and international (as necessary) to conduct project M&E.
43.	74500	Miscellaneous, including premises alterations	$47,000	Office support, including computers, printers, furniture, and office space as required.
44.	75700	Training (workshops)	$12,000	Project inception, mid/final M&E workshops.

ANNEX IV: Breakdown of UNDP Implementing Entity Fees and Disbursement Schedule

Stage	UNDP Services	UNDP Fee (8.5%)
Identification, Sourcing and Screening of Ideas	Provide information on substantive issues in adaptation associated with the purpose of the Adaptation Fund (AF). Engage in upstream policy dialogue related to a potential application to the AF. Verify soundness and potential eligibility of identified idea for AF.	$ 21,543 (5%)
Feasibility Assessment / Due Diligence Review	Provide up-front guidance on converting general idea into a feasible project/programme. Source technical expertise in line with the scope of the project/programme. Verify technical reports and project conceptualization. Provide guidance on AF Board expectations and requirements. Provide detailed screening against technical, financial, social and risk criteria and provide statement of likely eligibility against AF requirements. Assist in identifying technical partners. Validate partner technical abilities. Obtain clearances from AF.	$ 64,632 (15%)
Development & Preparation	Provide technical support, backstopping and troubleshooting to convert the idea into a technically feasible and operationally viable project/programme. Source technical expertise in line with the scope of the project/programme needs. Verify technical reports and project conceptualization. Provide guidance on AF expectations and requirements. Verify technical soundness, quality of preparation, and match with AF expectations. Negotiate and obtain clearances by AF. Respond to information requests, arrange revisions etc.	$ 86,175 (20%)
Implementation	Technical support in preparing TORs and verifying expertise for technical positions. Participate, guide and train project teams on setting up operational plan for implementation of the project during inception phases of the approved project. Verification of technical validity / match with AF expectations of inception report. Provide technical information as needed to facilitate implementation of the project activities. Provide advisory services as required. Provide technical support, participation as necessary during project activities. Provide troubleshooting support if needed. Undertake a minimum of one technical support and oversight visit per year. Provide additional support and oversight missions as necessary.	$ 193,894 (45%)

Stage	UNDP Services	UNDP Fee (8.5%)
	Provide technical monitoring, progress monitoring, validation and quality assurance throughout. Allocate and monitor Annual Spending Limits based on agreed workplans. Return unspent funds to AF.	
Evaluation and Reporting	Provide technical support in preparing TOR and verifying expertise for technical positions involving evaluation and reporting. Participate in briefing / debriefing. Verify technical validity / match with AF expectations of all evaluation and other reports Undertake technical analysis, validate results, compile lessons. Disseminate technical findings	$ 64,632 (15%)
TOTAL		**$ 430,876**

Disbursement schedule

The disbursement schedule to use for the AF funds is as follows: AF Trustee transfers the funds to UNDP in 6 tranches based on the following time-bound milestones. All figures in US Dollars.

	Upon agreement signed (July-11)	July - 2011	Oct-2011	Oct-2012	Oct-2013	Oct-2014	Oct-2015	Total
Project Funds		823,500	1,419,500	1,011,250	822,000	487,500	505,374	5,069,124
IA Fee	172,350	41,999	72,395	51,574	41,922	24,863	25,774	430,876
TOTAL	172,350	865,499	1,491,895	1,062,824	863,922	512,363	531,148	5,500,000
	Transferred by Trustee in a single tranche		Transferred by Trustee in 5 tranches					

ANNEX V: Indicative Output Level Workplan

A detailed activity level work plan will be prepared during the inception phase of the project.

Component	Activity	Year 1				Year 2				Year 3				Year 4				Year 5				Year 6				Note
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Component 1: Landscape level integrated land use and water resources monitoring and planning system focused upon reduction of ecosystem vulnerability to climate change.	Output 1.1: Strategic environmental assessment, including climate change considerations, conducted for target landscapes to document threats to ecosystem function and resilience and provide recommendations for avoiding and mitigating impacts.																									
	Output 1.2: Economic valuations completed summarizing landscape level costs and benefits of EBA.																									A series of three assessments are envisaged.
	Output 1.3: Ecosystem-based Adaptation integrated within land use and water resources monitoring and decision-making system in two eco-regions.																									
Component 2: Landscape level adaptation techniques maintaining ecosystem integrity and water security under conditions of climate change.	Output 2.1: Local level climate change adaptation assessment and monitoring implemented in two target watersheds.																									This output include continued implementation by local stakeholders and mentoring support throughout the project perioed.
	Output 2.2: Integrated landscape level Ecosystem-based Adaptation management action plans operational within two target watersheds.																									By the end of Year 3, the EBA plan for the target watersheds should be revised based on the experiences and will be formally adopted.By the close of the project, a final 4-year EBA mgt plan will be in place for both target watersheds.
	Output 2.3: Suite of physical techniques to improve ecosystem resilience established in two target watersheds.																									
	Output 2.4: Regulatory and financial management techniques for improving climate change resilience implemented within two target watersheds.																									
Component 3: Institutional and policy capacity strengthened to support Ecosystem-based Adaption	Output 3.1: Ecosystem-based adaptation approaches mainstreamed in national resource use planning and implementation mechanisms.																									
	Output 3.2: Institutional support for integrating climate change risks in land and water resource management planning.																									

replication, planning, monitoring, and enforcement for critical watersheds.	Output 3.3: Program for up-scaling best practices developed and implemented.																										

ANNEX VI: Description of Proposed Project Sites

Two Target Eco-Regions

This project will target two large landscapes within Mongolia's immense system: the Altai Mountains and Great Lakes Basin (Altai/GLB) and the Eastern Steppe. The Altai/GLB and Eastern Steppe landscapes are considered high-risk areas in terms of the climate change vulnerability. These two distinct landscapes are critical catchments for 70% of the country's water resources. They comprise forest and steppe ecosystems[27], including high Alpine belt, Taiga belt, mountain forest steppe, and steppe and desert steppe. They straddle five of Mongolia's thirteen critical watersheds: Uvs Lake, Khovd River, Kherlen River, Onon/Yoroo River, Ulz River, and Khalkh River Basins. These are highly diverse water systems with glaciers, wetlands, riparian zones, forests and grasslands each playing a vital role in watershed regulation.

1. The Altai Mountains and Great Lakes Basin Eco-Region

The Altai/GLB watershed covers approximately 288,000 km^2 of Mongolia's territory. The eco-region's three main provinces of Khovd, Uvs and Bayan-Ulgii have a total population of approximately 270,000. The primary land use is livestock husbandry with only limited crop and vegetable farming along watercourses. Mining for coal, gold and tungsten plays a major role in the region's new economy. Tourism is growing quickly as Mongolia opens to the outside world. This is a grand and diverse region of soaring mountains, rushing rivers, and wide empty deserts. The Altai/GLB bridges Asia and Central Asia and is shared by native Kazakhs and Mongolians. Khuiten mountain, the nation's highest peak, rises from the Altai to reach 4,374m. Nearly 15% of the Altai/GLB is within the national system of protected areas. The rivers in the mountainous country receive 50-70% of their water from snow and ice melt. The average amount of annually renewed surface water in the Great Lake Basin is estimated to be one third of Mongolia's total renewable water resources.[28] Mountains encircle the closed watershed with all water emptying into basin lakes and feeding some of world's

[27] Steppe ecosystems of Mongolia are renowned around the world for their wilderness qualities. The steppe habitats host a large population of small and large mammals and migratory birds.

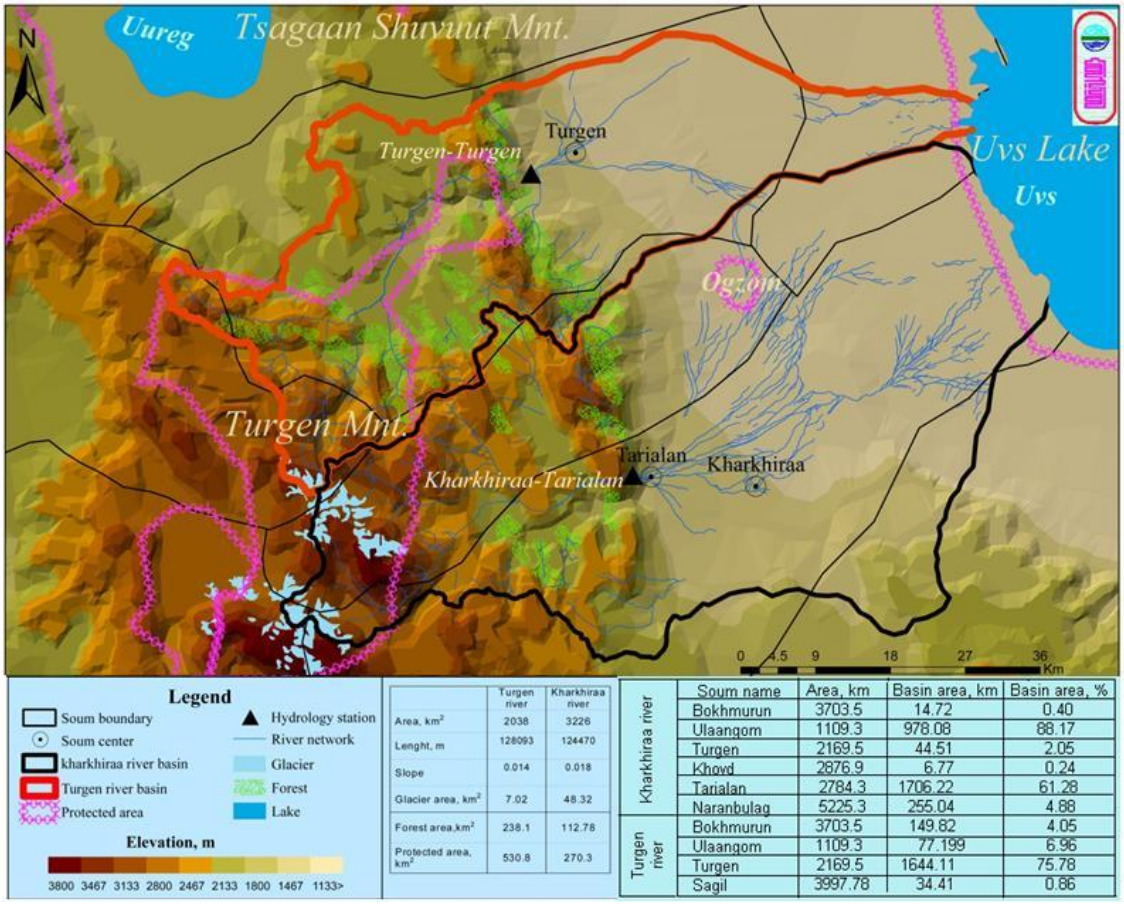
28 Myagmarjav, B. and Davaa, G. (eds), (1999): Surface water of Mongolia. Interpress publishing

most important wetlands: the Uvs, Khyargas, Khar-Us, Khar, Airag and Shargiin Tsagaan. This is the land of the Snow leopard and Argali sheep.

Unfortunately, as noted in the main document, this area faces substantial climate change risks. In the near-term, land degradation advances rapidly driven by over-grazing, energy development, mining and other anthropogenic factors. There are already visible impacts to water security. In the long-term, the loss of glaciers and the melting of permafrost will eventually diminish the region's rich water provisioning services.

Altai/GLB Project Site: The Kharhiraa/Turgen Watersheds

Project site level activity in the Altai/GLB eco-region will focus upon the neighboring Kharhiraa and Turgen watersheds. The 5,300 km^2 watershed rests within Uvs Aimag and touches the territories of seven Soums. Over 94% the watershed is contained within the territories of three Soums: Tarialan, Turgen, and Ulaangom. These adjoining watersheds occupy a diverse landscape that presents ample opportunities to establish EBA practices. Both rivers start at 4,000m in the protected area of the highly glaciated Turgen Mountains. They travel 100 km and cross a desert plain before reaching the globally important wetlands of Uvs Lake at 759 m. The Aimag capital, also named Ulaangom, sits along the watersheds' lower stretch. This landscape experiences the hottest, coldest and driest climate conditions of any place on Earth at similar latitudes. These watersheds are a mosaic of glaciers, tundra, alpine meadows, coniferous forest, intermountain steppes and finally Gobi desert steppe inhabited by nomads and farmers.



	Turgen river	Kharkhiraa river
Area, km^2	2038	3226
Lenght, m	128093	124470
Slope	0.014	0.018
Glacier area, km^2	7.02	48.32
Forest area,km^2	238.1	112.78
Protected area, km^2	530.8	270.3

	Soum name	Area, km	Basin area, km	Basin area, %
Kharkhiraa river	Bokhmurun	3703.5	14.72	0.40
	Ulaangom	1109.3	978.08	88.17
	Turgen	2169.5	44.51	2.05
	Khovd	2876.9	6.77	0.24
	Tarialan	2784.3	1706.22	61.28
	Naranbulag	5225.3	255.04	4.88
Turgen river	Bokhmurun	3703.5	149.82	4.05
	Ulaangom	1109.3	77.199	6.96
	Turgen	2169.5	1644.11	75.78
	Sagil	3997.78	34.41	0.86

Soum	Tarialan	Turgen	Ulaangom	Bokhmoron	Khovd	Naranbulag	Totals
Area (Soum), sq.km (GIS)	2784	2169	1109	3,704	2877	5225	17,868
Area (Watershed), sq.km	1,706	1689	1055	14.7	7	255	4,727
Population in a soum (2010)	4,029	2,021	24,713	2,190	2,230	4,459	31,117
Number of Herding Households	586	223	738	N/A	N/A	N/A	N/A
Protected areas,ha	7,565	38,913	54,839	N/A	N/A	N/A	N/A
Forest Cover, ha	2,849	18171	4463	0	0	0	25,483
Steppe, ha	148,680	171,860	81,500	370,400	287,700	522,500	1,582,640
Livestock (2010)	73,528	107,308	172,161	92,067	113,832	78,270	637,166
Soum Budget (2010), mln MNT	157	95	147	160	94.8	600	1,254
Cultivated lands/non-irrigated, ha	1,470	470	1,411	0	0	0	3,351
Cultivated lands/irrigated, ha	60	0	0	0	0	0	60
Cultivated lands/abandoned, ha	349	60	139	0	0	0	548
Number of wells (2007)	15	10	98	3	18	25	169
Water Monitoring Stations	1	1	0	0	0	0	2

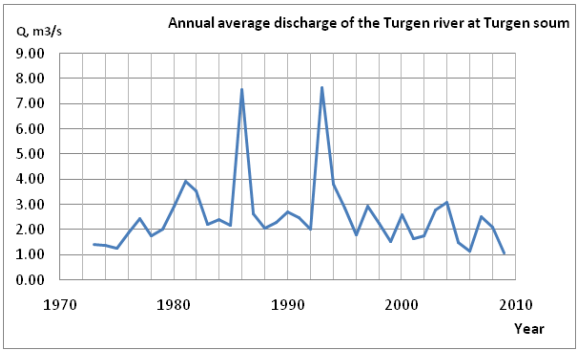
Note: No data exist in 2010 for Sagil soum, which occupies just 34. sq.km of the watershed.

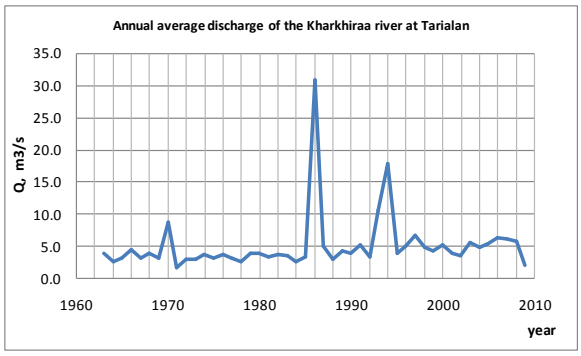
Population Trends	1990	1995	2000	2005	2010
Tarialan Soum	4,413	4,801	5,193	5,115	3,783
Turgen Soum	2,279	2,523	2,361	1,877	2,021
Ulaangom Soum	25,502	29,619	24,888	25,339	25,313
Bokhmoron Soum	N/A	N/A	2435	2217	2190
Khovd Soum	N/A	N/A	4759	4935	2230
Naranbulag Soum	N/A	N/A	2804	2440	4459
Sagil	N/A	N/A	2473	2245	N/A
Total	N/A	N/A	44,913	44,168	N/A

Water: These watersheds have water resources composed of glacier, lake, river and ground water. Both water basins are approximately 2,500 km^2, covering a total of 4,727 km^2. The annual mean flow of the Kharkhiraa River is currently 5.12 cms. The Turgen's flow is 2.54 cms. Seasonal flows vary for both streams, with 20% - 30% in spring and 55 – 60% in summer. Only 20% of the Kharkhiraa flow and less than 10% of the Turgen's occurs in the cold of winter.

Hydrological gauges of the Kharkhiraa, Turgen Rivers and Uvs Lake at Tarialan, Turgen and Davst Soums operate since 1963, 1973 and 1963, respectively. Hydrological station, Hydrology, Meteorology and Environment Monitoring center in Ulaangom are responsible for hydrological, meteorological and environment monitoring and data management within Uvs Aimag.

Uvs Lake is immense with a water surface area of 3518.3 km2. The average water level of is 759.94 m and water volume is 35.7 ckm. River water, dominantly fed by glacier and rainfall is fresh. The lake is salty and reaches 13.4 g/l on average.





Water degradation: Glaciers are shrinking due to climate change with impacts to both the Kharkhiraa and Turgen rivers. The glacier area is monitored, but almost no data exists on volume and ice density.

Water temperatures are actually decreasing as glacial melt speeds. Local landslides are occurring more frequently as permafrost melts. Small lakes tend to dry up due to increase in evaporation from open surface water and less precipitation. Water logging is not known in these basins. However, there is irrigation system. Until economic collapse in the early 1990's, Tarialan Soum had the capacity to irrigate 3,000 ha. Currently, the system irrigates cropland of 200 ha and uses 240 thousands m^3/year of water.

Livestock and rangeland: Since 2001, a pasture carrying capacity monitoring network introduced within the country using in-situ observation on pasture vegetation biomass in June and August and number of livestock in Soum and bag levels. Pasture carrying capacity is a function of vegetation biomass in a summer and number of livestock, expressed as pressure and quantified by equivalent sheep numbers. The monitoring results for this watershed show that over a ten-year period, there was only one year that the number of livestock did not exceed pasture carrying capacity. For 6 out 10 years, livestock numbers were 3-5 times higher than carrying capacity.

Dzud impacts: The severe dzud of 2009-2010 caused livestock losses of 21.3% - 24.2% in Turgen and Ulaangom Soums. The losses in Tarialan Soum, expressed in sheep equivalent units, totaled 49%. In spite of this, livestock numbers continue to increase dramatically. In the last twenty years, the number of livestock in the watershed's three main Soums tells the story. Ulaangom Soum's herd has grown from 47,000 to 190,000 animals. Turgen Soum grew from 59,000 to 101,000 animals. As noted, Tarialan Soum experienced massive die-offs in all three Dzud events. Livestock numbers still increased from 95,000 in 2000 to 140,000 in 2010.

Total Livestock	1990	1995	2000	2005	2010
Tarialan	139,171	111,108	95,000	130,461	140,444
Turgen	59,137	61,174	67,800	82,089	101,504
Ulaangom	47,011	102,238	85,800	121,529	190,783
Bokhmoron	62,682	N/A	65,892	66,554	92,067
Khovd	83,099	N/A	69,224	79,809	113,832
Naranbulag	114,896	N/A	122,989	149,962	78,270
Sagil	71, 919	N/A	78,099	119,315	N/A
Total	505,996	N/A	584,804	749,719	N/A

Desertification and Land Degradation: The slow process of land degradation has very complex driving forces such as climate change and natural resources mismanagement. The extent is not known in the watershed, but is suspected to follow national trends where overgrazing, land disturbance, deforestation, abandoned agricultural land and artisanal or improper mining have contributed significantly. The Agency for Land Affairs, Construction, Geodesy and Cartography is responsible for monitoring land status every 5 years. Total degraded land is estimated to be 8,836 ha in the Tarialan, 58,030 ha in Turgen and 236 ha in Ulaangom Soums in 2010. These figures generally include abandoned farmland. National land surface mapping conducted in 1992, 2002 and 2006 showed areas without grass (or barren) increased by 46% from 1992 to 2002. The 2006 data showed that barren land almost tripled, while during the same period forest area decreased by more than 26%.

Erosion. No data on soil erosion exist for these basins.

Mining or mining claims: Artisanal mining activity does occur in the watershed and currently occupies around 10 ha near Ulaan nachin in the Turgen river valley. In addition, Khotgor coal mining and artisanal mining takes place in the upper Orlogo stream valley. Khotgor coal mining is taking place in the vicinity of these basins, but has not yet entered.

Forests: Limited forest resources exist within the lower basins below the protected area. There is practically no commercial forestry. However, fuel-wood consumption is a concern, particularly along riparian habitat where woody growth has been drastically depleted. There are several companies near Ulaangom that provide trees for reforestation and pursue seabucthorn fruit planting on a 1,000 ha plot.

Biodiversity: Approximately 100,000 ha of the watersheds are within protected areas. The three protected areas that share territories with the watershed are: Kharkhiraa-Turgen Mountains, Ogzom, and Uvs lake. Because these basins have high elevation changes and present a mosaic of habitat types, they support an incredibly wide variety of endemic and red-book listed flora and fauna species. Charismatic species include Snow leopard (*Panthera uncia*), Siberian ibex (*Capra sibirica*), Wolf (*Canis lupis*) and the world's largest muflon, the Altai argali (*Ovis ammon ammon*). There are also three endemic fish species in the watershed. As noted, the rivers drain into Uvs Lake, recognized as a Wetland of International Importance. This area provides ample habitat for a variety of migratory bird species, including the Relict gull (Ichthyaetus relictus). This is one of the globe's most endangered shore birds.

2. The Eastern Steppe Eco-Region

Mongolia's vast Eastern Daurian Steppe eco-region occupies approximately 444,548 km^2. The landscape is the world's largest intact temperate grassland. Nearly the entire region is covered with Mongolian-Manchurian grasslands. Only 20% is comprised of Durian forest-steppe. Nomads continue to move unfettered across this magnificent prairie watching their livestock graze towards an empty, fenceless horizon. For centuries, this unique culture has depended almost exclusively upon eco-system services for their livelihoods. Nomads share this landscape with nearly two million Mongolian gazelles. Herds reaching the tens of thousands constantly migrate over the plains seeking out pasture. In late June, when the grass is greening after a hard winter, these gazelles all give birth over a two-week period creating an amazing wildlife spectacle. Wolves, brown bears and a host of other wild animals make their home here. The wetlands, prairie potholes, and grasslands provide sanctuary for six of the world's thirteen species of crane. Approximately 42,676 km^2 are included within the national system of protected areas.

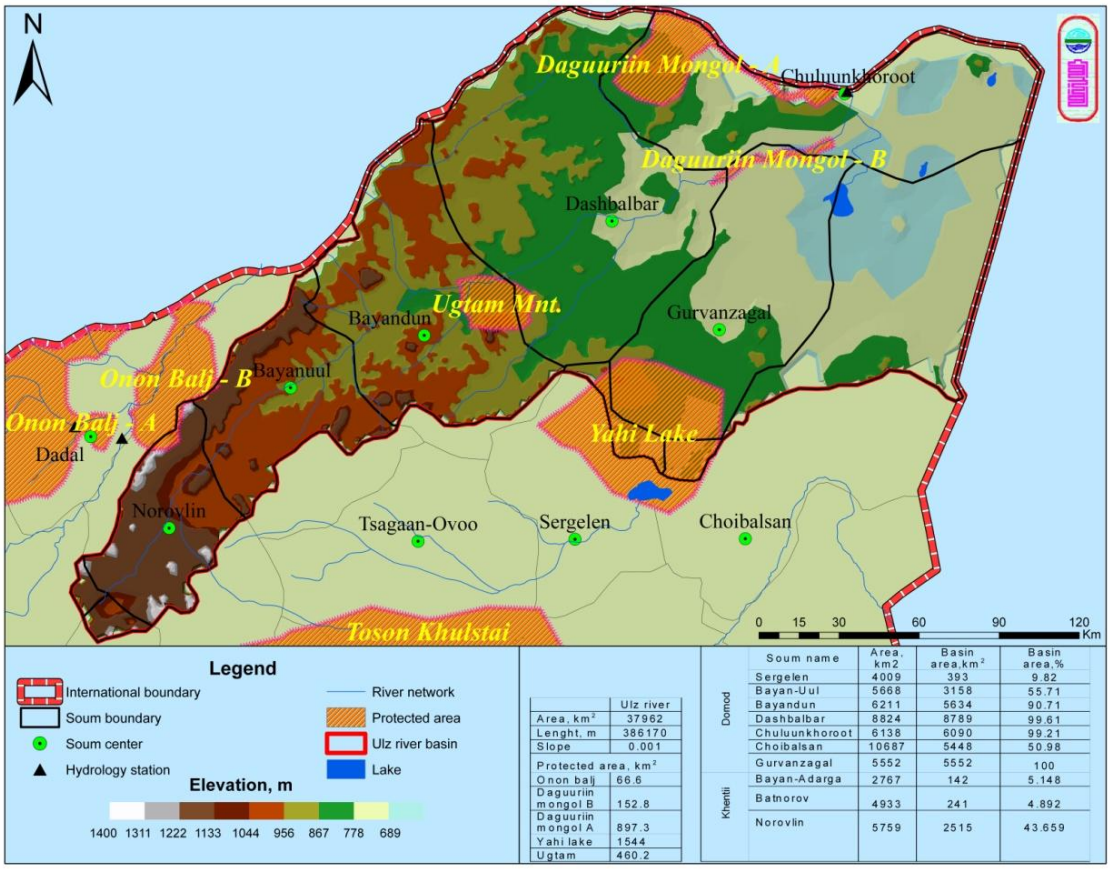
The region's major rivers (Kherlen, Onon, Khalkh, Ulz) each drain to the Pacific Ocean through China and Russia. They represent the headwaters of the vast, free-flowing Amur River. Although prairie wetlands are numerous, lakes are relatively scarce in this network. The largest is Buir Lake on the border with China.

Three Aimags have jurisdiction over the Eastern Steppe: Dornod, Khentii and Sukhbaatar. The total population is approximately 200,000. The region's four million livestock are concentrated upon landscapes with available water. Over-grazing creates the highest pressure on the ecosystem. However, under the new economy, the pursuit of minerals, oil, and coal with their associated infrastructure demands threaten to fragment the undisturbed grasslands.

As noted in the main document, climate vulnerabilities in the region are felt through increased desertification, reduced agricultural productivity, frequency of drought, dzud disasters and wind/sand (yellow dust) storms. This landscape relies primarily upon summer rainfall. Glacier-melt and permafrost retreat within the Khentii Mountain region does impact major rivers. As air temperature increases, river runoff will be decreased by at least 15-30%. Because of the decline in spring precipitation, the occurrence of forest and steppe fire and its recurrence has increased tremendously, causing millions of dollars worth of damage in addition to the environmental and human losses with adverse impacts on the hydrology. Although is a fire tolerant landscape, the intensification of El Nino or Southern Fluctuation is believed to influence wildfire fire occurrence rates and will likely cause ground cover losses.

Eastern Steppe Project Site: The Ulz River Basin

Project site level activity in the Eastern Steppe eco-region will focus upon the Ulz River watershed. The Ulz River Basin covers nearly 38,000 square kilometers of Mongolia's eastern steppe (approximately the same size as Switzerland). Less than 20,000 people are estimated to live in this area. There are ten Soums that share a portion of their territory with this watershed.



	Ulz river
Area, km²	37962
Lenght, m	386170
Slope	0.001
Protected area, km²	
Onon balj	66.6
Daguuriin mongol B	152.8
Daguuriin mongol A	897.3
Yahi lake	1544
Ugtam	460.2

	Soum name	Area, km2	Basin area,km²	Basin area,%
Domod	Sergelen	4009	393	9.82
	Bayan-Uul	5668	3158	55.71
	Bayandun	6211	5634	90.71
	Dashbalbar	8824	8789	99.61
	Chuluunkhoroot	6138	6090	99.21
	Choibalsan	10687	5448	50.98
	Gurvanzagal	5552	5552	100
Khentii	Bayan-Adarga	2767	142	5.148
	Batnorov	4933	241	4.892
	Norovlin	5759	2515	43.659

This large basin is emblematic of the Mongolian prairie. The Ulz River begins it's journey east across Mongolia in gentle mountains covered with larch, birch, pine, and grassy meadows. This is the southern extent of the vast Siberian taiga. The low-lying hills and valleys are still a wild place inhabited by Brown bears, elk, and wolves. As the clear flowing Ulz moves gently onto the prairie, the hills gradually give way to the Durian forest steppe where a mix of forest, grassland, and wetlands continues to feed the river's flow. The marshes and meadows provide refuge for a host of migratory birds, including significant breeding populations of the regal and highly endangered White-naped crane (*Grus vipio*). As the river slowly enters the prairie, the landscape becomes increasingly defined by intense grazing. The Ulz moves through several small Soum centers, providing water for both livestock and people. The signs of over-grazing are evident. Only remnants of once rich willow and popular forests remain. Livestock trample un-protected marshes and wetlands. However, this is still a rich landscape shared by migrating gazelles and prairie wolves. And, the landscape around the Ulz is filled with myriad of prairie potholes and wetlands. The Ulz remains clear as it continues to gain water from numerous wetlands and small streams entering from the surrounding hills. The Ulz's last job on the journey is to provide water for the pristine wetlands of the Mongol Daguur Strictly Protected Area. This is one of the world's most important refuges for avian species and is part of a vast transboundary complex shared with Russia and China. As it nears the board, Ulz branches with part of the water flowing into the closed basin Lake Khokh in Mongolia and the remainder crossing the border into Russia where it enters Torey Lake. After traveling nearly 400 kilometers to reach this point, the Ulz is only 607m above sea level, one of the lowest elevations in Mongolia.

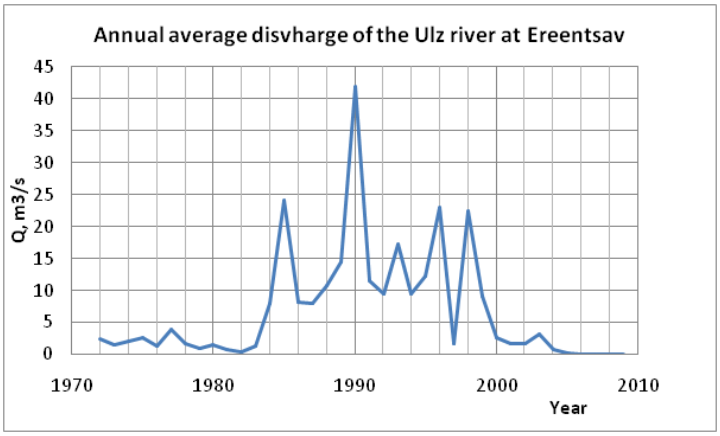
Soum	Sereg-len	Bat-norov	Bayan-Adraga	Chuluun-horoot	Dash-balbar	Bayan-dun	Bayan-Uul	Norov-lin	Gurvan-zagal	Choibal-san	Totals
Area (Soum), sq.km	4,009	4,933	2,767	6,138	8,824	6,211	5,668	5,759	5,552	10,687	60,548
Area (Watershed), sq.km	393	241	142	6,090	8,789	5,634	3,158	2,515	5,552	5,448	37,962
Percent of territory in watershed	10%	5%	5%	100%	100%	91%	56%	44%	100%	51%	N/A
Population (2010)	2,135	2,783	2,412	1,631	3,257	3,098	4,399	2,294	1,354	2,679	26,042
Herding Households	N/A	N/A	596	194	822	675	843	N/A	N/A	N/A	3,130 na
Protected Areas, (ha)	0	0	0	93,364	102,19	37,555	0	6452	107,576	0	244,947
Forest Cover, ha	N/A	N/A	33,500	178	1,473	34,009	135,708	52,932	N/A	N/A	257,800
Steppe, sq.km	393	241	2,700	6,088	8,774	5,294	1,801	1,986	5,552	5,448	38,277
Livestock (2010)	81,421	196,956	67,400	47,375	157,187	102,220	64,628	85,332	58,817	66,792	842,796
Soum Budget, mln tug. (2010)	473.9	720.2	552	135	288.4	150.4	105.4	595.7	435.9	561.6	3,423
Cultivated lands/non-irrigated, ha	0	0	3,200	10	26	26	22	4,160	0	0	7,444
Cultivated lands irrigated	0	0	0	0	0	0	0	0	0	0	0
Cultivated lands/abandoned, ha	0	0	240	N/A	N/A	N/A	N/A	1,777	0	0	2,017
Wells (2007)	173	77	34	143	108	226	173	63	245	179	1,421
Water Monitoring Stations	0	0	0	1	0	0	1 new	0	0	1	3[29]

Population Trends (includes Soum territory both inside and outside watershed)	1990	1995	2000	2005	2010
Chulunhorot	2,338	-	1,602	1,518	1,631
Dashbalbar	2,894	-	3,608	3,347	3,257
Bayandun	2,490	-	2,750	2,906	3,098
Bayanuul	5,167	-	5,139	4,737	4,399
Norovilin	-	2,893	2,871	2,255	2,294
Gurvanzagal	-	-	1,420	1,386	1,354
Choibalsan	-	-	3,007	2,844	2,679
Sergelen			2,571	2,194	2,135
Bayan-Adarga	2,156	2,409	2,348	2,413	2,412
Batnorov			6,858	6,739	2,783
Total	-	-	32,174	30,339	26,042

Water: The Ulz basin water resources are composed of lake, river and ground water. The total catchment area is 37,962 km2. The river's length is 386 km. The average riverbed slope is 0.001 and average riverbed elevation is 768 m. River bottom sediment consists of sand and loam. The Ulz is part of the upper Amur River basin. However, depending upon flow levels, the river feeds water to both Torey Lake in Russia and the closed basin Khokh Lake in Mongolia. The average water level of Khokh Lake is 552 m. With recent flow changes, the lake's water surface area has increased from 80.7 km^2 in 1941 to 101.7 km^2 in 2001.

[29] Including Khokh Lake gauge.

The annual mean flow of the Ulz River is 6.89 cms. The river system relies primarily upon rainfall. Most the annual flow (52.4%) occurs during summer from July – September. More than 25% of the flow takes place in fall and winter months of October – March. Approximately 22% of the flow occurs in spring from April to June.



Water Degradation: Scientific and anecdotal evidence seem to point to a loss of river flow over the past ten years. The river is experiencing low flows since 2000. Some of this is due to perceptions since the river has changed course and seems to be flowing more towards Mongolia rather than Russia. However, much may be attributed to climate change, primarily noticeable changes in precipitation patterns and a potential increase in evaporation. Unsustainable grazing management compounds impacts. No matter the cause, it is beyond dispute that changes in the hydrological regime are occurring in the Ulz River basin. From 2006 to 2010, there were periods where the Ulz did not flow (zero flow) into the lower reaches within Chulunkhorot Soum. This is a watershed filled with prairie wetlands. So water resources management and climate change impacts within the Ulz basin are not limited only to the Ulz River. There is also no dispute that wetlands are depleted along the river flood plain and in the greater wetland complex due droughts combined with grazing. However, very little formal wetland monitoring takes place. Several small lakes and wetlands appear to drying more frequently due to increased surface water evaporation. This may have knock-on effects for the greater watershed. Although there is cultivation in the watershed, there are no irrigation systems. Therefore, water logging is not practiced. This may change with the advent of government and donor programs pushing for more fodder production, including irrigated hay lands.

Livestock and rangeland: Since 2001, the national pasture carrying capacity monitoring network has been using in-situ observation on pasture vegetation biomass in June and August along with livestock numbers reported Soums and Bags. This information is used to determine pasture carrying capacity as a function of vegetation biomass in a summer and number of livestock expressed as pressure and quantified by equivalent sheep numbers. The monitoring results for the Ulz basin show that carrying capacity was likely not exceeded until 2007. However, it should be noted that nearly all conservation organizations will counter that grazing is maximized and carrying capacity figures do not account for damages to ecosystem services, particularly localized damage near watercourses, wetlands and villages. From 2007 – 2010, official estimates showed sporadic overgrazing at rates of 1 - 3 times ideal levels throughout 10% to 40% of the catchment area. This was particularly pronounced during summer drought condition. Much of this is associated with livestock migration into the basin. This is an increasingly common trend. Livestock are counted during the fall/winter months. Persons from outside areas with pronounced over-grazing, particularly from the south, will move towards the north to take advantage of summer pastures. These herders will then leave and return to their own territories before livestock counts occur. Ironically, this north/south movement mimics livestock practices that pre-date collectives. Livestock numbers have increased dramatically in the last five years. Reported numbers show that the average Soum herd size increased almost doubled over the last twenty years with an average increase of 70% in the past five years.

Total Livestock	1990	1995	2000	2005	2010
Chulunhorot	42,595	-	15,640	29,322	47,375
Dashbalbar	111,775	-	95,003	114,356	157,187
Bayandun	78,217	-	67,715	90,362	102,220
Bayanuul	48,188	-	36,902	50,061	64,628
Norovlin	74,178	-	67,071	52,478	85,332
Gurvanzagal	43,689	-	25,852	41,571	58,817
Choibalsan	40,166	-	53,842	69,645	66,792
Sergelen	72 822	-	87520	105,468	81,421
Bayan-Adarga	67,100	-	34,100	39,600	67,400
Batnorov	106,001	-	121,476	158,053	196,956
Total	611,909	-	605,121	750,916	928,128

Dzud Impacts: This region, located in the far east of the country, was not impacted as severely during the most recent dzud. The western section of the watershed - Norovlin and Bayan-Adarga soums – saw livestock losses of approximately 12%. The remainder of the basin experienced livestock losses of an average of only 2%. This is well within normal expectations.

Desertification and land degradation: There is no strong data on land degradation within this region, only anecdotal data reported primarily by first-hand observations. These observations indicate substantial land degradation primarily along watercourses and in areas with larger numbers of people and livestock. The amount of abandoned agricultural land in both Norovlin and Bayan-Adarga Soums increased by nearly 50% between 2000 and 2005 when last reports were available. percents in 2005 comparing with that was in 2000 in these Soums. There are community based wildfire units in soums. The Ulz river basin has a very high potential for wildfire due to forest steppe and grassland vegetation. There were 8 wild fire events in Ulz river basin in 2010. That same year, there were massive wildfires reported in neighboring Russia.

Mining or mining claims: There are no active mines in this basin. However, much of the basin is licensed for mineral exploration and there is growing economic pressure to develop mining resources. Neighboring basins have recently seen an increase in mining activity.

Forestry Management: Forestry is limited to subsistence use for corrals, winter buildings, and fuel-wood. Riparian habitat has been substantially degraded of woody vegetation.

Biodiversity: As noted, the Ulz river basin is a bastion for wildlife and provides habitat for a wide variety of plant and animal species. The region is most well known for vast numbers of Mongolian gazelle and as a refuge for globally threatened birds. To date, more than 280 species of migratory birds have been recorded in the Ulz basin.

The basin shares territory with several protected areas. The total watershed territory covered by protected areas is 3,120 km^2 or 8% of the total watershed. The protected areas and the amount of individual territory within the basin include: Onon-Balj (67 km^2), Mongolian-Daurian B (152 km^2), Mongolian-Daurian A (897 km^2), Yahi Lake (1,544 km^2), and Ugtam (460 km^2).

The 2010 “Biodiversity Gap Analysis of the Grasslands and Forest Steppe of Central and Eastern Mongolia” determined that less than 20% of potential range is protected for several critical species. Species living in the steppe region tend to be wide ranging and demand large areas to be conserved in order to maintain habitat needs. The report concluded that although protected areas serve as important non-developed refuges, additional strategies for conserving connectivity between protected areas is essential to maintaining viable populations of these enigmatic and highly mobile species. The report also states that the dominant threats to the persistence of biodiversity in the Ulz basin are hunting and over grazing.

Because of the rich biodiversity value of the region, MNET and several Non-governmental environmental organizations are active in the Ulz basin and surrounding watersheds. International organizations include The Nature Conservancy, WWF, and WCS. These organizations are implementing a wide range of research and conservation activities. The project design phase was defined by close collaboration with each. This high-level of coordination and cooperation will continue during implementation.

Annex VII: Description of Relevant On-going and Planned Sector Investments Activities

Title	Principal	Dates	Budget US$ (approx)	Objective and Primary Activities	Coordination Measures
Sustainable Water Management as a Climate Change Adaptation Strategy in Western Mongolia	WWF	2008 - 2010	$800,000	To ensure the ecological integrity of the Khovd River Basin and the sustainable management of its water and related resources as a climate change adaptation strategy in western Mongolia A fully participatory and holistic approach of the project for Khovd River water management involving all key stakeholders and interests (herding, agriculture, industry, production of hydropower etc). Best practices in scientific data collection, development of Integrated River Basin Management Plan will be replicated through the proposed project. The main outputs of the project are the integrated water resource management plan for the Khovd River, which is an important river basin in the Altai Mountains / GLB landscape, as well as establishment of the River Basin Council for the particular basin.	The proposed project will take the results of the WWF project initiatives to a larger scale and demonstrate actual adaptation measures and options at the local level. WWF is also active in the Eastern Steppe working on issues pertaining to climate change, water management (Basin Council for Onon/Balj), and biodiversity. WWF was consulted throughout the project design process, including participation in key stakeholder meetings. Continuing opportunities for coordination, cooperation, and mutual programming will be maximized during the implementation phase.
Eastern Steppe Conservation	The Nature Conser-vancy	2006 0n-going	n.a	Conservation of grasslands of Eastern Steppe and development of conservation plan with the key stakeholders	TNC's work in the area, including collection of data and information on the Eastern Steppe biodiversity and ecosystems, will form a strong basis for the proposed project planning and analysis. The proposed project will build on the Eastern Steppe Biodiversity Conservation Strategy in establishing the integrated landscape-level land use and water resource planning system aimed at reducing vulnerabilities to climate change impacts.
Climate Change and Biodiversity Program	GTZ	2009 - 2011	$8,500,000	To conserve biodiversity in Mongolian forest and steppe areas endangered by climate change in the Khangai and Khentii regions.	Project will coordinate to integrate lessons-learned regarding biodiversity conservation and climate change adaptation.
Sustainable Land Management (SLM) for Combating	UNDP The Netherland	2008-2012	$4,150,000	To combat land degradation and desertification in Mongolia in order to protect pasture/land	The proposed project will build on the best practices and lessons learned from

Title	Principal	Dates	Budget US$ (approx)	Objective and Primary Activities	Coordination Measures
Desertification	s SDC			resources so that they are key to reducing poverty. The SLM project focuses on effective management and rehabilitation of pasture/land in the south eastern corner of the Eastern Steppe.	the community-based pasture/land management approach. The proposed project will add the critical element of enhancement of ecosystem service resilience at a landscape level.
Community-based Conservation of Biological Diversity in the Mountain Landscapes of Mongolia's Altai Sayan Eco-region	UNDP GEF The Netherlands	2004-2011	$4,834,000	To ensure the long-term conservation of the biodiversity of Mongolia's Altai-Sayan region by mitigating threats and encourage sustainable resource use practices by local communities Successes and lessons in community-based biodiversity conservation approach and the Environment Units that were established in local governments to support herder groups will be a useful vehicle for community based activities in the Altai Mountain region. The Altai Mountains biodiversity conservation plan provides a wealth of data and information on ecology, hydrology, geography and socioeconomics that will enable the proposed project to work effectively building on the existing information.	The conservation efforts are centered on biodiversity conservation and protected area management and extension. The proposed project will add the critical element of enhancement of ecosystem service resilience, and implement landscape level conservation activities.
Green Gold – Mongolian Pasture Ecosystem Management Programme	SDC	2002-2011 Phase 2 soon	8,000,000	To strengthen the self-reliance of poor and vulnerable herders and to improve their livelihoods through more productive and sustainable use of pastures in Mongolia The Green Gold Project's focus has been on the capacity of communities to use pasture sustainably for increased production, rather than managing pasture for resilience. The project aims at increasing pastureland productivity, without necessarily considering wildlife co-existence. The geographical focus of the project is very different from the proposed project, therefore replication of successful methods and systems may be possible.	During the project preparation phase, successes were discussed at length with SDC staff covering how best to apply and upscale the concept of territory-based pasture user groups responsible for formulating and implementing a pasture co-management plan. These are fully integrated within the project design.
Sustainable Livelihood Programme Phase 2	World Bank	2007 - 2012	$49,400,000	To enhance livelihood security and sustainability by scaling up institutional mechanisms that reduces the vulnerability of	The SLP has staff in every Soum. However, they are not trialing – to date – pastureland specific

Title	Principal	Dates	Budget US$ (approx)	Objective and Primary Activities	Coordination Measures
				rural communities. A comprehensive programme with four components – pastoral risk management, community initiative, microfinance development fund and project management/capacity building.	activities with this project's proposed target areas. During the project design phase, discussions were held with both project implementers and original World Bank task managers to make certain synergies are strong. The lessons learned to date, especially with regard to pastureland management, were firmly applied to the design of this project and will be used to enhance outputs.
IFAD/GEF/Government of Mongolia - Livestock Adaptation Project (2011-2016)	IFAD	2011-2016	$20,000,000	Empowering poor rural population to achieve higher incomes through sustainable improvements in their livelihoods, through a) Market development; b) Pasture management and c) climate change adaptation. This project is combination of loan/grant GEF funds focus on the resource user side of climate change adaptation, namely market development, improved pasture management, establishment of an early warning system and disaster insurance schemes.	This project has close alignments with the proposed project. However, the two projects do not contain overlaps for several reasons discussed at length in the main proposal. The IFAD/GEF project will be working in and piloting efforts in locations quite geographically distinct from this proposed project. In addition, the IFAD/GEF project is focused upon developing herder productivity, including concepts such as fodder production and marketing. There are numerous lessons to be shared and all opportunities for developing further synergies between the two projects will be maximized. This will include close coordination during project implementation through a possibly shared steering committee.
Daurian Steppe SCAPES (Sustainable Conservation Approaches in Priority EcosystemS) project	WCS USAID	2009-2014	$ 1,250,000	Working with local governments and rural communities to improve land management for water resource security	This program has developed a significant amount of information and data pertaining to biodiversity conservation and grassland management directed towards water security and climate change. There are numerous opportunities for sharing of knowledge and experience, particularly in the Eastern Steppe.

Title	Principal	Dates	Budget US$ (approx)	Objective and Primary Activities	Coordination Measures
					Numerous discussions were held during the project design phase to make certain synergies are built into project programming. This will be continued during implementation.
Gobi Forage Project	Mercy Corps USAID	2004-2009	N/A	Through the project a forage monitoring system was developed, providing near real-time spatial and temporal assessment of current and forecasted forage conditions An information and communication infrastructure and analysis delivery system developed to provide herders with information on current and forecasted forage conditions	Lessons-learned, including the need to reduce rather than increase competitive grazing being domestic and wild ungulates, have been incorporated within the proposed project.
Rural Poverty Reduction Project	IFAD	2003-2009	$11,200,000	The overall objective was to achieve a sustainable increase in productive capacity and the general public, and to: offer increased access to economic and social resources, including education, health and social network.	Lesson-learned in the importance of designing strong rural marketing strategies that are well-informed to increase upscale success.
Animal Health and Livestock Marketing Project	European Commi-ssion	2008-2012	$15,800,000	Project aims at improving the livelihoods of rural population living on livestock production by establishing a productive and market-oriented livestock sector. Intended results: 1. Institutional capacity in the agricultural sector enhanced, including disaster risk reduction 2. Animal health improved 3. Quality and efficiency of livestock production and marketing increased	This project focuses upon increasing the productive side of livestock grazing. Lessons learned are incorporated.
Securing our future: Mongolia Watershed Monitoring Network component	The Asia Foundation	2007-2009	N/A	The purpose of the Mongolian Watershed monitoring Network is to engage teachers and students, community groups, citizen and river movement advocates, and government officials in scientific data collection on river water conditions and share that information among members to improve the environment. Through the initiative Mongolian teachers and citizens in target area were taught to conduct river quality monitoring.	The project will work to adopt and upscale lessons learned. This project generated very good materials related to community monitoring of water resources that will be utilized to enhance all three of the proposed project's components.

ANNEX VIII: Comments and Response Matrix for the Project Concept Approved in September 2010

Point for Clarification from AF	Response
CR1: There appears to be a miscalculation in the project budget. The three components total USD 5.0 M but the figure used in the subsequent calculation is USD 4.5 M. Please clarify the budget.	In the concept, the "Project Execution Cost" of USD 500,000 was considered as part of the "Total Project Cost". However now that we understand that it should be in addition to the costs of the project components, we have revised the component budget as follows in the table on page 8 and 9. Component 1: $ 700,000 Component 2: $ 3,350,000 Component 3: $ 450,000 Total of 3 components: $ 4,500,000 The project execution cost of $ 500,000 is separate from the above (bringing the total project to US$ 5 million). The UNDP agency fee of 10% is in addition to this, bringing the total amount of financing requested to $ 5.5 million.
CR2: Please state more clearly what the expected benefits are and when they are expected to materialise. To enable assessing the benefits of the project, calculations of direct economic, social and environmental benefits for these regions should be included (reference to ecosystem service value in tropical forests bears little relevance). Please also include an assessment of opportunity costs resulting from the project interventions.	Environmental benefit: This is inherent in the Ecosystem Based Adaptation (EbA) approaches proposed in the project. Increased resilience of ecosystems to be able to sustain essential ecosystem provisioning and regulating services. The benefits include stabilisation of hydrological regime (runoff, discharge, infiltration, storage, recharge, and associated silt and sediment loads etc.) , healthy natural vegetation able to sustain biodiversity, improvement in pasture quality and biomass, erosion and desertification control, as well as better control of wildfire. Social benefit: EbA activities are closely linked with societal adaptation as a whole. With the enhanced resilience of ecosystems, climate change induced changes and extreme events are likely to be more gradual and less severe than under a 'business as usual' scenario without any EbA measures. This would directly enhance the capacity of vulnerable, largely subsistence communities to be able to respond to climate change impacts. In addition, an increase in awareness, and the knowledge and experience in community based integrated water management and resilience based pasture management will further strengthen the adaptive capacity of the communities. Furthermore, with the EbA activities, the risk of natural disasters such as drought, "dzud", strong wind and sand storms, flash floods and wild fire will be better controlled. Well maintained ecosystems and landscape will also increase the region's potential for expanding tourism opportunities, providing alternative livelihoods for local herder communities with income generation and employment opportunities. Moreover, without inclusion of EbA approaches to both mitigation and adaptation, society runs a high risk of not being able to deal adequately with the causes or consequences of climate change, leading to a reduction in the quality of life for all of society, in particular the poorest and most vulnerable sectors. Economic benefit: It is widely recognised that ecosystem services have extremely significant economic values. There have been few economic assessments of ecosystem services in Mongolia, and none in the proposed project sites, and more ought to be done in future. However, there is a study on a similar ecosystem, the Upper Tuul River Ecosystem in Mongolia, conducted in 2009, that suggests that economic benefits of conservation of the country's watersheds are substantial. The study found that the land and resources of the Upper Tuul currently contribute income and marketed products worth around US$ 28 million a year in tourism, herding and forest-based sectors. Given the importance of the ecosystem for water provisioning to the capital Ulaanbaatar, improved conservation of the Upper Tuul ecosystem is estimated to be worth in excess of US$ 1 billion in present value terms, through the provision of water, tourism, herding and forest products. Conservation of the area is estimated to generate an additional US$ 58 million net present value over 25 years as compared to continuing gradual degradation of the watershed. This is US$ 97 million per year over and above a situation of no protection, including the opportunity costs (reductions in the value of land and resource use in the upper watershed and increased investments in protected area management in the upper watershed). The study findings suggest that every 1 Mongolian Tugrik invested in the conservation of the Upper Tuul Ecosystem has the potential to generate an additional 15 Tugriks in water, land and resource use benefits over the next 25 years. Possible opportunity costs of the project interventions include reduced grazing areas and costs for conservation activities. However, the overall benefits from enhanced ecosystem resilience, including long-term sustainability of water provisioning capacity of the landscapes and improved pasture quality, are likely to significantly outweigh the opportunity costs. The Ministry of Nature, Environment and Tourism is currently participating in a regional project on economics of climate change response measures including adaptation activities. In addition, it is planned that using the UNDP co-funding for the project, a series

	of economic valuation studies will be conducted during the first year of the project so that the project's economic impact, including opportunity costs will be clarified, and to make a stronger case for mainstreaming of the ecosystem based adaptation approach in the national and local adaptation framework. With regards to the timing of materialisation of the benefits, ecosystem based measures can have visible environmental, economic and social impacts over different time scales. Some types of measures, for instance improvement in water harvesting technologies, increase in adaptive capacity of communities, creation of alternative livelihood activities, and realignment of protected area systems can yield fairly quick environmental and social benefits well within the project time frame. On the other hand, full results of ecosystem resilience and associated economic benefits may only materialise in the medium or long term. However, the Project will be able to set quantifiable targets to gauge progress in enhancement of ecosystem resilience, to be achieved within the project time frame, based on scientific facts. The Project design will also focus on capacity building and institutional framework development in order to ensure the benefits can continue to be monitored by the national government over the long term beyond the project's time frame, and the impacts of the Project outputs and outcomes will be sustained. Clarifying changes have been made in section B. Economic, Social and Environmental Benefit on page 12 and 13.
CR3: Please explain the cost effectiveness in more detail.	The proposed project approach of tackling two major landscapes is considered cost effective compared with the option of choosing one landscape because of the following reasons. 1) The target landscapes were selected because they represent a significant portion of Mongolia's water resources and encompass an array of representative ecological, social and economic samples in the country, with potential for generating a variety of experiences and lessons. Although component 1 and 3 of the projects will deal with the entire landscapes, the demonstration activities under component 2 will cover targeted areas covering a maximum of 20% of each landscape, making the two landscape approach feasible. Given the associated project management costs (e.g. project personnel, office and equipment) tackling the two landscapes within one project would be more cost effective than focusing on one landscape, leading to larger impacts. 2) The strategy of the project is to catalyse climate change adaptation efforts at two landscapes through mainstreaming ecosystem resilience in land use and water resource planning and management at the landscape level, demonstrating EbA approaches and developing the national and local institutional capacity in mainstreaming and applying the approach in the adaptation frameworks. This would ensure effective utilisation of the project fund as well as country's limited financial resources to implement programmes addressing different components of climate change adaptation. 3) The project applies existing best practices from the past and ongoing interventions that are proven to be cost effective on mainly singular resource types (water, land/pasture or biodiversity). There have been quite a few interventions of this kind in the target landscapes, though many interventions are solely for income generation or livelihood diversification for vulnerable communities. The experiences gained will be applied to optimise management of ecosystems, thus avoiding optimising a particular resource at the cost of the others under changing climatic conditions. 4) The Project will mobilise international and domestic expertise for EbA, and will act as the knowledge hub for the government and resource users regarding the EbA approach. It would be cost-effective to utilise the expertise and knowledge for the two critical landscapes, capturing a wide range of experiences and lessons unique to each landscape and demonstrating diverse ecosystem based adaptation options. 5) Having these two landscapes is considered manageable because of the reasons stated above and as these areas have a relatively good amount of biodiversity, ecosystem and socioeconomic data accumulated during past and on-going projects, including the landscape level biodiversity conservation plans for the Eastern Steppe and Altai Mountain Regions. More detailed investigations will be conducted during the proposal formulation stage, on the cost effectiveness of covering the two large landscapes as opposed to just one. Clarifying changes have been made in section C. Cost-effectiveness on page 14 and 15.
CR4: Please explain how the choice of areas and the selected approach and set of activities are in line	The Government of Mongolia (GoM) discussed the draft updated National Action Programme on Climate Change (NAPCC) at the Cabinet meeting earlier this month, and submitted it to the Great Khural (Parliament) for its approval. GoM also is finalising the National Adaptation Strategy (NAS) and it is expected that the updated NAPCC and draft NAS will be approved in the next few months. The ecosystem based adaptation element is embedded in these official climate change documents. The strategic objective 2 of the NAPCC

with the national adaptation and other relevant strategies in Mongolia.	states "Ensure ecological balance and reduce socio economic vulnerabilities and risks step by step through strengthening of national adaptive capacity to climate change." The action plans under this objective for the first phase (2011-2016) include: integrated watershed management; technological and economic capacity building for water saving systems, extension of water reservoirs and basin constructions from rivers; precipitation and snow melting harvest, coordination of sector development strategies for sustainable water use, and enhancement of greenhouse gas sequestration capacity of pasture and soil. However, there is still an information and capacity gap for mainstreaming the EbA approach in the adaptation framework. Every activity envisaged under the project's three components will contribute towards implementing the policy and programmes listed in the concept. Relevant objectives and sections of these documents, to which the project interventions contribute, are listed underneath each policy and programme. By applying the landscape-based holistic planning approach, the effectiveness and efficiency to contribute to specific sectoral programmes and policies (climate change adaptation, combating desertification, water, forest, biodiversity etc.) will be significantly increased. The main strategies for climate change adaptation embodied in the listed policy documents also apply to the project concept under Section D. Effective management and protection of pastureland, water and forest resources, rain and snow water harvesting and basin-based integrated water resources management are vital parts of these policy documents. Due to the importance to the country's water resource formation, the two landscapes, especially the water bodies within the landscapes are specifically stated in programme documents, such as NAPCC, NAPCD, and National Programme on Water. Additional information has been provided in section D. National and Sub-National Priorities on page 15 and 16.
CR5: Please explain what the scale of physical structures to be built is, what the standards to be used are, and whether those structures will prompt environmental assessments according to Mongolian laws and regulations.	The water harvesting infrastructure to be supported by the project is envisaged to be small scale. Locations of water harvesting structures at two landscapes will be selected in close consultation and collaboration with the Water Agency under the Ministry for Nature, Environment and Tourism and other relevant authorities, as this activity will contribute to an essential part of the National Programme on Water. Feasibility studies and engineering drawings for establishing structures will be conducted by certified professional companies by the Decree of the Minister for Construction and Urban Development. Expertise review of the design will be conducted by the Administration for Construction, Geodesy and Cartography and their personnel. The water harvesting structures will be no more than 20,000 m^3 in capacity. Therefore EIA will not be necessary according to Mongolian legislation, although the Project will ensure that there will be no negative environmental and social impacts from the infrastructure development activities. The main Building Codes, Norms and Standards to be followed are: Regulation for preparation and approval of engineering design drawings (BCNS - 11.01.2007), Regulation on construction structure inspection (BCNS – 3.01.01-88), Construction safety techniques and standards (BCNS – 3.01.05.-90) and Regulation for constructing engineering structures and foundations (BCNS-3.02.01.-90). Additional information has been provided in section E. Technical Viability on page 17.
CR6: Please explain ways of complementarity and lack of duplication with other projects in a more comprehensive and detailed manner.	Mongolia is a large country in size and a small country in terms of population, government and donor communities. This makes duplication of efforts by different programmes seldom a problem. The proposed project is envisaged to be steered by the National Climate Change Committee, including representatives from all the Ministries and entities that have oversight of the existing initiatives. Through the steering committee, any potential duplication with on-going or future projects will be avoided. Complementarity with past and on-going initiatives will be assured through thorough review of the projects' work, achievements and lessons learned, and consultations with implementing partners of those projects during the full proposal development phase. As stated earlier, one of the reasons for choosing the two landscapes is that these areas have some good baseline data for biodiversity and ecosystems, which have been accumulated through past and on-going complementary initiatives. The proposed project will directly build on the existing initiatives and will add value to the results of these initiatives, by creating ecological conditions that will increase sustainability of the results. The main difference between the proposed project and the complementary projects listed in the concept paper (Section F) is that the latter focus mainly on optimising sustainable use of specific types of natural resources rather than looking at maintaining ecosystem functions. The following is some additional information on the seven projects listed in the concept. The WWF's sustainable water management project focuses on development of the integrated water resource management plan for the Khovd River, which is a major river basin in the Altai Mountains / Great Lakes Basin landscape, as well as establishment of the River Basin Council for the basin. Data, documentation and experiences from this project will form an ideal basis for the proposed project interventions. The proposed

	project will take the results of the WWF project initiative to a larger scale and demonstrate actual adaptation measures and options at the local level. The Eastern Steppe conservation plan that was developed through TNC's work in the area will form a strong basis for the proposed project planning and analysis. Similarly, the UNDP/GEF funded Altai Sayan Project's Altai Mountains biodiversity conservation plan provides a wealth of data and information on ecology, hydrology, geography and socioeconomics that will enable the proposed project to work effectively building on the existing information. The conservation efforts are centered on biodiversity conservation and protected area management and extension. The UNDP/Netherlands/SDC funded sustainable land management project for combating desertification aims at increasing productivity through effective management and rehabilitation of pasture/land for local communities while ensuring certain levels of mobility/nomadic lifestyle in the south eastern corner of the Eastern Steppe. The proposed project will build on the best practices and lessons learned from the community-based pasture/land management approach, at the same time management of other resources is considered comprehensively at a landscape level. The concept of soum level pasture management committees and participatory support units will be applied/replicated for the proposed project. The SDC funded Green Gold Project has addressed herders' capacity to improve their livelihood through more productive and sustainable use of pasturelands. Its focus has been on the capacity of community to use pasture sustainably for increased production, rather than managing pasture for resilience. The project aims at increasing pastureland productivity, without necessarily considering wildlife co-existence, i.e. some of the pilots divide the whole soum territory in a way that it is solely managed by herder groups. The geographical focus of the project is very different from the proposed project. The World Bank supported Sustainable Livelihood Programme phase II that started in 2007 is a comprehensive programme with four components – pastoral risk management, community initiative, microfinance development fund and project management/capacity building. Geographically it covers much of Mongolia, however many on-the-ground support projects are to do with infrastructure (road, school, clinics) support. The project successes for alternative livelihood and/or income generation activities will be replicated for the proposed project, without compromising the need for maintaining ecosystem balance. The IFAD/GEF supported Livestock Adaptation Project is expected to start in 2011, to increase the livestock sector's adaptation capacity. The project focuses on the resource user side of adaptation, namely market development, improved pasture management, establishment of an early warning system and disaster insurance schemes. The Project's geographical focus is totally different from the proposed project. Changes have been made in section F. Chances of Duplication on page 17 and in Table 2: Relevant Ongoing and Upcoming Initiatives in Mongolia on page 18 and 19, with additional information.