AFB/PPRC.1/8
June 2, 2010

Adaptation Fund Board
Project and Programme Review Committee
First Meeting
Bonn, June 14, 2010

PROJECT/PROGRAMME PROPOSAL FOR PAKISTAN

I. Background

1. The Operational Policies and Guidelines for Parties to Access Resources from the Adaptation Fund, adopted by the Adaptation Fund Board, state in paragraph 41 that regular adaptation project and programme proposals, i.e. those that request funding exceeding US$ 1 million, would undergo either a one-step, or a two-step approval process. In case of the one-step process, the proponent would directly submit a fully-developed project proposal. In the two-step process, the proponent would first submit a brief project concept, which would be reviewed by the Project and Programme Review Committee (PPRC) and would have to receive the approval by the Board. In the second step, the fully-developed project/programme document would be reviewed by the PPRC, and would finally require Board's approval.

2. The Templates Approved by the Adaptation Fund Board (Operational Policies and Guidelines for Parties to Access Resources from the Adaptation Fund, Annex 3) do not include a separate template for project and programme concepts but provide that these are to be submitted using the project and programme proposal template. The section on Adaptation Fund Project Review Criteria states:

> *For regular projects using the two-step approval process, only the first four criteria will be applied when reviewing the 1st step for regular project concept. In addition, the information provided in the 1st step approval process with respect to the review criteria for the regular project concept could be less detailed than the information in the request for approval template submitted at the 2nd step approval process. Furthermore, a final project document is required for regular projects for the 2nd step approval, in addition to the approval template.*

3. The first four criteria mentioned above are:
   1. Country Eligibility,
   2. Project Eligibility,
   3. Resource Availability, and
   4. Eligibility of NIE/MIE.

4. Based on the Adaptation Fund Board Decision B.9/2, the first call for project and programme proposals was issued and an invitation letter to eligible Parties to submit project and programme proposals to the Adaptation Fund was sent out on April 8, 2010.

5. According to the paragraph 41 of the operational policies and guidelines, a project or programme proposal needs to be received by the secretariat not less than seven weeks before a Board meeting, in order to be considered by the Board in that meeting.

6. The following project concept titled "Reducing Risks and Vulnerabilities from Glacier Lake Outburst Floods in Northern Pakistan" was submitted by the United Nations Development Programme (UNDP), which is a Multilateral Implementing Entity of the Adaptation Fund. It was received by the secretariat before the closing date for consideration of projects in the 10th Adaptation Fund Board meeting. The secretariat has carried out a technical review of the project concept and assigned to it the diary number AFB/MIE/DRR/2010/1, and is submitting to the Project and Programme Review Committee the following documents:

   1. Summary of the project, prepared by the secretariat.
   2. The technical review sheet, filled in by the secretariat.
   3. The original concept, as submitted (in Annex).

II. Recommendation

7. The PPRC may want to consider and recommend to the Board

a) To endorse the project concept, contained in the Annex; and

b) To communicate to UNDP a list of specific issues that would need to be clarified within the project proposal. A list of such issues, suggested by the secretariat, is included in the technical review sheet.

1. Project Summary

Pakistan – Reducing risks and vulnerabilities from Glacier Lake Outbursts Floods in Northern Pakistan
Implementing Entity: *UNDP*
Executing Entity: *Ministry of Environment*)

Project execution Cost: USD 400,000
Total project cost (execution included): USD 3,600,000
UNDP management fee: USD 360,000 (10%)
Total amount of financing requested: USD 3,960,000
Co-Financing by Government of Pakistan: USD 3,500,000
Co-Financing by ICIMOD: USD 500,000

Project Background and Context:

People living in the HKH mountain range region in northern Pakistan are affected by climate-related hazards such as floods, avalanches and landslides. Warming trends in the region have been greater than the global average which will lead to the rapid melting of these glaciers. The breaching of the ice containing the glacier lakes, known as Glacier Lake Outburst Floods (GLOF), can lead to a release of water and debris at large volumes. The project will develop the human and technical capacity of public institutions and will enable vulnerable local communities to understand and address immediate GLOF risks.

Component 1: Policy recommendations & institutional strengthening to prevent climate change induced GLOF events in northern Pakistan (USD 200,000)

The expected outcome for this component is to develop an institutional capacity to implement policies, plans and investments that prevent human and material losses from GLOF events in the vulnerable areas of northern Pakistan. Project inputs will be used to develop the capabilities of local and federal institutions. The preparation and dissemination of policy recommendations on GLOF prevention and risk management as well as contingency plans will be part of this component.

Component 2: Strengthening knowledge and information about GLOF risks in northern Pakistan (USD 350,000)

The expected outcome for this component is to improve the access to knowledge, information and research on GLOF risks for disaster management planners and policy makers. A locally-anchored knowledge base and analytical framework for long-term tracking and management of GLOF risks in Pakistan will be developed under this component. Additionally, risk and hazard maps for mountain valleys with high GLOF risks as well as a web-based risk information system will be developed.

Component 3: Demonstration of community-based GLOF risk management in vulnerable mountain valleys of northern Pakistan (USD 2,550,000)

The expected outcome for this component is to reduce human and material losses in vulnerable communities in northern Pakistan through GLOF early warning and other adaptation measures. Awareness rising activities will be undertaken to educate disaster-prone communities about GLOF

risks and the behavior of GLOF events. The project will also include targeted mitigation measures for at least one potentially hazardous glacier lake.

Component 4: Documentation, analysis and continued application of lessons learnt (USD 100,000)

The expected outcome of this component is the documentation and replication of project experiences. The project will allow replication of effective risk reduction measures for GLOF within Pakistan and beyond its borders.

ADAPTATION FUND

2. ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT CATEGORY: **REGULAR-SIZED PROJECT CONCEPT**

Country/Region: **Pakistan**
Project Title: **Reducing Risks and Vulnerabilities from Glacier Lake Outburst Floods in Northern Pakistan**
AF Project ID: AFB/MIE/DRR/2010/1
NIE/MIE Project ID: Requested Financing from Adaptation Fund (US Dollars): **3,960,000**
Regular Project Concept Approval Date (if applicable): **n/a** Anticipated Submission of final RP document (if applicable):
AFB Secretariat Screening Manager: NIE/MIE Contact Person: **Gernot Laganda**

Review Criteria	Questions	Comments
Country Eligibility	1. Is the country party to the Kyoto Protocol?	Yes.
	2. Is the country a developing country particularly vulnerable to the adverse effects of climate change?	Yes.
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project?	No. The project concept is endorsed by the Ministry of Environment.
	2. Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive capacity to the adverse effects of climate change and build in climate resilience?	Yes, but requires further clarification, also pending AFB specification of what is understood with “concrete”. The warming trend in the Himalayan Karakorum Hindukush region results in a rapid melting of glaciers and formation of glacial lakes. These lakes can discharge suddenly leading to flooding (glacier lake outburst floods - GLOF). Local populations are threatened by these GLOF. The project will reduce risks and vulnerabilities from GLOF in Northern Pakistan through capacity building, monitoring and early warning, and pilot investments (dams, drainage...). While 80 percent of the component costs are directed to the Component 3 which deals with demonstration activities, this component includes awareness-raising that could be classified under Component 2 (strengthening knowledge and information). The exact content of the other parts of Component 3, i.e. community based monitoring & early warning system, and targeted GLOF measures, should be spelled out in more detail.

	3. Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities?	Yes. Improved anticipation and management of GLOF-related events will enhance economic and social development and help avoid environmental degradation. Community involvement will improve social benefits. "Further details ...will be provided in the full project proposal". The full proposal should clarify how the project would address the particularly vulnerable communities and parts of communities.
	4. Is the project / programme cost effective?	Yes, but requires clarification. The actual outcomes of the project should be described in further detail, together with a more specific budget break-down. The project proponent has mobilized co-financing which increases cost-effectiveness.
	5. Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments?	Requires clarification. The concept refers to the National Environment Policy (2005) and the Poverty Reduction Strategy Paper which emphasize climate hazards. However, the concept does not specify why the selected approach is particularly relevant within Pakistan's climate adaptation priorities. For example, Pakistan's 1st National Communication (2003) did not mention glacial lake outburst floods at all.
	6. Does the project / programme meet the relevant national technical standards, where applicable?	Requires clarification. The concept does not refer to any national standards: "will be highlighted in the full project proposal". The concept refers to another project using same approach in Bhutan: this does not mean that Pakistan's national technical standards are met.
	7. Is there duplication of project / programme with other funding sources?	Requires clarification. "At this point in time, the risk of duplication can be assessed as negligible." The UNDP is implementing an existing project "Regional GLOF Risk Reduction Project", which takes place in Pakistan, Bhutan, Nepal and India, so risk of duplication exists. It should be clarified, how this proposed project would build on the activities of the regional project in Pakistan and not duplicate them.
	8. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?	Yes. However, knowledge management related issues are dealt with in three of the four project components (2, 3, 4), and the concept would benefit of approaching knowledge management in a more consolidated manner.
	9. Is the requested financing justified on the basis of full cost of adaptation reasoning?	Requires a more detailed budget breakdown, and clarification of share between knowledge-related and more concrete activities. This project could be compared to a relatively similar but smaller-scale project financed by the LDCF in Bhutan. Initial comparison indicates congruent cost – effect ratio.
Resource Availability	1. Is the requested project / programme funding within the cap of the country?	n/a (No cap decided yet)

Eligibility of NIE/MIE	2. Is the project submitted through an eligible NIE/MIE that has been accredited by the Board?	Yes.
Implementation Arrangement	1. Is there adequate arrangement for project / programme management?	n/a (Not required in Project Concept phase)
	2. Are there measures for financial and project risk management?	n/a (Not required in Project Concept phase)
	3. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans?	n/a (Not required in Project Concept phase)
	4. Is a results framework included?	n/a (Not required in Project Concept phase)

Technical Summary	The project will help by reducing climate change induced risks and vulnerabilities from GLOFs in the Northern Areas of Pakistan by encouraging community based adaptation measures for climate change induced GLOFs. The tentative components of the project are (these will be "examined in detail during the project formulation phase"): 1. Policy recommendations & institutional strengthening to prevent climate change induced GLOF events in northern Pakistan, US$ 200,000. 2. Strengthening Knowledge and Information about GLOF risks in northern Pakistan, US$ 350,000. 3. Demonstration of community-based GLOF risk management in vulnerable mountain valleys of northern Pakistan, US$ 2,550,000. 4. Documentation, analysis and continued application of lessons learnt, US$ 100,000. The project would replicate some efforts of a GLOF-related LDCF project in Bhutan, and build on an existing UNDP and EU funded "Regional GLOF Risk Reduction Project". Concerns: 1. The mandate of the Adaptation Fund is to finance concrete adaptation projects. This concept has a significant emphasis on awareness and knowledge related activities, even in the demonstration component. While those may be the best way to address the GLOF risk, the justification for this approach would need to be given. 2. The concept should outline the demonstration activities and technical solutions more precisely, to illustrate why they are a national priority. Consistency with national policies should be illustrated more specifically. 3. Links with existing activities should be described in more detail. There is very little in the concept about the existing regional project and how this project would build on it. 4. Ways of community involvement and selection of beneficiaries should be described in more detail.
Date:	June 2, 2010

ADAPTATION FUND

DATE OF RECEIPT:
ADAPTATION FUND PROJECT ID:
(For Adaptation Fund Board Secretariat Use Only)

PROJECT/PROGRAMME PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

PROJECT/PROGRAMME CATEGORY:	Regular Project
COUNTRY/IES:	Pakistan
TITLE OF PROJECT/PROGRAMME:	Reducing Risks and Vulnerabilities from Glacier Lake Outburst Floods in Northern Pakistan
	(PIMS 4454; ATLAS IDS – PAK10, PROPOSAL 59801, PROJECT 74958)
TYPE OF IMPLEMENTING ENTITY:	Multilateral Implementing Entity (MIE)
IMPLEMENTING ENTITY:	United Nations Development Programme (UNDP)
EXECUTING ENTITY/IES:	Ministry of Environment, Government of Pakistan
AMOUNT OF FINANCING REQUESTED:	US$3,960,000
Co-financing:	US$ 3,500,000.- (Government of Pakistan) US$ 500,000.- (ICIMOD)

BACKGROUND AND CONTEXT:

The Himalayan Karakorum Hindukush (HKH) mountain ranges in northern Pakistan possess the largest glaciers in the world outside the Polar Regions. This region plays an important role in global atmospheric circulation, biodiversity, water resources, and the hydrological cycle. It is the source of large river systems. For example, the Indus river basin plays a major role in water availability and the recharge of groundwater for the region.

People living in the HKH region of northern Pakistan are annually affected by a number of climate-related hazards. These include floods, avalanches and landslides and result in extensive human and material losses. Climate change is projected to further exacerbate some of these natural hazards and lead to significant impacts on the regions' development.

Description of the Climate-Change-induced Problem

Various studies suggest that the warming trend in the region has been greater than the global average (ICIMOD, 2007). The most severe threat of this effect is related to the rapid melting of glaciers. As these glaciers retreat (some at a rate of up to 30 to 60 metres per decade, as shown by ICIMOD studies), glacial lakes start to form and rapidly fill up behind natural moraine or ice dams at the bottom or on top of these glaciers. The ice or sediment bodies that contain the lakes can breach suddenly, leading to a discharge of huge volumes of water and debris. These are termed Glacier Lake Outburst Floods (GLOFs) and have the potential to release millions of cubic meters of water and debris, with peak flows as high as 15,000 cubic meters per second.

During a GLOF, the V-shaped canyons of a normally small mountain stream can suddenly develop into an extremely turbulent and fast-moving torrent, some 50 meters deep. On a

floodplain, inundation becomes somewhat slower, spreading as much as 10 kilometers wide. Both scenarios present horrific threats to lives, livelihoods, infrastructure and economic assets for the exposed population. Mountain communities living in the proximity of glacier lakes and glacier fed rivers are particularly at risk, as they live in remote and marginalized areas and depend heavily on fragile eco-systems for their livelihoods.

According to a study conducted by ICIMOD (2007), 5218 glaciers (15040 sq km) and 2420 lakes were identified and mapped in Pakistan. Among the identified lakes, 52 lakes have been classified as potentially hazardous, and likely to cause GLOFs over the next few years to decades.

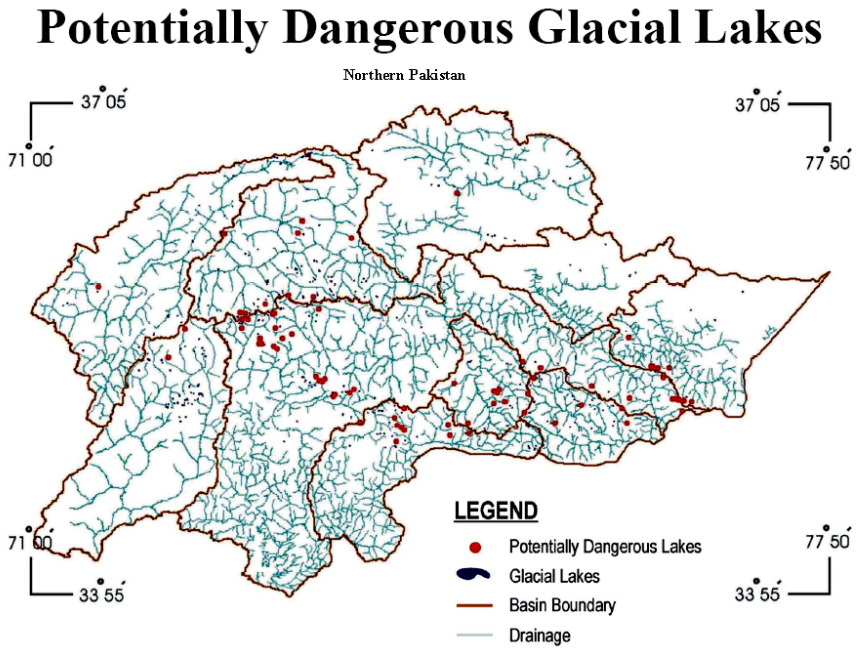


Figure 1: Potentially dangerous glacial lakes in Northern Pakistan (source: ICIMOD)

The number of glaciers, glacial lakes and potentially GLOF-prone glacial lakes in the studied area of the Hindu Kush Himalaya Region is summarized in **Error! Reference source not found.** (ICIMOD, 2007).

River Basins	Glaciers			Glacial Lakes		
	No.	Area (km^2)	Ice Reserve (km^3)	No.	Area (km^2)	Potentially dangerous
Indus River Basin						
Swat	233	223.55	12.221	255	15.86	2
Chitral	542	1903.67	258.817	187	9.36	1
Gilgit	585	968.1	83.345	614	39.17	8
Hunza	1050	4677.34	808.794	110	3.21	1
Shigar	194	2240.08	581.27	54	1.09	0
Shyok	372	3547.84	891.8	66	2.68	6
Indus	1098	688	46.38	574	26.06	15
Shingo	172	36.91	1.009	238	11.59	5
Astor	588	607.03	47.931	126	5.52	9
Jhelum	384	148.18	6.943	196	11.78	5
	5218	**15040.7**	**2738.51**	**2420**	**126.32**	**52**

Records show that GLOF events occur in the Himalayas every 3-10 years, with varying degrees of socio-economic impact. From 1950 to 1999, recorded flood damages amounted to property damage of Rs.380,181 million, a death toll of 5,832 lives, and 84,475 affected villages. A total of 35 destructive outburst floods have been recorded in the Karakoram region in the past 200 years and at least 11 surges of exceptional scale have been recorded so far in the Upper Indus Basin.

Barriers in Responding to the Climate Change-induced Problem

Accurate and comprehensive knowledge of glaciers and glacial lakes are of utmost importance to understand and manage the risk of GLOFs in northern Pakistan. At present, the country faces a critical gap in *knowledge* of hydrological forecasting, risk mapping and disaster prevention planning. The information currently available about the glaciers in the water shed of the Indus basin is limited and scattered, and the understanding of the snow and ice conditions associated with the mountainous headwater of the Indus is largely inadequate.

As the current status of the identified glacial lakes is changing, the number of potentially hazardous lakes and their location/origin is shifting, and new lakes are developing rapidly, a need have developed for a formal monitoring and evaluation system to validate the information on the status of potentially hazardous glacial lakes. A digital repository is be required to consolidate the existing knowledge on glaciers, glacial lakes, and GLOF events, which will enhance the ability of policy makers to understand the associated vulnerabilities and finance/implement appropriate risk mitigation and disaster preparedness measures.

Current (baseline) disaster management policies and risk reduction and preparedness plans in Pakistan address recurrent natural hazards (e.g.flooding, landslides and seismic events) in the country, but are not yet geared to deal with the new dimension of GLOF threats. Due to the limited information on the expected distribution and the impacts of GLOFs, there are capacity deficits in existing *early warning* systems. Current disaster mitigation and preparedness initiatives (including early warning systems) do not have the capacity to manage effectively the risks posed by rising water levels in glacial lakes, including issueing early warning of GLOFs.

Communities settling in GLOF-prone mountain valleys are highly vulnerable, with vulnerabilities being compounded by poverty, increasing pressure on natural resources, high-risk settlement patterns, and the need for greater education and public *awareness* on how to reduce risk from GLOF threats. Resources from the Adaptation Fund will therefore be required to ensure local community *participation* in GLOF risk management and disaster prevention activities, and to

create an enabling institutional environment at all levels of policy making, investment and communications planning to support community-based implementation of targeted risk reduction activities. This will have a positive effect not only on communal resilience, but will also be helpful in connecting isolated target communities to broader economic and social development benefits.

PROJECT / PROGRAMME OBJECTIVES:

The proposed project will reduce risks and vulnerabilities from GLOFs and snow-melt flash floods in Northern Pakistan. The main objectives of the project are as follows:

- To develop the human and technical capacity of public institutions to understand and address immediate GLOF risks for vulnerable communities in Northern Pakistan
- To enable vulnerable local communities in northern areas of Pakistan to better understand and respond to GLOF risks and thereby adapt to growing climate change pressures

PROJECT / PROGRAMME COMPONENTS AND FINANCING:

PROJECT COMPONENTS	EXPECTED CONCRETE OUTPUTS	EXPECTED OUTCOMES	AMOUNT (US$)
1. Policy recommendations & institutional strengthening to prevent climate change induced GLOF events in northern Pakistan	1.1. Policy framework and guidelines to address GLOF risks in northern Pakistan institutionalized 1.2. Indicators and criteria for GLOF vulnerability developed and systematically applied to enable priority allocation of risk reduction efforts and investments	1. Institutional capacities to implement policies, plans and investments that prevent human and material losses from, GLOF events in vulnerable areas of Northern Pakistan	200,000
2. Strengthening Knowledge and Information about GLOF risks in northern Pakistan	2.1. Systematic engagement with global and regional research networks and centers working on GLOF issues 2.2. Risk and hazard maps for mountain valleys with the highest GLOF risk and exposure of lives, livelihoods and infrastructure 2.3. Web-based GLOF risk information system for northern Pakistan	2. Improved access of disaster management planners and policy makers to knowledge, information and research on GLOF risks	350,000
3. Demonstration of community-based GLOF risk management in vulnerable mountain valleys of northern	3.1. Awareness raising activities for vulnerable communities to climate-related GLOF risks and appropriate preparedness and risk reduction measures	3. Reduced human and material losses in vulnerable communities in the Northern areas of	2,550,000

Pakistan	3.2. A community based system for GLOF risk monitoring & early warning established and piloted in priority communities 3.3. Targeted GLOF risk reduction measures such as check dams, spill-ways, slope stabilization or controlled drainage demonstrated in at least one dangerous GLOF site	Pakistan through GLOF early warnings and other adaptation measures	
4. Documentation, analysis and continued application of lessons learnt	4.1. Technical knowledge and project lessons documented for use in future initiatives 4.2. Project experiences disseminated to policy makers and disaster management planners in Pakistan and the wider HKH region	4. Project experiences documented and replicated	100,000
4. Project/Programme Execution cost			400,000
5. Total Project/Programme Cost			3,600,000
6. Project Cycle Management Fee charged by the Implementing Entity (if applicable)			360,000
Amount of Financing Requested			**3,960,000**
Co-financing by Government of Pakistan			3,500,000
Co-financing by ICIMOD			500,000

PROJECTED CALENDAR:

MILESTONES	EXPECTED DATES
Submission of Concept to AF	April 26, 2010
Approval of the Concept by the AF Board	June 15, 2010
Commence Development of a Full Project	April 2011
Submission to AF of a Full Project Proposal	May 2011
Start of Project/Programme Implementation	July 2011
Mid-term Review (if planned)	July 2014
Project Closing	July 2015
Terminal Evaluation	March 2015

PART II: PROJECT JUSTIFICATION

A. Project Components

The project will help by reducing climate change induced risks and vulnerabilities from GLOFs in the Northern Areas of Pakistan by encouraging community based adaptation measures for climate change induced GLOFs. The tentative components of the project are described below. Each component will be examined in detail during the project formulation phase and a detailed project document will be presented for approval by the AF Board.

Component 1: Policy recommendations & institutional strengthening to prevent climate change induced GLOF events in northern Pakistan

This project component responds to the need for systematic integration of GLOF risk management into the processes, policies and plans of institutions that have a stake in avoiding human and material losses from GLOF events in vulnerable areas of northern Pakistan. Project inputs will be utilized to develop the capabilities of local level institutions (Agriculture, Livestock and Forest departments of Gilgit Baltistan and Chitral) and federal level institutions (Ministry of Kashmir Affairs and Gilgit Baltistan, Ministry of Environment and National Disaster Management Authority) to understand the nature and extent of GLOF risks in Pakistan, and their effects on human and economic development in all sectors. Targeted, evidence-based policy recommendations on GLOF prevention and risk management will be prepared and disseminated for adoption at national and provincial levels, which will enable the integration of GLOF risk awareness in all potentially affected sectors. Contingency plans & incentive schemes to address GLOF risks at the policy level will be developed, based on collaboration between affected stakeholders.

Component 2: Strengthening Knowledge and Information about GLOF risks in northern Pakistan

This project component addresses the need for more accurate and comprehensive knowledge of glacier lakes and their associated flooding risks in northern Pakistan. Such knowledge is essential for better risk mapping, early warning and disaster prevention planning. Based on a targeted mapping exercise of flooding hazards downstream of potentially hazardous glacier lakes, a locally anchored knowledge base & analytical framework for long-term tracking & management of GLOF risks will be developed. Systematic networking and exchanges with global & regional research institutions and resource centers, as well as with other GLOF risk management projects in the region (e.g. the Least Developed Country Fund (LDCF) GLOF risk reduction project in the Punakha-Wangdi and Chamkhar Valleys of Bhutan) will contribute to a widening the knowledge base about GLOF risks in Pakistan, eventually leading to a critical mass of knowledge required for specific and targeted risk reduction investments.

Component 3: Demonstration of community-based GLOF risk management in vulnerable mountain valleys of northern Pakistan

Adaptation Fund resources will be used to demonstrate GLOF risk management at the village and district levels, with the aim to provide an evidence base for replication and up-scaling. Based on the systematic capturing of hazard information and vulnerabilities in Component 2, awareness raising activities will be undertaken to educate disaster-prone communities about the nature of GLOF risks, the particular behavior of GLOF events, evacuation routes and appropriate early warning and risk reduction measures. These awareness activities will be connected with the production and dissemination of communication products, such as posters, leaflets and videos illustrating the topic.

Institutional arrangements to devise, operate, test, and maintain a community-based GLOF risk monitoring & early warning system will be established in a number of target communities, providing an evidence base on the strengths and weaknesses of different types of high- and low-tech early warning systems. Based on such analyses, a prototype GLOF Early Warning

system will be devised for replication in other vulnerable areas.

In addition to the demonstration of an Early Warning system, the project will demonstrate targeted mitigation measures for at least one potentially hazardous glacier lake. These measures are expected to include check dams, mini dams, spill-ways, slope stabilization and -reinforcement, and controlled drainage. Existing knowledge from other GLOF risk management projects in Bhutan and Nepal will assist to prioritize measures.

Vulnerability analysis on the basis of GLOF hazard exposure and sensitivity mapping will be considered a critical feature for the selection of target communities to participate in and benefit from this project. More specifically, target areas will be selected on the basis of the following criteria:

1. Technical geography:

   The target areas will be representative with respect to their geographical location, area and height of glaciers, track of glacier lakes, hydrology, direction of sloping land surface, disintegrating ice and/or sediment barriers, geological structure and build-up, size of affected communities, and their general vulnerability profile.

   The geographical locations and other related features of the glaciers and lakes will be identified and captured by means of a Geographical Information System (GIS). Locality based analysis will be conducted.

2. Recurring GLOF Events / History:

   Recurring GLOF Events will be tracked and identified through time series analysis, using existing maps, satellite data and other records available from different years. The information will then be utilized to simulate projections based on coupling of information on other critical factors such as climate change projects, geology, land-use etc.

3. Affected communities and accessibility of the area:
   Information will be utilized to map the number of persons exposed to flooding risk; population density, traditions/culture of the community, present land use, accessibility and livelihood structure in conjunction with information on the probability of events occurring.

Component 4: Documentation, analysis and continued application of lessons learnt

At present, there is a limited pool of knowledge and experience on how to involve communities to design, implement and maintain targeted GLOF risk reduction measures. While, there are existing institutional mechanisms for knowledge sharing on disaster risk management, knowledge on pre-disaster risk management is yet to be developed and systematically disseminated.. By taking a systematic approach to the codification, analysis and dissemination of knowledge about GLOF risks and how they can be addressed, the project will allow replication of effective risk reduction measures for GLOF both within Pakistan and beyond. This systematic management will assist the replication of early warning systems and targeted risk mitigation measures in other GLOF prone areas in northern Pakistan.

Other countries facing GLOF risks, such as China, India, Nepal and Bhutan, will also benefit from the knowledge generated through the project. This proposed initiative will contribute to a

critical mass of experience on GLOF risks in the Himalaya region and enhance systematic regional cooperation on this critical adaptation issue.

B. Economic, Social and Environmental Benefits

At the national level, the expected adaptation benefits of the project include improved government capacity to deal with dynamic, climate-induced hazards and to design, implement, evaluate and replicate systems for GLOF risk reduction and preparedness. Adaptation Fund resources will be used to analyze urgent and immediate needs to reduce imminent risks of glacier lake outburst flooding in northern Pakistan. Based on such analysis, the project will engage with local communities to devise and demonstrate community-based early warning and risk management measures which in turn prevent human and material losses from GLOF-related disasters. In terms of livelihood benefits, this will improve human and livelihood security in potentially affected areas and ensure that sufficient lead-time is available to protect important livelihood assets and evacuate to areas of safety.

At the policy level, the project will provide an enabling environment for the integration of climate change adaptation and risk management considerations into GLOF-affected sectors, such as land use planning, agriculture, forestry and disaster management. The interface between the policy level and local level institutions will be enhanced, in order to ensure evidence-based policy making that is informed by community needs. Involvement of communities from the planning and design to the implementation and monitoring stages of project will further enhance the economic and social benefits of the project, and ensure that communities are empowered to be in charge of their own protection from climate-induced risks.

Vulnerability of communities in high risk GLOF areas will be reduced as the project will catalyze cost-effective management of glacier lake levels and adjustment of communal early-warning systems to climate change-induced hazards. In the process of achieving enhanced disaster preparedness, community members and community-based organizations (CBOs) will be strengthened for improved communication, public awareness, and response to GLOF early warning signals. Project measures will have a positive effect not only on the environmental conditions in the area, e.g. by conserving existing forested slopes and maintaining the natural state of natural flooding buffers along riverbanks and floodplains, but will also be helpful in connecting isolated communities to initiatives which will ultimately provide potential for income generation (such as community-based management of drainage channels, which could be one particular mitigation activity supported and financed by the project). This will contribute to broader economic and social development benefits for local communities in the area.

Further details about the economic, social and environmental benefits of the project will be provided in the full project proposal, where the target locations of the project will be specified and described in greater detail.

C. Cost-effectiveness

A range of scientific publications by ICIMOD as well as Pakistan's National Communications to the UNFCCC provide clear indication that the set of adaptation measures presented in this project does not have a justifiable alternative in terms of achievable vulnerability reduction and adaptive capacity. Alternative options such as the retrofitting of critical infrastructure have been considered, but would ultimately imply much higher investments. Furthermore, the project's three-pronged knowledge management, capacity building and risk reduction approach has a better cost-benefit ratio than the scaling up of disaster response systems in Pakistan, which

would only come into effect after a GLOF disaster has actually materialized and resulted in widespread human, material and immaterial losses to the country.

At the operational level, cost effectiveness of the project concept is reflected through the following characteristics:

1) Throughout the project, AF resources will be aligned with the financing and delivery of project Outputs that have competitive procurement components to ensure best value for money;
2) The project has made a successful effort to increase the co-financing portion of the project, which diversifies financial risks and increases financial flexibility.
3) A number of project activities will involve local communities and connect directly to local opportunities for the purchase of goods and services.

During preparation of full project proposal, the cost-effectiveness of individual interventions will be studied in greater detail and outlined in the project document submitted for AF Board approval.

D. National or Sub-National Priorities

Addressing the risks and vulnerabilities from climate change induced hazards is considered a high-priority under Pakistan's National Environment Policy of 2005, the second Poverty Reduction Strategy Paper (PRSP-II), as well as provincial sustainable development strategies, and district development plans. The project will reinforce and strengthen the impact of existing disaster risk reduction policies in the project areas, which include initiatives on flood early warning, disaster risk awareness, disaster preparedness and land use planning.

The proposed project concept has been prepared using inputs from a number of stakeholders, including non-environmental agencies that are working in GLOF-prone areas. These stakeholders will be the main partners of the full-size project. Apart from the Ministry of Environment, these include the Pakistan Meteorological Department, Pakistan Agricultural Research Centre, Global Change Impact Study Center, Pakistan Council of Research on Water Resources, Earthquake Relief and Recovery Authority (ERRA), Federal Flood Commission, IGIS, ICIMOD, WWF, LEAD Pakistan, IUCN, Karakuram University and the communities in the affected areas.

The project will be implemented in collaboration with these organizations, forming a technical committee and preparing a stakeholder involvement plan. UNDP and ICIMOD have indicated contribution of technical resources to the project.

Additional details on policy alignment and the roles and responsibilities of individual partners will be provided in the full project proposal to be submitted for AF Board approval.

E. Technical Viability

The project initiatives will be consistent with all national technical (social and environmental) standards. It is worth noting that the design and costing of the proposed intervention has been aligned with the experiences and approaches of other GLOF projects in the HKH region, most notably the LDCF-funded project "Reducing Climate Change-induced Risks and Vulnerabilities from Glacial Lake Outburst Floods in the Punakha-Wangdi and Chamkhar Valleys" in Bhutan, which is in the second year of its implementation. This project has already demonstrated the viability of an approach that integrates elements of early warning and drainage-based mitigation with policy alignment and community-based capacity development. As such, the experiences

provided by the GLOF project in Bhutan indicate technical (as well as financial) viability of the chosen course of action.

Additional details will be highlighted in the full project proposal when it is submitted to the AF Board for final approval.

F. Chances of Duplication

The project initiatives were identified with the consent of other similar programs in the area (like the DIPECHO-funded Regional Glacial Lake Outburst Floods Risk Reduction Initiative, ICIMOD, and the National Agriculture Research Center) to avoid duplication of efforts. During project formulation, further negotiations will be conducted to ensure comprehensive alignment with any projects that follow similar objectives. At this point in time, the risk of duplication can be assessed as negligible. If this project concept were to receive AF support, it would enable the implementation of Pakistan;'s first tangible, community- and evidence-based GLOF risk reduction effort.

G. Learning and Knowledge Management

Knowledge Management is a central component of the proposed project, featuring prominently in Components 1 and 4. Under the project, a locally institutionalized knowledge base and analytical framework for long-term tracking and management of GLOF risks will be developed. Networking with global and regional research and resource centres working on GLOF issues will be established to institutionalize a well connected knowledge base and analytical framework for decision-making.

A communication strategy for the project will be developed, which will highlight dissemination of project experiences to communities, educational institutions, NGOs, Civil Society Organizations, private sector institutions with a stake in the issue, and the larger public. This strategy will detail the use of print and electronic media and other communication channels (roundtables, participative community workshops, posters, brochures, booklets, pamphlets, news articles, radio and TV broadcasts, and web-based items).

Technical knowledge and lessons in the artificial lowering of glacier lake levels, as well as the stabilizing of slopes, moraine dams and drainage channels will be systematically captured and documented for future use. Lessons learnt from the project will be provided via a number of national, regional and international communication channels to increase their outreach. This will enable adoption of project experiences in the up-scaling of early warning systems outside of the immediate project area, and benefit other disaster-prone areas downstream of potentially hazardous glacier lakes.

Further details on knowledge management and learning, particular on the envisaged dissemination and communication strategy, will be provided in the full scale project that will be submitted to the AF Board for endorsement.

H. Stakeholder Consultation and Participation

The proposed project was prepared in cooperation between UNDP, the Regional Glacial Lake Outburst Floods Risk Reduction Initiative, ICIMOD, the National Agricultural Research center, the Ministry of Food, NDMA-Pakistan, and the Pakistan Meteorological Department. Further consultations with these as well as other stakeholders will be conducted during the formulation phase of a full scale project.

I. Funding Justification

AF funds will be used to expand on, and complement existing programmes of the Government of Pakistan. The programmes and projects being implemented by other donor agencies will be taken into account. The project has already made a successful effort to increase the co-financing portion of the project, which diversifies financial risks and increases financial flexibility.

The full cost of adaptation reasoning will be articulated in the project proposal submitted for final approval by the Adaptation Fund. The proposal will outline baseline development activities that are currently financed out of traditional ODA and the value added of those outcomes that are to be financed with resources from the Adaptation Fund.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Adequacy of project / programme management arrangements.

This project will be implemented by the Ministry of Environment, Government of Pakistan in collaboration with the provincial governments of Khyber-Pakhtoonkhawa and Gilgit-Baltistan, and the Global Change Impact Study Centre. At the provincial levels of Gilgit-Baltistan and Khyber Pakhtoonkhawa, provincial offices will be established under the respective Planning and Development Departments. Local NGOs and/or Government agencies/departments will be selected to lead the implementation of local level activities. These partners will work through community based organizations and ensure their sustainable participation during the planning, design, implementation and monitoring stages of the initiative.

The project will establish Steering Committees at both the national as well as provincial levels. The national Project Steering Committee will include representation from relevant government departments, national level NGOs such as ISIMOD, and UNDP. At the provincial levels, Steering Committees will include representation by the National Project Manager, relevant provincial departments and implementing NGO partners.

Additional information on Implementation arrangements, including a list of Steering Committee members and a comprehensive stakeholder involvement plan, will be provided after a final round of stakeholder consultations which will feed into the formulation of full scale project document.

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

Key risks underlying the project which will be analyzed and qualitatively assessed during the formulation phase and in connection with the context of the target sites for the project. Potential risks include:

- Adverse climatic conditions damage adaptation measures being implemented;
- The political and security situation in pilot districts is affecting project implementation or weakens the interest of stakeholders to address adaptation planning issues.
- Delays in recruitment of qualified project staff may affect the timeframe of different project activities.
- Project stakeholders agree on institutional management for project implementation and

provide necessary coordination.

- Government co-financing contributions may only come forth in batches and may not be available in full at the beginning of the project.
- Lack of incentives for particular local communities to cooperate in activities that do not yield immediate financial value, but aim at longer-term resilience.
- Implementing partners for local level initiatives and pilot sites for project implementation may shift during project implementation, due to unforeseen political reasons.

While the above mentioned risks are tentative, and need to be further elaborated in the form of a comprehensive risk log, strong commitment from national as well as provincial Government authorities is evident which will limit a number of risks from materializing. Consistent involvement of a diverse set of partners, including local government agencies/departments, NGOs and communities will further reduce these risks.

C. Monitoring and Evaluation

Project monitoring and evaluation (M&E) will be in accordance with established UNDP procedures and will carried out by the Project team, verified by the Ministry of Environment, Government of Pakistan and the UNDP Country Office in Islamabad. Dedicated support by the technical adaptation teams in the UNDP Regional Center for Asia/Pacific and UNDP New York will be provided on a regular basis. A comprehensive Results Framework of the project will define execution indicators for project implementation as well as the respective means of verification. A Monitoring and Evaluation system for the project will be established based on these indicators and means of verification. It is important to note that the Results Framework, together with the impact indicators and means of verification, will be fine-tuned during project formulation. Targeted M&E activities for the proposed project include the following:

A Project Inception Workshop will be conducted within four months of project start up with the full project team, relevant government counterparts, co-financing partners, and UNDP. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan. A fundamental objective of the Inception Workshop will be to present the modalities of project implementation and execution, document mutual agreement for the proposed executive arrangements amongst stakeholders, and assist the project team to understand and take ownership of the project's goals and objectives. Another key objective of the Inception Workshop is to introduce the project team which will support the project during its implementation. An Inception Workshop Report will be repared and shared with participants to formalize various agreements decided during the meeting.

A UNDP risk log will be regularly updated in intervals of no less than every six months in which critical risks to the project have been identified. Quarterly Progress Reports will be prepared by the Project team and verified by the Project Steering Committee. Annual Project Reports will be prepared to monitor progress made since project start and in particular for the previous reporting period. These annual reports include, but are not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative);
- Project outputs delivered per project Outcome (annual);
- Lessons learned/good practices;
- Annual expenditure reports;

- Reporting on project risk management.

Government authorities, members of Steering Committees and UNDP staff will conduct regular field visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress.

In terms of financial monitoring, the project team will provide UNDP with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of funds according to the established procedures set out in the Programming and Finance manuals. The Audit will be conducted by a legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

The project will undergo an independent Mid-Term Evaluation (MTE) at the mid-point of project implementation, which will determine progress being made toward the achievement of outcomes and 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. A, summative evaluation will be conducted 3 months before project closure.

The budgeted M&E plan is as follows:

Type of M&E activity	**Responsible Parties**	**Budget US$** *Excluding project team Staff time*	**Time frame**
Inception Workshop	▪ National Project Coordinator ▪ UNDP CO	4,000	Within first 6 months of project start up
Inception Report	▪ Project Team ▪ UNDP CO	None	Within one month of IW
Measurement of Means of Verification for Indicators of Project initiatives and its performance	National Project Coordinator	Indicative cost will be finalized during formulation of full scale project and will be updated at different stages of project	Start, mid and end of project
Annual and Quarterly Progress reviews	▪ Project Team ▪ UNDP-CO	None	Quarterly and Annually
National and Provincial Steering Committee Meetings	▪ National Project Coordinator ▪ UNDP CO	10,000	Following Project IW and subsequently at least once a year
Periodic status reports	▪ Project team	4,000	To be determined by Project team and UNDP CO
Technical reports	▪ Project team ▪ Hired consultants as needed	8,000	To be determined by Project Team and UNDP-CO
Mid-term External Evaluation	▪ Project team ▪ UNDP- CO ▪ External Consultants	20,000	At the mid-point of project implementation.

	(i.e. evaluation team)		
Terminal Report	▪ Project team ▪ UNDP-CO ▪ External Consultant	none	At least one month before the end of the project
Audit	▪ UNDP-CO ▪ Project team	8,000	Yearly
Visits to field sites	▪ Project staff ▪ Government representatives	40,000	At all stages of project implementation
Final Evaluation	▪ Independent external Consultants	20,000	six months prior to the terminal tripartite review meeting.
TOTAL indicative COST		**US$ 114,000**	

D. Project Logical Framework Analysis

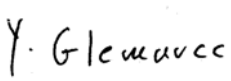
A detailed logical framework, including Outcome Indicators, quantified Output targets, as well as specific, measurable and time-bound indicators will be outlined in the full Project Document when submitted to the Adaptation Fund Secretariat after conclusion of the project preparation phase.

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 Pakistan's policies and priorities. Hence, it has been endorsed with the approval of competent authority. A copy of the endorsement letter is attached.

Momin Agha Deputy Secretary (Climate Change) Ministry of Environment Government of Pakistan Local Government Complex, G-5/2 Islamabad Tel: +92-51-9245529 Email: momin_agha@hotmail.com	Date: May 21, 2010

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 Environmental Finance UNDP Implementing Entity Coordinator	
Date: April 23, 2010	Tel. & Email: +1-212-906-6843; yannick.glemarec@undp.org
Project Contact Person: Gernot Laganda	
Tel. & Email: +66 2288 2644; gernot.laganda@undp.org	