



**GREEN  
CLIMATE  
FUND**

**Meeting of the Board**  
12 – 14 October 2016  
Songdo, Incheon, Republic of Korea  
Provisional agenda item 11(f)

**GCF/B.14/07/Add.01**

27 September 2016

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# Consideration of funding proposals – Addendum I

## Funding proposal package for FP018

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### **Summary**

This addendum contains the following three parts:

- a) A funding proposal titled “Scaling-up of Glacial Lake Outburst Flood (GLOF) risk reduction in Northern Pakistan” submitted by UNDP;
- b) A no-objection letter issued by the national designated authority or focal point; and
- c) Environmental and social report(s) disclosure.

The documents are presented as submitted by the accredited entity, and national designated authority or focal point, respectively.



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Funding proposal submitted by the accredited entity

No-objection letter issued by the national designated authority or focal point

Environmental and social report(s) disclosure



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# Funding Proposal

Version 1.1

**The Green Climate Fund (GCF) is seeking high-quality funding proposals.**

Accredited entities are expected to develop their funding proposals, in close consultation with the relevant national designated authority, with due consideration of the GCF's Investment Framework and Results Management Framework. The funding proposals should demonstrate how the proposed projects or programmes will perform against the investment criteria and achieve part or all of the strategic impact results.

Project/Programme Title: Scaling-up of Glacial Lake Outburst Flood (GLOF) risk reduction in Northern Pakistan

Country/Region: Pakistan

Accredited Entity: United Nations Development Programme

Date of Submission: 01/08/2015

Date of Resubmission: 07/12/2015; 13/07/2016

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### *Note to accredited entities on the use of the funding proposal template*

- Sections **A, B, D, E** and **H** of the funding proposal require detailed inputs from the accredited entity. For all other sections, including the Appraisal Summary in section F, accredited entities have discretion in how they wish to present the information. Accredited entities can either directly incorporate information into this proposal, or provide summary information in the proposal with cross-reference to other project documents such as project appraisal document.
- The total number of pages for the funding proposal (excluding annexes) is expected not to exceed 50.

**Please submit the completed form to:**

[fundingproposal@gcfund.org](mailto:fundingproposal@gcfund.org)

Please use the following name convention for the file name:

FP-UNDP-310715-5660

A.1. Brief Project / Programme Information		
A.1.1. Project / programme title	Scaling-up of Glacial Lake Outburst Flood (GLOF) risk reduction in Northern Pakistan	
A.1.2. Project or programme	Project	
A.1.3. Country (ies) / region	Pakistan	
A.1.4. National designated authority (ies)	Ministry of Climate Change, Mr. Arif Ahmed Khan 3rd Floor, LG & RD Complex G-5/2, Islamabad Phone: + (92-51) 9224579, 9204126 Fax: + (92-51) 9204126 Email: secretary@moenv.gov.pk	
A.1.5. Accredited entity	UNDP	
A.1.5.a. Access modality	<input type="checkbox"/> Direct <input checked="" type="checkbox"/> International	
A.1.6. Executing entity / beneficiary	<u>Executing Entity:</u> Ministry of Climate Change  <u>Other Executing Beneficiaries:</u> Ministry of Kashmir and Northern Areas, Provincial Planning and Development Departments of Khyber Pakhtunkhwa (KP) and Gilgit-Baltistan  <u># (total) of beneficiaries:</u> 29 million	
A.1.7. Project size category (Total investment, million USD)	<input type="checkbox"/> Micro ( $\leq 10$ ) <input checked="" type="checkbox"/> Small ( $10 < x \leq 50$ ) <input type="checkbox"/> Medium ( $50 < x \leq 250$ ) <input type="checkbox"/> Large ( $> 250$ )	
A.1.8. Mitigation / adaptation focus	<input type="checkbox"/> Mitigation <input checked="" type="checkbox"/> Adaptation <input type="checkbox"/> Cross-cutting	
A.1.9. Date of submission Date of resubmission	01/08/2015 07/12/2015 29/03/2016 13/07/2016	
A.1.10. Project contact details	Contact person, position	Reis Lopez Rello, Regional Technical Specialist - Adaptation
	Organization	UNDP
	Email address	<a href="mailto:reis.lopez.rello@undp.org">reis.lopez.rello@undp.org</a>
	Telephone number	+66 92248 7752
	Mailing address	76 Rajadamnern Nok Ave, United Nations Service Building, Bangkok 10200

A.1.11. Results areas <i>(mark all that apply)</i>	
<b>Reduced emissions from:</b>	
<input type="checkbox"/>	Energy access and power generation (E.g. on-grid, micro-grid or off-grid solar, wind, geothermal, etc.)
<input type="checkbox"/>	Low emission transport (E.g. high-speed rail, rapid bus system, etc.)
<input type="checkbox"/>	Buildings, cities and industries and appliances (E.g. new and retrofitted energy-efficient buildings, energy-efficient equipment for companies and supply chain management, etc.)

- Forestry and land use  
(E.g. forest conservation and management, agroforestry, agricultural irrigation, water treatment and management, etc.)

Increased resilience of:

- Most vulnerable people and communities  
(E.g. mitigation of operational risk associated with climate change – diversification of supply sources and supply chain management, relocation of manufacturing facilities and warehouses, etc.)
- Health and well-being, and food and water security  
(E.g. climate-resilient crops, efficient irrigation systems, etc.)
- Infrastructure and built environment  
(E.g. sea walls, resilient road networks, etc.)
- Ecosystem and ecosystem services  
(E.g. ecosystem conservation and management, ecotourism, etc.)

## A.2. Project / Programme Executive Summary (max 300 words)

1. The melting of the Hindu Kush, Karakoram, and Himalayan glaciers in Northern Pakistan due to rising temperatures has created 3,044 glacial lakes in the federally-administered territory of Gilgit-Baltistan (GB) and the province of Khyber Pakhtunkhwa (KP). It is estimated that 33 of these glacial lakes are hazardous and likely to result in glacial lake outburst floods (GLOFs)<sup>1</sup>. Such outbursts have occurred in the past and when they do, millions of cubic metres of water and debris is released in a few hours, resulting in the loss of lives, destruction of property and infrastructure, and severe damage to livelihoods in some of the most remote areas of Pakistan. Currently 7,101,000 people remain at risk in GB and KP. Most recently, in July 2015, over 280,000 people in GB and KP were affected, a combination of heavy rains and GLOFs.

2. At present, the country faces a critical gap in technical and technological capacity to monitor the status of glaciers through hydrological monitoring and forecasting. Current early warning systems (EWS) do not have the capacity to support the management of risks posed by rising water levels in the lakes, including failure to issue early warnings to communities. The design and implementation of medium- and long-term disaster management policies and risk reduction and preparedness plans are also not fully geared to deal with the specifics of GLOF threats.

3. The Government of Pakistan has recognized the threat from GLOFs in its National Climate Change Policy and in its National Determined Contribution to monitor changes in glacier volumes and related GLOFs. The Government of Pakistan is seeking GCF resources to upscale ongoing initiatives on early warning systems and small, locally-sourced infrastructure to protect communities from GLOF risks. The interventions proposed for scale up by this project will be based on activities implemented in two districts on a trial basis that have proven to be impactful. In particular, engineering structures (i.e. gabion walls) have been constructed; automatic weather stations, rain gauge and discharge equipment were installed to support rural communities to avoid human and material losses from GLOF events. The proposed GCF project will expand coverage to twelve districts in the Khyber Pakhtunkhwa and Gilgit-Baltistan provinces. The proposed project will strengthen the technical capacity of sub-national decision makers to integrate climate change and disaster risk management into medium- and long-term development planning processes.

4. As the project is focused on delivering a public good, the Government of Pakistan is requesting 100% concessionality (i.e. grant) from the GCF. Currently, 58.7 million people in Pakistan are living in poverty, with 46 per cent of the rural population and 18 per cent of urban households below the poverty line. In Khyber Pakhtunkhwa, the poverty rate is 22% and in Gilgit Baltistan, 26.7%. To be able to strengthen capacities of vulnerable communities to address the GLOF issue urgently in the scale that is needed, the Government of Pakistan needs financial support from international donors. Flood hazards are already greater than what national public finance can manage. During the project preparation phase, stakeholders including civil society in the targeted districts were fully consulted and the NDA has issued a Letter of No Objection.

<sup>1</sup> <http://www.glof.pk/index.php/video-gallery/video/a-journey-through-glaciers>

### A.3. Project/Programme Milestone

Expected approval from accredited entity's Board (if applicable)	Date: 6 May 2016
Expected financial close (if applicable)	TBD [date of agreement on the FAA between UNDP and GCF]
Estimated implementation start and end date	Start: <u>01/03/2017</u> End: <u>28/02/2022</u>
Project/programme lifespan	Benefit stream: 15 years Project Implementation lifespan: 5 years

### B.1. Description of Financial Elements of the Project / Programme

5. The Government of Pakistan is requesting full concessionality of GCF resources to carry out the proposed interventions. Without grant resources, the proposed interventions would not be financed. First, with a debt of about 62% of its GDP (IMF, 2015), Pakistan is among the most indebted countries in the world. This very high level of indebtedness makes it difficult for the government to borrow to invest in climate change adaptation. However, the need for investment to adapt to the increased occurrence of GLOFs in Pakistan is made manifestly obvious following the impacts of the previous floods and the lack of preparedness of the affected populations to these events. Second, the project targets highly vulnerable rural populations in remote areas in Northern Pakistan that are prone to GLOF risks, more than half of whom are women and dependent on subsistence agriculture. Given the small size in population, socio-economic standards and remote location of these communities threatened by GLOF risks, there is no incentive for Pakistan's private sector to invest in these types of interventions. The key constraints to private sector development in Pakistan are weak regulatory structures, poor property rights protection and contract enforcement, ineffective policy and legal framework for private sector investment. Third, the proposed interventions – including early warning systems (EWS), small-scale flood infrastructure, land management and policies – are by their very nature public goods entailing zero cost recovery from the proposed interventions. All the interventions aim to save lives and support climate-resilient livelihoods of vulnerable communities in the country. Fourth, government budgets are stretched and domestic public finance is not available at the scale required to effect a long-lasting solution. Other sources of finance, such as the Special Climate Change Fund and Adaptation Fund are also not available or easily accessible. Pakistan, therefore, needs GCF funding to effect a transformational change towards GLOF risk management and this investment is urgent considering the expected increase of GLOF-related disasters. The project leverages co-financing of an amount US\$ 500,000 from the local government of Gilgit-Baltistan.

6. Scaling up piloted interventions initially financed by UNDP/Adaptation Fund from 2 districts to 12 districts is expensive and challenging. The current climate information and early warning system will be updated through the acquisition, installation and maintenance of automatic weather stations and river discharge sensors. In addition, the public good nature of these interventions means that public financing is justified. However, several key barriers need to be overcome. These barriers (See Section C.2) include lack of capacity and information availability at the community level to prepare for and respond to immediate threats from GLOFs, as well as limited resources, capacity, and logistical feasibility in government institutions to construct infrastructure required for remote mountain communities to reduce exposure and respond to medium- and long-term climate change risks.

7. The proposed project leverages co-financing from the Government of Gilgit-Baltistan, from three projects, which are currently operational under the Annual Development Programme (2015-2016), which are aligned to the proposed project. Government co-finance will cover activities aimed at building the capacities of sub-national institutions to coordinate, plan and implement CCA measures across sectors and also will cover the expansion of weather surveillance and discharge monitoring networks. The proposed project also build on three projects from UNDP that are aligned with the proposed project and will coordinate activities for capacity building of provincial line and planning departments to mainstream climate change considerations into development plans and set adequate long-term measures for vulnerable communities to cope with GLOF risks.

Component	Output	Activity	Financing (MUS\$)		Total Cost per output	
			GCF	Co-finance	Foreign Currency (MUS\$)	Local Currency <sup>[1]</sup> (Mil.PKR)
Strengthened adaptive capacity and reduced exposure to Climate risks						
	1. Strengthened sub-national institutional capacities to plan and implement climate change -resilient development	1.1 Provincial line and planning departments have technical capacities to mainstream climate change into development plans	3.250	0.080	3.330	837.932

<sup>[1]</sup> Exchange rate used is as of July 2016 (UN Operational Rates of Exchange)

	pathways	1.2 Sub-national institutions coordinate effectively to implement adaptation action plans and climate change initiatives	4.507	0.170	4.677	
	2. Community-based EWS and long-term measures are up-scaled to increase communities' adaptive capacity	2.1 Expanded weather surveillance and discharge measuring networks	15.700	-	15.700	3,082.256
		2.2 Early warnings are effective in protecting communities from climate-induced risks	3.200	0.120	3.320	
		2.3 Vulnerable communities have adequate long-term measures in place to address GLOF-related risks	8.203	-	8.203	
		2.4 Improved financial capacity to adapt to GLOFs and other climate change-induced risks	2.100	0.130	2.230	
<b>Total project financing</b>			<b>36.960</b>	<b>0.500</b>	<b>37.460</b>	<b>3,920.188</b>

**B.2. Project Financing Information**

	Financial Instrument	Amount	Currency	Tenor	Pricing		
<b>(a) Total project financing</b>	<b>(a) = (b) + (c)</b>	37.460	<u>million USD</u> (\$)				
<b>(b) Requested GCF amount</b>	(i) Senior Loans	.....	<u>Options</u>	( ) years	( ) %		
	(ii) Subordinated Loans	.....	<u>Options</u>	( ) years	( ) %		
	(iii) Equity	.....	<u>Options</u>		( ) % IRR		
	(iv) Guarantees	.....	<u>Options</u>				
	(v) Reimbursable grants *	.....	<u>Options</u>				
	(vi) Grants *	36.960	<u>million USD</u> (\$)				
	* Please provide economic and financial justification in <a href="#">section F.1</a> for the concessionality that GCF is expected to provide, particularly in the case of grants. Please specify difference in tenor and price between GCF financing and that of accredited entities. Please note that the level of concessionality should correspond to the level of the project/programme's expected performance against the investment criteria indicated in <a href="#">section E</a> .						
	Total requested (i+ii+iii+iv+v+vi)	36.960	<u>Options</u>				
<b>(c) Co-</b>	<b>Financial Instrument</b>	<b>Amount</b>	<b>Currency</b>	<b>Name of Institution</b>	<b>Tenor</b>	<b>Pricing</b>	<b>Seniority</b>

financing	<u>Grant</u>	0.500	<u>million USD</u>	Government		( ) %	<u>Options</u>
	<u>Grant</u>	.....	<u>( \$ )</u>	of Gilgit -	( ) years	( ) %	<u>Options</u>
	<u>Options</u>	.....	<u>Options</u>	Baltistan	( ) years	( ) % IRR	<u>Options</u>
	<u>Options</u>	.....	<u>Options</u>	.....	.....	.....	<u>Options</u>
Lead financing institution: Not applicable.							
* Please provide a confirmation letter or a letter of commitment in section I issued by the co-financing institution.							
(d) Financial terms between GCF and AE (if applicable)	<b>Financial instrument</b>	<b>Amount</b>	<b>Currency</b>	<b>Tenor</b>	<b>Pricing</b>		
	Choose an item.	.....	<u>Options</u>	( ) years	( ) %		
<b>B.3. Financial Market Overview (if applicable)</b>							
Not applicable							

## C.1. Strategic Context

### **Institutional and Political Context**

8. The Pakistan Framework for Economic Growth (2011) developed by the Ministry of Planning, Development and Reforms, highlights the role of climate change in its growth model, proposing to “climate-proof economic growth from the impacts of climate change, paying particular attention to the agricultural, water and energy sectors”. Enabling climate-resilient economic growth requires formulation of a policy setting and governmental institutional setup capable of delivering these policy objectives. Though Pakistan has undertaken efforts to advance policy and institutions on climate change at a broad level, climate change, as a cross-cutting issue, must also be addressed across many of the sectoral line ministries at both the federal and provincial levels. To this end, the proposed project will support strengthening the sub-national institutional capacities to plan and implement climate change and disaster-resilient development pathways.

9. A major change in governance took place in 2010 in the form of the 18th Amendment to the Constitution of Pakistan, which mandated the devolution of 47 federal items to the provincial level, including “environmental pollution and ecology.” Climate change, traditionally considered to be part of the environmental sector, was also devolved. However, the federal government, through the Ministry of Environment (now, Ministry of Climate Change [MCC]), has taken the lead on implementation of international agreements and treaties related to the environment and climate change, and therefore maintains responsibility for national and international policy and obligations. The split responsibilities between the federal and provincial governments continue to impede institutional clarity and the adoption of clear working protocols on climate change. The proposed project strengthens this framework between federal and provincial governments by further developing the capabilities of local-level institutions to incorporate climate change adaptation considerations into development plans in GB and KP.

10. The re-establishment of the MCC as a ministerial entity in 2015, following its downgrading to a division in 2013, has given climate change federal institutional prominence again. That said, climate change is still not prioritized across all sectors. The National Disaster Management Authority (NDMA) is an attached department of the MCC and administratively works under the Ministry. This administrative linkage between climate and disaster management means, better coordination in executing the project is in place, where coordination can be ensured for all climate change-triggered disasters. Moreover, the Ministry has been managing other climate change and environmental projects and their capacity has been considerably enhanced to implement projects related to climate change, including GLOF. The proposed project will further strengthen the capacity of the Ministry and take adaptation to climate change into livelihood level in the selected communities.

11. The National Climate Change Policy (NCCP), approved by the Cabinet in 2012 and central to the MCC, focuses on adaptation, in light of Pakistan’s high vulnerability to extreme weather events and other adverse impacts of climate change. However, this policy was not presented to Parliament, and therefore Parliamentary engagement is missing. A particularly relevant aspect of the NCCP is its recommendation for the development of plans of action by the federal and provincial governments and federally-administered regions. The Framework for the Implementation of the Climate Change Policy is a living document developed as a catalyst for mainstreaming climate change concerns into decision-making at both the federal and provincial levels. It was expected that the framework document would be used to prepare detailed provincial and local adaptation action plans, but this has not been the case so far. Further, the framework has not been used as a guiding document for decision-makers. Rather, sector policies are driving public expenditure on climate change. Further, because of the devolution following the 18th Amendment, the provinces have not implemented the federal-led NCCP, further complicating the climate change response in Pakistan. The proposed project, therefore, will facilitate climate adaptation policy at the sub-national level by helping the provincial line and planning departments to mainstream climate change into development plans.

### **CC Policy and Institutional setup in KP province**

12. Following the establishment of the Provincial Environmental Protection Agency (EPA) in 2014, an attached entity of the provincial Environment Department, policy formulation on climate change in KP is under the purview of the EPA’s Climate Change Cell. The Climate Change Cell is mandated with mainstreaming climate considerations into policies, strategies and actions. The KP Integrated Development Strategy and the KP Green Growth Initiative help link the environmental impact assessment (EIA) process and PC-I (development project proposal form) to climate change. The KP Act introduces a decision support process for ‘strategic environment assessments’ (SEAs) for certain areas. While the SEAs do not yet specifically mention climate change, the Provincial Environmental Protection Council notification may be used as a vehicle to make climate change explicit in the SEAs.

13. KP’s main policy and institutional response on climate change includes:

- The establishment of the provincial EPA and its Climate Change Cell in 2014
- The initiation of a process for developing a Provincial Climate Change Policy
- The announcement of a Greenhouse Gas Initiative (GGI) for KP

14. However, other key sectors, such as the agriculture, livestock and water sectors and actors within the provincial government are still missing from the discussions around climate change action and finance. These sectors must be involved in the climate change response for KP.

#### **CC Policy and Institutional setup in GB province**

15. In contrast with the fiscal federalism in the provinces, GB is entirely dependent on yearly grants from the federal government for development capital and current expenditures; GB does not have a revenue base of its own. GB was never formally integrated with Pakistan and does not participate in constitutional political affairs. However, it has been administratively controlled by Pakistan since the First Kashmir War. Administratively, GB has its own administrative departments, governed by the GB Council, including those for environment, planning and finance. Devolution through the 18th Amendment does not extend to GB and federally legislated laws and policies remain valid. Therefore, the NCCP remains the overarching policy document to align climate change activities in GB. In fact, one of the specific recommendations in the NCCP is to conduct GLOF related research and accordingly developing projects to conserve the glaciers of the northern regions, especially in GB. The Government of GB has recognized the need to climate-proof investments (particularly infrastructure) and protecting ecosystem functions from projected climate change impacts. However, GB's national status with its own administrative departments will not pose a barrier as the NCCP and its implementation will still apply to the territory to form a framework for mainstreaming climate change into provincial setup also in GB.

#### **C.2. Project / Programme Objective against Baseline**

16. The Government of Pakistan's long-term preferred solution to the increasing rate of glacial melt as a result of climate change is to establish efficient and effective mechanisms to enhance the resiliency of vulnerable communities. In the context of the increasing risk of glacial lake outbursts, the objective of the proposed project is to empower communities to identify and manage the risks associated with GLOFs and other related impacts of climate change, strengthen public service systems to lower the risk of GLOF related disasters. The project will also support the development of sustainable and climate-resilient livelihood options for communities in the regions targeted by this project.

#### **Baseline Scenario**

17. Pakistan was ranked number three in the 2014 Global Climate Risk Index, with over US \$2,4 billion (PPP) in losses between 1993-2012 due to climate change with the majority of losses caused by floods. The losses caused by the GLOF events are extensive and rehabilitation of the flood-affected people and reconstruction of damaged infrastructure in Chitral district after the GLOF event in 2015 is estimated to have cost US\$ 100 million. (See "Preliminary damage assessment report on July 2015 GLOF and monsoon flooding from Chitral District, KP" in Annex XV.)

18. Pakistan lies in a geographic region where temperature increase is projected to be higher than the global average. One of the major threats identified in Pakistan's National Climate Change Policy (NCCP) is the projected recession of the Hindu Kush, Karakoram, and Himalayan glaciers due to global warming and carbon soot deposits from trans-boundary pollution sources. In addition to threatening water inflows into the Indus River System (IRS), this is a prominent threat to the water sector due to the country's arid climate and its reliance on water from glaciers and snowmelt. Glacial melt in the Himalayas is expected to increase the flooding of the Indus River and its tributaries over the next two to three decades, which will be followed by decreased river flows as the glaciers recede. Two areas in Pakistan's north, home to the country's Hindu Kush, Karakoram and Himalayan glaciers are particularly threatened: the administrative territory of Gilgit-Baltistan (GB) and the province of Khyber Pakhtunkhwa (KP).

19. The role of GLOFs in the overall intensity of floods in Pakistan is reinforced by the observation of the rapidity at which Pakistani glaciers are melting compared to any other part of the world (Pakistan Economic Survey 2014-15). The impacts of GLOFs in the 2010 flood especially in the valley of Bindo Gol, as a result of an outburst of the Bindo Gol glacier, included "unprecedented devastation to human lives, houses, transport networks, irrigation channels and cultivated land".<sup>2</sup> Another example is the case of Booni Gole Glacier located near Chitral that generated an outburst flood in July 2010 and caused huge erosive damages. Entirely the floods in 2010 caused 1,980 reported deaths and nearly 2,946 people were injured. Also, about 1.6 million homes were destroyed, and thousands of acres of crops and agricultural lands damaged (ADB, 2010). Approximately 7,100,000 people live in the most vulnerable districts of these two provinces. (See Annex XV

<sup>2</sup> <http://www.pakistantoday.com.pk/2015/07/06/national/pakistans-glaciers-melting-faster-than-the-worlds/>

for details on individual district and community risk reports and damage assessments from past flood events.)

20. There have been significant investments in GB and KPK to test and demonstrate risk management approaches to the Issue of GLOFs. Government has piloted baseline interventions to reduce risks from GLOF and other climate-induced disasters, as well as to support the natural resource-dependent livelihoods of mountain communities. Sub-national authorities have recognized the vital importance of up scaling these investments and hence the proposed project will build on or coordinate with the following projects:

- “Reducing Risks and Vulnerabilities from Glacier Lake Outburst Floods in Northern Pakistan”: (US \$7.6 million from Government of Pakistan and the Adaptation Fund, supported by UNDP). The 4-year project has implemented measures to reduce the vulnerability of communities in Bagrot and Bindogol valleys of GB and KP districts. The pilot project was successful in helping the most vulnerable communities in these districts better prepare for GLOF risks through infrastructure enhancement such as gabion walls, diversion walls, bridges, assembly points and safe evacuation routes, while also enhancing the understanding, preparedness and response of communities to climate-induced disaster risks (as reflected in the independent Mid-Term Evaluation, Annex VIII). Further, the Pakistan Meteorology Department has successfully installed automatic weather stations, rain gauges, and discharge measuring equipment (DME) to support early warning systems in the target sites. Training and provision of equipment have been provided to community-based Disaster Risk Management Committees (DRMC) and Village Hazard Watch Groups (VHWG) have been substantially enhanced and through the project, they have access to new equipment, and disaster recovery supplies. The project is currently undergoing a terminal evaluation and will be closed in December 2015. Numerous assessment and vulnerability and feasibility studies have been conducted and documented, including: design and cost-estimates of various engineering structures; study on GLOF socio-economic impact in Chitral and Gilgit; impact of GLOF on biodiversity and ecosystems, among others (Please see Annex II and XIII). The proposed project will provide continuity of this intervention by developing a revolving community-based disaster risk management fund paired with climate-resilient land-use and water management techniques to support agro-based livelihoods in GB and KP.
- “**Water and Sanitation Extension Programme**” (WASEP) is a five-year project, (US \$10,000,000 from Kreditanstalt für Wiederaufbau (KfW) Development Bank). The project is supporting more than 350,000 people in under-served communities of Gilgit-Baltistan and Chitral with access to potable water and sanitation facilities in order to reduce waterborne diseases and improve their overall quality of life. This project will close in December 2015. The proposed project builds on the lessons learned from the water techniques that this project has set in place in GB and Chitral.
- **UNDP/GEF Mountain and Markets Project** (US \$ 7,793,182) through which sub-national governments in GB and KP are fostering the production of biodiversity goods and services through community ecosystem-based enterprises. The project uses voluntary certification of Non-Timber Forest Products (NTFP) as a tool to promote biodiversity conservation and strengthen existing conservation efforts with innovative market-based mechanisms. It also develops community and institutional capacity for certified production of ‘biodiversity-friendly’ NTFPs in northern areas and stimulate market demand for these products, thereby creating new economic incentives for conservation. Using the ongoing value-chain assessments and marketing studies, the proposed project will scale-up community and market based mechanisms created in its social forestry and community plantation activities. The project will close in 2017. The proposed project will build on the lessons learned from the biodiversity conservation and market-based mechanism activities piloted by this project.

21. **UNDP/GEF Sustainable Land Management (SLM) Phase II** (from 2015-2019, US\$ 20,421,000) project focuses on creating an enabling environment for SLM and information systems and capacity building for SLM at national and provincial levels. The proposed project will build on and overlap with this project to increase yields while promoting sustainable land and pasture management approach by developing water-efficient farming technologies.

22. Finally, the Government of Pakistan has also made some progress in incorporating climate change in national and sub-national planning processes, through several programmes. One such programme is the UNDP/DIFID “Strengthening Governance of Climate Change Finance” (US \$ 1 million, 2015-2016) which allows the Finance Ministry to take steps to integrate climate change concerns into national budgeting and planning processes in Pakistan. A “Climate Financing Framework” that has emerged from this exercise is expected to be used to effectively integrate climate risks into budgets.

23. Notwithstanding the results from these pilot projects, the interventions remain fragmented and often times un-coordinated. Some shortcomings are still evident, such as limited investments in water and sanitation in remote villages

and efficient mainstreaming of climate information in local and provincial decision-making processes. A long-term and systematized approach to adaptation is nascent at the national level through the ongoing work on climate finance and the National Adaptation Plan process. Additional resources are needed to strengthen institutional coordination and to ensure that a “whole of government approach” trickles down to the sub-national and local levels to ensure that climate change risks are considered in local development planning. For example, the GLOF project in Bhutan was able to integrate the project structure into its existing institutional arrangements. One of the key successes of the project was the efficiency in project implementation.

#### **Potential effects of climate change on Pakistan's agriculture**

24. Future temperature rise for Pakistan is estimated to be +1.4 - 3.7°C by 2060 according to GCMS models (IPCC 5<sup>th</sup> Assessment Report). In addition, historical data (1902-2002) shows that the country's number of hot days and nights per year has increased by 20 days and 23 days respectively defined as the temperature exceeded on 10% of days or nights in current climate of that region and season (World Bank, 2015). Babar et al. (2015) conducted climate trend analysis specifically in the region of Khyber Pakhtunkhwa (KP), in Northern Pakistan. In line with World Bank's and IPCC's reports, the authors concluded that climate change in KP has been perceived mainly in the form of increased rainfalls and increased mean temperatures. The authors' study shows that KP rainfall trend, for both the kharif (summer crops e.g. maize) and rabi (winter crops, e.g. wheat) cultivation period, has amplified over the last thirty years span by 3mm-38mm.

25. Mostly as a result of monsoon rains in July through September, Pakistan experiences frequent and severe flooding in the Indus River Basin where millions live on low-lying lands. According to IPCC projections, climate change can be expected to impact the effects of this phenomenon (Hijioka et al., 2014). In 2010, an unprecedented rainfall inundated approximately one-fifth of the nation's land and affected an estimated 21 million Pakistanis (World Bank, 2011). Nine of the 25 heaviest rains ever recorded in Pakistan occurred between July and August of that year (World Bank, 2011). Floods in Pakistan have caused loss of life, inundated fertile land, killed livestock, destroyed standing crops, and reduced or eliminated yields.

26. In the other hand, in 1999-2002 Pakistan experienced a nationwide drought that revealed the limitation/vulnerabilities of the Indus River Basin irrigation system, as the total flows of water in major rivers declined roughly 34% below the monthly norm (World Bank, 2011). People faced severe water shortages and major crop yields declined 10% (World Bank, 2011). Changing the seasonal distribution of rainfall, coupled with rising temperatures, is likely to increase evaporation and reduce water availability in drought-prone regions (World Bank, 2011).

27. The IPCC concludes that a shift in climate variations will have a resounding effect in countries heavily dependent on agricultural production (Hijioka et al., 2014). This appears then will be the case for Pakistan which is largely an agro-based economy. Agriculture in Pakistan contributes to 21% of the total GDP and 70% of the total population draw their livelihood from various agricultural activities<sup>3</sup> (Asif & Islam-ul-Haque, 2014). In the northern state of KP, for example, agriculture contributes to 14% of the economy and provides direct and indirect livelihood to the majority of the rural population (Ikram et al., 2014).

28. Recent IPCC reports predicts that climate change will have a generally negative impact on crop production in Asia, but recognizes diverse possible outcomes (medium confidence: Hijioka et al., 2014). Reflecting on this uncertainty, both positive and negative impacts from Climate Change in Pakistan's agriculture have been discussed in the literature. According to Hussain and Mudasser (2007), warming temperatures could for example make it possible to grow at least two crops (wheat and maize) a year in mountainous areas of Pakistan. In the Swat and Chitral districts of the country, results of projections have been mixed for wheat crops: projected temperature increases of 1.5 and 3°C could lead to wheat yield declines (by 7% and 24% respectively) in Swat district but to increases (by 14% and 23%) in Chitral district (Hussain and Mudasser, 2007). As for rice, warming temperatures have shown to accelerate this product's process of development and to reduce the duration for growth (Wassmann et al. 2009a, 2009b in Hijioka et al., 2014). Nevertheless, Wassmann et al. (2009a, 2009b in Hijioka et al., 2014) concluded that, in terms of risks of increasing heat stress, Pakistan's current temperatures are already approaching critical levels during the susceptible stages of the rice plant.

29. Specifically in the regions of Northern Pakistan, Babar et al. (2015) analyzed the potential impacts of climate change in agriculture of the region. The authors found that the KP mean temperature in rabi season (winter crops) was displaying an increased trend of +1-1.2 degree centigrade; whereas the kharif (summer crops) mean temperature was screening a

<sup>3</sup> The five most important crops in the country are wheat, rice, cotton, sugarcane, and maize. These products are grown predominantly by subsistence farmers: 80% of farmers subsist on small landholdings; 81% of all farms are smaller than five hectares; and only 7% of farms are over 10 hectares (World Bank, 2011).

falling trend of -0.3 degree centigrade. Even if the authors' disaggregated regional analysis found that agriculture of the Northern and Central parts of KB may benefit from climate change, they reached the conclusion that the overall climate change impact is negative as it puts severe stress in the southern part of the province (that constitutes the larger area for crop cultivation and production), which is already short in water supply (Babar et al., 2015). For the authors, the changes in climate have led to variation in crop sowing and reaping patterns, early crop development, low crop productivity, low nutritional food and intensified weed and pest outbreaks.

#### **Importance of scaling up irrigated agriculture**

30. The improvement in the usage of water resources for irrigation constitute a key to strengthening the agricultural sector and food security of northern Pakistan. Irrigation agriculture in northern Pakistan is underdeveloped and rain-fed agriculture remains a common practice. For example, out of the total 2.7 million hector cultivable area in KP, 49% of the area entails the rain-fed region, which makes it especially sensitive to climate change (Babar et al., 2015, Ratnakumar et al., 2011), including drought periods and variability in rainfalls (Kawasaki, 2012; Baba et al., 2015). Central KP, for example, is so dependent on rain that studies have shown that the variable of average rainfall can have a remarkably positive impact on the crop production; i.e. 1 mm increase in rainfall will leads to increase crop productivity by 212 tones (Babar et al., 2015).

31. For this reason, irrigation agriculture systems that bring the required water at the right time, accompanied with efficient irrigation led technological interventions can be key for mitigating the negative effectives of climate change in agriculture and maximizing the potential positive ones. Strong irrigation systems can also become a driver for increased productivity enhancement in agriculture sector of the region (Asif & Islam-ul-Haque, 2014). Data gathered at the Barmiyān province on wheat plantations shows for example that the agricultural output in irrigated agriculture can be twice or three times larger than in rain-fed ones (Kawasaki, 2012). Furthermore, irrigation areas have proved to maintain some levels of productivity during times of drought, while other areas suffered from a devastating damage (Kawasaki, 2012).

#### **Key Barriers addressed by the project**

32. A holistic solution to the issue of decreasing GLOF risks requires a number of barriers to be overcome. The devolution process in the country poses some significant challenges for the institutional setup for climate change in Pakistan. There is no formal mechanism through which the Pakistan Environment Protection Act (PEPA) (at the federal level) is linked with the provincial EPAs. There is also no coordination mechanism between federal and provincial EPAs to ensure effective implementation of policy instruments and for mainstreaming climate change at the planning stage. In addition, disaster management and reduction require collaborative working between the federal and provincial levels. The National Disaster Risk Reduction Policy states that "DRR is first and foremost a provincial and district level subject... Provincial, district and municipal governments, together with civil society groups are best placed to promote and support risk-reduction behavior among vulnerable communities." Collaboration in this and other areas where climate change is relevant (such as agriculture and water resources) needs to occur in order to take a harmonized approach to addressing climate change. In other words, policy making on climate change and the implementation of international agreements and conventions is considered to be assigned to the Federal Government, while implementation is located at the provincial level. A disconnect between intent and implementation arises because there is no effective mechanism for the transfer of climate policy to the implementation level.

33. The objective of the proposed project is to support rural communities to avoid human and material losses from GLOF events in vulnerable areas. A long-term solution is hindered by the following socio-economic, political and institutional barriers:

- Institutional capacity and coordination at the sub-national level, and across relevant agencies to address the risks from GLOFs and climate change is limited, but the proposed project will strengthen public service systems to lower the risk of GLOF related disasters.
- Government institutions have limited resources, capacity, and logistical feasibility to construct infrastructure required for remote mountain communities to reduce exposure and respond to disasters and climate change. Therefore, the proposed project is needed to establish efficient and effective mechanisms to enhance the resiliency of vulnerable communities
- Capacity and information availability at the community level to prepare for and respond to immediate threats from GLOFs is limited. The proposed project will provide the community much needed skills and information to address GLOF-related risks.
- There is a lack of access to readily available financial capital for households to cope with GLOF-related risks, and the proposed project will scale up a revolving, community-based fund to enhance the resiliency of vulnerable communities.

- Current natural resource, land, and water use practices are unsustainable. Ecosystem-based adaptation interventions will provide a paradigm shift required to catalyze new long-term sustainable use patterns that form the foundation of local agro-based livelihood assets.

**Scale up of ongoing activities**

34. The proposed project will scale up piloted interventions in 2 districts to 12 districts in Departments of Khyber Pakhtunkhwa (KP) and Gilgit-Baltistan (GB). Below a table describing the main activities that will be scaled up.

Table 1. Activities that will be scaled up in 12 district in KP and GB.

Current activities (2 Districts)	GCF resources (12 districts)
Two policies have been reviewed to address or incorporate GLOF risk reduction.	By the end of the project, at least two policies have been reviewed and/or revised to address or incorporate GLOF risk reduction.
90% of households in target communities are receiving early warnings and are taking the appropriate actions following the warning.	By the end of the project, 95% of households in target communities are able to receive and respond to early warnings and take the appropriate actions following the warning.
2 targeted engineering structures (gabion walls) have been established to reduce the effects of GLOF events on livelihood assets.	By the end of the project, at least 250 small-scale engineering structures (biological and/or mechanical) have been established to reduce the effects of GLOF events on livelihood assets (as appropriate: check dams, mini dams, ponds, spill ways, slope stabilization, tree plantation, controlled drainage) and from debris slides.
At least 2 GLOF-prone mountain valleys are comprehensively covered by a GLOF Early Warning system.	100% of households in KP and GB target communities are able to receive and respond to early warnings and take the appropriate actions following the warning.
-5 Automatic Weather Stations (3 in KP and 2 in GB) have been installed. -5 Automatic Rain Gauge (3 in KP and 2 in GB) have been installed. -6 discharge measuring equipment (3 in KP and 3 in GB) were installed, two of those were damaged during recent flooding (2015). Bioengineering techniques for slope stabilization have been established to reduce GLOF impacts.	Installation of 50 weather monitoring stations (22 in KP and 28 in GB) to collect meteorological data in the catchment areas in order to understand parameters with flood peaks.  The installation of 408 river discharge gauges/ sensors (170 in KP and 238 in GB) to collect river flood data in order to understand and predict flood peaks.  The proposed technology will provide data to conduct hydrological modelling to generate flood scenarios and to capacitate village hazard watch groups that will be part of a local-level early warning system.  Bioengineering techniques will be replicated.

**C.3. Project / Programme Description**

35. In the context of the stated project objective in C.2, the proposed GCF project has been structured around 2 inter-related outputs.

**Output 1: Strengthened sub-national institutional capacities to plan and implement climate change -resilient development pathways**

This output 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 in the Departments of Khyber Pakhtunkhwa (KP) and Gilgit-Baltistan (GB).

37. GCF resources will be used to strengthen the capabilities of local level institutions (Disaster Risk Management, Agriculture, Livestock and Water sector in the Departments of GB and KP and federal level institutions (Ministry of Kashmir Affairs, Ministry of Environment and National Disaster Management Authority) to incorporate climate change adaptation considerations into development plans in GB and KP. The incorporation of climate change adaptation

measures into the planning instruments will also be based on progress made at the national level under NCCP and by other regions in including climate change measures in sectoral, territorial, and environmental planning instruments. More specifically, the project will make use of the lessons learned from the recently completed UNDP/Adaptation Fund supported project: “Reducing Risks and Vulnerabilities from Glacier Lake Outburst Floods in Northern Pakistan”. In addition, GCF resources will be used to promote the inclusion of information generated from early warning systems and hydrological modeling (Output 2) to generate flood scenarios that then can better inform local development plans and, by extension, budgeting.

**Activity 1.1: Provincial line and planning departments have technical capacities to mainstream climate change into development plans**

38. Provincial and territorial governments have recognized the risks of climate change, and have begun mobilizing to address it. Building on this progress and based on the current structure and coordination mechanisms established by the NCCP, the project will support the development of provincial climate change adaptations action plans that address GLOF risks from a sectoral perspective, focusing primarily in Agriculture, Livestock and Water. At the provincial level, the project will support the integration of GLOF risks into existing KP provincial climate change policies, based on information and data generated in Output 2 [hydrological modeling and flood scenarios] and Output 3 [Climate-resilient land-use and water management techniques]. In addition, EPAs, line and planning departments in GB and KP will integrate climate change risks that will set the foundations for adaptation sectoral and provincial action plans.

39. The Climate Change Action (CCA) action plan process will be driven by the DRM, Agriculture, Livestock, and Water sub-national governments in KP and GB, based on the strategic lines underlying the National Climate Change Policy. The overall purpose of Output 1 is to introduce appropriate policies to address GLOF risks across different sectors. GCF resources will finance the identification and preparation of written policy recommendations on how to address GLOF risks in diverse sectors, based on evidence and will be subject to approval by a multi-stakeholder board. These policy recommendations will be submitted to Cabinet, with PSC members serving as advocates in their respective line ministries. Their adoption by relevant line Ministries and local authorities will be tracked. This will be instrument in addressing one of the most critical policy gaps in catalyzing behavioral adjustments to managing GLOF risks across key sectors.

40. As the impacts and severity of GLOF is multidimensional, affecting not only human lives but infrastructure (e.g. houses, schools, bridges) and livelihoods (e.g. livestock, forest and fruits tress), the inclusion of GLOF risk into sub-national policies in both KP and GB provincial CC policies is a complex task involving diverse Ministries. (See Annex XIII – Section “GLOF impacts on lives and economic assets in GB and KP”). One of the expected results is to develop evidence-based policy recommendations on GLOF prevention and risk management in diverse sectors (DRM, Agriculture, Livestock, and Water) that will be prepared and disseminated. Contingency plans & risk management incentive schemes between KP and GB will be developed based on collaboration between relevant stakeholders under the CCA action plan and sub-national governments.

41. Indicative inputs for the above activity include:

- Develop integrated provincial CCA action plan encompassing key sectors (mainstream CC risks into DRM, Agriculture, Livestock, and Water Sectors) in KP and GB, linked to NCCP.
- Integration of GLOF risks in the existing KP and GB provincial CC policies which will serve as framework for the CCA action plan.
- Build capacities of EPAs, line departments (Agriculture, Water and DRM) and planning departments to mainstream CC risks in development plans (building blocks of CCA action plans) in GB and KP.

**Activity 1.2: Sub-national institutions coordinate effectively to implement adaptation action plans and climate change initiatives**

42. GCF resources will also be used to strengthen and expand existing sub-national institutional and coordination arrangements including financial, planning and budgeting processes and other requirements for implementing adaptation action plans and climate change initiatives in GB and KP. Climate change coordinating entities will be established (and strengthened if currently operating) using a multi-stakeholder approach to integrate climate change responses across key sectors. In addition, the project will increase consideration of GLOF and climate change risks among district authorities, NGOs and CBOs as these will be key agents implementing adaptation action plans.

43. Pakistan’s National Climate Change Policy has layout 10 policy objectives “to ensure that climate change is mainstreamed in the economically and socially vulnerable sectors of the economy and to steer Pakistan towards climate resilient development”. NCCP Objective #6 states the need to “strengthen inter-ministerial decision making and coordination mechanisms on climate change”. Activity 1.2 aims to strengthen and expand existing sub-national

institutional and coordination arrangements including financial, planning and budgeting processes and other requirements for implementing adaptation action plans and climate change initiatives in GB and KP.

44. GCF resources will be used to strengthen the Climate Change Cells in sectoral ministries in KP and GB to implement adaptation action plans financed under Activity 1.1. These CC cells were established under the National Climate Change Commission to coordinate all climate change activities at national and international level and are funded by the federal budget. GCF resources will be used to provide training and support to targeted officials and experts of line ministries and departments that are part of the CC cells to further their knowledge and capacities on managing climate change risks, in particular GLOFs.

45. Indicative inputs for the above activity include:

- Establish/ strengthen provincial-level CC coordinating entities within the Planning and Development Departments (involving CBOs, NGOs, and EPA) to coordinate responses and management of medium- and long-term risks across key sectors.
- Raise awareness at the local level (district authorities, NGOs, and CBOs) to effectively coordinate CC initiatives and play key roles in implementing CCA action plans across key sectors.

### **Output 2: Community-based EWS and long-term measures are up-scaled to increase communities' adaptive capacity**

46. A key result that GCF resources will finance focuses on the scaling up of interventions that have been tested with other financing (see Annex VIII) to increase adaptive capacity of communities in target valleys. GCF resources will expand the climate information surveillance and discharge measuring network in the region. GCF resources will be used to procure and install 50 automatic weather stations (AWS) and 408 river discharge gauges/sensors. These monitoring instruments will provide the requisite data to conduct hydrological modeling to generate flood risk scenarios that will feed into a flood early warning system to enable the dissemination of flashflood warning signals on a 24-hour basis generated by PMD through cellphones. AWS and river discharge sensors will provide information to capacitate village hazard watch groups that will be part of a local-level early warning system. Small-scale hard adaptation structures will be constructed (gabion walls, spillways, check dams) to protect human lives and household's assets in combination with bioengineering interventions to stabilize slopes slides, reducing the risk of debris slides. In Pakistan EIAs are not required for smaller infrastructure projects. The protective capability of these structures will be amplified by additional resources channeled to the communities ex ante and following a GLOF event through the scale up of already established, revolving community-based disaster risk management fund. In addition, ecosystem-based adaptation interventions will be promoted in order to increase resilience against GLOFs events while supporting livelihoods.

#### **Activity 2.1: Expanded weather surveillance and discharge measuring networks**

47. The project will facilitate the updating of river discharge and meteorological information into the Pakistan Meteorological Department (PMD) network to address the vulnerability of the identified target area and provide information for the development of an Early Warning System. The installation of 50 automatic weather stations (22 in KP and 28 in GB) and the installation of 408 river discharge gauges/sensors (170 in KP and 238 in GB), will be used to measure lake volume, flow and discharge rates, and will provide data to conduct hydrological modeling to generate flood risk scenarios (Input 2.2.1). The information generated will also capacitate village hazard watch groups that will be part of a local-level early warning system (Input 2.2.2) (See Annex IX). In addition, the capacity for processing, validating, and interpreting river discharge and meteorological information will be strengthened at the national (PMD), and at the department level by GB Disaster Management Authority (GBDMA) and KP Disaster Management Authority (KPDMA). PMD will integrate AWS as part of its networks, therefore it will cover M&O costs after the project has finalized.

48. The capacity to better analyze how climate changes causes floods caused by glacial lakes will also be strengthened at the local and regional levels of the Project will enable more accurate predictions for the intensity and breadth of GLOF, and for defining and implementing adaptation measures. The new automatic weather stations will be part of the national network; thus, the stations will generate information that will also be useful outside of the project target area in assessing climate change, particularly in other areas of GB and KP.

49. The new automated stations will provide data at a significantly greater frequency, recording physical parameters (i.e. rainfall, wind, temperature, etc.) every minute, in all weather conditions, day and night all year around. The technology will also provide accurate and useful data on extremes in climate (i.e., maximum rainfall intensity, maximum wind gusts, etc.) for the development of an effective early warning system that will help decision-making aimed at saving lives and avoiding high economic losses from GLOF.

50. Indicative inputs for the above activity include:

- Installation of 22 weather monitoring stations in KP and 28 in GB: to collect meteorological data in the catchment areas in order to understand parameters with flood peaks.
- Installation of 170 river discharge gauges/ sensors in KP and 238 in GB: to collect river flood data in order to understand and predict flood peaks
- GBDMA and KPDMA provide extension to PMD on installation and maintenance of equipment

51. This hydro-meteorological equipment with communication system will collectively form the warning systems. Although it is not possible for the system to reduce or obstruct or prevent a flood or disaster, the system, coupled with early warning communications, will have reduce the risk of loss.

**Activity 2.2: Early warnings are effective in protecting communities from climate-induced risks.**

52. Existing flood early warning systems in the target area will be established to enable the dissemination of flash flood warning signals on a 24-hour basis. Information generated by AWS and river discharge gauges (170) / sensors (22) will be used by Pakistan Metrological Department (PMD) to conduct hydrological modeling to generate flood scenarios and calculate GLOF lead time. GLOF hazard maps previously developed and updated hydrological modeling will be utilized to estimate the probable flood inundation sites. PMD will analyze this information and alerts will be issued through cellphones and other media.

53. If the above activities are implemented, the warning dissemination mechanism should be very effective to save communities in the targeted regions from the probable GLOF disaster. The lead time will also be estimated with the help of hydrological modeling so that expected time for the inundation at particular location may be estimated. Vulnerable areas prone to GLOF will be ranked (High, Moderate and Slight Vulnerable) based on assigning weights to different characteristics of the lakes, such as processes and records of past events, geo-morphological and geo-technical characteristics of the lake with the help of hydrological modeling and different scenarios of flood inundation will be generated. For more information on the physical conditions of the surrounding area that may be considered before declaring a lake to be potentially dangerous see Section 5.2 of the Technical Report in Annex XV]

54. AWS and river discharge gauges/ sensors information will be gathered and analyzed at the Main Control Room at PMD, where an analysis of thresholds for potential GLOF risks will be carried out. When warnings are triggered, PMD will issue meteorological and hydrological alerts regarding possibilities of GLOF events in the target valleys. The communication channels for PMD to disseminate the alerts will be mobile phones (Call + SMS), sirens, FM Radio, Internet website (GLOF II Page). Most effective communication is GSM technology which is available in most of the valleys. However, where the GSM technology is not available, sirens or declarations from mosques are very common source of communications, moreover, satellite based communication. PMD has well established this communications and alert system in other regions, however GCF resources will be used to expand it in the twelve target districts.

55. The project will establish watch groups at the valley level with community members and NGOs, leveraging the strong social networks and cohesion within and between upstream and downstream communities, to increase early warning awareness and utilize existing community channels of communication. Training workshops will ensure that EWS procedures are internalized and GLOF alerts reach the most at-risk communities.

56. Finally, a local government representative will be designated as a focal point to ensure continued functionality of the EWS. This focal point will work with Local Support Organizations (LSOs) to monitor the EWS and facilitate follow-up to any evident maintenance issues with government support. LSOs are registered entities with the government. These organizations are managed by Board of Directors which have representation from the local government, community members both men and women. Catering to a number of other rural development projects, LSOs are experienced in the management of community funds which are regularly replenished through public and private contributions. These funds have been established for the maintenance of communal services provided by various development projects, and will be used under this project to manage financial contributions by the government and the communities for continued EWS operation and maintenance. The funds will be managed through a separate bank account and an independent audit will be carried out by UNDP in addition to spot checks. An agreement will be signed between the project and LSOs which will clearly elucidate the modalities for the distribution of these funds and the activities to be carried out upon completion of the project. In the ongoing GLOF project, such agreements are done with community and government departments, in which it is clearly stated that after the completion of project life time, relevant line departments and community will be responsible for the sustainability and Operations & Maintenance (O&M). In this case, EWS systems officially handed over to local government to manage the operations and maintain the systems at the end of the project. Agreements will be signed by each local entity prior to managerial handover of responsibility for EWS management.

57. Indicative inputs for the above activity include:

- PMD conducts hydrological modeling to generate flood scenarios and calculate GLOF lead time
- Village hazard watch groups are set up (expanded) and capacitated to monitor GLOF and disseminate early warnings

**Activity 2.3: Vulnerable communities have adequate long-term measures in place to address GLOF-related risks**

58. Potential outburst flood hazards need to be addressed from different perspectives and in coordination with CBOs and community members aiming to protect life and property in the downstream of each valley, hence the importance to combine preparedness and response, small-scale infrastructures with EWS-based mechanisms downstream (Activity 2.2) to address GLOF risks.

59. The project will support the expansion of DRM Committees and emergency response cells by providing basic necessary early warning equipment on communications as well as fostering advance planning of risk management activities using preexisting DRM plans (modified and enhanced by GLOF I project). This will be done with a view to also monitor potential GLOF risk sites and prepare simulations to support risk management. GBDMA and KPDMA will provide training to DRM Committees and communities on managing GLOF risks in the medium- and long-term as well as preparedness and response to build their capacities and keep them activated during peak GLOF risk seasons.

60. Small-scale hard adaptation structures will be constructed, expanding on the design of the pilot project activities carried out in GLOF I project financed by the Adaptation Fund. In May 2014, a gabion wall built during that project proved successful in protecting the houses, agricultural land, livestock and orchards of 1,350 people in Chira village in Bagrote Valley of GB during a GLOF event. Gabion walls reinforce spillway banks and protect villages and property from flooding and erosion. Both gabion spurs and check dams retard the velocity of outburst flood waves, attenuating its destructive force and providing greater lead time for communities to prepare and evacuate. Gabion spurs are permeable structures constructed perpendicular from the bank, extending into the stream. Check dams extend across the entirety of the stream and can be constructed from different material (gabion material, dry masonry, and vegetation/soil) depending on the particular conditions and size of each spillway site. Small additional spillways will be constructed near the glacial lake outlet to regularly drain and divert excess water, helping to prevent the buildup of pressure from meltwater accumulation that can lead to an outburst flood. The exact size, specifications and placement of each of these protective structures is dependent on the particular conditions of each lake, outlet stream, and valley. Detailed design and environmental and social safeguard assessments will be undertaken prior to installation. None of the hard structure will be of a significant size to warrant EIAs (these will be low to medium risk activities). The protective capability of these structures is amplified when used in concert with additional risk mitigation measures, such as slope stabilization through bioengineering.

61. A major risk related to climate change in the region is increased probability of land and debris slides, produced by intensification of acute rainfall events and cloudbursts. Debris slides can also be both an effect of glacial lake outbursts, resulting from reduced slope stability due to bank erosion and flood scars, and a cause, as occurred when a major landslide blocked the outlet of the glacial-fed Attabad Lake in Hunza District, GB, in January 2010, leading to flooding of the Karakoram Highway and five upstream villages.

62. Many slope sides in vulnerable valleys have been denuded of vegetation, increasing the risk of a slide. Ecosystem-based adaptation through bioengineering helps stabilize slopes at risk through reforestation and vegetation, reinforcing the structural integrity of slope sides and increasing their shear resistance. Because many slopes were degraded due to human exploitation of vegetation, this activity will be linked to the sustainable land and pasture management plan to ensure that the vegetative cover and the stabilization it provides will be maintained in the long term. Choosing local indigenous species for re-vegetation will help conserve and restore natural ecosystems in the project area, and sustainable harvest of those with economic value contributes to income generation. During the pilot project, demonstration sites were established for slope stabilization through these bioengineering techniques in two locations. These demonstration sites will be used to train communities and local support organizations from the 12 districts included in this project.

63. In GB and KP despite having access to water resources from the glaciers, irrigated agriculture is still limited. As a result of the reliance of the agriculture sector on rain-fed agriculture, increasing climate variability is causing a greater frequency of crop failure and associated food insecurity. Increasing and improving existing irrigation systems to insure against crop failure is therefore a priority. Among the foreseen works undertaken by the project will include increasing the capacity of and improving existing micro-irrigation systems and rehabilitating irrigation channels through the installation of 240 water efficient farming technologies in 24 targeted valleys. 120 drip irrigation systems will be installed to support fruit

trees (apples, apricot, cherries, peaches, plums and walnuts) and 120 sprinkle irrigation systems for vegetables and cereal crops (potato) raising.

64. Proposed micro-irrigation systems are water saving technologies that do not require leveling of fields (terraces). The farmers will grow fruit orchards on slopes which are at present not under agriculture crops increasing the area under agriculture. Both the micro-irrigation systems will be used by gravity flow as the mountain terrain permits without using pressure pumps reducing the running costs to zero. Water tanks will be constructed at various levels and the water will be used at lower elevation through gravity flow through the pipes. The micro-irrigation channels will be operated and maintained by the farmers on self-help basis in the mountain areas of GB and KP. In addition to increasing the water efficiency in the area the rehabilitated irrigation systems will reduce GLOF risks by releasing the water pressure on the glacier lake banks

65. Indicative inputs for the above activity include:

- DRM Committees and emergency response cells are expanded to act as first responders and manage drills and simulations.
- GBDMA and KPDMA train communities and DRM committees on disaster preparedness and response.
- Construction of 250 small infrastructure to reduce medium- and long-term risks of floods (gabion walls, check dams, spillways).
- Expand slope stabilization to mitigate risks from debris slides (100000 ha in KP and 140000 ha in GB).
- Installation of 240 water efficient farming technologies (Micro Irrigation Systems: 120 Drip Irrigation Systems and 120 Sprinkle Irrigation Systems and rehabilitation of irrigation channels in 24 targeted valleys)

**Activity 2.4: Improved financial capacity to adapt to GLOFs and other climate change-induced risks**

66. Access to finance is critical for enabling communities and households to prepare for weather shocks and to build adaptive capacity. As part of the UNDP/Adaptation Fund financed GLOF I project, a community-based revolving fund was established with an initial endowment of Rs 1 million (2015 US\$ 9,800), which has since increased to Rs 2.7 million (2015 US\$ 26,600) through contributions by local communities and governments. The fund operates on the basis of pooled risk-sharing, and supports GLOF response and preparedness activities within these communities where other sources of risk insurance or credit are lacking, and/or relief from the central government is typically slow to reach. The fund only disburses payouts preceding or following an emergency, and is repaid over time by its enrollees. As GLOF events can impact on human lives and livelihoods, the fund plays a vital role by providing financial support to community members the projects aims at increasing adaptive capacity of communities to recover from GLOF shocks and losses to their assets and livelihoods. However, it is currently insufficient to provide adequate coverage within the pilot villages or expansion to the others included in this project. With GCF resources, a one-time endowment will be made to set the fund officially and increase the size at US\$ 50,000 for each disaster risk management cell, (total GCF Funding required for 24 DRM Cells is US \$1.2 Million) which, based on the experiences to-date, is sufficient to cover climate adaptation measures. Also, relevant stakeholders (i.e. micro-credit lenders, insurance companies, SMEs, Gov agencies, etc.) will be trained to improve coordination and delivery of integrated adaptation and disaster risk management initiatives in GB and KP. Please refer to section E.6.3. for more details.

67. Best practices of climate change adaptation measures must be adopted and mainstreamed by all stakeholders active in the project area. Public and private entities may face different and additional risks than households at the community level. For example, small businesses may face vulnerabilities at every point of their operations and supply chain, such as damaged inventory, unavailability of labor, or inability to transport goods to market. However, these entities currently lack knowledge of climate and disaster risks and the capacity to manage these risks. Further, small businesses and public organizations lack adequate capital to invest in measures that would reduce risks from climate change and disasters or formal insurance policies to compensate for damages, and the CBDRMC may be an inappropriate mechanism for covering organizational risk.

68. This project will support awareness raising and training events that target local public and private entities to be made aware of their risks and risk management related to GLOFs and of other local climate and disaster phenomena. Further, GCF resources will be used to incentivize micro-credit lenders and insurance companies to better cover these organizations, for example by addressing current barriers in the credit and insurance markets, and exploring new innovative products such as index-based insurance payouts based on discharge as recorded by the river gauges (Input 2.1.2) and/or rainfall as recorded by the AWS (Input 2.1.1).

69. Indicative inputs for the above activity include:

- Scale-up revolving community-based disaster risk management fund i.e. \$ 50,000 USD per Community based Disaster Risk Management Committee (CBDRMC) to address climate change adaptation measures (medium- and long-term risks)
- Relevant stakeholders (i.e. micro-credit lenders, insurance companies, SMEs, Gov agencies, etc.) trained to improve coordination and delivery of the CBDRM Fund and adaptation/DRM initiatives on the ground in GB and KP.

#### C.4. Background Information on Project / Programme Sponsor

70. The Ministry of Climate Change of Pakistan (MCC) has five departments (National Disaster Management Authority, Pakistan Environmental Protection Agency, Pakistan Environmental Planning and Architectural Consultants, Global Change Impact Studies Centre and Zoological Survey Department) with an annual budget of US \$4.5 million (2013-14). The MCC's core mandate it's associated to the Framework for Implementation of the National Climate Change Policy (NCCP). The Ministry is also responsible for other environmentally related national policies, including sanitation, drinking water, forests and resettlement and environmental (PEPA) policies. The Public Sector Development Programme is the main instrument for providing budgetary resources for development projects and programmes and its budget was US \$ 115 million in 2013-14. The Ministry has the Climate Finance Unit that is designed as a focal authority on behalf of the lead implementing partner Executing Entity as defined by the GCF, the MCC, responsible for coordinating implementation of the project. The Unit will chair the Project Board, be responsible for overall implementation, coordination and mobilization of the project.

71. The Ministry of Climate Change (MoCC) has the capacity to implement large scale development projects and in the past has implemented many projects with collaboration of UN agencies and local line departments under the overall guidance of Pakistan National Climate Change Policy and its Implementation Framework. The best example of which is Phase-I of GLOF project which was successfully implemented through Adaptation Fund by the Ministry of Climate Change. MoCC has well-structured Wings and Departments headed by Senior Government officials having working experience of different high level position at Federal and Provincial departments.

72. Moreover, Climate Finance Unit (CFU) is also operating in the Ministry of Climate Change headed by Federal Secretary, Ministry of Climate Change to look after all matters related to Climate Finance available windows specially GEF and GCF. CFU is managing the GEF Country portfolio and is actively involved in the GEF projects development and implementation throughout the country. CFU has a Board / Steering Committee having representation of all Federal and Provincial stake holders, Private Sector, UN agencies and Technical expert to review project development, approval, implementation, monitoring status etc.

73. Ministry of climate change is the lead agency in the country to implement the climate change agenda in the country. It has the overarching role with the provinces and the regions in the country as well as the custodian of the international conventions and obligations. In order to best meet the international obligations and the implementation of NCCP, it is of utmost importance that MoCC is in the lead role. MoCC currently has a project portfolio of more than US\$500 million in adaptation and mitigation projects nationwide. The project amount being request of US\$ 36.96 million to the GCF will support MoCC to implement and execute a project to address GLOF risks in Northern Pakistan.

74. Women's percentage share of all managers in Pakistan is 3 % (ILO, 2012). In the National Assembly 60 of the 342 seats (17.5 percent) are reserved for women and allocated to the political parties proportionally from the provinces, according to the electoral result. At the provincial level Khyber Pakhtunkhwa intends to retain the 33% quotas of reserved seats for women as enacted in 2001. Total presentation of women in public sector is less than 2 % and most of the women are employed in education and health sectors. There is a minimal presentation in the sectors like trade and finance (Ministry for Labor and Manpower, 2010).

75. Following UNDP National Implementation Modality (NIM) guidelines, the executing entity or Implementing Partner Executing Entity as defined by the GCF is the entity responsible and accountable for managing a project, including the monitoring and evaluation of project interventions, achieving project outputs, and for the effective use of UNDP resources. A single Implementing Partner is designated to manage each UNDP-supported project. The Implementing Partner may enter into agreements with other organizations or entities to assist in successfully delivering project outputs.

76. UNDP provides the required financial resources to the implementing partner to carry out project activities during the annual cycle. These arrangements must be clearly stated in the annual work plan. Under the Harmonized Approach to

Cash Transfer (HACT), three cash transfer modalities are available: direct cash transfer, direct payment, and reimbursement. More information about financial management can be found in section F.4. of the proposal.

77. Engagement with Ministry of Climate Change, as a Responsible Party for, will be formalized through a Letter of Agreement (LoA). A Responsible Party is defined as an entity that has been selected to act on behalf of the Implementing Partner Executing Entity as defined by the GCF on the basis of a written agreement or contract to purchase goods or provide services using the project budget. In addition, the Responsible Party may manage the use of these goods and services to carry out project activities and produce outputs. All Responsible Parties are directly accountable to the Implementing Partner, Executing Entity as defined by the GCF, in accordance with the terms of their agreement or contract with the Implementing Partner. Implementing Partners use Responsible Parties in order to take advantage of their specialized skills, to mitigate risk and to relieve administrative burdens. Procurement of goods, services and technical assistance required under the Work Plan will be conducted by the CSO in accordance with the principles of highest quality, transparency, economy and efficiency. Such procurement will be based on the assessment of competitive quotations, bids or other proposals, unless otherwise agreed in writing by UNDP. The executing entity will account for and report on the use of GCF funds in an acceptable format and timely manner consistent with UNDP's Policies and Procedures and in line with requirements as per the AMA agreed between UNDP and the GCF.

### C.5. Market Overview (if applicable)

Not applicable.

### C.6. Regulation, Taxation and Insurance (if applicable)

78. According to the Pakistan Environmental Protection Act (1997) when a project is likely to cause an adverse environmental effect an Environmental Impact Assessment (EIA) is required. Given the nature of the proposed activities of the project an EIA is not required by national regulations although a number of specific studies will be required prior to final design and construction. As the Environmental Protection Agency (EPA) is the regulatory authority under the Ministry of Climate Change (EPA) responsible for the project, the proposed Pakistan GLOF project will not require licenses permits or a no objection certification. As per strategy, Pakistan GLOF project will conduct reforestation with the Forest Department of the provincial governments and will follow all rules and no objections before implementing such activities. Forest, Environment, PDMA's, Irrigation, Agriculture, and Planning and Development departments of the provinces are major stakeholders of this GCF-funded project.

79. According to the PEPA a license is required when handling of hazardous substances but there is no legislation for the chemical fertilizers. In this case, a license is not required.

80. Regarding taxes on imported products during bidding processes are waived if process carried out by UNDP.

### C.7. Institutional / Implementation Arrangements

81. The project will be implemented following UNDP's National Implementation Modality (NIM), according to the Standard Basic Assistance Agreement between UNDP and the Government of Pakistan, the Country Programme Action Plan (CPAP), and as policies and procedures outlined in the UNDP POPP (see <https://info.undp.org/global/popp/ppm/Pages/Defining-a-Project.aspx>). The national executing entity - also referred to as the national 'Implementing Partner' in UNDP terminology - is required to implement the project in compliance with UNDP rules and regulations, policies and procedures (including the NIM Guidelines). In legal terms, this is ensured through the national Government's signature of the UN Special Fund Agreement on 25 February 1960, together with a UNDP project document<sup>[1]</sup>, which will be signed by the Implementing Partner to govern the use of the funds (once the funds are secured).

82. UNDP's overall role as an Accredited Entity is to provide oversight and quality assurance through its Headquarter and Country Office units. This role includes: (i) project preparation oversight; (ii) project implementation oversight and supervision, including financial management; and (iii) project completion and evaluation oversight. It also includes oversight roles in relation to reporting and knowledge-management. The 'project assurance' function of UNDP is to support the Project Board by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. Project assurance has to be independent of the Project Manager; therefore, the Project Board cannot delegate any of its assurance responsibilities to

[1] An example of a signed project document (cover page) is provided at [http://cfapp2.undp.org/gef/documents/1/q4958/q2\\_19062/Prodoc\\_Signature\\_Page\\_for\\_PIMS\\_4958.pdf](http://cfapp2.undp.org/gef/documents/1/q4958/q2_19062/Prodoc_Signature_Page_for_PIMS_4958.pdf)

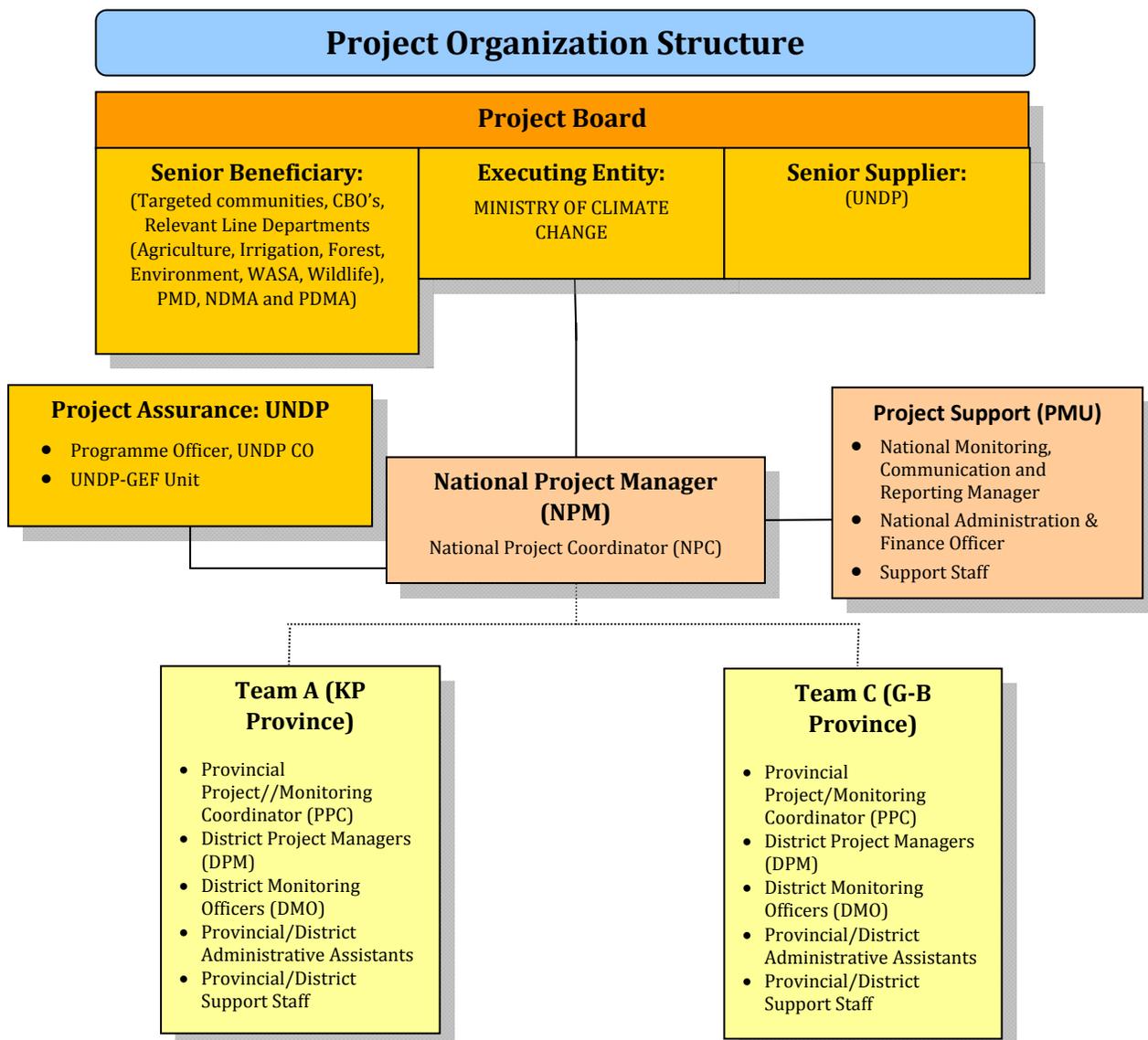
A sample letter of agreement between IP and Responsible Party is provided at [http://cfapp2.undp.org/gef/documents/1/q4710/q2\\_19222/2013-12-04\\_MoU\\_LDCF2\\_Final\\_Signed.pdf](http://cfapp2.undp.org/gef/documents/1/q4710/q2_19222/2013-12-04_MoU_LDCF2_Final_Signed.pdf)

the Project Manager. A UNDP Programme Officer, or M&E Officer, typically holds the Project Assurance role on behalf of UNDP. The 'senior supplier' role of UNDP is to represent the interests of the parties which provide funding and/or technical expertise to the project (designing, developing, facilitating, procuring, implementing). The senior supplier's primary function within the Board is to provide guidance regarding the technical feasibility of the project. The senior supplier role must have the authority to commit or acquire supplier resources required. If necessary, more than one person may be required for this role. Typically, the implementing partner, Executing Entity as defined by the GCF, UNDP and/or donor(s) would be represented under this role.

83. The Implementing Partner, Executing Entity as defined by the GCF, for this project is Ministry of Climate Change.

84. MCC is accountable to UNDP for managing the project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of UNDP resources. The following parties have entered into agreements with Ministry of Climate Change to assist in successfully delivering project outcomes and are directly accountable to Ministry of Climate Change as outlined in the terms of their agreement in Province of of Khyber Pakhtunkhwa (KP) and Gilgit-Baltistan(GB).

85. The management arrangements for this project are summarized in the chart below.



86. The Project Board is comprised of the following organizations: UNDP, MCC, Line Departments of Agriculture,

Irrigation, Forest, Environment, WASA, Wildlife, as well as, PMD, NDMA and PDMA.

87. The Project Board is responsible for making, by consensus, management decisions when guidance is required by the Project Manager. Project Board decisions will be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case a consensus cannot be reached within the Board, final decision shall rest with the UNDP Programme Manager (Jacqui Badcock, UN Resident Coordinator and UNDP Resident Representative in Pakistan). The Project Board will meet four times a year.

88. The Project Manager will run the project on a day-to-day basis on behalf of Ministry of Climate Change within the constraints laid down by the Project Board. The Project Manager function will end when the final project terminal evaluation report and other documentation required by the GCF and UNDP has been completed and submitted to UNDP. The Project Manager is responsible for day-to-day management and decision-making for the project. The Project Manager'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.

### **C.8. Timetable of Project/Programme Implementation**

Please refer to Annex X

### D.1. Value Added for GCF Involvement

89. With a debt of about 62% of its GDP (IMF, 2015), Pakistan is among the most indebted countries in the world. According to Moody's, in 2014, it had a considerable credit risk and was rated Caa1, but it was recently upgraded to B3 which shows an improvement in the government effectiveness. This very high level of indebtedness prevents the government from borrowing to invest in climate change adaptation.

90. However, the need for investment to adapt to the increased occurrence of GLOFs in Pakistan is made manifest following the impacts of the previous floods and the obvious lack of preparedness of the affected populations. Indeed, organizations – government, private sector, charities and international donors – investing in disaster management have mainly invested in disaster recovery rather than preparedness. Pakistan, therefore, needs GCF funding to operate a transformational change and to help increase the adaptation of these vulnerable populations in order to avoid facing the consequences of GLOF. This investment is urgent considering the expected increasing occurrence of these disasters.

91. The intervention aims to reduce the vulnerability of the local community to climate-induced changes (especially the threat of glacial lake outburst floods) thus reduces the financial stress on government coffers in terms of the financial burden of funding emergency relief and rehabilitation activities in the aftermath of a disaster. There is no direct financial return for the Government of Pakistan or the implementing agency. In addition, GCF funding will not further indebt the country. On the contrary, we believe it will generate substantial economic benefits that will translate into a more robust local economy in the medium to long term. The government of GB has estimated an annual savings of US\$ 1.2 million from outcomes the GCF project activities will deliver.

92. GCF funding will not crowd out local funding as the project mix as proposed here, i.e. one that focuses on long run climate change adaptation, is not something that is traditionally financed by local private and public sector entities. This is especially true in light of the fact that many of the benefits of the proposed project are in fact non-financial (i.e. non-pecuniary returns), rather economic benefits that do not accrue as revenues. GCF funding is necessary in this scenario.

93. Finally, the risk premium has not been quantified in this case. However, given that interventions have already been successfully piloted, the Government of Pakistan is certain of its ability to scale up (as proposed here) without significant additional risks. The Government believes that it has a strong case for success given previous experiences; therefore, there is no risk premium in exceedance of what has been previously tolerated. Also, access to GCF fund gives the government the ability to continue and scale up the public support that has been provided to the vulnerable communities in GB and KP.

94. GCF resources to address GLOF risks not only impulse sustainable development for communities in rural areas, more importantly send a strong political signal in other GLOF-prone countries in the Himalayas and Andes that integrating adaptation into planning tools and structures is paramount to avoid human losses and livelihoods assets. In addition, all the information and experiences generated will provide knowledge and best practices to other communities in GLOF-prone regions, to better understand and address such impacts increasing the visibility of the GCF.

### D.2. Exit Strategy

95. Sustainability is associated with the capacity of local communities and of local and regional authorities to influence collective decisions regarding the implementation of policies and activities to address climate change impacts. For this result the foundation for sustainability are the community-institutional partnerships that will be built among MCC, provincial line and planning departments, CBOs, NGOs and communities in GB and KP to address GLOF risks.

96. In this regard, the project will facilitate the incorporation of GLOF risks into development plans and development of provincial adaptation action plans in diverse sectors (DRM, agriculture, livestock, and water) based on a multi-stakeholder approach that will guarantee the institutional support of project actions and results after the project is completed. This will be further strengthened by articulating provincial-level climate change coordinating entities with Planning and Development Departments involving CBOs, NGOs and EPAs. The project will coordinate the communication between different entities but also create communication structure for sustainable continuation of the project work in the future.

97. The project will provide training in different topics related to climate change adaptation to staff of local, regional, and national-level institutions directly involved in the reduction of GLOF risks targeting women and monitoring (pre-post training assessments etc.) the process. Improved institutional knowledge and skills will be instrumental in the development and implementation of adaptation measures during the life of the project and in the future, as well as for the replication of successful activities in other areas of Northern Pakistan and neighboring countries threaten by GLOF risks.

98. Regarding the financial sustainability strategy for the local-level early warning system, the Pakistan Meteorological Department (PMD) will incorporate in its general operation budget all associated costs related to the involvement of PMD in the EWS after the project is completed as stated in the agreement between ongoing GLOF project and the PMD. This will include the incorporation of the AWS and river discharges sensors that will provide information for the local EWS (Activity 2.1 and 2.2) as part of PMD's monitoring network. As such, the gathering, analysis, and dissemination of all climate-related information to be generated through the project will be done as part of PMD's functions during and after the project conclusion. This will allow for the continued generation of information to feed the EWS, hydrological modelling, as well as generation of flood scenarios for GB and KP.

99. As for the small-scale infrastructures to reduce the risks of floods (Output 2.3) the sustainability of interventions will be achieved by incorporating the adaptation measures as part of the federally-administered territory of GB and KP programming budgets to cover for maintenance costs. As per LOA/MOA, the Beneficiary Community or Govt. Department will be responsible for the Operation and Maintenance of Infrastructure and Technology.

100. The community-based revolving fund established by the GLOF I project financed by the Adaptation Fund (Output 2.4) is financial sustainable by only disbursing payouts preceding or following an emergency and is being repaid over time by its enrollees. Activities covered, fund management, and disbursement and repayment mechanisms are formalized and will be expanded with GCF resources.

101. The adaptation measures that are being proposed and that will directly benefit local communities and respond to their adaptation needs were identified jointly with members of the local communities in the target area. That said, during implementation, community groups, community members, and women participation will be further fostered and strengthened through the implementation of concrete adaptation measures. This approach, which includes capacity-building and awareness-raising related to climate change adaptation, will empower the participating social groups and will promote social organization for the development and implementation of strategies to reduce risk related to GLOF. In addition, these interventions will promote alternatives for income generation and food production to enable individuals to better cope with the impacts of climate variability increasing the ownership and sustainability of these interventions.

**E.1. Impact Potential**

Potential of the project/programme to contribute to the achievement of the Fund’s objectives and result areas

**E.1.1. Mitigation / adaptation impact potential**

102. The proposed interventions have been tailored and agreed upon with beneficiaries to address climate change impacts and GLOF risks by preventing loss of lives and community infrastructure based on a holistic approach in all 7 districts of Gilgit-Baltistan and five districts in Khyber Pakhtunkhwa Province, thus contributing to a climate-resilient sustainable development in the long-term.

103. Overall, the project will contribute to Fund level impact of increased resilience and enhanced livelihoods of the most vulnerable people affected by climate related disasters and variability through the replication of demonstrated adaptation measures, empowering beneficiaries to address climate-induced disasters including risks from GLOF.

104. Please refer to the Project Logframe and Economic Analysis for the assumptions and estimates of the impact potential. Contributing to the Fund Level impacts:

Lives saved over 25 years of project life = 93; 50% EWS efficacy

Present value over 25 years of project life of avoided housing stock damage = \$9.7 million; 50% FPW efficacy

Present value over 25 years of project life of avoided housing stock damage = \$12,251,174.98

105. The proposed project will benefit 348,171 women and girls and 348,171 men and boys, totaling 696,342 People on average directly (5 districts in KP and 7 in GB) and about 29,233,000 indirect beneficiaries, of whom half are women and girls. The project therefore benefits about 15% of the total population of Pakistan, estimated at 185 million as at 2014 (World Bank data).

106. The project outcome will strengthen adaptive capacity and reduce exposure to climate risks posed by climate change impacts and GLOF risks through the increased technical capacity of provincial and line departments to integrate CC and GLOF risks into development plans, tools and budgets and by expanding the Pakistan Meteorological Department’s EWS based on hydrological modelling and flood scenarios. The project will directly benefit 348,171 men and 348,171 women through expanded EWS, protective infrastructure, and community-based disaster risk management.

107. The project will strengthen sub-national institutional capacities to plan and implement climate change and disaster-resilient development pathways as proposed outputs and activities will develop the capabilities of local level institutions (DRM, Agriculture, Livestock and Water sector in the 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 incorporate climate change adaptation considerations into development plans in GB and KP. The project will indirectly benefit all districts in GB and KP, totaling 29,233,000 people of whom half are women and girls.

108. The project will contribute to the reduction in vulnerability to GLOF risks by enhancing adaptive capacity and resilience of vulnerable subsistence farmers and flood-risk prone communities through community-based EWS to increase communities’ adaptive capacity. AWS and river discharge sensors will feed information into Pakistan Meteorological Department network for hydrological modelling to develop flood scenarios to expand the EWS to 12 districts in KP and GB, directly benefiting 696,342 people.

**E.1.2. Key impact potential indicator**

<ul style="list-style-type: none"> <li>• <i>Expected total number of direct and indirect beneficiaries, disaggregated by gender (reduced vulnerability or increased resilience);</i></li> <li>• <i>Number of beneficiaries relative to total population, disaggregated by gender</i></li> </ul>	<i>Total</i>	<p><b>Direct: 696,342</b></p> <p><b>Indirect + Direct: 29,233,000</b></p>
	<i>Percentage (%)</i>	<p><b>Direct: 0.38%</b></p>

	<i>(adaptation only)</i>		<b>Indirect + Direct: 15.79%</b>
<p>109. The total number of direct beneficiaries are the members of 37 communities among the 12 districts considered the most vulnerable and targeted for the interventions described here, based on physical danger from GLOF risks, socioeconomic assessment, and current lack of capacity to adapt.</p>			
<p>110. Given that both the main problem (GLOF flooding) and core interventions (EWS, protective infrastructure, and community-based disaster risk management) operate at the valley level, direct beneficiaries are considered to comprise the total populations of each of the 37 communities identified, totaling 696,342 people, but the project results will be distributed to a wider audience via different communication channels and the project will enhance an awareness on climate change for many more people than the direct beneficiaries alone.</p>			
<p>111. Indirect beneficiaries include the entire populations of KP and GB, who benefit from institutional capacity building and climate policies, action plans, and sectoral (e.g. agriculture and water) management plans being developed at the sub-national level totaling 29,233,000 people representing 15% of national population in Pakistan.</p>			
<p>112. An explanation of how beneficiaries are quantified for each activity is provided in Annex XIII.</p>			
<p>113. A 2014 analysis of GLOF risks and management strategies in three similarly situated countries – Nepal, Bhutan, and China – identified a number of best practices for GLOF risk reduction interventions<sup>4</sup>. These include commitment to local initiatives and greater community participation, improved GLOF mapping and data availability, strengthened institutions, and deployment of EWS and small-scale infrastructure (protective walls, check dams, spillways, slope stabilization, re-forestation) in communities of high GLOF risk. The study also noted key remaining barriers to the success of GLOF management strategies in these countries, which include lack of specific inclusion of GLOFs into policy frameworks, and addressing GLOF risk linkages to gender issues, natural resource management, and long-term food security.</p>			
<p>114. The activities within the proposed project in Pakistan (See Section C.3) build on the best practices and address the key barriers identified in this analysis of comparable contexts. These interventions will be rolled out in 12 GLOF-affected districts, which in total contain a population of 7.1 million people (696,342 of which live in the target communities). As a comparative benchmark indicator, the Comprehensive Disaster Risk Management Programme (CDRMP) assigned to UNDP through an inter-agency initiative in Nepal covers 13 districts with a total population of 6.1 million. The CDRMP also combines initiatives focused on institutional capacity building, community-based DRM measures and training, and the installation of EWS in its project districts (Iqbal, 2014).</p>			
<p><b>E.2. Paradigm Shift Potential</b></p>			
<p>Degree to which the proposed activity can catalyze impact beyond a one-off project/programme investment</p>			
<p>E.2.1. Potential for scaling up and replication (Provide a numerical multiple and supporting rationale)</p>			
<p>115. The project presents a holistic model of climate-resilient development to enable one region in Pakistan to manage the risks from GLOFs and other impacts of climate change, incorporating top-down regulatory support, bottom-up community preparedness, and long-term planning for sustainable and climate-resilient use of natural livelihood assets. These activities, working in concert with each other and existing initiatives on the ground for livelihoods development, greatly enhance the region's endogenous adaptive capacity. The barrier each activity addresses, and its ability to support strengthened adaptive capacity and reduced exposure to risks, is illustrated in the theory of change presented below.</p>			

<sup>4</sup> Iqbal, Aftab (2014). *Analysis of Disaster Risk Reduction Initiatives From Bhutan, Nepal & China: To Inform and Document Risk Assessment & Planning Strategies for Future GLOF Initiatives in Pakistan*. Report from Adaptation Fund-supported UNDP project "Reducing Risks and Vulnerabilities from Glacier Lake Outburst Floods in Northern Pakistan"



land, water, and natural resource use practices. Together, these activities ensure that the forest resources planted for slope stabilization and their intrinsic protective value against GLOFs and other climate risks are conserved in the long term.

120. Similar linkages are present between other project activities – for example, inviting engagement of micro-credit lenders in the region could enable individuals to pursue other sustainable and climate-resilient livelihoods not covered by the programmatic or temporal scope of this project; and drip irrigation systems to enhance long-term water security could also support alternative livelihoods development in addition to reducing pressures on water supplies required for natural resource conservation.

**Indicative numerical multiple**

121. According to WWF<sup>5</sup>, the countries at risk of GLOF are the countries of the Himalayas – Bhutan, Nepal, China (Tibet), India and Pakistan – as well as the countries of the Andes – Peru, Bolivia and Venezuela. However only in the Himalayas the risk of catastrophic flooding due to glacier melt is considered severe, where in the Andes, the risk incurred by glacier melt resides mainly in water supply issues.

122. The population in the highland areas of the HTP (Himalayan-Tibetan Plateau) it is estimated approximately in 30 million people<sup>6</sup>. Communities in this area are bearing additional stresses due to global warming, “leading to shifting tree lines and biodiversity loss as well as increased hazards from GLOFs” (Manton, Stevenson, 2014). This area is particularly at risk from GLOFs, counting up to 151 potentially dangerous glacial lakes (ISDR, GFDRR, WB, 2010) – excluding the 52 potentially dangerous lakes in Pakistan.

123. Unfortunately, only few studies have provided estimations of the risks that some specific areas face in the countries subject to GLOF.

124. A study from WB’s GFFDR<sup>7</sup> has estimated the probable impacts for the 3 riskiest lakes in Nepal in terms of GLOFs as well as for a transborder lake between Tibet and Nepal.

125. In Nepal, 16,754 people are estimated to be highly exposed to a potential risk of flood while almost 4 million people are moderately exposed only by these three lakes (Imja Tsho, Tsho Rolpa and Thulagi) with about US\$ 459.6 million of assets exposed<sup>8</sup>. Concerning the transborder lake – Lumu Chimi Lake – a total of 16,313 people are highly exposed and 727,185 are moderately affected by GLOF risks with an estimated total of US\$ 188.81 million of assets exposed.

126. A study has also been conducted in Bhutan, in Punakha-Wangdi Valley and Chamkhar Valley, in the context of a UNDP-GEF project, which estimated the total population at risk of 3,835 people.

127. Finally, even though the Andean countries are less at risk of GLOFs than the Himalayan countries<sup>9</sup>, after the lake Palcacocha had filled beyond its capacity record, that 100,000 residents of Huaraz in Peru were endangered of a lake outflow due to glacial lake melting (Perez, 2013).

128. As the proposed project will provide lessons learned and experiences in addressing risks from GLOF within neighboring countries, we estimate that the indicative numerical multiplier of the number of potential beneficiaries will be approximately 30,000 million people living in the highland areas of the Himalayan-Tibetan Plateau (Please see Annex XIII).

<sup>5</sup> [http://www.panda.org/about\\_our\\_earth/aboutcc/problems/impacts/glaciers/](http://www.panda.org/about_our_earth/aboutcc/problems/impacts/glaciers/)

<sup>6</sup> Manton, and Stevenson, “Climate in Asia and the Pacific: Security, Society and Sustainability”, Ed. Springer, 2014, page 299.

<sup>7</sup> [http://www.unisdr.org/files/14048\\_ICIMODGLOF.pdf](http://www.unisdr.org/files/14048_ICIMODGLOF.pdf)

<sup>8</sup> [http://www.icimod.org/dvds/201104\\_GLOF/reports/final\\_report.pdf](http://www.icimod.org/dvds/201104_GLOF/reports/final_report.pdf)

<sup>9</sup> [http://na.unep.net/geas/getunepagewitharticleidscript.php?article\\_id=104](http://na.unep.net/geas/getunepagewitharticleidscript.php?article_id=104) (box 2)

**E.2.2. Potential for knowledge and learning**

129. Results from the project will be disseminated both within and outside of GB and KP through a number of existing information-sharing networks and forums. MCC (Executing Entity) conceived this project as a pivotal experience for developing tools and information to reduce the vulnerability of local communities to the effects of climate change, and to facilitate the incorporation of adaptation measures into policy and planning processes at the local and regional levels. At the national level, the project will capture and disseminate lessons learned through the MCC's web page. This webpage was developed to provide access to the public for climate change-related information and to improve national capacity to address GLOF risks. In this way the project results will be shared with a wide variety of stakeholders at the national level. The technical officers of the Ministry of Petroleum & Natural Resources, the Ministry of Food Security and Research and the Ministry of Water & Power working on areas where climate change will have adverse impact will be the key ministries for disseminating the results of the project.

130. At the local level, the project will establish and strengthen provincial coordinating entities with Departments of Planning and Development to coordinate climate change response across key sectors (Activity 1.2). Community-based organizations, non-governmental organizations, community members, community leaders and EPAs will be the foundation to identify lessons learned from the project and share knowledge among stakeholders and will be the basis for replicating successful experiences at the local level. Additionally, lessons learned will be shared locally through printed material (booklets and leaflets) and videos, which will be developed as part of the planned activities for Activity 1.2 for sharing information about the successful experiences and lessons learned from the project and its potential for replication in other locations. Utilization of telecommunication technology ranging from commercial radio to mobile phones will ensure that the materials reach community beneficiaries.

131. The project will build capacities of provincial and line planning departments to incorporate climate change adaptation considerations into and development plans for the target districts (Activity 1.1) that have the potential to be replicated to other regions.

132. Lessons learned will also be shared regionally and globally through the Adaptation Learning Mechanism (ALM), which is a collaborative knowledge-sharing platform for sharing adaptation experiences and good practices through an open/global learning process. The UNDP is operating the ALM in close partnership with the UNFCCC, UNEP, WB, GEF, Adaptation Fund and specialized UN agencies.

**E.2.3. Contribution to the creation of an enabling environment**

133. The project has the potential to enable the political environment for long-term adaptation and resilience by integrating climate change adaptation considerations into key economic sectors, such as water, agriculture, and disaster management. This intervention is timely, as there is an increased opportunity to mainstream climate change into policy making given the following in Pakistan: i) useful developments in climate change management are underway now that the MCC is established and provides a good institutional base to steer climate change actions including transmitting the National Climate Change Policy to the sector ministries; ii) there have been improvements in overall economic development; and iii) the government and various reform initiatives are politically more stable.

134. The project also creates an enabling environment for private sector engagement and development. Directly, livelihood improvements (e.g. drip irrigation), additions and alternatives will produce financial benefits for individual smallholders and SMEs throughout the project area. Though additional income generated through these activities is minimal at the project scale, the capital it provides helps build individuals' capacity to adapt. Indirectly, engagement with micro-credit lenders and insurance companies will complement ongoing activities through the Small and Medium Enterprise Development Authority (SMEDA) and Agricultural Support Fund (ASF) to catalyze business growth in the region, enabling private sectors to access capital and manage risks from GLOFs and other climate impacts along their operations and supply chains. By enhancing their capacity to operate, the project enables the sustained participation and growth of private sector actors as part of the climate-resilient development pathway for the region.

135. The proposal includes a number of innovative activity streams. These include:

- Expansion of EWS network and GLOF risk mitigation infrastructure to 10 new districts
- Demonstration of ecosystem-based adaptation measures to manage climate risks in a mountain context
- Community engagement and empowerment to monitor and manage their own climate risks, e.g. through the capacitation of hazard monitoring watch groups and expansion of community-managed disaster risk management funds, rather than relying solely on top-down or infrastructure-based measures. The community disaster risk management funds have traditionally been mostly used by community members to recover from GLOF related shocks and losses to their assets and livelihoods. GCF resources will be used by communities for addressing long-term adaptation needs. Communities will be sensitized towards integrating climate change adaptation measures into disaster preparedness activities.
- The development of comprehensive climate change action plans and policies at the sub-national level, a process which can be replicated in other provinces of Pakistan
- A holistic approach that combines institutional capacity building, hard and soft measures to respond to immediate threats, and livelihoods improvements to enable long-term adaptive capacity
- The utilization of information and communication technologies (ICTs) for disaster risk management and response and the further optimization of EWS networks and communication channels
- Strengthening and formalizing informal risk sharing structures (i.e. the Community Based Disaster Risk Management Fund) to support community resilience

#### E.2.4. Contribution to regulatory framework and policies

136. Output 1 will strengthen the capacity of sub-national institutional and regulatory systems to integrate climate change and disaster risks into planning and development. Specifically, it bridges gaps in the current regulatory framework surrounding climate-responsive planning and development:

- Horizontally, across relevant line departments. The MCC and NCCP provide a clear mandate to take action to reduce vulnerability to extreme weather and other adverse impacts of climate change in Pakistan. However, climate change and natural disasters cannot be compartmentalized simply as environmental issues. Rather, they are cross-cutting issues that must be integrated within the activities of other sectors, notably water and agriculture. This project will build the capacity of sub-national water and agriculture line departments (as well as EPAs, disaster risk management (DRM) bodies, and planning agencies) to utilize climate change and disaster information and mainstream associated risks into their development plans.
- Vertically, between the federal and sub-national levels. Though the KP EPA's Climate Change Cell is tasked with mainstreaming climate change into provincial policies, strategies, and actions, this process is incomplete (e.g. the absence of climate change in the SEAs), and the KP government lacks an analog or

complement to the NCCP. In GB, the federal NCCP applies and the GB government recognizes the need to protect investments and ecosystem functions against the impacts of climate change, but specific actions for GB are not yet fully outlined or implemented. Using sectoral plans as a basis, this project will produce integrated climate change policies and action plans (with particular inclusion of GLOF risks) at the sub-national level for KP and GB, which are linked to the federal NCCP.

137. The project will ensure coordination among different departments with regard to climate change response, and in developing integrated climate change action plans. Further, the project expands beyond the federal and sub-national regulatory systems to coordinate activities and information with local governments, NGOs, and community organizations, and engage them as key actors in climate and DRM initiative.

### E.3. Sustainable Development Potential

#### Wider benefits and priorities

##### E.3.1. Environmental, social and economic co-benefits, including gender-sensitive development impact

138. The fundamental benefit of the project is to save human lives and property through the operation of EWS and protective structures. Secondly, the project will promote slope stabilization through ecosystem-based interventions. Nevertheless, the project will also produce significant co-benefits in terms of income and business generation, community capacity-building, improved quality of human life, sustainable and climate-resilient land use, reversal of environmental degradation, and women's empowerment, as follows:

#### Economic benefits

139. The project will generate employment opportunities for local communities both during and beyond the timeframe of the project. Labor will be sourced locally for the construction of hard and soft infrastructure, such as gabion walls, check dams, spillways, river gauge stations, weather stations, and reforestation and slope stabilization programmes. The engagement of microcredit lenders and insurance companies, and development of an index-based insurance scheme, helps create an enabling environment to incubate enterprise growth, in coordination with other existing initiatives (e.g. through SMEDA and ASF). Climate change will have an impact on food security in areas where employment opportunities in ecosystem services sector are scarce. The project will support the communities in protecting their natural resources by strengthening the capacities to sustainably use ecosystem services and thus generating new businesses that are not entirely dependent on natural resources.

140. The project will strengthen local communities through GLOF awareness and response training and the formation of village hazard watch groups. In addition, community leaders will be direct beneficiaries from the technical skills development and training program of the project. The training will enable these community leaders to assist villagers in development and implementation of local land use plans. Local NGOs/CBOs will have an improved understanding of community based and participatory approaches for introduction and implementation of climate change adaptations at the local level. The formation of local community-based organizations will enable farmers and women to receive small grants for addressing GLOF impacts.

#### Environmental Benefits

141. The project produces a number of environmental and ecosystem co-benefits. Much of the natural state of slopes and floodplains in the target valleys has been degraded. Bioengineering and reforestation not only creates natural buffers for flooding and reduces risks of landslides, debris slides, and avalanches, but these activities can also restore the natural biodiversity of the region. The project will coordinate with other initiatives (e.g. the Mountains and Markets project) focused on alternative livelihoods and sustainable harvest of non-timber forest products (e.g. medicinal plants) to tie ecosystem conservation to income generation. Together, these activities help reduce dependence on natural resources, improve overall land productivity (both for pasture and farmlands), increase the functional integrity of the natural landscape, and reverse degradation of land and water resources, resulting in greater resilience to climate change impacts both overall and in the constituent productive areas.

142. Healthier ecosystems provide higher crop yields, strengthened agricultural practices, and reduced crop losses. Ultimately, this will contribute to enhanced food security and resilient livelihoods and ecosystems. GCF resources will also yield environmental benefits through strengthened ecosystem resilience and improved soil

retention.

143. Indirectly, the planting of trees will increase carbon absorption and, therefore, reduce the impacts of climate change. Secondly, the planting of trees to reduce landslide and provide soil protection will result, in time, in the reduction of infrastructure, including homes, being destroyed. Further benefits can then accrue, including reductions of raw materials needed to repair homes or build new homes and of waste material after homes are damaged. The prior two issues will also be direct results of the programme through the development of small-scale hard infrastructure, particularly when using environmental friendly construction materials.

**Social Benefits**

144. With respect to social benefits, the programme will provide the communities with improved information to allow them to make decisions prior to, during and post GLOF events. It will also provide valuable data that will allow for future planning in terms of structural planning of houses, the management of their agricultural crop, etc., as well as how communities need to adapt their current activities to meet the increasing threat of climate change. With this information, it is highly likely that lives will be saved and it will improve two-way communication mechanisms and inclusion of resilience building projects in the socio-economic planning process.

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146. The gender dimension will be taken into account throughout the project in order to better understand how women empowerment can strengthen project interventions and sustainable development in the targeted area. In this sense, the project will mainstream a gender perspective into the all activities and gender balance will be taken in to account when hiring and engaging the project team. Traditionally, women have passed on their skills in water and forest management and the management of biodiversity. Climate change affects women differently than men, and so climate strategies must consider gendered patterns in order to be effective. Through experience, women have acquired valuable knowledge to effectively contribute to the identification of appropriate adaptation techniques and it is important to understand how the gender approaches to strengthen sustainable livelihoods can also make initiatives more effective. In the targeted areas, women are primarily responsible for household tasks, including collecting firewood and water. Based on the Action Gender Plan, women quotas have been established for the active participation of women during the project implementation, from project management unit to all activities supported by GCF resources such as participation in DRM committees and village hazard watch groups and trainings provided on climate change, GLOF events, DRR, business development, slope stabilization programme, etc.

**E.4. Needs of the Recipient**

Vulnerability and financing needs of the beneficiary country and population

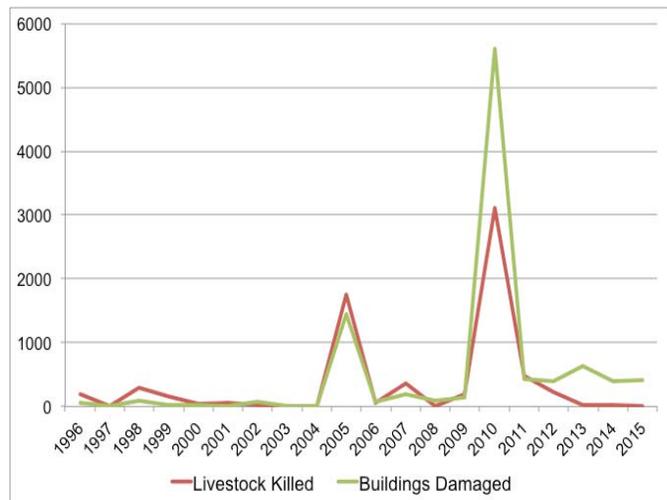
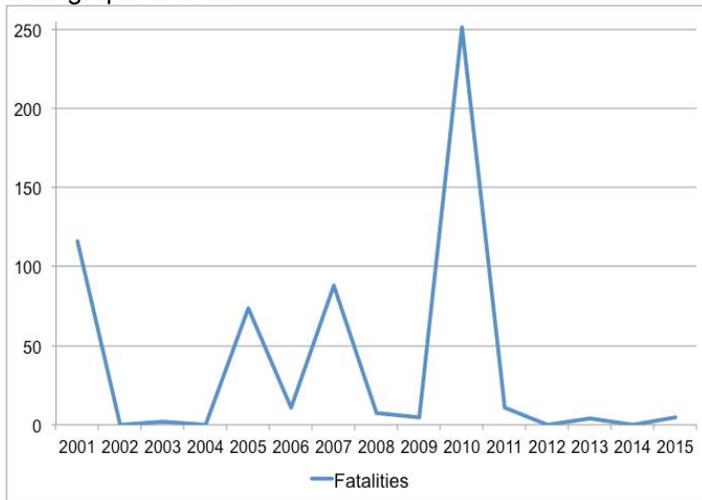
**E.4.1. Vulnerability of country and beneficiary groups (Adaptation only)**

147. According to a recent Climate Public Expenditure and Institutional Review (CPEIR) published in April 2015, climate change has been recognized in Pakistan as a core component of the economic growth model which is required to be addressed to foster economic growth, poverty reduction and well-being of the population. Indeed, Pakistan is highly threatened by changing monsoon patterns, melting glaciers (which normally supply 40% of inflow to the entire Indus River system and supports 90% of Pakistan’s agriculture sector and almost 30% of its power sector), increased occurrence of extreme weather events (floods and droughts), and decreased capacity of water reservoirs. Due to these impacts, the total costs of adaptation in Pakistan are currently estimated at around \$6.5 billion per year (2015) but expected to increase to \$26.4 billion by 2050 under a business-as-usual scenario, based on a UNFCCC National Economic and Environmental Development Study. Timely preparedness interventions are needed now to build adaptive capacity and reduce future climate damages.

148. Within Pakistan, the beneficiary region covered by this project is particularly vulnerable, as demonstrated

by recent events. From 16-22 July 2015, in the process of drafting this proposal, the region was struck by major GLOF events triggered by monsoon rains and rapid snowmelt. Initial assessments indicate that at least 285,000 people have been affected in Chitral District, KP alone, including 3 fatalities. Another 2 fatalities are reported from Diamer District, GB. Within the entire project region, at least 389 houses have been damaged (many completely destroyed) in addition to 17 bridges, 11 power stations, and 109 drinking water supply structures.

149. Since 1996, it is estimated that there have been a total of 575 human deaths, 7,028 livestock killed, and 10,121 buildings (homes, shops, hotels, schools) partially or completely damaged by GLOFs and related hazards within the 12 project districts, based on field reports prepared for this proposal. These are illustrated on annual basis in the graphs below.



#### E.4.2. Financial, economic, social and institutional needs

150. In spite of the adoption of the National Disaster Plan Response in 2010, Pakistan has not succeeded in building resilient communities and promoting disaster risk preparedness as demonstrated by the floods in 2010, 2011 and 2012 (J. Ahmad et al., 2014). The investments in disaster management from government, private sector, charities as well as international donors have been largely used for disaster recovery instead of prevention (M.A. Kahn, 2014). The 2010 flood resulted in US\$9.7 billion, representing 5.7% of Pakistan's GDP, however, the observation of institutional gaps and regulatory weaknesses revealed that these losses could have been highly reduced through improved disaster preparedness and response (S. Deen, 2015).

151. Vulnerable populations are not able to face the costs of adaptation due to their low resources and the high costs of adaptation. The average household income within the 37 project communities is estimated at US \$1,126 per year, compared to a national average of US \$3,796 per year. Based on one study of multi-dimensional poverty<sup>10</sup>, 38.8% of all people in the 12 districts covered by the project are living in poverty, compared to a national poverty index of 27.8% (See Annex XIII).

152. Financial resources at the institutional level are also severely lacking to manage this kind of climate vulnerability, and external financing, particularly through grants, is vital. G-B is entirely dependent on yearly grants from the Federal Government; it does not have a revenue base of its own. However, G-B has the most focused policy commitment for climate change with the highest expenditure. Hence, there is a critical need to allocate external funds on climate change to interventions in GB and it is evident that the prioritization of climate change and the commitment are strong.

153. The geographic location of KP makes it particularly vulnerable to gradual rising temperatures. This creates

<sup>10</sup> Arif, G.M. *Poverty Profile of Pakistan*, produced by the Pakistan Institute of Development Economics (PIDE) and the Benazir Income Support Programme. Available at <http://www.bisp.gov.pk/PIDEReports/poverty.pdf>

the need for fiscal space for an effective climate response. The poor and uncertain law and order and security have taken a toll on the province's economic activity and shrunk the tax base. However, greater than 98% of climate-related investments by KP are adaptation related, which is high compared to the Federal level. Resorting to external financing, whether foreign loans of Federal Government loans, runs the risk of creating debt for future generations. Hence external grants to cover adaptation needs are critical.

154. The need for an effective EWS and institutional capacity in the country has been critical – even though a warning system was available during the 2010 floods, only 10% of the affected villages had received advanced warning due to limited technical capacity of the system and inability of district authorities to transmit information to the community level (P. Gonzalez, et al., 2014). The project, by expanding the previous interventions carried out by GLOF I to improve technical capacity and community-based EWS and the GLOF response measures, will ensure that the targeted vulnerable populations receive adequate and timely information that will ensure their preparedness and response in future flash flood events.

155. As of today, institutions still need to be strengthened to improve the resilience of the populations to climate change. The severity of the impacts of the recent floods has been an indicator of this institutional failure, in particular due to the improper implementation of adaptation plans (M. Shabbir, et al., 2014). In addition, flood-prone areas are large and numerous in Pakistan, which implies a unique focus for preparedness activities; however, Pakistan is not yet prepared to cope with disasters of the magnitude of GLOF events (J. Karamat, 2010). By strengthening sub-national institutions, the project will ensure better response and capacity to alleviate the harm from these natural hazards.

## **E.5. Country Ownership**

Beneficiary country (ies) ownership of, and capacity to implement, a funded project or programme

### **E.5.1. Existence of a national climate strategy and coherence with existing plans and policies, including NAMAs, NAPAs and NAPs**

156. Pakistan is signatory to several multilateral agreements covering environment, including the three major Rio1992 agreements of Conventions on Biological Diversity (CBD), United Nations Framework Convention on Climate Change (UNFCCC), and the convention on Combating Desertification (UNCCD).

157. The Public Sector Development Programme, under the MCC, is the main instrument for providing budgetary resources for development projects and programmes and its budget was US \$ 115 million in 2013-2014. In addition, the Ministry has the Climate Finance Unit that is designed as a focal authority responsible for coordinating and implementation of the climate-related initiatives that will chair the Project Board.

158. The goal of the Climate Change Policy of Pakistan (2011) is to ensure that climate change is mainstreamed in the economically and socially vulnerable sectors of the economy and to steer Pakistan towards climate resilient development. The Policy also recommends setting up appropriate mechanisms to monitor the development of glacial lakes and develop evacuation strategies in case of Glacial Lake Outburst Floods (GLOF) for vulnerable areas in Pakistan. The proposed GCF project will directly support the federal Climate Change Policy in this regard.

159. The project is also aligned with the "Vision 2030" elaborated by the Pakistan Planning Commission in 2007, which aims for equitable sharing of environmental benefits, increasing community management of national resources, and integrating environmental issues into socio-economic planning to achieve sustainable development.

160. The Government of Pakistan (GoP) ratified the National Climate Change Policy (NCCP) in 2012, which aims to ensure that CC is mainstreamed in the economically and socially vulnerable sectors of the economy, and to steer Pakistan towards climate-resilient development. In 2012, the Ministry of Climate Change (MCC) expressed an interest in undertaking a Climate Public Expenditure and Institutional Review (CPEIR) to assess the level at which the GoP has so far been able to respond to the challenges of CC, and to identify opportunities for further strengthening its response.

161. The proposed project has been designed and developed with full ownership of the GoP through a series of

consultations, at community, district and national levels. As the proposed project aims to scale up current ongoing activities, consultations were carried out with diverse stakeholders including government ministries and departments, NGOs, Civil Society, private sector and development partners to obtain input and feedback into the development of the proposal. All key partners were consulted individually as well as collectively to gain and in-depth understanding of the needs and also solicit ideas on how the needs could be addressed through the proposal. The National Designated Authority (NDA) was involved in the entire process. Further details on stakeholder engagement are provided in Section E.5.3. Noting that the design of the proposal has taken into consideration the national priorities and relevant strategies highlighted above, the NDA has issued a 'no objection' letter for the submission of the proposal to the GCF. As an expression of commitment and ownership, the regional governments also provided co-financing for the project.

#### E.5.2. Capacity of accredited entities and executing entities to deliver

162. UNDP is one of the world's largest brokers of climate change grants for developing countries, with a current portfolio of \$1.34 billion in mitigation and adaptation grant-financed projects in over 140 countries, supported by co-financing of \$6.7 billion.

163. UNDP Pakistan-Environment and Climate Change Unit is currently working with the Ministry of Climate Change on a number of projects such as:

- Mountain and Markets
- Glacial Lakes Outburst Floods (GLOF)
- IS project- Montreal Protocol
- Sustainable Land Management project
- Comprehensive reduction and elimination of persistent organic pollutants in Pakistan

164. UNDP Pakistan has also completed many projects with the MCC in the areas that have been mentioned as separate components under the proposed GLOF-2 project; those earlier UNDP interventions with the government have proved to be very successful and have also been replicated in other areas by the government. Under the GLOF-2 project, UNDP and the government of Pakistan intends to extend their partnership to disaster-prone areas that remain unreached by past efforts but where the threat from GLOF events is imminent.

#### E.5.3. Engagement with NDAs, civil society organizations and other relevant stakeholders

165. Local support organizations, councils, and other stakeholders were consulted during the development of this proposal to identify the appropriateness, need, and feasibility of various activity options, as well as to select the communities (identified above) most in need of the project as direct beneficiaries, based on physical and socioeconomic vulnerability (See Annex XIII). This programme presents a complement to the activities of local stakeholders in the region, which primarily focus on livelihoods development, agriculture, water security and sanitation, and business incubation. Disaster risk management and long-term resilience is a critical and fundamental requirement for the success of all of these activity streams, and local stakeholders recognize the value that would be added by the initiatives of this programme, from providing the enabling regulatory environment to build capacity for climate change and DRM, to hard and soft adaptation structures that will help protect, over the long term, the assets that these stakeholders create.

166. During the project development phase the provincial governments (GB and KP) and households living in the project area were consulted and interviewed to collect lessons learned from the initial project. In KP the consultation meetings were held on the 20th, 22nd, 23rd and 24th of June 2015. In Gilgit the meetings were held on the 20th, 22nd, 24th and 27th of June 2015. Other meetings were organized on the basis following the proposal development with different line departments, stakeholders at provincial level and on the national level the team had around 4 meetings weekly during the entire development process.

167. The funding proposal was prepared in a close cooperation with the NDA. On the 26th of May the initial project idea was discussed with the NDA and the idea was approved by the national authority. The NOC letter was received on the 1st of July and the concept was submitted for comments from the NDA and provincial governments before it was submitted to the GCF on the 10th of July. The funding proposal was submitted for comments and approval to the NDA on the 27th of July and the final proposal was submitted on the 1st of August to the GCF. A delegation from the government of Pakistan had a mission to meet GCF to discuss the readiness and this GLOF

proposals between 15th and 17th of September in GCF HQ in Songdo, South Korea.

168. In turn, the local knowledge, support, and experience of these stakeholders will be leveraged to support the implementation and long-term sustainability of programme activities. A multi-sectoral stakeholder committee will be established in each of the district to support the implementation of the project activities, facilitate dialogue on GLOFs and coordination among all stakeholders. The implementation will include a system for effective monitoring and enforcement of the process and delineation of roles and responsibilities among key stakeholders. A brief description of some key stakeholders active in the region and their involvement in the programme is outlined below:

- Research and Academic Institutions, Karakoram International University Gilgit, Abdul Wali Khan University, Chitral, KPK: provide courses on Glaciology, Snow Hydrology, Meteorology and Natural Disaster Management etc. and technical support to identify climate resilient adaptation and mitigation interventions
- NGOs and CBOs (Aga Khan Foundation, WWF-Pakistan, FOCUS International, PRCS, Rescue 1122, IUCN & Dubani Development Organization etc.): provide technical and financial support, share their experience of disaster relief, rehabilitation and community mobilization. They will also be enlisted to support the field level implementation of programme activities in their respective areas of expertise.
- Communities (women, men, and youth): the main beneficiaries of the Programme interventions and improvements are the local communities, farmers and pastoralists. They will actively be engaged in planning and implementation of field activities that enhance their livelihoods and increase their resilience to climate change impacts and mitigate natural disasters. During consultation from the communities, women were particularly targeted to gain their input and their voices has been recorded and given preference during each stage of the proposal development. Mechanisms to ensure that women's perspectives and needs are continually sought out and addressed will be instituted throughout the project. Mainstreaming of gender considerations will form a component of all trainings and knowledge-sharing activities associated with project implementation.

## **E.6. Efficiency and Effectiveness**

Economic and, if appropriate, financial soundness of the project/programme

### **E.6.1. Cost-effectiveness and efficiency**

#### **Adequacy of financing structure**

169. The GCF grant resources sought for this project will help remove key barriers to support investments which, due to the primarily public good nature, do not entail any revenue generation or significant cost recovery during the project duration. The one exception is the community-based revolving fund financed by adaptation fund (Output 2.4). Even in the community-based revolving fund, cost recovery is primarily aimed to sustaining the financial intervention. The financial and technical barriers in Pakistan that prevent capacity strengthening of sub-national institutions on climate change and resilience, scaling up of community-based EWS and GLOF response measures and reduced vulnerabilities of critical community resources can only be removed by public investment financed by grant resources. The Government is also seeking these funds from global financing instruments such as GCF. As such, the public goods nature of this project's outputs does not entail revenue generation or significant cost recovery from the project's direct and indirect beneficiaries during the project duration. Hence, a detailed financial analysis of this project is not deemed pertinent.

170. The full concessionality of GCF resources requested by the Government of Pakistan will be paramount to remove barriers in the provision and expansion of public goods being proposed: EWS and flood control small-scale infrastructure. In addition, interventions related to the restoration of forest ecosystem services, due to its scale and approach, do not entail revenue generation or cost recovery during the project duration.

171. The financial and technical barriers to address the limited resources, capacity, and logistical feasibility of PMD to expand EWS in remote mountain communities can only be removed by public investment financed by grant resources from international development institutions.

172. Given the small size in population, socio-economic standards and remoteness location of these communities threaten by GLOF risks, Pakistan's private sector has no incentive to invest in the proposed project;

therefore it has been proven difficult to receive any co-finance as the project has not any direct and immediate revenue generation potential. However, the project will engage with the private sector, especially micro-credit lenders, insurance companies, SMEs to expand the work of the proposed community-based disaster risk management fund.

173. The proposed project will benefit 696,342 in 37 communities in 12 districts resulting in having a US\$60.54 cost per beneficiary (including co-finance). The proposed interventions, using GCF resources will generate economic benefits making the project economically viable (See Section F.1 and Annex XII) with an economic internal rate of return (EIRR) of 24.6%.

**Efficiency and Effectiveness**

174. The proposed project is building upon the experiences, data, information and coordination networks created by the GLOF I project financed by the Adaptation Fund. By expanding scope of proven interventions, based on existing institutional and management frameworks, the proposed project is more cost-effective than the implementation of a separate new initiative. Additionally this approach builds upon strengthened local capacities and previous experiences that will maximize effectiveness of proposed interventions on which future investments can build on. Synergies between the proposed project and current PMD’s EWS for GLOF risks currently covering two districts will be used to enhance the cost-effective hiring of specialized technical staff, coordination of data and information, training (operations & maintenance of equipment; forecasting techniques; tailored advisories and warnings), and effective use of communications and standard operating procedures.

E.6.2. Co-financing, leveraging and mobilized long-term investments (mitigation only)
Not applicable
E.6.3. Financial viability

**Expected economic rate of return**

175. The proposed interventions are public goods and do not involve revenue generation or cost recovery from the project's direct and indirect beneficiaries. For this reason, a financial analysis of this project is not considered pertinent. The expected economic internal rate of return is 24.64% for this project (see Annex XII for details).

**Financial viability in the long run beyond the Fund intervention**

176. MCC through its divisions will provide technical and management support to implement interventions on the ground support to the proposed project through its budget allocations. PMD will incorporate in its general operation budget all associated costs related to the involvement of PMD in the EWS after the project is completed. This will include the incorporation of the AWS and river discharges sensors that will provide information for the local EWS as part of PMD's monitoring network, as such, the gathering, analysis, and dissemination of all climate-related information to be generated though the project will be done as part of PMD's functions during and after the project conclusion. This will allow for the continued generation of information to feed the EWS, hydrological modelling, as well as generation of flood scenarios for GB and KP.

177. The community-based revolving funds under DRM cells (Input 2.4.1) which will be capitalized by a one-time endowment of \$50,000 from GCF resources, will provide micro-credit to support GLOF response and preparedness activities within these communities only when other sources of risk insurance or credit are lacking, and relief from the central government is slow to reach. The fund will only disburse payouts preceding or following an emergency, and is repaid over time by its enrollees. The credit terms typically are – interest rate of 10% per annum and a tenor of 1-1.5 years. The fund management cost is 10% which needs to be recovered from the fund. Given that this is non-profit making activity funded by a grant, the micro-credit scheme's interest rate only needs to factor-in fund management costs, inflation and loan default risks. However, since the interest rate of 10% covers only the fund management cost, the net fund resources available for on-lending to communities will keep reducing annually. Nonetheless, this reduction is likely to be small enough to ensure the fund's financial sustainability at a reasonable level, if loan repayment rates are 100%. If repayment rates are lower, the available fund resources to communities will be lower and hence, it is important for the fund managers to ensure that repayment rates remain high, ideally 95% and above to ensure financial sustainability of the fund. If repayment rates are 50% or below, the fund resources will deplete rapidly and won't be sufficient to meet much of the communities' requirements beyond the first 1-2 years of the project duration. Based on evidence of the ongoing instrument in place in Pakistan, the risk of default is low.

**E.6.4. Application of best practices**

178. UNDP and the Government of Pakistan have implemented a project on managing risks associated with GLOF, with financing from the Adaptation Fund. This initiative targeted communities in two (2) districts. The proposed project is planning to expand the scope of the EWS to 12 districts, building upon all the experiences, data, information generated and coordination mechanism established. This baseline will prove beneficial when acquiring and installing AWS and river discharge sensors, when developing hydrological modelling and flood scenarios and when organizing the community around watch groups to disseminate early warnings. Using similar technology as in GLOF I project, PMD will have the technical capacity to replace, maintain and retrofit the technology.

179. The proposed project also adopts best practices in community engagement based on the support already extended to Pakistan. Proposed project will train communities on GLOF preparedness and response, expand the village hazard groups, provide inputs for land-use and water management techniques and to restore ecosystems services using established channels and platforms during baseline.

**E.6.5. Key efficiency and effectiveness indicators**

<i>GCF core indicators</i>	Estimated cost per t CO <sub>2</sub> eq, defined as total investment cost / expected lifetime emission reductions (mitigation only)
	Not applicable
	Expected volume of finance to be leveraged by the proposed project/programme and as a result of the

	Fund's financing, disaggregated by public and private sources (mitigation only)
	Not applicable
Other relevant indicators (e.g. estimated cost per co-benefit generated as a result of the project/programme)	

## F.1. Economic and Financial Analysis

180. Key Output: The “Scaling-up Glacial Lake Outburst Flood (GLOF) risk reduction in Northern Pakistan” project aims to scale up interventions that were shown to have impact in a pilot project phase to help reduce the vulnerability of mountain communities in Pakistan to climate related flood damages. The economic analysis quantified a sub-set of project life-span benefits and costs to produce an economic net present value and an economic internal rate of return. The project is constituted of two components as described in this document. The economic cost benefit analysis covers all 2 components: component 1 (support policy-making efforts and strengthen technical capacities to address GLOFs risks) and component 2 (which reduces community vulnerability to climate related flood risk).

181. Quantified Benefits and Costs: The benefits we have included in the analysis are a subset of the total possible benefit stream generated by the intervention. Estimated benefits associated with Component 2 include (1) deaths averted by the installation of the early warning system; and (2) housing stock damage averted by installation of flood protection works, and (3) improved farm profit from the livelihoods intervention through improved irrigation. The bulk of benefits are generated by deaths and housing stock damage averted. We exclude any gains from the community endowment fund as it is unclear what (if any) the investment strategy for that fund is. For a more complete discussion for quantified benefits, including benefits resultant from averted deaths, refer to the Economic Analysis in Annex XII (b).

182. Net Present Value (NPV) and Economic Internal Rate of Return (EIRR): The project has a positive net present value of \$11,064,354 and an with an economic internal rate of return of 15% over a presumed 25 years project life span (which includes 5 years of project implementation and 20 years of operation) using a 10% discount rate (all values in 2014 terms). Under Component 2, sub-activity EWS generated a net present value of \$10,290,270 with an economic internal rate of return of 18%, while sub-activity Livelihoods had a net present value of \$4,737,938. The bulk of costs is incurred during the 5 years of the project implementation. Moreover, operational and maintenance expenditures (as specified for the five years of project implementation) were carried forward for the full life of the project with an assumption that half of those were labor costs.

183. Sensitivity Analysis: The drivers of the benefit value stream are the efficacy of the early warning system, flood protection works and the benefits due to expansion in irrigation (all sub-activities of project Component 2). The efficacy of all 3 systems has been set to a conservative 50% (based on literature). In terms of switching values, a reduction in efficacy of the early warning system from 50% to 3% results in zero net present value while even a reduction in efficacy of the flood protection works from 50% to 0% results in a positive net present value (the flood protection works would have to be actively destructive for a net present value of zero). So, the early warning system’s efficacy is crucial to generating real benefits from this project as a smaller “drop” in assumed efficacy results in dramatic reductions in the benefit stream.

## F.2. Technical Evaluation

184. This project has been designed by expanding work of scope from previous GLOF I project to provide EWS to communities prone to GLOFs risks with a focus on policy-level activities and on sector critical protecting livelihoods and reducing the impacts of GLOF and climate related risks: integrate climate change adaptation into development plans, EWS for GLOF risks combined with community-based early warnings, small-scale infrastructure to protect lives and assess from GLOF and support livelihoods of subsistence farmers.

185. The technological approaches to deliver these services have been specifically designed based on the experiences and results from GLOF I project (See engineering report from baseline project interventions in Annex II) that fit the technical capabilities of PMD to expand its AWS network and reaching out to remote communities. Technical specifies, costs of operating and maintaining AWS after project closure, providing human resources to operate the news AWS have been discussed and agreed with PMD ensuring that the project will be providing services during and after projects ends.

186. New AWS will measure temperature, Humidity, wind speed, wind direction, solar radiation (incoming & outgoing), Precipitation (rainfall, snow scale). Precipitation in the form of rainfall is also a crucial indicator for the GLOF

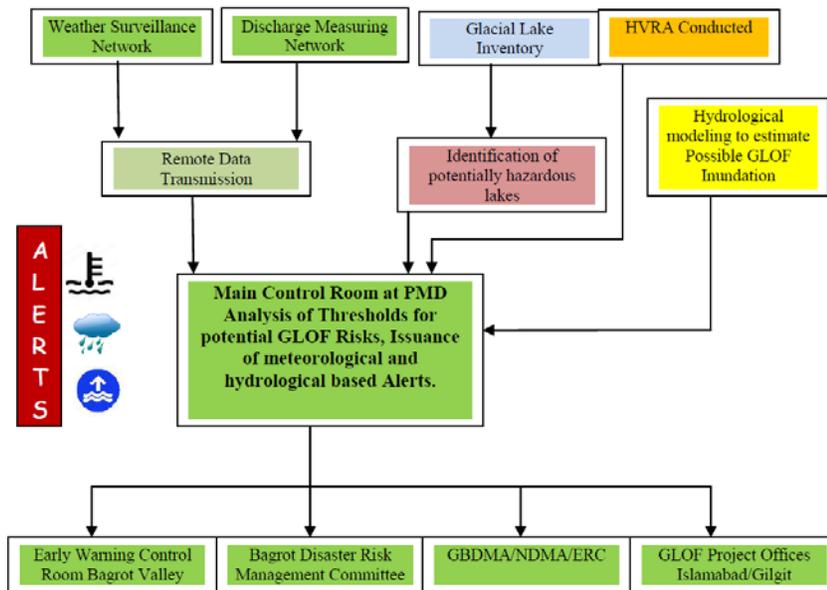
triggering phenomena. Thus real time data display from the installed stations will be available simultaneously at PMD Islamabad Hq. office, Met office GB and KP t, GLOF Project offices, and Disaster Management office in GB and KP. Based upon the continuous hydro-meteorological monitoring in the target valley with the help of installed stations, glacial lakes outburst probability will be estimated. The extended network will provide more accurate data from diverse geolocations that will help to define alerts thresholds and lead time more precisely.

187. The project will further strengthen the capacity for processing, validating, and interpreting river discharge and meteorological information at the national (PMD), and at the department level by GB Disaster Management Authority (GBDMA) and KP Disaster Management Authority (KPDMA). The capacity to better analyze climate data and river flows' changes over time will enable more accurate predictions for the intensity and breadth of GLOF.

PMD data analysis

188. Flow Diagram of PMD Responsibilities:

Flow Diagram of PMD Responsibilities



**F.3. Environmental, Social Assessment, including Gender Considerations**

189. This project has completed the UNDP’s Social and Environmental Screening Procedure (see SESP attached as Annex VI). This screening was undertaken to ensure this project complies with UNDP’s Social and Environmental Standards. UNDP’s Social and Environmental Standards were reviewed by the GCF accreditation panel and deemed sufficient to accredit UNDP to submit low and medium risk projects. The overall social and environmental risk category for this project is moderate as highlighted below. Specific project risks are listed in Section G below. Appropriate mitigation measures are included within the following section.

190. The project will have a number of environmental impacts which will be temporally and spatially restricted.

191. During tree planting for slope stabilization, it will be necessary to undertake earth works to re-stabilized areas where alternative activities has previously been undertaken. A remediation plan will be conducted based on the target area rapid analysis to be prepared. All the seven districts are located in dry temperate zone where the precipitation is quite low and is received in the winter season and mostly in the form of snow. Planting in dry zone will be successful

only with water harvesting system (hillside ditches & conservation contour trenches). The tree and bush species suitable for planting in all the districts include: Pistacia khinjak , Fraxinus xanthozloides (Wild Ash), Prunus ebernia (Wild almond), Tamarix gallica, Elaeagnus hortensis (E. angustifolia), Ailanthus altissima, Melia azadiracta, Gleditsia triacanthos, Cupressus arizonica ( at the upper reaches), Cedrus deodara (deodar) (at the upper reaches), Prosopis glandulosa (successful plantation in Quetta valley Balochistan), Atriplex canescens (Four wing salt bush), Atriplex lentiformis (Quil salt bush), A. numularia, Sea-buckthorn(Hipophae sp.), Capparis spinosa (Caper), Sophora sp., Artemisia sp. ,Fugic sp. (Shatshakh), Vitex augnus , Daphne mucronata, Astragalus oplites, Berberis calliobotrys, Ephedra intermedia, Rosa webiana, Rubus anatolicus, Haloxylon griffithii.

192. The suitable tree species for planting in districts Mansehra, Swat and Dir of KPK include; Cedrus deodara, Pinus wallichiana (blue pine), Pinus roxburghii (Chir pine), Quercus spp.(Oak), Alnus nitida, Poplar species(Populus deltoides, P. alba, P. ciliata) at moist sites, Willow species (Salix tetrasperma, S. alba, S. acmophylla) at moist sites, Robinea pseudoacacia (black locust), Ailanthus altissima , Iple Iple ( Leucanea leucocephalla), Mulberry species( Morus spp).

193. District Kohistan is located in the transitional zone between moist temperate and dry temperate zone and the suitable tree species are there are: Quercus spp. (Oak) Olea cuspidata, Acacia modesta, Pistacia khinjak in the lower reaches and in the upper reaches Cedrus deodara and blue pine (Pinus wallichiana) and chir pine (P. roxburghii). Among the exotic Ailanthus altissima and honey locust (Gleditsia triacanthos )

194. Similarly, during the installation of rock gabions, protection walls, check dams, earth works to prepare for the foundations will be required. Prior to undertaking any activities with respect to the design and location of hard infrastructure, appropriate modelling and detailed design will be undertaken to ensure the location of the proposed infrastructure is the right location. The earth works will move sediment that, if not properly contained, may enter the aquatic environment and/or result in land slips. To ensure that the sediment is not mobilized through either wind or more specifically water movement, it will be necessary to prepare an erosion control sediment plan and install silt curtains to restrict sediment movement. The plan should contain aspects including but not limited to the installation of sediment curtains to reduce sediment movement and the covering of sediment where practicable. All works should be undertaken in the autumn period to reduce the potential impacts from GLOF.

195. Overall, it is expected that the programme will have some environmental impacts although these can be mitigated effectively through appropriate management measures. The programme will have significant environmental benefits in the short to long term through the improvement of flood mitigation, improved water quality through the minimization of sediment loss, hillslope protection, the absorption of greenhouse gas emissions and most importantly, through providing communities with climate information that will result in lives being saved.

196. There are limited social impacts associated with the project. It is understood that the inhabitants of the area are indigenous and therefore special considerations need to be made to ensure impacts are alleviated. Importantly, no people will be displaced or relocated, however there will be a reduction in the availability of grazing land through the rehabilitation and planting of vegetation. This will overall improve the livelihoods of people working in and around the rehabilitated forests and increase their income potential. Where available, local people will be employed to undertake propagation, planting and maintenance of the trees, thereby providing a social benefit to the community. Further the trees will act as a buffer during storm, events and therefore reduce the potential loss of lives and assets. Where the impacts cannot be mitigated, a Livelihood Restoration Plan and Indigenous Peoples' Plan will be developed.

197. To ensure that the project will not adversely impact gender, particularly the needs of women in the targeted communities, gender considerations will be mainstreamed into all trainings and knowledge-sharing activities associated with project implementation. For example, opportunities for women to take leadership roles will be assessed, such as to provide home garden-based livelihood trainings. Early warning system communication design will apply gender-particular considerations to the dissemination of disaster warnings and post-GLOF support. Local government entities in charge of managing post-GLOF support will be trained in order that financial support can flow to activities that meet the needs of women. Likewise, operations and management plans for EWS are subject to

managerial handover to local governments in collaboration with communities. Women's voices will inform the management at the local level of EWS and the maintenance committees will provide an additional avenue for women to assume leadership roles.

#### F.4. Financial Management and Procurement

198. The financial management and procurement of this project will be guided by UNDP financial rules and regulations available here: [https://info.undp.org/global/documents/frm/Financial-Rules-and-Regulations\\_E.pdf](https://info.undp.org/global/documents/frm/Financial-Rules-and-Regulations_E.pdf).

199. Further guidance is outlined in the financial resources management section of the UNDP Programme and Operations Policies and Procedures available at <https://info.undp.org/global/popp/frm/Pages/introduction.aspx>.

200. UNDP has comprehensive procurement policies in place as outlined in the 'Contracts and Procurement' section of UNDP's Programme and Operations Policies and Procedures (POPP). The policies outline formal procurement standards and guidelines across each phase of the procurement process, and they apply to all procurements in UNDP. See here: <https://info.undp.org/global/popp/cap/Pages/Introduction.aspx>.

201. The project will be implemented following the National Implementation Modality (NIM) following NIM guidelines available here: <https://info.undp.org/global/documents/layouts/WopiFrame.aspx?sourcedoc=/global/documents/frm/National%20Implementation%20by%20the%20Government%20of%20UNDP%20Projects.docx&action=default&DefaultItemOpen=1>

202. UNDP will ascertain the national capacities of the implementing partner by undertaking an evaluation of capacity following the Framework for Cash Transfers to Implementing Partners/Executing Entities (part of the Harmonized Approach to Cash Transfers - HACT).

203. All projects will be audited following the UNDP financial rules and regulations noted above and applicable audit guidelines and policies.

204. The NIM Guidelines are a formal part of UNDP's policies and procedures, as set out in the UNDP Programme and Operations Policies and Procedures (POPP) which are available here: <https://info.undp.org/global/popp/Pages/default.aspx>. The NIM Guidelines were corporately developed and adopted by UNDP, and are fully compliant with UNDP's procurement and financial management rules and regulations.

205. The national executing entity, the Ministry of Climate Change - also referred to as the national 'Implementing Partner' in UNDP terminology - is required to implement the project in compliance with UNDP rules and regulations, policies and procedures (including the NIM Guidelines). In legal terms, this is ensured through the national Government's signature of the UNDP Standard Basic Assistance Agreement (SBAA), together with a UNDP project document which will be signed by the Implementing Partner to govern the use of the funds. Both of these documents require compliance. Prior to signature of the project document, all national Implementing Partners need to have undergone a Harmonized Approach to Cash Transfer (HACT) assessment by UNDP to assess capacities to implement the project. This is in line with standard UNDP policies and procedures; a thorough capacity assessment of the "Executing Entity" (Implementing Partner, in UNDP terminology) will be carried out prior to commencement of implementation (after assurance of funding). This assessment (conducted by an independent audit firm includes an assessment of accounting, procurement, reporting, internal controls, etc and a risk rating is attributed. UNDP then advances funds to the IP where the risk is determined to be low. In cases where risk rating is low, the Implementing Partner will sign and manage contracts with various sub-contractors (called responsible parties in UNDP terminology). When the risk rating is medium or high, UNDP will provide services in the areas where capacity assessment results are medium to high risk. A separate bank account for the project will be opened which will help in managing the funds flow, audit etc. During implementation, UNDP will provide oversight and quality assurance in accordance with its policies and procedures, and any specific requirements in the Accreditation Master Agreement (AMA) and project confirmation to be agreed with the GCF. This may include, but is not limited to, monitoring missions, spot checks, facilitation and participation in project board meetings, quarterly progress and annual implementation reviews, and audits at project level or at Implementing partner level on the resources received from UNDP. UNDP

carries out one spot-check every quarter and there is a regular annual independent audit by an external audit team which continues throughout the project period and concludes by a final audit after the project is completed.

206. The Harmonized Approach to Cash Transfer (HACT) framework consists of four processes: (1) macro assessments; (2) micro assessments; (3) cash transfers and disbursements; and (4) assurance activities. Assurance activities include planning, periodic on-site reviews (spot checks), programmatic monitoring, scheduled audits and special audits. During micro-assessment, there can weaknesses identified for which actions are required to addresses the gaps. When a spot check finds that the gaps are not addressed it will mean that the level of assurance activities will have to remain higher and modalities of engaging with that implementing partner will have to be reviewed if necessary. All details are available here: <https://undg.org/wp-content/uploads/2015/02/2014-UNDG-HACT-Framework-English-FINAL.pdf>.

207. The project will be audited in accordance with UNDP policies and procedures on audits, informed by and together with any specific requirements agreed in the AMA currently being negotiated with the GCF. According to the current audit policies, UNDP will be appointing the auditors. In UNDP scheduled audits are performed during the programme cycle as per UNDP assurance/audit plans, on the basis of the implementing partner's risk rating and UNDP's guidelines. A scheduled audit is used to determine whether the funds transferred to the implementing partner were used for the appropriate purpose and in accordance with the work plan. A scheduled audit can consist of a financial audit or an internal control audit.

208. GCF resources will be provided to the implementing partner, less any agreed cost recovery amount. Under UNDP's national implementation modality, UNDP advances cash funds on a quarterly basis to the implementing partner (executing entity) for the implementation of agreed and approved programme activities, in accordance with UNDP standard policies and the NIM Guidelines. These disbursements will be based upon approved annual work plan and on quarterly basis on the submission of quarterly work plan and other required documents for quarterly release of funds. The implementing partner reports back expenditure via a financial report on quarterly basis to UNDP. Any additional requirements will be as in accordance with the AMA as and when it is agreed.

### G.1. Risk Assessment Summary

209. Risk factors associated with the project implementation include both technical and operational aspects to acquire, install and monitor AWS and river discharge sensors; and social and environmental due to the implementation of climate-resilient livelihoods initiatives and construction of small-scale protective infrastructures against GLOF risks. The risk may affect the sedimentation movement during construction of small-scale infrastructures and during forest rehabilitation activities. Other risks may affect the lack of commitment from communities where restoration activities, alternative livelihoods and EWS are planned.

210. The proposed project includes several mitigation measures to address these risks. This mitigation strategies include preparing an erosion control sediment plan and install silt curtains to restrict sediment movement during construction and reforestation activities. To encourage communities' ownership and participation in proposed interventions, the project will be implemented respecting social organization, norms and traditions in GB and KP.

### G.2. Risk Factors and Mitigation Measures

*Please describe financial, technical and operational, social and environmental and other risks that might prevent the project/programme objectives from being achieved. Also describe the proposed risk mitigation measures.*

#### Selected Risk Factor 1

Description	Risk category	Level of risk	Probability of risk occurring
Sediment movement during construction activities of hard infrastructure	Social and environmental	Low (<5% of project value)	Medium

#### Mitigation Measure(s)

Prior to undertaking works, UNDP will prepare an erosion control sediment plan and install silt curtains to restrict sediment movement during construction activities. Design and appropriate hydrological modeling will be undertaken to ensure the infrastructure is ideally located. Further, all activities will be undertaken in autumn to reduce the impacts of GLOF events.

#### Selected Risk Factor 2

Description	Risk category	Level of risk	Probability of risk occurring
Sediment movement during forest rehabilitation activities	Social and environmental	Low (<5% of project value)	Low

#### Mitigation Measure(s)

Prior to undertaking works, UNDP will prepare an erosion control sediment plan and install silt curtains to restrict sediment movement during planting activities. Further, where possible, all planting will be undertaken in autumn to reduce the impacts of GLOF events although where this is not possible due to plant survival, appropriate forecasting should be followed.

#### Selected Risk Factor 3

Description	Risk category	Level of risk	Probability of risk occurring
Reduction in the availability of land through the	Social and	Low (<5% of	Low

rehabilitation and planting of vegetation	environmental	project value)	
Mitigation Measure(s)			
Carefully planning and stakeholder consultation will be undertaken prior to the planting to ensure peoples do not lose their livelihoods. To ensure there is limited impact on people, diversification is planned.			
<b>Selected Risk Factor 4</b>			
Description	Risk category	Level of risk	Probability of risk occurring
Failure of infrastructure constructed as part of the programme	Technical and operational	Low (<5% of project value)	Low
Mitigation Measure(s)			
Prior to construction, all structures will be designed based on site evaluations. Secondly, structures will be built during late summer and autumn to remove the potential for damage during construction. All structures will be designed and built consistent with international good engineering practice so as the structures are resilient to these events.			
<b>Selected Risk Factor 5</b>			
Description	Risk category	Level of risk	Probability of risk occurring
Lack of commitment from communities where restoration activities, alternative livelihoods and EWS are established undermines the effectiveness of the GCF project demonstrations.	Social and environmental	Medium (5.1-20% of project value)	Medium
Mitigation Measure(s)			
The GCF project will avoid a 'top down' approach and seek to create community ownership of the project through community training and encouraging participation in project activities.			
<b>Selected Risk Factor 6</b>			
Description	Risk category	Level of risk	Probability of risk occurring
Climate shocks occurring during the design and implementation phase of the GCF project result in disruptions to restoration activities and severely affect communities, prior to the EWSs being established.	Social and environmental	Low (<5% of project value)	Low
Mitigation Measure(s)			
Disaster mitigation and response activities will be prioritized at the target communities whilst the EWS is being established.			

<b>Selected Risk Factor 7</b>			
Description	Risk category	Level of risk	Probability of risk occurring
A disaster takes place and the EWS system fails to alert the population on time.	Social and environmental	Medium (5.1-20% of project value)	Medium
Mitigation Measure(s)			
Detailed planning and practical training with the stakeholders and regular system maintenance to ensure peoples do not lose their livelihoods and to ensure there is limited impact on people.			
<b>Selected Risk Factor 8</b>			
Description	Risk category	Level of risk	Probability of risk occurring
Access and Maintenance of Equipment could be difficult as target area is remote. Limited capacity of the community members in maintenance of equipment as well as management of funds.	Other	Low (<5% of project value)	Medium
Mitigation Measure(s)			
Constant monitoring from the Project Coordinator and local government officials in the target area to inform the Project Board will reduce the incidence of vandalism and will serve as the institutional mechanism to ensure that equipment is secure and properly maintained. Activities implemented for enhance local capacity building to maintain equipment.			
<b>Selected Risk Factor 9</b>			
Description	Risk category	Level of risk	Probability of risk occurring
Security issues in the target area may cause delays in implementation. Some of the proposed sites have remained exposed to instability due to sectarian violence which cause delays in the activities and utilization of DRM funds.	Other	Low (<5% of project value)	Medium
Mitigation Measure(s)			
Coordination with local government's official and police officers in the target area with Project Management Unit will minimize the risk that security issues affect the implementation of the project. Awareness raising activities communities about the significance of these adaptation and disaster management activities.			

### H.1. Logic Framework.

Please specify the logic framework in accordance with the GCF's [Results Management Framework](#) and [Performance Measurement Framework](#).

H.1.1. Paradigm Shift Objectives and Impacts at the Fund level <sup>11</sup>						
Paradigm shift objectives						
<i>Increased climate-resilient sustainable development</i>	The project presents a holistic model of climate-resilient development to enable Northern Pakistan to manage the risks from GLOFs and other impacts of climate change, incorporating regulatory support, community preparedness, GLOF response capacitation, and long-term planning for sustainable and climate-resilient use of natural livelihood assets.					
Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
Fund-level impacts						
<i>A1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions</i>	1.1 Change in expected losses of lives and economic assets (US\$) due to the impact of extreme climate-related disasters in the geographic area of the GCF intervention.	-Project reports: annual reports; mid-term and final evaluations. - Field visits to engineering structures -Satellite imagery of glacier lakes and vulnerable sites before and after the project.	There are 33 potentially dangerous lakes in KP and GB. 960 destructive outburst floods are in KP and GB areas in last two decades.		By the end of the project, 100% of households in KP and GB target communities are benefiting from engineering measures and early warnings in place to reduce the impact of GLOF events. (696,342 people: 348,171 men, 348,171 women)	The political situation stays stable throughout the project duration. Stakeholders are able to perceive reductions in vulnerability over the time-scale determined by project duration. No flooding disasters in target communities occur throughout the project lifetime.

H.1.2. Outcomes, Outputs, Activities and Inputs at Project/Programme level						
Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
Project/programme outcomes	Outcomes that contribute to Fund-level impacts					
7.0 Strengthened adaptive capacity and	7.2: Number of males and females	-Review of climate change, DRM and development policies	GLOF early warning system in		By the end of the project,	Government remains supportive to link longer-term climate change

<sup>11</sup> Information on the Fund's expected results and indicators can be found in its Performance Measurement Frameworks available at the following link (Please note that [some indicators are under refinement](#)): [http://www.gcfund.org/fileadmin/00\\_customer/documents/Operations/5.3\\_Initial\\_PMF.pdf](http://www.gcfund.org/fileadmin/00_customer/documents/Operations/5.3_Initial_PMF.pdf)

reduced exposure to climate risks	reached by climate related early warning systems and other risk reduction measures established/ strengthened	and plans at the national, district, and community levels.  -Review of Disaster Management Act, DRM policies, plans, and institutional structures.  -Project reports: annual reports; mid-term and final evaluations.  -Site visits before/after the project  -Questionnaire-based surveys (QBS)/Interviews at the beginning, mid-term and end of the project.	KP and GB covering two districts  Vulnerable households are not able to receive and react to GLOF early warning messages in the KP and GB.  No physical structures in place to mitigate the effect of GLOF events.		100% of households in KP and GB target communities are able to receive and respond to early warnings and take the appropriate actions following the warning (348,171 men, 348,171 women).	planning with current disaster risk management initiatives  No tampering with early warning system installations.  Community workforce available to support engineering measures.
<b>Project/programme outputs</b>	<b>Outputs that contribute to outcomes</b>					
1. Strengthened sub-national institutional capacities to plan and implement climate change resilient development pathways.	1.1. Strengthened institutional and regulatory systems for climate-responsive planning and development.  1.2. Number of policies introduced to address GLOF risks or adjusted to incorporate GLOF risks.	Questionnaire-based surveys (QBS)/ Interviews) at the beginning, mid-term and end of the project.  Impact assessment at the end of the project.  Satellite imagery of glacier lakes and vulnerable sites before and after the project.  Qualitative assessment (e.g. through a standardized scorecard) of the various strategic plans and documents that integrate GLOF risks.	National, provincial and local disaster management institutions and development planners are unable to design, finance and analyze GLOF risk reduction measures on the basis of reliable, comprehensive information.  Only 2 comprehensive disaster management guidelines exist for the KP and GB regions.		By the end of Year 3, 100% of the national and 90% of district and community authorities in the KP and GB regions are able to prioritize and plan measures to minimize potential losses from GLOFs.  By the end of the project, at least four policies have been adopted by Government to address or incorporate GLOF risk reduction.	The political situation stays stable throughout the project duration.  Stakeholders are able to perceive reductions in vulnerability over the time-scale determined by project duration.  No flooding disasters in target communities occur throughout the project lifetime.
2. Community-based EWS and long-term measures are up-scaled to increase communities' adaptive capacity.	2.1. Number of vulnerable households in KP and GB covered by a GLOF early warning system.  2.2. Number of Community-based organizations	QBS with households.  Mock drill protocols.  Field visits to EWS sensor, relay and	Vulnerable households are not able to receive and react to GLOF early warning messages.		By the end of the project, 100% of households in target communities are able to receive and respond to	No tampering with the early warning system installations,  Functioning backup systems in place.

	<p>trained in the operation and maintenance of the EWS.</p> <p>2.3. No. of physical assets constructed to withstand the effects of GLOF events.</p>	<p>communication sites.</p> <p>Site visits before/after the project</p>	<p>24 GLOF early warning system for KP and BG in place.</p> <p>No physical structures in place to withstand the effect of GLOF events.</p>	<p>early warnings and take the appropriate actions following the warning. (696,342 people: 348,171 men, 348,171 women)</p> <p>By the end of the project , at least 24 CBOs are trained in the operation and maintenance of the EWS and ensure its continued functionality.</p> <p>By the end of the project, at least 250 targeted engineering structures have been established to withstand the effects of GLOF events on livelihood assets.</p>	<p>Communities are receptive to the adoption of mitigation measures and participate actively in construction efforts.</p>
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Activities	Description	Inputs	Description
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<p>1.1.Provincial line and planning departments have technical capacities to mainstream CC into development plans</p>	<p>Capacity building activities to integrate CC and GLOF risk into development plans and instruments.</p>	<p>1.1.1.Develop integrated provincial CCA action plan encompassing key sectors (mainstream CC risks into DRM, Agriculture, Livestock, and Water Sectors) in KP and GB, linked to NCCP</p> <p>1.1.2. Completion of the KP Provincial CC policy which will serve as framework for the CCA action plan.</p>	<p>Technical training activities on developing provincial CCA action plans that address GLOF risks from a sectorial perspective, focusing primarily in Agriculture, Livestock and Water in GB and KP.</p>
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<p>1.2.Sub-national institutions have improved capacities to coordinate, plan, and implement CCA measures across sectors.</p>	<p>Strengthen sub-national institutional and coordination arrangements including financial, planning and budgeting processes and other requirements for implementing CCA action plans and CC initiatives in GB and KP</p>	<p>1.2.1.Establish/ strengthen provincial-level CC coordinating entities within the Planning and Development Departments (involving CBOs, NGOs, and EPA) to coordinate CC response across key sectors.</p> <p>1.2.2. Raise awareness at the local level (district authorities, NGOs, and CBOs) to effectively coordinate CC initiatives and play key roles in implementing CCA action plans across key sectors.</p>	<p>Through multi-stakeholders participation, coordinate response to CC and GLOF risks.</p>
<p>2.1. Expanded weather surveillance and discharge measuring networks.</p>	<p>Increase the area coverage by hydro-meteorological instruments and equipment to address GLOF risks.</p>	<p>2.1.1. Installation of 22 weather monitoring stations in KP and 28 in GB.</p> <p>2.1.2. Installation of 170 river discharge gauges/ sensors etc. in KP and 238 in GB.</p> <p>2.1.3. GBDMA and KPDMA provide extension to PMD on installation and maintenance of equipment.</p>	<p>Installation of hydro-meteorological infrastructure to expand EWS in 7 valleys.</p>
<p>2.2. Early warnings are effective in protecting communities from climate-induced risks.</p>	<p>Expansion and development of tailored warnings for GLOF risk through Pakistan Meteorological Department.</p>	<p>2.2.1. PMD conducts hydrological modeling to generate flood scenarios and calculate GLOF lead time.</p> <p>2.2.2.Village hazard watch groups are set up (expanded) and capacitated to monitor GLOF and disseminate early warnings</p>	<p>The installation of 50 automatic weather stations (22 in KP and 28 in GB) and the installation of 408 river discharge gauges/sensors (170 in KP and 238 in GB) [Input 2.2.1 &amp; 2.2.2) will provide data to conduct hydrological modelling to generate flood scenarios and to capacitate village hazard watch groups that will be part of a local-level early warning system.</p>

<p>2.3. Vulnerable communities have adequate long-term measures in place to address GLOF-related risks.</p>	<p>GLOF response expanded, small-scale infrastructures constructed and increased natural protection through vegetative cover to protect lives and property downstream of each valley.</p> <p>Implement water efficient farming technologies to increase yields to promote food security to cope with GLOF events.</p>	<p>2.3.1. DRM Committees and emergency response cells are expanded to act as first responders and manage drills and simulations.</p> <p>2.3.2. GBDMA and KPDMA train communities and DRM committees on GLOF preparedness and response.</p> <p>2.3.3. Construction of 250 small infrastructure to reduce risks of floods i.e. (gabion walls, check dams, spillways)</p> <p>2.3.4. Expand slope stabilization to mitigate disaster risks from debris slides (Increase vegetative cover i.e. 100,000 ha in KP and 140,000 ha in GB).</p> <p>2.3.5. Installation of 240 water efficient farming technologies i.e. Micro Irrigation System, Drip Irrigation System, Sprinkle Irrigation and rehabilitation of irrigation channels in 24 targeted valleys.</p>	<p>Expansion of DRM Committees and emergency response cells by providing basic necessary equipment regarding communication and relief.</p> <p>Small-scale hard adaptation structures will be constructed and vegetative cover expanded to reduce risks of floods and from debris slides.</p> <p>Increase the capacity of subsistence farmers and women to address CC impacts by installing micro-irrigation systems, and household gardening in targeted valleys</p>
<p>2.4. Improved financial capacity to adapt to GLOFs and CC-induced risks.</p>	<p>Enable communities and households to prepare for weather shocks and to build adaptive capacity.</p>	<p>2.4.1. Scale-up revolving community-based disaster risk management fund i.e. \$ 50,000 USD per CBDRMC.</p> <p>2.4.2. Relevant stakeholders (i.e. micro-credit lenders, insurance companies, SMEs, Gov agencies, etc.) trained and working in ways to improve coordination and delivery of the CBDRM Fund and DRM initiatives on the ground in GB and KP.</p>	<p>Expansion of a community-based disaster risk management fund for disaster risk management cells to provide support <i>ex ante</i> and <i>ex post</i> GLOF events.</p> <p>Workshops and trainings targeted specifically for local public and private entities to be made aware of their risks and risk management related to GLOFs.</p>

## H.2. Arrangements for Monitoring, Reporting and Evaluation

211. Project-level monitoring and evaluation will be undertaken in compliance with the [UNDP POPP](#) and the [UNDP Evaluation Policy](#). UNDP will perform monitoring and reporting throughout the Reporting Period in accordance with the AMA. UNDP has country presence and capacity to perform such functions. In the event of any additional post-implementation obligations over and above the AMA, UNDP will discuss and agree these with the GCF Secretariat in the final year of the implementation period. .

### **Oversight and monitoring responsibilities:**

212. The primary responsibility for day-to-day project monitoring and implementation rests with the Project Manager. The Project Manager will develop annual work plans to ensure the efficient implementation of the project. The Project Manager will inform the Project Board and the UNDP Country Office of any delays or difficulties during implementation, including the implementation of the M&E plan, so that the appropriate support and corrective measures can be adopted. The Project Manager will also ensure that all project staff maintain a high level of transparency, responsibility and accountability in monitoring and reporting project results.

213. The UNDP Country Office will support the Project Manager as needed, including through annual supervision missions. The UNDP Country Office is responsible for complying with UNDP project-level M&E requirements as outlined in the [UNDP POPP](#). Additional M&E and implementation quality assurance and troubleshooting support will be provided by the UNDP Regional Technical Advisor as needed. The project target groups and stakeholders including the NDA Focal Point will be involved as much as possible in project-level M&E.

214. A project inception workshop will be held after the UNDP project document has been signed by all relevant parties to: a) re-orient project stakeholders to the project strategy and discuss any changes in the overall context that influence project implementation; b) discuss the roles and responsibilities of the project team, including reporting and communication lines and conflict resolution mechanisms; c) review the results framework and discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E plan; d) review financial reporting procedures and mandatory requirements, and agree on the arrangements for the annual audit; e) plan and schedule Project Board meetings and finalize the first year annual work plan. The Project Manager will prepare the inception report no later than one month after the inception workshop. The final inception report will be cleared by the UNDP Country Office and the UNDP Regional Technical Adviser, and will be approved by the Project Board.

215. The Project Manager, the UNDP Country Office, and the UNDP Regional Technical Advisor will provide objective input to the annual Project Implementation Report (PIR) for each year of project implementation. The Project Manager will ensure that the indicators included in the project results framework are monitored annually well in advance of the PIR submission deadline and will objectively report progress in the Development Objective tab of the PIR. The annual PIR will be shared with the project board and other stakeholders. The UNDP Country Office will coordinate the input of the NDA Focal Point and other stakeholders to the PIR. The quality rating of the previous year's PIR will be used to inform the preparation of the next PIR. The final project PIR along with the terminal evaluation report and corresponding management response will serve as the final project report package.

216. An independent mid-term review process will be undertaken and the findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the project's duration. The terms of reference, the review process and the final MTR report will follow the standard templates and guidance available on the [UNDP Evaluation Resource Center](#). The final MTR report will be cleared by the UNDP Country Office and the UNDP Regional Technical Adviser, and will be approved by the Project Board. The final MTR report will be available in English.

### **Additional GCF evaluation requirements:**

217. An independent terminal evaluation (TE) will take place no later than three months prior to operational closure of the project. The terms of reference, the review process and the final TE report will follow the standard templates and guidance available on the [UNDP Evaluation Resource Center](#). The final TE report will be cleared by the

UNDP Country Office and the UNDP Regional Technical Adviser, and will be approved by the Project Board. The TE report will be available in English.

218. The UNDP Country Office will include the planned project terminal evaluation in the UNDP Country Office evaluation plan, and will upload the final terminal evaluation report in English and the management response to the public UNDP Evaluation Resource Centre (ERC) (<http://erc.undp.org>). Once uploaded to the ERC, the UNDP Independent Evaluation Office will undertake a quality assessment and validate the findings and ratings in the TE report, and rate the quality of the TE report.

219. The UNDP Country Office will retain all M&E records for this project for up to seven years after project financial closure in order to support ex-post evaluations.

220. A detailed M&E budget, monitoring plan and evaluation plan will be included in the UNDP project document.

221. UNDP will perform monitoring and reporting throughout the reporting period in accordance with the AMA and Funded Activity Agreement (FAA). UNDP has country presence and capacity to perform such functions. In the event of any additional post-implementation obligations over and above the AMA, UNDP will discuss and agree these with the GCF Secretariat in the final year of the project and will prepare a post-implementation monitoring plan and budget for approval by the GCF Board as necessary.

## I. Supporting Documents for Funding Proposal

- NDA No-objection Letter **Annex I**
- Feasibility Study **Annex II**
- Integrated Financial Model that provides sensitivity analysis of critical elements (word format) **Annex III (a)**
- Integrated Financial Model that provides sensitivity analysis of critical elements (xls format) **Annex III (b)**
- Confirmation letter or letter of commitment for co-financing commitment **Annex IV**
- Term Sheet (including cost/budget breakdown, disbursement schedule, etc.) – see the Accreditation Master Agreement **Annex V**
- Environmental and Social Impact Assessment (ESIA) **Annex VI (a)**
- Environmental and Social Management Plan (in English) **Annex VI (b)**
- Environmental and Social Management Plan (in Urdu) **Annex VI (c)**
- Gender Analysis and Action Plan **Annex VI (d)**
- Appraisal Report or Due Diligence Report with recommendations **Annex VII**
- Evaluation Report of the baseline project **Annex VIII**
- Map indicating the location of the project/programme **Annex IX**
- Timetable of project/programme implementation **Annex X**
- Project/Programme confirmation **Annex XI**

### Additional Information

- Economic Analysis **Annex XII (a)**
- Economic Analysis (excel file) **Annex XII (b)**
- Additional Background Details **Annex XIII**
- Responses to GCF Comments on Proposal **Annex XIV**
- Letter of Endorsement from UNDP **Annex XV**

*\* Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting document.*



**NDA No- Objection Letter**

Tel: 051-9245626  
Fax: 051-9245627



SECRETARY

(F.No.CFU/GCF/003/2015)  
**Government of Pakistan**  
**Ministry of Climate Change**  
LG & RD Complex, Sector G-5/2, Islamabad

\*\*\*\*\*

Islamabad, the 28<sup>th</sup> July, 2015

To: **Green Climate Fund (GCF) Secretariat**  
**Song Do,**  
**South Korea**

Subject: **Funding proposal for the GCF by UNDP regarding "Scaling-up of Glacial Lake Outburst Flood (GLOF) risk reduction in Northern Pakistan"**

We refer to the project "Scaling-up of Glacial Lake Outburst Flood (GLOF) risk reduction in Northern Pakistan" as included in the funding proposal submitted by UNDP to us on 27 July 2015.

2. The undersigned is the duly authorized representative of the Ministry of Climate Change, the National Designated Authority/Focal Point of Pakistan. Pursuant to GCF decision B.08/10, the content of which we acknowledge to have reviewed; we hereby communicate our No-Objection to the project as included in the funding proposal.

3. By communicating our No-Objection, it is implied that:

- The government of Pakistan has no-objection to the project as included in the funding proposal;
- The project as included in the funding proposal is in conformity with Pakistan's national priorities, strategies and plans;
- In accordance with the GCF's environmental and social safeguards, the project as included in the funding proposal is in conformity with relevant national laws and regulations.

4. We also confirm that our national process for ascertaining no-objection to the project as included in the funding proposal has been duly followed.

5. We acknowledge that this letter will be made publicly available on the GCF website.

Yours sincerely,

*Arif Khan*  
**(Arif Ahmed Khan)**  
28/7/15

Copy to:

1. UNDP Country Office, Islamabad.

## Environmental and social report(s) disclosure

Basic project/programme information	
<b>Project/programme title</b>	Scaling-up of Glacial Lake Outburst Flood (GLOF) risk reduction in Northern Pakistan
<b>Accredited entity</b>	UNDP
<b>Environmental and social safeguards (ESS) category</b>	Category B

Environmental and Social Impact Assessment (ESIA) (if applicable)	
Date of disclosure on accredited entity's website	Click here to enter a date.
Language(s) of disclosure	
Link to disclosure	<a href="http://www.pk.undp.org/content/pakistan/en/home/operations/projects/environment_and_energy/project_sample/">http://www.pk.undp.org/content/pakistan/en/home/operations/projects/environment_and_energy/project_sample/</a> The ESMP contains a simplified impact assessment (ESIA) consistent with the requirements of PS1.
Other link(s)	
Environmental and Social Management Plan (ESMP) (if applicable)	
Date of disclosure on accredited entity's website	2015-11-27
Language(s) of disclosure	English, Urdu
Link to disclosure	<a href="http://www.pk.undp.org/content/pakistan/en/home/operations/projects/environment_and_energy/project_sample/">http://www.pk.undp.org/content/pakistan/en/home/operations/projects/environment_and_energy/project_sample/</a> ESMP in English and Urdu (in pdf) can be found under "Related Documents"
Other link(s)	
Resettlement Action Plan (RAP) (if applicable)	
Date of disclosure on accredited entity's website	Click here to enter a date.
Language(s) of disclosure	
Link to disclosure	http://
Other link(s)	http://



<b>Any other relevant ESS reports and/or disclosures (if applicable)</b>	
Description of report/disclosure	
Date of disclosure on accredited entity's website	<a href="#">Click here to enter a date.</a>
Language(s) of disclosure	
Link to disclosure	<a href="http://">http://</a>
Other link(s)	<a href="http://">http://</a>

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