AFB/B.44-45/7
9 June 2025

Adaptation Fund Board

REQUEST FOR CHANGE IN PILOT SITES IN TAJIKISTAN (REGIONAL PROJECT IN KAZAKHSTAN, KYRGYZSTAN, TAJIKISTAN, UZBEKISTAN): UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION (UNESCO)

Background

1. The Adaptation Fund Board (the Board), through its intersessional Decision B.35.a-35.b/83, approved a five-year regional project titled “Reducing vulnerabilities of populations in the Central Asia region from glacier lake outburst floods in a changing climate” in Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan. The project was submitted by the United Nations Educational, Scientific and Cultural Organization (UNESCO), a multilateral implementing entity of the Adaptation Fund, for a total requested amount of US$ 6,500,000.

2. The primary objective of the project is to strengthen adaptation to climate change by reducing societal risks and vulnerabilities associated with Glacier Lake Outburst Floods (GLOFs). As mandated by the decision, an agreement was prepared and signed between the Board and UNESCO.

3. The first tranche of disbursement for the implementation of the project was released in January 2021 following the signing of the agreement and the project started on 29 April 2021. The project is progressing well, and the third Project Performance Report (PPR) has been submitted to the secretariat and is currently under review.

4. In May 2023, UNESCO, with the endorsement of the Designated Authority for Kyrgyzstan, submitted a request for changes to the pilot sites in Kyrgyzstan. The proposed change aimed to relocate activities to a site with higher exposure to glacial lake outburst floods (GLOFs), which would potentially impact a larger population and critical infrastructure. The request was reviewed by the secretariat and approved by the Board through Decision B.40-41/2.

5. In February 2025, UNESCO, with the endorsement of the Designated Authority for Tajikistan, has submitted another request for changes to the pilot sites in Tajikistan.

6. This background document (Annex 1 and 3) presents the details and rationale for the proposed change.

Suggested change in pilot sites in Tajikistan

7. The original approved project pilot site for Tajikistan was located in the Gorno-Badakhshan Autonomous Region (GBAO) in the Pamir Mountains. However, the region posed significant challenges, including its extreme remoteness, poor infrastructure, and occasional security concerns, which made it difficult to carry out project activities as planned through 2022.

8. In response, the Government of Tajikistan has suggested moving the pilot site to Baralmos Valley in Lakhsh District, located in central Tajikistan. This area, which includes the villages of Dashti Murghon, Obshoron, and Duaghba, is far more accessible, with fewer logistical challenges. Furthermore, Baralmos Valley experiences a much higher frequency of GLOF events than the original site, making it a critical area for intervention.

9. UNESCO has outlined the reasons for the proposed changes in Annex 3 of this document. It highlights that the GBAO site was inaccessible for much of the year, which hindered the project’s implementation. In contrast, the Baralmos valley is reachable via a major road network, including an international highway running through the valley, which allows for smoother operations. Moreover, recent data from the project indicates that the Baralmos valley is highly vulnerable to GLOFs, with several events in 2023 damaging key infrastructure such as the Surhob River highway.

10. Additionally, Baralmos Valley has a higher population density and more critical

infrastructure at risk from GLOFs, including three villages and an important transportation corridor. Moving the project to this area would allow it to reach more beneficiaries and significantly improve the effectiveness of early warning systems and adaptation measures.

11. In December 2024, the project team conducted consultations (see Annex 4) with local communities in Dashti Murghon, Obshoron, and Duaghba to ensure the proposed change aligns with local needs. Focus group discussions revealed that these communities face frequent flash floods and mudflows and have limited preparedness or early warning capacity. There was strong support for the project's interventions, such as early warning systems, community training, and small-scale protective infrastructure.

12. The consultations affirmed that the new pilot site would address the local communities' needs. Importantly, the site change will not require modifications to the project's outcome indicators, outputs, or budget. UNESCO confirmed that the results framework will remain unchanged and that no new risks have been identified, ensuring that the Environmental and Social Management Plan remains applicable.

Secretariat's review of the request

13. The secretariat finds that the request for a site change in Tajikistan is justified. The Baralmos valley is more exposed to GLOFs, making it an urgent priority for the project's interventions. The new site also offers operational advantages, such as accessibility, and the project has already established monitoring activities in the area.

14. The proposed site change will increase the number of beneficiaries covered by the project, as the new area is more densely populated and includes vital infrastructure. The shift aligns with Tajikistan's national priorities and does not require any changes to the project's scope, impact, or budget. Finally, the proposed changes have been endorsed by Tajikistan's Designated Authority (Annex 2) and approved by the Project Steering Committee.

Recommendation

15. Having considered the request and its annexes, the Board may decide to approve the change of pilot sites in Tajikistan for the project "Reducing vulnerabilities of populations in the Central Asia region from glacier lake outburst floods in a changing climate" as requested by UNESCO.

Annexes

1. Request for revision of pilot sites of the regional project "Reducing vulnerabilities of populations in Central Asia region from glacier lake outburst floods in a changing climate;
2. Designated Authority endorsement letter for the proposed changes in pilot sites in Tajikistan suggested by UNESCO;
3. Justification note for change in pilot communities sent by UNESCO;
4. Community consultation report for a new pilot area within the framework of the project "reducing vulnerabilities of populations in the Central Asia Region from glacier lake outburst floods in a changing climate" (GLOFCA); and
5. Revised Project Document (sections related to the change in pilot sites in Tajikistan highlighted in track changes) sent by UNESCO.

Annex 1: Request for revision of pilot sites of the regional project "Reducing vulnerabilities of populations in Central Asia region from glacier lake outburst floods in a changing climate

UNESCO Almaty Regional Office

Adaptation Fund Board Secretariat
c/o Global Environment Facility
Washington DC 20433, USA

28 February 2025

Ref.: 97

Subject: **Request for revision of pilot sites of the regional project "Reducing vulnerabilities of populations in Central Asia region from glacier lake outburst floods in a changing climate"**

The UNESCO Almaty Regional Office presents its compliments to the Adaptation Fund Board Secretariat and, in its capacities of the Executing Entity of the project "Reducing vulnerabilities of populations in Central Asia region from glacier lake outburst floods in a changing climate", based on respective country's inquiry, has the honor to request the Board for approval of change of the pilot sites of Tajikistan in this project. The proposed changes, as specified in the attached renewed Letter of Endorsement signed by respective designated authority for the Adaptation Fund in the Republic of Tajikistan, and a justification note, are in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Tajikistan. The proposed change of pilot sites in Tajikistan was also approved by the Project Steering Committee and supported by representatives of all participating countries.

As the Implementing Entity Coordinator, I would like to confirm that the proposed change in target area will not result in modifications at the outcome or output indicator level, as well as will not entail any budget changes/shifts. The consultations with local communities, local government and relevant stakeholders in the new target area have been carried out. The conclusions of the consultations are in line with the project outputs.

It should be noted that no objections to the project or its activities were voiced during the consultations, and there is no change in the risk assessment or social and environmental management plan as a result of this update.

I thank you for your consideration.

Yours sincerely,

Amir Piric
Director

UNESCO Almaty Regional Office
303, Baizakov str. 050040 Almaty, Kazakhstan
Tel.: + 7-7272-582643
E-mail: almaty@unesco.org
Website: www.unesco.org/almaty

Annex 2: Designated Authority endorsement letter for the proposed changes in pilot sites in Tajikistan suggested by UNESCO

КУМИТАИ
ҲИФЗИ МУҲИТИ ЗИСТИ
НАЗДИ ҲУКУМАТИ
ҶУМҲУРИИ ТОҶИКИСТОН
734003, шаҳри Душанбе, кӯчаи Шамсӣ 5/1
Тел./факс: (992 37) 236-40-59, 236-13-53
Веб-сайт: www.tajnature.ti
Почтаи электронӣ: info@tajnature.ti

КОМИТЕТ ПО
ОХРАНЕ ОКРУЖАЮЩЕЙ СРЕДЫ
ПРИ ПРАВИТЕЛЬСТВЕ
РЕСПУБЛИКИ ТАДЖИКИСТАН
734003, город Душанбе, улица Шамсӣ 5/1
Тел./факс: (992 37) 236-40-59, 236-13-53
Веб-сайт: www.tajnature.ti
Электронная почта: info@tajnature.ti

**COMMITTEE FOR ENVIRONMENTAL PROTECTION
UNDER THE GOVERNMENT OF THE REPUBLIC OF TAJIKISTAN**
5/1 Shamsi str., 734003, Dushanbe city, tel./fax: (992 37)236-40-59, 236-13-53 web-site: www.tajnature.ti, e-mail: info@tajnature.ti

№ _____ from « ___ » ____ 2024

To _____ from « » ____ 2024

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

Subject: Endorsement for the project "Reducing vulnerabilities of populations in Central Asia region from glacier lake outburst floods in a changing climate"

In my capacity as the designated authority for the Adaptation Fund in the Republic of Tajikistan, I would like to re-confirm that the above regional project proposal, with the proposed changes in the pilot site of the Republic of Tajikistan as specified in the attached justification note, is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate changes in Tajikistan.

Accordingly, I am pleased to re-confirm the endorsement of the above project proposal with support from the Adaptation Fund, implemented and executed by UNESCO.

Mr. Sheralizoda Bahodur Ahmadjon

urman of the Committee for Environmental
Protection under the Government of the
Republic of Tajikistan
Designated Authority for the Adaptation Fund

Annex 3: Justification note for change in pilot communities sent by UNESCO

Attachment

JUSTIFICATION NOTE
FOR CHANGES IN PILOT COMMUNITIES

Summary of Proposed Changes

The proposed revision would replace the communities in Tajikistan nominated in the 2020 Funding Proposal with the following pilot communities:

Surkhob basin: Communities (**Dashti Murghon, Obshoron and Duaghba villages of Surkhod sub-district, Lakhsh district of the Direct Rule Districts)** in the Surkhob basin vulnerable to glacier lake outburst floods (GLOFs) from Saidoi Nasafi (Baralmos) Glacier.

The motivation for the change in pilot communities are three-fold: 1) The local and international project partners continue to have difficulties under the current political situation to work effectively in the original pilot site in the GBAO, and the successful implementation and long-term sustainability of the installations cannot be guaranteed with any confidence. 2) The proposed new location has experienced regular and repetitive (annual) glacial lake outburst floods over the past decade, with major implications for communities and transportation routes. 3) The proposed new location outside of the GBAO is easily accessible, and both the local and international project partners have long-term monitoring activities already in place at the related glaciers, with annual visits occurring since 2021, ensuring the feasibility of implementation at this site.

As recently as July 2024, a major mudflow affected this region, originating as an outburst flood from the Saidoi Nasafi (Baralmos) Glacier; similar events have occurred annually since at least 2017. These mudflows have repeatedly damaged the major transportation corridor in the region, leading to associated economic disruptions, and threatening the connectivity of the villages to their crops, animals, and lifelines (health services, etc.). This route is also the major historic trade route to Kyrgyzstan, and although its use is currently reduced owing to political tensions, under normal conditions, disruptions to this route lead to economic impacts on a district, national and even regional scale. While houses in the affected villages are typically located at a safe elevation above the river channel, the 2024 events destroyed several buildings.

Over the first 3 years of the project, the political situation in the GBAO became increasingly unstable, and the associated risk to the project implementation has been noted in the annual reporting. During the 2023 mission of the project team to the region, the mission came under close scrutiny of The State Committee for National Security, particularly with respect to the presence of an international project partner. It has since become clear, that the foreseen local implementation partner (Aga Khan Agency for Habitat) faces increasing difficulty working in GBAO, and is not in a position to guarantee the timely and successful installation of the Early

Warning System over the remaining time-frame of the project.

Given these concerns, a high-level meeting was undertaken on 6 May 2024 in Dushanbe with representatives of the Committee of Emergency Situations and Civil Defence (CoES) and the Agency on Hydrometeorology, to discuss the best way forward. Based on these discussions, it became clear that there was no mechanism to improve the likelihood of successful implementation in GBAO, and there was mutual agreement that a site change to the Surkhob basin would be in the best interests of the ministries, and optimize the success of the project in Tajikistan.

Overview of the Proposed Pilot Site in Surkhob basin

The area affected by the Saidoi Nasafi (Baralmos) and Kyzylsu glaciers' outburst floods and mudflows is within Lakhsh (Jirgatol) District, located in north central Tajikistan, 6 km east of Jirgatol village (Figure 1). The mudflows run into the Surkhob (Vakhsh, Kyzyl-Suu) River, a transboundary river basin and a major tributary of the Amu Darya River system, supplying water and sediment that flows 150 km downstream to the Rogun Dam project and Nurek Dam.

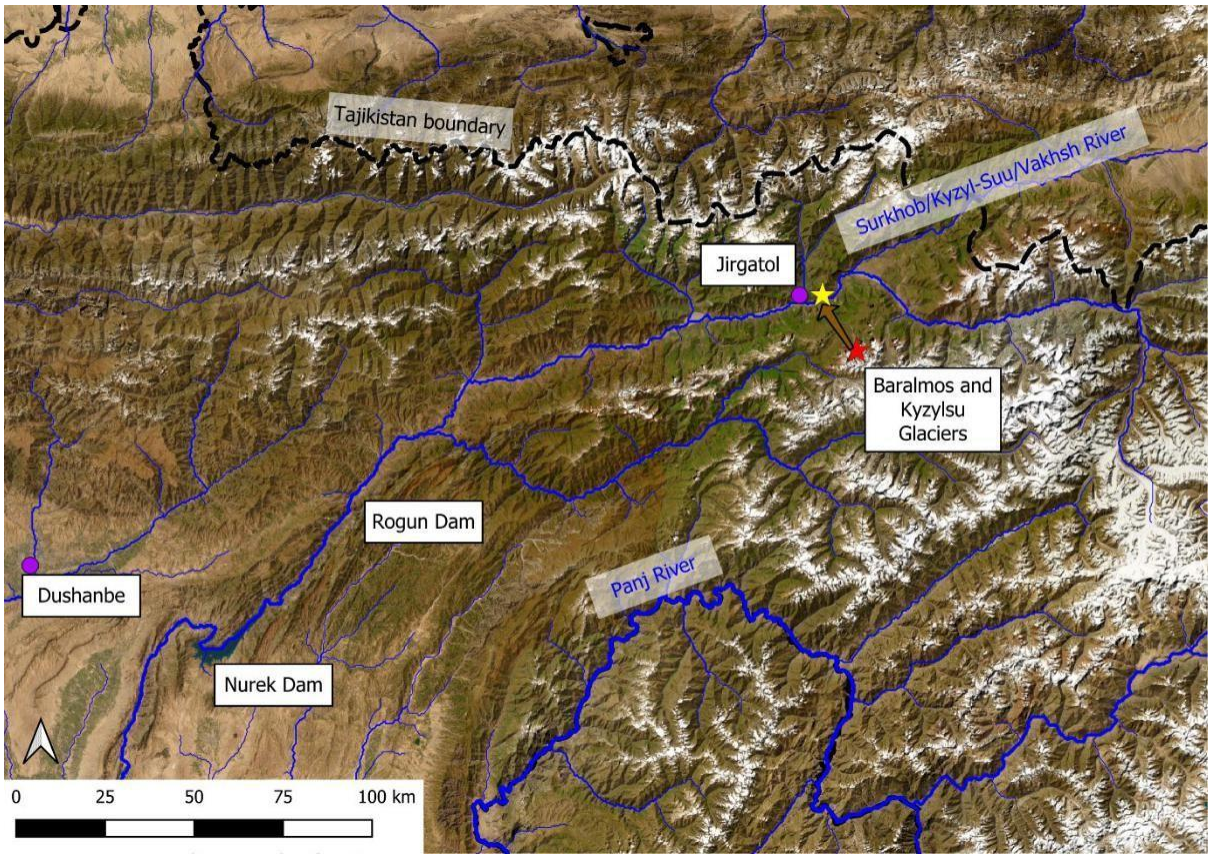


Figure 1. Context of the Saidoi Nasafi (Baralmos) Glacier outbursts and mudflows within Tajikistan.

Satellite observations from PlanetScope and Sentinel-2, confirmed by CoES responses, indicate that at least one mudflow event emanating from Saidoi Nasafi (Baralmos) Glacier has occurred in each of the past seven years. These events begin as a drainage of surface and internal stored waters from Saidoi Nasafi (Baralmos) Glacier, which then enters a highly erodible and steep mountain stream, entraining large volumes of unconsolidated sediments and transitioning into a mudflow as the mass descends 2000m elevation in ~15km stream

distance before entering the Vahksh/Surkhob/Kyzyl-Suu river valley at a major valley constriction (Figure 2).

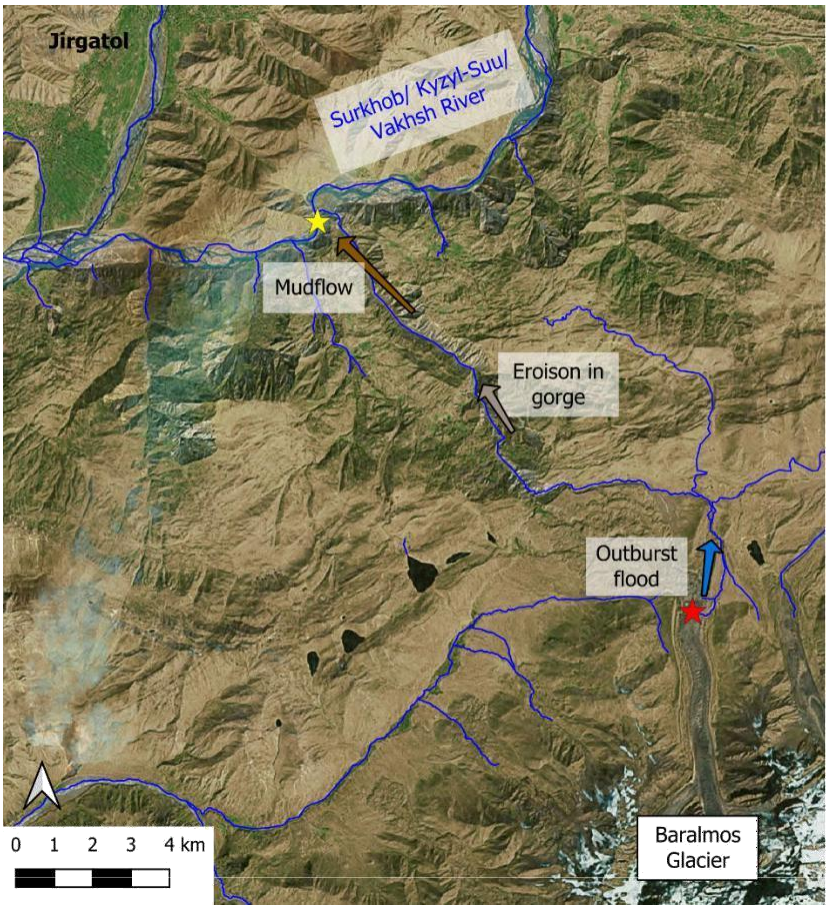


Figure 2. Configuration of Saidoi Nasafi (Baralmos) Glacier and flow path of outburst floods.

In recent years, the injection of this mass of water and sediment has significantly altered the river valley's geometry and sediment budget. This has led to large-scale upstream river flooding damaging several road segments on an annual basis, a sudden and hazardous interruption of the main local thoroughfare (Figure 3). The enhanced erosion associated with increased river stage followed by water level lowering has progressively damaged a long stretch of this road. In 2024, the mudflow led to partial diversion of the river onto the road itself, destroying several buildings (Figure 4).

Figure 3: Flooding of the Surkhob River due to the mudflow in 2023, which deposits considerable volumes of sediment at a constriction of the river channel. The flooded road is visible at the right of the frame.

Figure 4: Mudflow in the Surkhob River which destroyed several buildings in July 2024, resulting from a Glacial Lake Outburst from Saidoi Nasafi (Baralmos) Glacier.

At present, several depressions that are each 40m deep and approximately 200m in diameter have formed at the end of the glacier. These depressions fill annually due to snowmelt and drain suddenly due when increased water pressure enables the water to find a subsurface outlet. Over the past seven years, the lake basins have gradually grown, increasing the drainage magnitude.

Furthermore, historic satellite images from 1998, prior to the glacier's last surge event, showed that a much larger lake (1.2km x 0.7km) had formed, which then drained during the surge. This points to a possible much larger drainage scenario in the near (<15 years) future. Outbursts of these types of lakes are very dangerous, as they could lead to mudflows that would be even more powerful and destructive than before.

- Reasons for including the Surkhob basin in the priority list are as follows: There are three settlements in the immediate vicinity of the annual outburst floods, which are directly and considerably affected: This includes Dashti Murghon (939 people as of 2024), Obshoron (771 people as of 2024) and Duaghba (775 people as of 2024). In case of mudflow infrastructure, agricultural land, power lines and most importantly the Dushanbe-Lakhsh-Osh (Kyrgyz Republic) highway (250 to 257km) are suffered, resulting in large financial losses for the region and threatening the lives and well-being of the local population. While these three communities are most strongly affected, the interruption of transport isolates a considerable portion of the Lakhsh (Jirgatol) district from access to the rest of Tajikistan, including 17 communities (villages) of 4 jamoats (sub-districts) containing 17,605 residents. Furthermore, Rogun and Nurek Hydro Power Plants are located downstream of the Surkhob river. It is highly probable that with increasing frequency and volume of glacial lake outbursts and as a consequence increased mudflow, the process of sedimentation in these reservoirs will probably accelerate, which may have a significant impact on both the economy and the ecosystem and environment.
- The installation of an Early Warning System (EWS) in the Surkhob basin is vital to protect the 2,485 residents of Dashti Murghon, Obshoron, and Duaghba villages from glacier lake outburst floods (GLOFs), while also supporting hazard mitigation and transport management for the 17,605border region residents of Lakhsh (Jirgatol) district. These floods have repeatedly disrupted livelihoods, damaged infrastructure, and cut off access to essential services like healthcare and agriculture. A lack of resources, evacuation plans, and community preparedness significantly increases vulnerability. The EWS will provide critical early alerts, reduce disaster risks, and empower communities to respond effectively, ensuring their safety and economic stability.
- The major east- west transportation corridor connecting via Dushanbe the Tajik-Kyrgyz and Tajik-Uzbek road networks, is exposed to GLOFs and mudflows in this basin. Any interruptions to this corridor bring local, district, national and even regional economic impacts.

- Interruption to trade and tourism resulting from GLOFs in this region directly impact the lives and livelihoods of local communities.
- The AF-funded project GLOFCA can capitalize on several years of experience and monitoring undertaken on the glaciers and lakes in the basin, led by Glacier Research Center (GRC) of the Tajik Academy of Sciences (GLOFCA partner), in partnership with Swiss institutions. Monitoring equipment is already installed that can be rapidly transformed into a functioning Early Warning System.
- The Glacier Research Center (GRC) of the Tajik Academy of Sciences, and GLOFCA implementing partners at the University of Zurich already have good familiarity and relationships with the government authorities in this region. There are no permitting or logistical constraints, and high levels of local engagement and ownership are foreseen
- Due to glaciers retreat, existing lakes are actively developing and new ones are appearing in this basin, enhancing future GLOF risks in this basin.

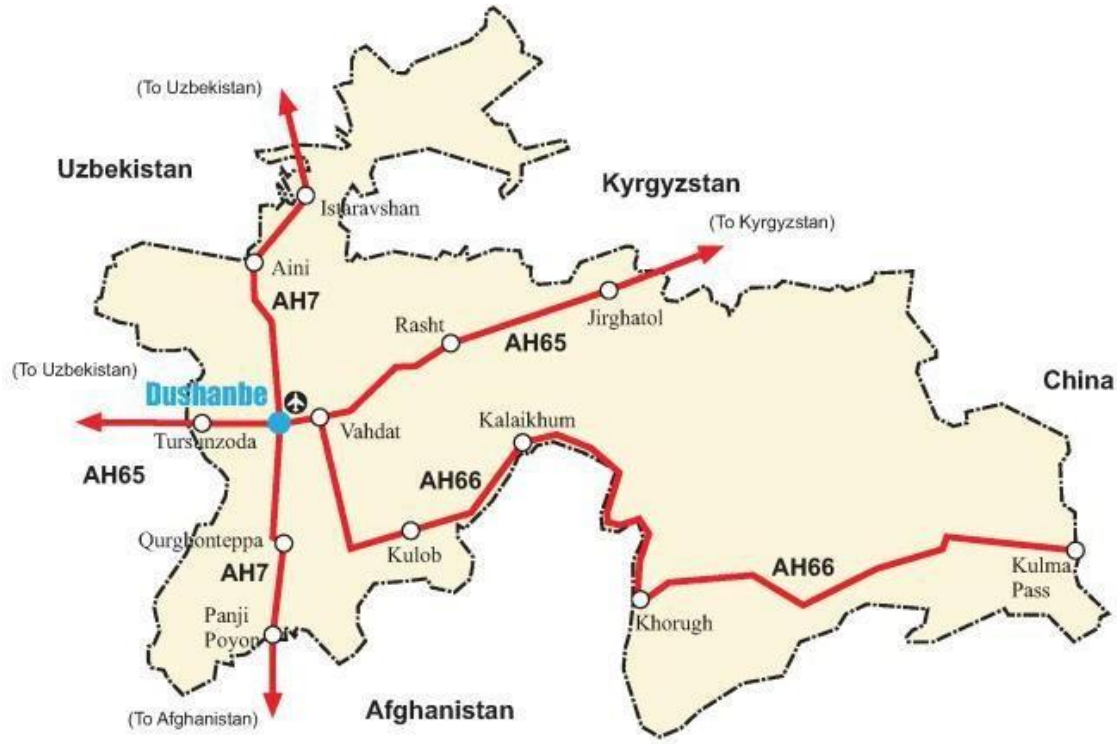


Figure 5: Major Asian Highways (AH) traversing Tajikistan (from University of Central Asia, 2012).

Recommendations for the pilot site and next steps:

It is recommended to install an early warning system responding to the threat from Saidoi Nasafi (Baralmos) Glacier in the Surkhob Basin, to protect the important downstream infrastructure and local communities. The early warning system will allow to alert road users and thereby prevent loss of life, and warn villages in advance of an impending threat, such to avoid human causalities, and reduce impacts on livelihoods.

In support of the Early Warning System, low-cost and other complimentary adaptation measures are planned, including demarcation of safe zones along the transportation corridor, evacuation planning and community awareness raising, through to engineering efforts to divert the worse outburst flood events away from harm's way.

The necessary community consultations and relevant procedures have conducted in communities included in the new proposed site in order to ensure compliance with the Environmental and Social Policy of the Adaptation Fund. Furthermore, all activities conducted at the site will be covered by the Environmental and Social Monitoring Plan as described in the Funding Proposal.

Information sources:

Shokhboz Asadov, (2012): Tajikistan's Transit Corridors and their Potential for Developing Regional Trade, University of Central Asia Report, Institute of Public Policy and Administration, Working Paper no.6. https://www.ucentralasia.org/media/vd0ffas1/uca-ippa-wp-6-tajikistan-transit-coridor-eng-1.pdf

Annex 4: Community consultation report for a new pilot area within the framework of the project "reducing vulnerabilities of populations in the Central Asia Region from glacier lake outburst floods in a changing climate" (GLOFCA)

ADAPTATION FUND

unesco

Government of the Republic of Tajikistan
Committee for Environmental Protection
Agency for Hydrometeorology

COMMUNITY CONSULTATION REPORT

FOR A NEW PILOT AREA
WITHIN THE FRAMEWORK OF THE PROJECT "REDUCING VULNERABILITIES OF POPULATIONS IN THE CENTRAL ASIA REGION FROM GLACIER LAKE OUTBURST FLOODS IN A CHANGING CLIMATE" (GLOFCA).

Dushanbe – 2024

Agency for Hydrometeorology

Contents

Background

On October 15-16, 2024 within the framework of the project "Reducing vulnerabilities of populations in the Central Asia region from glacier lake outburst floods in a changing climate" (GLOFCA), meetings and surveys of communities were held in the Lakhsh district, Districts of Republican Subordination (DRS) of the Republic of Tajikistan in order to determine the state of danger of glacial lakes on the Baralmos glacier.

Consultation meeting with the population, community members and other stakeholders was carried out in coordination between the Agency for Hydrometeorology of the Committee on Environmental Protection under the Government of the Republic of Tajikistan and the UNESCO Regional Office in Almaty.

The main objective of these consultations was to assess specific locations in the GLOF high risk zone and to identify areas at potential risk of glacial lake outburst. Considering this, it was also analyzed how the community would act knowing the current hazardous situation and their awareness of the state of the mountains surrounding their villages. The results of all this work will serve as a basis for the modification of the pilot project area in Tajikistan.

Community consultation was held by the specialists from the Agency for Hydrometeorology of the Committee for Environmental Protection under the Government of the Republic of Tajikistan in the villages of Dashti Murghon, Obshoron and Duaghba for the newly proposed pilot site. The following responsible team members from Agency of Hydrometeorology were involved in the process:

1. Mr. Nazirzoda Kamolidini - Deputy Head of the Glaciology Center of the Agency for Hydrometeorology;
2. Mr. Khodjiev Abdusamad - Head of Glaciers, Snow and Avalanches Research Department, Glaciology Center of the Hydrometeorology Agency;
3. Ms. Safaralizoda Omina - Specialist of Forecasting Department, Information and Archives, Glaciology Center, Hydrometeorology Agency;
4. Mr. Irgashev Jamshed - Expert of the Hydrometeorology Agency on coordination of organization of events in cities and regions of the country.

Initially, it was planned to hold consultation meetings in three villages, however given the weather conditions, consultations were held in two villages: the village of Dashti Murghon and the village of Duaghba. Due to heavy rains, it became impossible to get to the village of Obshoron.

The consultations involved a wide range of stakeholders, including men, women, youth, older people, representatives from the Lakhsh Local Administration and the Lakhsh District Emergency Department. The total number of participants during the community consultation were **68 people (33 male/35 female)**.

The information gathered during the consultations will be considered important for advancing current or developing future projects on climate change topics and, in particular, the impacts of glacial lake outburst floods.

Methodology

Focus group discussions (FGDs) were chosen as the best method to obtain information from the community about the GLOF situation in their area, as this approach allows for a deeper understanding of local issues and experiences, and facilitates a more open exchange of views and ideas among participants. To ensure an affective and impactful communication the consultations were held in Tajik language and all the survey forms were prepared in local language. Moreover, men and women were divided into two focus groups to increase the effectiveness of the discussions. This approach allowed each participant to freely express their opinions and ideas and to focus on specific issues related to community safety and sustainability.

Consultation process

The first meeting was held with the Deputy Head of Lakhsh district administration, Mr. Jabborzoda Mukim Amon on October 15 from 09:00 to 10:00, where the mission agenda and planned activities were agreed (***Annex 1*** – *Agenda - Community Consultations*).

Meeting with the representative of the Lakhsh district administration

Discussion of the main tasks of the pilot project

During the conversation, detailed information about the objectives and main components of the GLOFCA project was presented. The discussion highlighted that the main objective of the project is to reduce the risk of glacial lake outbursts in the face of climate change. The project includes several key components such as monitoring of lakes and establishing an early warning system, strengthening infrastructure to prevent outbursts, and improving preparedness of local authorities and vulnerable communities.

In addition, the project has planned activities aimed at conducting training programs for the population, developing evacuation plans and cooperating with international organizations to attract technical and financial assistance.

Identification of needs and proposals of the authorities

During the conversation, Mr. Jabborzoda Mukim Amon, representative of the district administration, provided information on glacial lake emergencies occurring in the region. It was also noted that glacial mudslides from the Baralmos Glacier and other glaciers, pose a serious natural threat to the local population and infrastructure. In the proposed pilot area, eight glacial mudslides have been recorded in the last three years, causing significant economic damage. These natural disasters destroy infrastructure, agricultural land, power lines and most importantly the Dushanbe-Lakhsh-Osh highway (250 to 257km), resulting in large financial losses for the region and threatening the lives and livelihoods of the local population.

Meeting with the Head of Emergency Situations Department of Lakhsh District

Despite the district's high exposure to disaster risks associated with glacial lake outbursts, the district administration does not have any programs or targeted funding to prevent glacial mudflow risks. This poses serious threats to the safety of the local population and infrastructure and highlights the need to develop and implement effective risk management or adaptation strategies to minimize potential impacts.

Analysis of legal and organizational aspects of the project

Legal and organizational aspects of the project were also discussed during the meeting. The representative of the district administration noted that, taking into account national interests, they are fully prepared to implement the project in the region and to implement the planned activities. This includes both coordination of all necessary legal documents and organization of interaction with local communities and other stakeholders to ensure successful implementation of the project objectives and its sustainable development.

Meeting with the Head of Emergency Situations Department of Lakhsh District

The second meeting was held from 10:30 to 11:30 with the Head of Emergency Situations Department of Lakhsh district Mr. Zainiddinov Farrukh during which the experience related to glacial mudflows in the region was discussed.

Experience with the occurrence of mudflows in the region shows that this phenomenon is becoming more frequent and threatening to the local population and infrastructure. Over the past few years, there have been several cases where heavy rainfall and glacial melt have resulted in mudslides, causing significant damage to agriculture, roads and residential structures.

Local authorities and emergency services are actively working on improving monitoring and early warning systems to inform the population about possible risks in a timely manner. An important part of the work is to conduct training activities for residents so that they know how to act in case of a threat.

Action plan and key steps in the action plan

The emergency action plan includes risk assessment, establishment of an early warning system, development of evacuation plans and community training, as well as strengthening infrastructure and coordination between different organizations. Monitoring and evaluation of the effectiveness of the measures taken are also important steps. All measures under the action plan are coordinated annually with the General Planning Headquarter of the Committee for Emergency Situations and Civil Defense (CoES) under the Government of Tajikistan to ensure coordination of efforts at all levels and to ensure that the measures taken are in line with current safety requirements and standards.

Identification of needs and proposals of government agencies

For more effective planning and implementation of disaster management measures, it is necessary to identify the needs and suggestions of government agencies includes analyzing the current challenges and problems faced by the agencies in the field of disaster risk management. The main requirement and suggestion of government agencies is to attract more financial resources to improve infrastructure, upgrade monitoring and early warning systems, as well as to conduct training programs for the public taking into account the GLOF issue in the district. (***Annex 2*** *- Questionnaire for the emergency situation representative of Lakhsh district*).

Meeting with Communities

Community Consultation in Dashti Murghon village

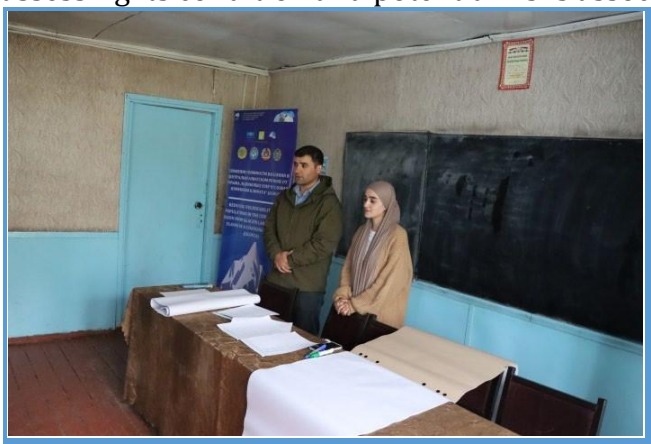
According to the plan, on October 15, 2024, after the meeting with representatives of the government authorities, a meeting with the population was organized in Dashti Murghon village of Surkhob jamoat (sub-district) of Lakhsh district. The meeting was held in the school of the village with the participation of 40 people including 19 male, 21 female and youth *(**Annex 3** – List of participants in Dashti Murghon village).* Men and women were divided into two focus groups to increase the effectiveness of the discussions. This approach

allowed each participant to freely express their opinions and ideas and to focus on specific issues related to community safety and sustainability.

According to the agenda in both focus groups, the Facilitator made a welcoming speech. In his speech he welcomed the participants on behalf of the Agency for Hydrometeorology of the Committee for Environmental Protection under the Government of Tajikistan and UNESCO-Adaptation Fund GLOFCA project and briefly explained the purpose of the community consultation and outlined the current situation. After that, in the men's group moderated by Mr. Khodjiev A. and in the women's group moderated by Ms. Safaralizoda O. briefly explained the situation of climate change and GLOF in the mountain villages of Surkhob jamoat and its impact on the communities in case of breaching. Both moderators asked the questions based on the questionnaire prepared in Tajik language (***Annex 4*** - *Tajik version of focus group questions*).

It should be noted that the detailed information led to good discussions among the participants in both groups. A representative of Emergency Situation Department also participated in the meeting and contributed to better sensitization on natural disasters in the district.

During the meeting, brief information was also provided on the result of monitoring of the surface of Baralmos Glacier presented by the Glacier Research Center of the National Academy of Sciences of Tajikistan. The monitoring result showed that the glacier is unstable. The presence of glacial lakes also indicates its active changes. These lakes can have a significant impact on the dynamics of the glacier and represent an important factor for assessing its condition and potential risks associated with climate change.



The result of the consultation works show that there is an increase from the upper two tributaries of the glacier, and their flow is directed towards the tongue part of the glacier. By 2019, the tributaries unite in the main trunk of the glacier and continue moving towards its lingual part, which indicates active processes of glacier dynamics and changes in its structure. As a result of active dynamics, dozens of glacial lakes were formed on the glacier body and their outbursts formed repeated debris flows.

After presenting the situation of floods caused by climate change, the groups presented their opinions based on the questionnaire. Based on the questionnaires, it is clear that the main problems in rural areas are related precisely to climatic conditions, and in certain seasons of the year this creates difficulties for the life and economy of the population. Questionnaire with the provided answers in Dashti Murghon village is available below.

№	Questions	Answers
Group 1 – Male – Dashti Murghon Village		
1	Can you name a significant climate event/emergency that has occurred in your community? Weather events? Floods? When did they occur?	In the summer season, the warming climate, melting glaciers, the coming of floods, destruction of roads, electrical wires and the village becomes dangerous as a result of the warming climate, melting glaciers, the coming of floods.
2	How did these events affect your community (town/village)? What kind of damage was caused?	These events damaged canals, people were unable to plant crops on time, roads were closed.
3	What climate events do you think are likely to happen in the future? Why?	Floods are expected due to excessive rainfall or warming weather.
4	How do you get information about flooding and other hazardous situations?	From television and from CoES notifications.
5	Do people in your community (city/town) help each other after floods or other natural disasters? Can you give examples of this?	As a result of natural disasters, we need help from road builders to open roads.
6	Who do you think is responsible for rebuilding the community after a flood or other natural disaster?	The local government should take action to address these disasters.
7	In your opinion, how many homes and other buildings in the community are at risk of flooding? Is there a school, medical facility, or sidewalk that could be flooded?	Homes, schools, medical centers, and other important public facilities are far from the floods.
8	Do you know if there are hazard maps for your community?	Yes. The Emergency Committee meets with us in May and June regarding these natural disasters and provides us with a map of the risk of glacial avalanches and their impact on our village.

№	Question	Answer
Group 2 – Male – Dashti Murghon Village		
1	What measures have you taken to protect your home and/or family from flooding?	Building plows, cleaning roads, building patches, planting trees on hills.
2	If you had 100,000 dollars (1,067,445.00 TJS) to increase your safety from floods, how would you spend it?	Construction of bridges over large flood pipes, planting of various trees in bushes, strengthening of dams.
3	Would you say that floods and other extreme weather events affect women and men differently? How would you say	Leaving home affects men's and women's mental and emotional well-being, especially those with mental illness. Men may experience increased stress, anxiety and feelings of social isolation as men are less likely to seek support and express emotions openly.
4	To what extent do you think women participate in local government? In public meetings?	Women of the village are actively participating in local meetings and management of local affairs.
5	How much/what do you know about climate change?	Climate change results in warmer weather and floods that inundate and wash away cultivated land.
6	What factors do you think are contributing to climate change?	Deforestation and soil erosion, which reduce the forest's ability to absorb CO_2, are reducing the forest cover in our region, as the glacial floods that occur every year reduce the forest cover in our village year after year. these are the main factors that contribute to climate change.
7	What do you think are the effects of climate change?	Rising global temperatures are melting glaciers, rising sea levels and increasing natural disasters such as landslides, avalanches and melting glacial mudslides.
8	Can you say that climate change is a very serious problem or a minor problem?	Climate change is a very serious issue as it is already having serious impacts on ecosystems, economies and human health, as well as threatening future generations. Especially in our village, the growing season and harvest season have changed due to climate change.
9	Do you think climate change is happening now or is it affecting you personally?	Climate change is already happening and its effects in the form of flooding are affecting our community. We think the affect may be rising food prices, changing weather patterns and the onset of glacial floods that have destroyed our road that connects us to other regions.
10	What measures have you taken to protect your home and/or family from flooding?	To protect the home and family from flooding, we should take measures such as storing valuables in airtight containers and developing an emergency evacuation plan that you can check with CoES.

№	Question	Answer
Group 1 – Female – Dashti Murghon Village		
1	Can you name a significant climate event/emergency that has occurred in your community? Weather events? Floods? When did they occur?	In August, due to unfavorable weather conditions, glaciers melted in some villages causing material damage to people. e.g. damage to highways, damage to overpasses, breakage of electric cables, depending on the causes of the listed events, the population suffers.
2	What climate events do you think may happen in the future? Why?	Due to heavy snowfall at least 3.4 meters of snow has fallen, and our people cannot solve their problems due to floods, landslides, damaged roads. In our opinion, there is a serious danger ahead of us with heavy snowfall, rainfall and rising lake water.
3	What climate events do you think might happen in the future? Why?	In the future we are afraid that there will be a lot of snow and avalanches. Because of heavy rains we are threatened with all kinds of accidents. Cattle deaths, shortage of fodder, etc.
4	How do you get information about floods and other dangerous situations?	We are informed by telephone, television and radio. CoES workers also provide the information.
5	Do people in your community (city/town) help each other after floods or other disasters? Can you give examples of this?	The villagers help each other. They clean each other's houses after a flood.
№	**Question**	**Answer**
Group 2 – Female – Dashti Murghon Village		
1	What measures have you taken to protect your home and/or family from flooding?	Planting trees near the yard. Cleaning the gutters that run past our yard and house. Floods and natural disasters, successive rainstorms, are more common during the spring season.
2	Can you say that floods and other extreme weather events affect women and men differently? How would you say	It has a negative effect. Floods have a serious effect on land, roads, wheat and potato crops, houses and all living things.
3	How much/what do you know about climate change?	Factors of climate change are the increase in industrial plants, decrease in forested areas, increase in the number of vehicles. Climate change is currently having a negative impact on us. Warming wind and weather has had a negative impact on the farmer.
4	How much/what do you know about climate change?	Floods, avalanches, snow and rain, thunder and lightning are all considered climate change.
5	What do you think are the consequences of climate change?	The effects of climate change are heavy rains, flooding, damage to many people and homes.

Community Consultation in Duaghba village

After Dashti Murghon village, the next community meeting was organized in Duaghba village of Surkhob jamoat of Lakhsh district on October 16, 2024. The meeting was also held in the school of the village with 14 male and 14 female (***Annex 4*** - *List of participants in Duaghba village*). Men and women were divided into two focus groups to make the discussions more effective. As in the first village at the beginning Facilitator welcomed all participants on behalf of the Agency for Hydrometeorology and UNESCO gave a brief overview of the purpose of conducting this survey within the GLOFCA project.

Then in the men's group Mr. Khodjiev A. and in the women's group Ms. Safaralizoda O. briefly explained the situation of climate change and GLOF in the mountain villages of Surkhob jamoat and its impact on communities in case of a breakthrough.

To clarify the situation on the issues at hand, the groups were also provided with details on the status of Baralmos Glacier and its lakes, which led to good discussions among the participants in both groups. After presenting the situation of climate change induced flooding, the groups presented their views based on a questionnaire. It is clear from the questionnaire that the problem of debris flows, especially of glacial origin, is widely known in the village, which made the discussions more productive.

Focus group discussion in Duaghba

Agency for Hydrometeorology

Questionnaire with the provided answers in Duaghba village

№	*Question*	Answer
	Group 1 – Male – Duaghba Village	
1	Can you name a significant climate event/emergency that has occurred in your community? Weather events? Floods? When did they occur?	During the summer season, the village becomes dangerous due to the warming climate, melting glaciers, flooding, destruction of roads and electrical wires.
2	How did these events affect your community (town/village)? What kind of damage was caused?	As a result of these events, canals were damaged, the population was unable to plant crops on time, and roads were closed.
3	What climate events do you think are likely to happen in the future? Why?	Floods are expected due to excessive rainfall or warming weather.
4	How do you get information about flooding and other hazardous situations?	As a result of non-compliance with the environmental situation, exhaust gases, including; landfills, factories and enterprises.
5	Do people in your community (city/town) help each other after floods or other natural disasters? Can you give examples of this?	As a result of natural disasters, we need help from road builders to open roads.
6	Who do you think is responsible for rebuilding the community after a flood or other natural disaster?	Local government must take action to address these disasters.
7	In your opinion, how many homes and other buildings in the community are at risk of flooding? Is there a school, medical facility, or sidewalk that could be flooded?	The village we live in is under threat of natural disaster.
8	Do you know if there are hazard maps for your community?	The Emergency Situations Committee holds meetings for us in May and June about these disasters.
№	**Questions**	**Answers**
1	What measures have you taken to protect your home and/or family from flooding?	Building plows, clearing roads, building patches, planting trees on hills.
2	If you had 100,000 dollars (1,067,445.00 TJS) to increase your safety from floods, how would you spend it?	Building bridges over large flood pipes, planting various trees in bushes, strengthening dams.
3	Would you say that floods and other extreme weather events affect women and men differently?	Influencing the mental and emotional state of women leaving their place of residence, suffering from any mental illness.
4	To what extent do you think women participate in local government? In public meetings?	Actively participating in local meetings and managing local affairs.
5	How much/what do you know about climate change?	Climate change is the warming of the Earth due to harmful gas emissions, deforestation and pollution. It leads to melting ice, rising sea levels and extreme weather that threatens people, animals and nature.
6	What factors do you think are contributing to climate change?	Climate change is happening because of harmful gas emissions from burning coal, oil and gas,

		deforestation and air pollution from cars and factories.
7	What do you think are the effects of climate change?	Climate change is causing the Earth to warm, ice to melt and sea levels to rise. All of this damages nature, destroys homes and infrastructure, and makes life more difficult for people, threatening food and health.
8	Can you say that climate change is a very serious problem or a minor problem?	Climate change is a big problem because it affects us all. It destroys nature, threatens human and animal life, and creates problems in the economy and society.
9	Do you think climate change is happening now or is it affecting you personally?	Climate change is already happening, and it affects all of us. We see it in the form of hot years, heavy rainfall, floods and droughts. These changes can affect our health, food and daily life.
10	What measures have you taken to protect your home and/or family from flooding?	It exists and has an effect: the road is blocked, it causes damage

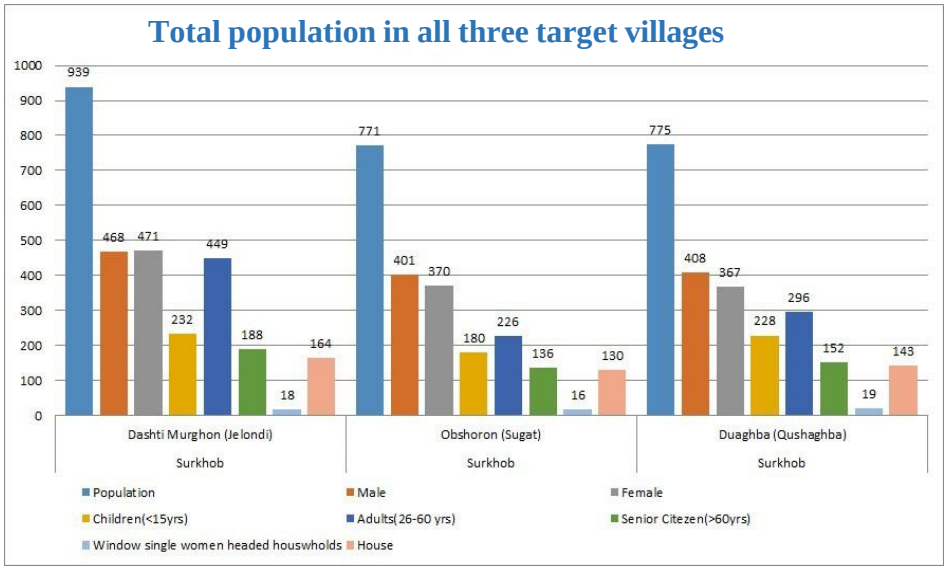
№	Questions	Answers
Group 1 – Female – Duaghba Village		
1	Can you name a significant climate event/emergency that has occurred in your community? Weather events? Floods? When did they occur?	In 1998, at 7 o'clock in the morning, a major flood occurred in the village of Duaghba, which washed away the house of one household and caused great damage to all the houses of the residents.
2	How did these events affect your community (town/village)? What damage was caused?	These events for us are like a terrifying event that we fear every night when it rains. We think that this rain may cause flooding and damage our homes.
3	What climate events do you think may happen in the future? Why?	Severe hurricanes, floods, droughts and wildfires are likely to occur more frequently in the future. This is because the warming of the planet is causing more energy in the atmosphere, making such events more powerful and destructive.
4	How do you get information about floods and other dangerous situations?	We receive information about flooding and other dangerous situations through the news, apps on our phones, and from local authorities and emergency services who report such events and warn of possible threats.
5	Do people in your community (city/town) help each other after floods or other disasters? Can you give examples of this?	Yes, they have financial assistance from the village, the community, and the state. If a flood destroys a house, all the people come together and help each other.
6	Who do you think is responsible for rebuilding the community after a flood or other natural disaster?	Disaster recovery is the responsibility of local governments, state agencies, non-profit organizations, volunteers, and residents themselves to work together to rebuild the community.
№	**Questions**	**Answers**
Group 2 – Female – Duaghba Village		

1	What measures have you taken to protect your home and/or family from flooding?	To protect ourselves from natural disasters, we need to plant trees to protect our region from natural disasters.
2	To what extent do you think women participate in local government? In public meetings?	Our women are very active in all public affairs. For example, women work more than men in the educational institution. A woman also works in the health center. In today's society, women are more active than men.
3	How much/what do you know about climate change?	When the weather becomes cloudy, rainy, windy - this is climate change. Many people are also affected by lightning strikes. This happened in our neighborhood. Two or three people died because of lightning.
4	What do you think are the consequences of climate change?	The effects of climate change are as follows: for example, when the rains increased this year, it affected planting and harvesting. It has affected the sowing and harvesting period of crops.
5	What measures did you take to protect your home and/or family from flooding?	When there was a natural disaster in our village and the road flooded. It becomes an obstacle for us to travel to the center of the district and bring the sick to the center.

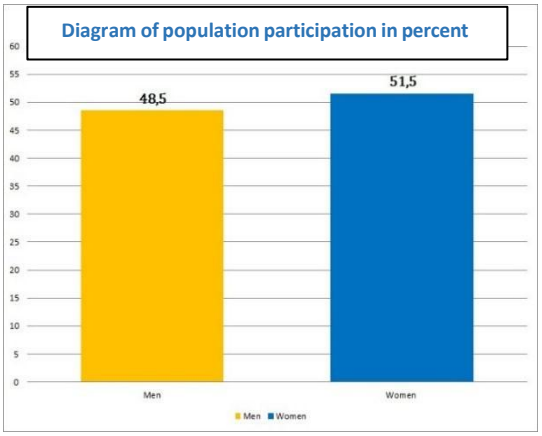
Outcome

Community consultation in the new proposed pilot area revealed that mainly three villages (Dashti Murghon – 939 pop., Obshoron – 771 pop., and Duaghba – 775 pop.) of Sukhrob sub-district of Lakhsh district with a total population of 2,485 in the Surkhob basin are vulnerable to glacier lake outburst floods (GLOFs) from Baralmos and Kyzylsu glaciers.

Occurred floods have repeatedly damaged the main transport corridor in the region, causing economic disruption and jeopardizing the connection of villages to their crops, animals, and health care service. Although houses and other social facilities in the affected villages are usually located at a safe elevation above the river level, in 2024 there was case when the floods destroyed several buildings.



Agency for Hydrometeorology



During the consultation works 74 people were involved, including 68 participants from focus group discussion, Government Representative – Mr. Jaborzoda Mukim Amon; CoES Department Representative – Mr. Zainiddinov Farrukh; Chairperson of District Women Committee – Ms. Tursunova Nigina; Representative of Surkhob Jamoat – Mr. Gaforov Azam Khursandovich; Deputy Chairman of Jamoat – Mr. Kululov Mazori; Military Officer of Jamoat – Mr. Jumaev Iskandar.

As was mentioned above according to the plan, another meeting was to be held with the population of Obshoron village, but due to continuous rains for several days, the road to the village became impassable and it became impossible to get there. Nevertheless, general information about the situation in this village and their exposure to possible risks was obtained during the conversation with the Chairman of Surkhob Jamoat – Mr. Gaforov Azam Khursandovich.

The survey showed that there is a lack of knowledge and resources among the population to deal with or mitigate the effects of glacial lake outburst failure (GLOF). Many local residents do not receive guidance on how to deal with such an emergency, which increases their vulnerability.

The lack of clear evacuation instructions or risk zone maps, inadequate early warning system, and lack of training programs for local communities all pose serious risks.

In addition, a lack of resources, such as specialized equipment, rapid response infrastructure and skilled personnel, greatly complicates the ability to prevent or minimize the impact of disasters in that area.

This requires a sophisticated program of community education (component 4 of GLOFCA project), improved warning and coordination systems (component 3), and the provision of financial and material resources to cope with the effects of such an economic crisis.

Verification process

1. **Which of the listed project outputs and activities would be most important to you?**
   a) Component 3 of the project is very important for the community to know where to evacuate in case of emergency and to have time to notify other villages about the situation.
   b) The community considers component 5 of the project as the third priority for easy access to and dissemination of information regarding GLOF Dashti Murghon village also suggest adding other lakes that are in the pilot area and have breakthrough risks so that people are better informed.

2. Are there activities that should be included but are not?

Agency for Hydrometeorology

a) Activities to identify all glacial lake outbursts in the area would be very good to include in the project (CoES representative);

b) Include a study for the construction of a new bridge for Obshoron village (Chairman of Surkhob Jamoat);

c) Include first aid training both theoretically and practically. This can help community members to provide good support during any emergency situations. Although such trainings are conducted every year by the CoES, but Duaghba village believes that this is not enough;

d) The project should create a village hazard map, indicating risk and safe zones.

3. Are there any activities that seem unnecessary to you?

All activities that the project includes are important and timely.

4. Is there anything else you would like to share?

a) In Duaghba village there was such a proposal that to carry out bank protection works along 250 km of the road "Dushanbe-Vahdat-Resht-Jirgatol-Saritosh".

Summary Table

Identify Risks					Flaws/ defects
Date	**Organization**	**Natural Hazards**	**Vulnerability**	**Early Warning System**	
15 – 16 October 2024	Agency for Hydrometeorology of the Committee on Environmental Protection under the Government of the Republic of Tajikistan Government of the Republic of Tajikistan Department of Emergency Situations and Civil Defense of Lakhsh District Executive Body of public authorities of Lakhsh district Community members representing the	In case of glacial floods, it destroys the road between villages and the main bridge of Obshoron village, 250 km of the road "Dushanbe-Vahdat-Resht-Jirgatol-Saritosh" (the road has already been partially destroyed), power lines for upstream villages (currently being rebuilt), the bridge leading to Dashti	-	The neighborhood does not have an early warning system in place. Residents will be informed of weather conditions and warnings from the appropriate and warnings from the relevant authorities of approaching floods.	No comments

	active group, youth members, women, elders etc.	Murghon village is almost destroyed due to the collapse of the Surkhob River banks during the mudflow. As well as land plots of residents of neighboring villages (many large cracks in the side walls of the transit zone of the mudflow channel were recorded).			

Annexes:

Annex 1 – Agenda – Community Consultations

Annex 2 - Questionnaire for the CoES representative of Lakhsh district.

Annex 3 – List of participants in Dashti Murghon village

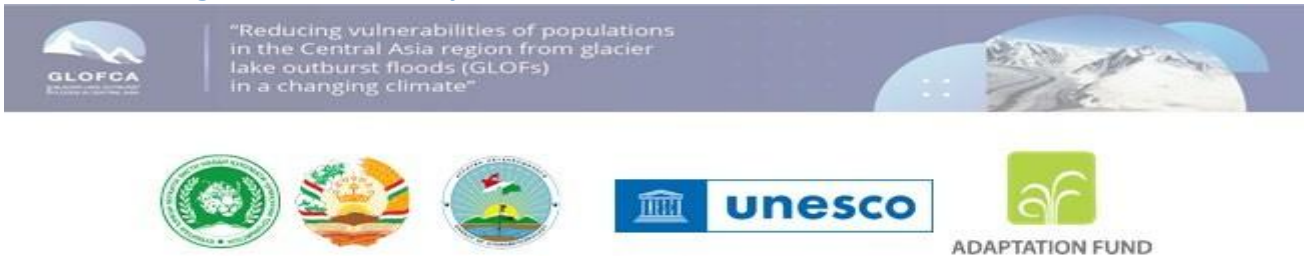
Annex 4 – List of participants in Duaghba village

Annex 5 - Tajik version of focus group questions

Annex 6 - Photo reports of the mudflow result

Agency for Hydrometeorology

Annex 1. Agenda – Community Consultation



Stakeholder consultation program

Date: 15 – 16 October 2024

Language of the event: Tajik and Russian

Date	***Description***
Date 1 (15/10/2024)	**Local Authority of Lakhsh District** **09:00-10:00 - Meeting with representatives of the state authorities of Lakhsh District** ➢ Discussion of the main objectives of the pilot project; ➢ Determination of the needs and proposals of the authorities; ➢ Analysis of the legal and organizational aspects of the project. **10:00-11:00 - Meeting with the staff of the emergency department of the Lakhsh district.** ➢ Experience related to the phenomenon of glacial flooding in the region; ➢ Action plan and key steps within the action plan; ➢ Identification of needs and proposals of government agencies.
	12:00-13:00 – Lunch

Agency for Hydrometeorology

	Location: Dashti Murghon village. Surkhob jamoat **13:30-14:30 – Meeting with community representatives.** ➢ Presentation of the project and its benefits for the village; ➢ Collection of ideas and proposals for the development of infrastructure and the socio-economic situation. **14:30-15:30 - Involvement of villagers (women, youth) in the discussion.** ➢ Organization of a round table for the exchange of opinions; ➢ Special needs and problems of these groups; ➢ Assessment of the needs of rural areas for the coming years. **16:00 – 17:00 – continuation of the discussion.** ➢ Discussion of participation in the project and possible initiatives to support women and youth; ➢ Formation of a list of priority tasks.
	17:00 - 17:30 - Summary of all proposals and presentation of the result.
Day 2 (16.10.2024)	**Location: Duaghba village** **09:00-11:00 – Meeting with community representatives.** ➢ Presentation of the project and its benefits for the village; ➢ Collection of ideas and proposals for the development of infrastructure and the socio-economic situation. **11:00 – 13:00 – Interview with women and youth representatives.** ➢ Organization of a round table to exchange views; ➢ Specific needs and problems of these groups; ➢ Assessment of rural needs for the coming years; ➢ Discussion of participation in the project and possible initiatives to support women and youth; ➢ Formulation of a list of priority tasks.
	13:00 - 14:00 – Lunch
	14:00 - 15:00 - A summary of all proposals and presentation of the result.

Agency for Hydrometeorology

Annex 2. Registration list of Community Consultation in Dashti Murghon villages, 15 Oct.2024.

UNESCO
ADAPTATION FUND

Чадвали иштирокчиён / Registration Form

Барои тадқиқот оид ба арзёбии осебпазирии ҷомеа аз тағйирёбии иқлим ва обхезии кӯли пиряхӣ (GLOF) дар деҳаҳои Дашти Мурғон, Дуағба ва Сунгат, ноҳияи Лахши Ҷумҳурии Тоҷикистон

Сана/Date: ____________________

№	Ному насаб/Name	Вазифа/Titel	Деҳа/Village	Телефон/Telephone	Имзо/Signature
1.	Алимова Курбонои	Хонашин	Дашти Мурғон	931-31-40-36	[signature]
2.	Шоимирзоева Х.	Хонашин	Дашти Мурғон		[signature]
3.	Давлатмирова М	Деҳқон	Дашти Мурғон		[signature]
4.	Лолаева З.	Деҳқон	Дашти Мурғон.	907-32-48-41	[signature]
5.	Ниданазаров Х	Деҳқон	Дашти Мурғон		[signature]
6.	Раҷабова Д	Хонашин	Дашти Мурғон		[signature]
7.	Хушвахтова И	Деҳқон	Дашти Мурғон		[signature]
8.	Султонова Г	Хонашин	Дашти Мурғон		[signature]
9.	Мамадиева Ф	Хонашин	Дашти Мурғон	938-10-56-86	[signature]
10.	Мамадиева Ш	Хонашин	Дашти Мурғон	931-41-52-42	[signature]
11.	Гадоева Мавҷуда	Хонашин	Дашти Мурғон		[signature]
12.	Самадова Азиза	Омӯзгор	Дашти Мурғон	908382329	[signature]
13.	Каримова Х	хонанда	Дашти Мурғон		[signature]
14.	Ҷумаева М	хонанда	Дашти Мурғон		[signature]
15.	Зарафшонзода Р	хонанда	Дашти Мурғон		[signature]
16.	Абилова Ч	хонанда	Дашти Мурғон		[signature]
17.	Ниёзова Б	хонанда	Дашти Мурғон		[signature]
18.	Нуралиева С	хонашин	Дашти Мурғон	934-50-42-74	[signature]
19.	Имонова Нафиса	хонашин	Дашти Мурғон		[signature]
20.	Мамадализода Ш	хонашин	Дашти Мурғон		[signature]
21.	Саймуродова Т	хонашин	Дашти Мурғон		[signature]
22.					

Agency for Hydrometeorology

ADAPTATION FUND

Чадвали иштирокчиён / Registration Form

Барои тадқиқот оид ба арзёбии осебпазирии ҷомеа аз тағйирёбии иқлим ва обхезии кӯли пиряхӣ (GLOF) дар деҳаҳои Дашти Мурғон, Дуағба ва Сунгат, ноҳияи Лахши Ҷумҳурии Тоҷикистон

Сана/Date: ______________________

№	Ному насаб/Name	Вазифа/Titel	Деҳа/Village	Телефон/Telephone	Имзо/Signature
1.	Цумаев Я	р/х/д	д.Д. мурғон	901909007	[signature]
2.	Шуйчиев З	омузгор	д. Д. мурғон	931202036	[signature]
3.	Махмадиев С	омузгор	д. Д. Мурғон	777-01-15-18	[signature]
4.	Холов А	Омузгор	д. Д. Мурғон	00Р-44-64-43	[signature]
5.	Алданазаров З	Посбон м №36	д. Д. Мурғон	935-28-51-17	[signature]
6.	[illegible]	р/х/д	д. Д. мурғон	981-31-40-36	[signature]
7.	[illegible]	р/х/д	д. Д. мурғон	11111-43-18	[signature]
8.	Бурхонов С	р/х/д	д. Д-мурғон	935621597	[signature]
9.	Эмомханов С	ронанда	Д. Кушай	907-01-05-04	[signature]
10.	Эмомханов С	Омузгор	д. Д-мурғон	004-04-10-03	[signature]
11.	Абдувашев С	р/х/д	д. Д. мурғон	931 87 78 93	[signature]
12.	Сафаров С.	р/х/д	д. Д. мурғон	936.36.12.17.	
13.	Алданазаров В	р(х)д	д. Д мурғон	931 07 99 56	[signature]
14.	Умаров А	р(х)д	д. Д. мурғон	933 39 25 71	
15.	Алданазаров Х	р(х)д	д. Д. мурғон	931 30 17 75	[signature]
16.					

ADAPTATION FUND

Чадвали иштирокчиён / Registration Form

Барои тадқиқот оид ба арзёбии осебпазирии ҷомеа аз тағйирёбии иқлим ва обхезии кӯли пиряхӣ (GLOF) дар деҳаҳои Дашти Мурғон, Дуағба ва Сунгат, ноҳияи Лахши Ҷумҳурии Тоҷикистон

Сана/Date: ______________________

№	Ному насаб/Name	Вазифа/Titel	Деҳа/Village	Телефон/Telephone	Имзо/Signature
1.	Чумаев И.	Р. (нохияи)	д. Д. мурғон	901-22-88-51	[signature]
2.	Алданазаров А.	р - хозаин	д. Д. Мурғон	933 90 95 10	[signature]
3.	Алданазаров М	кор- Хочагидори	д. Д. Мурғон	001 33-17-72	[signature]
4.	Сулаймонов Б.	Омузгор	д. Д. Мурғон	006 44 62 98	[signature]
5.					

Agency for Hydrometeorology

Annex 3. Registration List of Community Consultation in Duagba village, 16 Oct. 2024

39.	Фаҳмиддин дуят	омузгор	Д. дуағба	003 88 42 97	
40.	Ходиева Л	омузгор	Д. дуағба	004-11-46-70	
41.	Сайдалимова С	Хонанда	Д. дуағба	900-98-71-74	
42.	Нозиддинова З	хонанда	Д. дуағба	907-78-29-85	
43.	Дилафрӯзи М	хонанда	Д. дуағба	004-66-13-74	
44.	Кумлова М.	кормандӣ ошхона	Д. Дуағба	00077 06 75	
45.	Зайниддинова Т	омузгор	Д. Дуағба		
46.	Набиева М	хонанда	Д. Дуағба		
47.	Додарҷонова Ф	хонанда	Д. Дуағба		
48.	Назарова Д	хонанда	Д. Дуағба		
49.	Лоиқова Ф	хонашин	Дуағба	006 55 95 51	
50.	Усейнова П	хонашин (Фарраш	Дуағба	000-80-82-89	
51.	Ходиева Н	Фаррош	Дуағба	902-02-88-98	
52.	Сайдалиева М.	Мудири Бунёди С.	Дуағба	900-80-91-47	
53.					

...двали иштирокчиён барои тадқиқот оид ба арзёбии осебпазирии ҷомеа аз тағйирёбии иқлим ва обхезии кӯли пиряхӣ (GLOF) дар деҳаҳои Дашти Мурғон, Дуағба ва Сунгат, ноҳияи Лахши Ҷумҳурии Тоҷикистон

	Ному насаб	деҳа	телефон	Имзо
1.	Асалов. Назрҷуза	Дуағба	900075635	
2.	Рамазони Оғорхидин	д. Дуағба	903.00.16.93	
3.	Сайфалинов Зулмадин	Дуағба	900 98 71 74	
4.	Нозидинов Олим	д. Дуағба	907479081	
5.	Нуралиев Файзали	Дуағба	900112005	
6.	Давлатмоев Фаридун	Д. Дуағба	001227594	
7.	Абдурахмонов Парвиз	Дуағба	906729595	
8.	Асалов Пирмаҳмад	Дуағба	906 88 10 84	
9.	Биргизбеков Аминдин	Дуағба	000224129	
10.	Баротов. Кадрилло	Д. Дуағба	889007239	
11.	Каримов. Абдували	д. Дуағба	000668286	
12.	[illegible] Собир	д. Дуағба	801312321	
13.	Лоиқов Ривожидин	д-Дуағба	004-11-8278	
14.	маҳмудов Саймухтор	д. Дуағба	553.336115	

Agency for Hydrometeorology

Annex 4: Questionnaire for the CoES representative of Lakhsh District

General Information:

- What position do you hold in your organization?
- What experience do you have in emergency management?

Risk Understanding:

- How well is your organization aware of the risks associated with glacial lake outbursts?
- What measures are in place to monitor glacial lake conditions in your region?

Plans and strategies:

- Does your organization have a developed glacial lake outburst contingency plan?
- What key steps are included in this plan (evacuation, prevention, response, etc.)?

Equipment and Resources:

- What equipment is used to monitor glacial lakes?
- Does your organization have sufficient resources for emergency response (equipment, people, finances)?

Coordination of actions:

- How is coordination between different organizations (EMERCOM, local authorities, scientific institutes) carried out in case of threat of glacial lake outburst?
- Are joint drills or exercises conducted to deal with such emergencies?

Consequence assessment:

- What consequences could a glacial lake outburst have for your region (flooding, destruction of infrastructure, etc.)?
- How is potential damage assessed before and after a breakout?

Previous experience:

- Have there been any glacial lake outbursts in your region? If so, how did your organization respond to them?
- What lessons have been learned from previous glacial lake emergencies?

Issues and Challenges:

- What are the main challenges your organization faces in preparing for glacial lake outburst emergencies?
- What changes would you suggest improving the response to such situations?

Additional questions:

- What additional measures, in your opinion, need to be taken to prevent and eliminate the consequences of glacial lake outbursts?

Agency for Hydrometeorology

Annex 5: Tajik version of focus group questions

№	Саволҳо	Ҷавобҳо
	Гурӯҳи якум	
1	Оё шумо метавонед як ҳодисаи муҳими иқлимӣ/фавқулоддаро, ки дар ҷомеаи шумо рух додааст, номбар кунед? Ҳодисаҳои обу ҳаво? Обхезиҳо? Онҳо кай рӯй доданд?	
2	Ин воқеаҳо ба ҷомеаи шумо (шаҳр/шаҳр) чӣ гуна таъсир расониданд? Чӣ гуна зарар расонида шуд?	
3	Ба фикри шумо кадом ҳодисаҳои иқлимӣ метавонанд дар оянда рӯй диҳанд? Чаро?	
4	Шумо дар бораи обхезӣ ва дигар ҳолатҳои хатарнок маълумотро чӣ гуна қабул мекунед?	
5	Оё одамон дар ҷамоати шумо (шаҳр/шаҳр) пас аз обхезӣ ё дигар офатҳои табиӣ ба ҳамдигар кӯмак мекунанд? Метавонед ба ин мисолҳо оваред?	
6	Ба фикри шумо, кӣ барои барқарорсозии ҷомеа пас аз обхезӣ ё дигар офатҳои табиӣ масъул аст?	
7	Ба назари Шумо, чанд ҳиссаи хонаҳо ва дигар биноҳо дар ҷомеа зери хатари обхезӣ қарор доранд?Оё мактаб, муассисаи тиббӣ ё роҳраве ҳаст, ки зери об монда метавонад?	
8	Оё шумо медонед, ки оё барои ҷомеаи шумо харитаҳои хатар вуҷуд доранд?	

Agency for Hydrometeorology

№	Саволҳо	Ҷавобҳо
Гурӯҳи дуюм		
1	Шумо барои аз обхезӣ муҳофизат кардани хона ва/ё оилаатон чӣ гуна чораҳо андешидаед?	
2	Агар шумо барои баланд бардоштани бехатарии обхезӣ 100 000 доллар (1067 445,00 сомонӣ) дошта бошед, онро чӣ гуна сарф мекардед?	
3	Метавонед бигӯед, ки аз обхезӣ ва дигар ҳодисаҳои шадиди обу ҳаво ба занҳо ва мардон гуногун таъсир мерасонанд? Чӣ хел?	
4	Ба фикри шумо, то чӣ андоза занон дар идоракунии маҳаллӣ иштирок мекунанд? Дар маҷлисҳои ҷамъиятӣ?	
5	Шумо дар бораи тағирёбии иқлим чӣ қадар/чиро медонед?	
6	Ба фикри шумо кадом омилҳо ба тағирёбии иқлим мусоидат мекунанд?	
7	Ба фикри шумо, оқибатҳои тағирёбии иқлим чӣ гунаанд?	
8	Оё шумо бигӯед, ки тағирёбии иқлим як мушкили хеле ҷиддӣ аст, мушкилоти ҷиддӣ ё мушкилоти хурд?	
9	Ба фикри шумо, тағирёбии иқлим айни замон аст ё шахсан ба шумо таъсир мерасонад?	
10	Шумо барои аз обхезӣ муҳофизат кардани хона ва/ё оилаатон чӣ гуна чораҳо андешидаед?	

Annex 6 - Photo reports of the mudflow result

Annex 5: Revised Project Document (sections related to the change in pilot sites in Tajikistan highlighted in track changes) sent by UNESCO.

ADAPTATION FUND

REGIONAL PROJECT/PROGRAMME PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme:	Reducing vulnerabilities of populations in the Central Asia region from glacier lake outburst floods in a changing climate
Countries:	Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan[1]
Thematic Focal Area:	Disaster risk reduction and early warning systems
Type of Implementing Entity:	MIE
Implementing Entity:	UNESCO
Executing Entity:	UNESCO Cluster office in Almaty
Amount of Financing Requested:	USD 6,500,000

Project / Programme Background and Context:

Provide brief information on the problem the proposed project/programme is aiming to solve, including both the regional and the country perspective. Outline the economic social, development and environmental context in which the project would operate in those countries.

Central Asia is facing important challenges to coping with the adverse effects of climate change. A 2009 study by the World Bank found that Tajikistan and Uzbekistan had the highest degree of sensitivity to climate change in Europe and Central Asia and the lowest degree of adaptive capacity.[2] In particular, the impacts of climate change on water-related disasters in the region have been recognised as a key threat.[3] In Central Asia, socio-economically disadvantaged, indigenous groups, ethnic minorities, women, children and elderly are highly sensitive and particularly vulnerable to the impacts of climate change, as resilience and coping capacities are typically low.

One of the most significant effects of global warming in Central Asia (CA) is glacial melting and the associated formation of glacial lakes. Around the beginning of the 1970s, accelerated glacier

[1] The project concept included three countries (Kazakhstan, Tajikistan, and Uzbekistan) with the understanding that Kyrgyzstan would participate if possible. The Government of Kyrgyzstan has now endorsed the project, and its participation is reflected in the project activities and revised budget.

[2] World Bank (2009). *Adapting to Climate Change in Europe and Central Asia.* Washington, DC: World Bank.

[3] The declaration of the International conference on water-related natural disaster reduction, held in 2008 in Dushanbe, stated that research on the impacts of climate variability and change on water related disasters should be increased, in particular with the aim to develop adaptation strategies and mitigation measures. Water scarcity coupled with climate change related disasters has been recognized as a critical challenge in Central Asia region during the high-level international conference on the implementation of the "Water for Life" decade, held in Dushanbe, Tajikistan in June 2015. The pre-conference forum on Climate and Water dialogue, held in June 2018 in Dushanbe Tajikistan, at the occasion of the High Level International Conference on the International Decade for Action "Water for Sustainable Development" 2018-2028 recognized that melting glaciers pose threat to water security in CA at national and regional levels, and emphasized the necessity to showcase how implementing water resilient strategies can contribute to the adaptation and mitigation objectives set out in the Paris Climate Agreement and DRR in Sendai Framework for Action.

mass loss has been reported in the region (Sorg et al., 2012; Farinotti et al., 2015; Hoelzl et al., 2017). Today's rate of glacier loss in CA is 0.2–1% per year in volume. Furthermore, a 2017 analysis found that the impact of future climate change on glaciers in Central Asia is expected to be substantial: scenarios indicate that with a global temperature increase of 1.5°C, glacier mass in the Tien Shan range could decrease by 31%, while a 2° temperature increase could result in losses of up to 66%.[4] Due to glacier melting and lake formation, there is an increased danger of **Glacier Lake Outburst Floods (GLOFs)**, which confound and exacerbate water-related threats to mountain communities, their settlements, livelihood, and infrastructure located on river floodplain areas.

GLOF Hazards and Exposure

In the past two decades, GLOFs have resulted in significant economic damages and loss of life. In 1998, a GLOF in the Shakhimardan River catchment in Uzbekistan resulted in 93 fatalities, and in 2002, a GLOF in Dasht, Tajikistan left dozens of people dead. More recently, high temperatures and rapid melting in July 2015 triggered mudflows in the mountainous regions of Tajikistan. In 2008, a GLOF at the Zyndan glacial lake in Kyrgyzstan killed three people and led to substantial economic losses. Meltwater outbursts from the Aksai glacier in northern Kyrgyzstan triggered a GLOF that damaged houses and roads in villages down the valley. The lake still poses a continuous threat to the capital city of Bishkek. In 2015, a GLOF near Almaty, Kazakhstan caused the evacuation of over 1,000 people and 78 injuries. In addition, 127 houses were damaged. Across the region, experts estimate that nearly 100,000 people in mountainous areas face GLOF threats, with many others at risk downstream. In addition, several mountainous areas are relatively popular tourist destinations, which also places visitors at risk.

The incidence of dangerous glacial lakes in Central Asia is also increasing. A 2015 study in Kazakhstan identified 32 lakes in the Ile Alatau region and 110 lakes in Zhetysu Alatau region that had a water volume exceeding 100,000 m^3. In Kyrgyzstan, the latest inventory indicates that there are more than 350 glacial lakes in danger of outburst. Each year, there are twenty lakes that are in acute danger of failure, and approximately 300 settlements are exposed to potential GLOFs. Threats can appear rapidly; in the case of the Zyndan GLOF, the lake formed over a period of only two and a half months In Tajikistan, complex topography, high rainfall levels, and a large number of glaciers lead to a high level of exposure, and the south-western Pamir mountain range contains around 335 lakes with GLOF potential. In Uzbekistan, very large floods and mudslides are generally caused by the outburst of mountain lakes. According to Uzbekistan’s hydromet agency, the country is threatened with 271 potential GLOFs, most of which are located outside its border.

[4] Reyer et al. (2015) in Zholdosheva, E. et al. (2017). *Outlook on climate change adaptation in the Central Asian Mountains.* Mountain Adaptation Outlook Series. UN Environment, GRID-Arendal, RMCCA. Nairobi, Vienna, Arendal, Bishkek. www.unep.org, www.grida.no.

Figure 1: Glaciers of Central Asia

The number of glacial lakes and incidences of failure are expected to increase further as new lakes continue to develop and surrounding steep slopes destabilize in response to warming, particularly warmer summer temperatures. In Central Asia, regional scientific studies suggest that glacier shrinkage is causing more frequent hazards, including GLOFs (see Figure 1; Hoelzle et al., 2017). In addition to the large volume of water released by GLOFs, they present a significant transboundary hazard. Hence, the increasing risk of disasters from GLOFs is a significant threat to national and regional security and to sustainable development in Central Asia. In fact, during the international seminar co-organized by the UN Regional Centre for Preventive Diplomacy in Central Asia and UNESCO, *"The Impact of Glaciers Melting in Central Asia on National and Trans-Boundary Water Systems"* in Almaty, Kazakhstan, in April 2013, GLOFs were specifically highlighted as a key threat to the socio-economic development of the region. In June 2018, an international Climate and Water Forum held in Dushanbe, Tajikistan, reaffirmed the linkages between climate change, water resources, and disaster risk reduction in mountainous communities in Central Asia and highlighted the importance of partnerships between academia, hydromet agencies, ministries, and civil society in addressing threats.

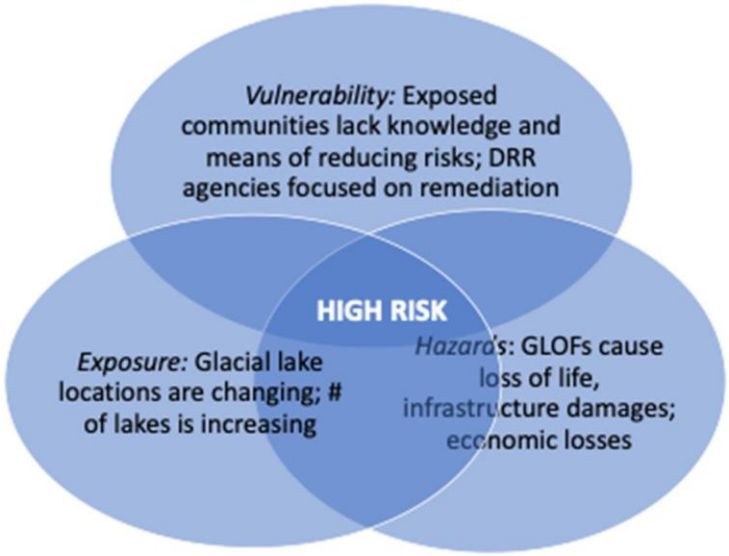


Figure 2: GLOF Climate Risk Factors

DRR and Adaptation in Central Asia

With the global emergence of new commitments to disaster risk reduction (DRR) and climate change adaptation (CCA), the issue of monitoring, forecasting and early warnings of natural hazards (including on GLOFs) is gaining importance in the region. In 2015, representatives from Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan endorsed a joint statement of support for a post-2015 framework for disaster risk reduction and expressed a commitment to "develop, assess, and monitor regional and national programs of disaster risk reduction in accordance with the post-2015 framework for disaster risk reduction."[5] At a subsequent regional platform meeting for DRR in 2016 in Dushanbe, Tajikistan, participants called for the establishment of a regional forum to strengthen collaboration and provide important support to implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 at local, national, regional levels.

In the Central Asian region, which was part of the Soviet Union, disaster response has been traditionally stronger than prevention and preparedness. At present, the relevant ministries/committees (the Committee for Emergency Situations in Kazakhstan, the Committee of Emergency Situations and Civil Defence in Tajikistan, and the Ministry of Emergency Situations in Uzbekistan) still focus primarily on disaster response.

With the emergence of DRR as an area of cooperation, several country-level and bilateral programs have begun to address the issue. Countries in Central Asia maintain some common legislative links through their membership in the Commonwealth of Independent States (CIS). For example, in 2014, Kazakhstan, Kyrgyzstan, Uzbekistan, and Tajikistan adopted a model act on

[5] Joint Statement of the Countries of Central Asia and South Caucasus regarding the post-2015 framework for disaster risk reduction. Approved by the participants of the Regional Ministerial Meeting of Countries of Central Asia and South Caucasus for cooperation in the post-2015 Framework for Disaster Risk Reduction January 30, 2015, Bishkek, Kyrgyz Republic.

international disaster assistance through the Inter-Parliamentary Assembly of the CIS. In January 2017, the four countries participated in a regional consultative conference on the legal aspects of disaster risk reduction.

In programming, the EU-funded Disaster Preparedness ECHO Programme (DIPECHO) has supported a variety of policy and education/training activities in Central Asian Countries. In 2016, DIPECHO also supported the establishment of the inter-governmental Kazakhstan-Kyrgyzstan Center for Emergency Situations and Disaster Risk Reduction (CESDRR) in Almaty, Kazakhstan. Non-governmental actors are also involved in DRR activities: the Aga Khan Agency for Habitat, for example, is currently cooperating with CESDRR on emergency response and DRR. However, country programming on DRR is at a relatively early stage, and it faces shortages of funding and qualified personnel. Furthermore, GLOFs have not been addressed explicitly in programming to date. Finally, research institutes have undertaken some work in GLOF monitoring in conjunction with partners from other regions. However, this research is not coordinated across Central Asian countries, and it does not necessarily feed into policy-making.

In addition, over the past three years, the UNESCO Almaty office has helped to build knowledge and capacities in Central Asian countries in sound water management and DRR. A total of 1,478 people have been trained in the areas of water research; governance and education; water diplomacy and cooperation; geohazard risk reduction; glacier research; and risk reduction related to glacial melting. These initiatives included training, workshops, and summer schools aimed at a variety of stakeholders: scientists and policy makers, managers, young civil servants, and young researchers. More than 268 young scientists were trained in field work in the areas of glacier mass balance measurements, landslide research and risk reduction, GLOFs, and other related topics.

The participating countries also recognize that building resilience and reducing societal vulnerabilities to climate related disasters is a key requirement for sustainable development. The United Nations 2030 Agenda for Sustainable Development specifically pledges to reduce physical and economic losses caused from water-related disasters, with a focus on the most vulnerable communities, and furthermore highlights the need for improved education, awareness-raising, and capacity building in relation to climate change impacts and early warning (SDG targets 11.5, 13.1 and 13.3). All four countries are members of the United Nations Framework Convention on Climate change (UNFCCC), and they have ratified the Kyoto Protocol and have signed the 2015 Paris Agreement. The participating countries in this project are on record that they “Confirm commitment to promotion of coordinated and mutually-supporting approach in the post-2015 framework for disaster risk reduction, the sustainable development goals, and the climate change agreements….”[6]

Target Area of the Project

[6] Ibid.

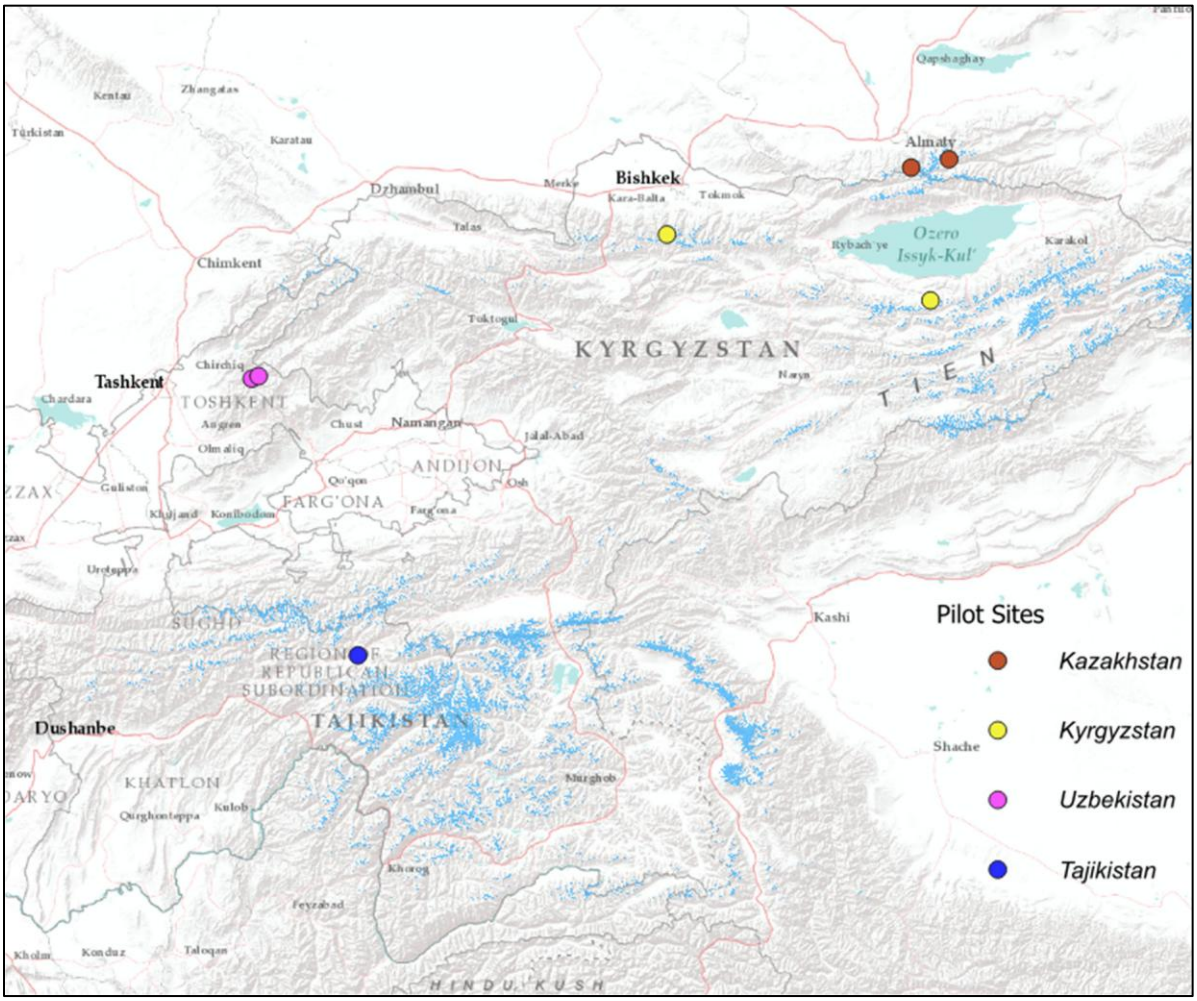


Figure 3: Map of the Target Area of the Project, using ESRI data.

The target area of the project covers vulnerable communities across several mountain ranges in Central Asia. Following discussions with government stakeholders, an initial group of pilot communities was identified based on representativeness of mountainous communities at risk of GLOFs, magnitude of exposure to GLOF threats, and vulnerability (e.g. communities with limited resources in need of assistance). The target communities are home to more than 85,000 people representing a number of different nationalities.

In Kazakhstan, the pilot villages of Esik and Talgar are located in the Almaty region in the foothills of the Tien Shan mountains. In Kyrgyzstan, the initially proposed pilot villages of Tosh-Bulak and Yurevka are located in the north central part of the country in the Ala-Too Range. Following the approval of the project document by the Adaptation Fund Board, discussions during the project inception activities identified two communities in Kyrgyzstan that would be more suitable for piloting the activities planned under the project due to their increased vulnerability to GLOFs: Ala-Archa and Ton-Tosor valleys located on the northern slopes of the Kyrgyz range and the Terskey-Alatoo ridge respectively. Consultations were held in April and May of 2022, and the supplemental findings are presented in the Annexes 1, 2 and 3. In Tajikistan, the initially proposed pilot villages are located in the district of Shugnon, which is located in the southwestern part of the Pamir Range, and all are directly threatened by two glacial lakes in the upper reaches of the Varshez glacial lake. However, local and international project partners continue to face difficulties working

effectively at the original pilot site in the GBAO due to the current political situation, rendering the successful implementation and long-term sustainability of the installations uncertain. Following the approval of the project document by the Adaptation Fund Board and subsequent discussions during project implementation, a new pilot site has been identified in Tajikistan. This site is considered more suitable for piloting the planned activities, as it has experienced regular, annual glacial lake outburst floods over the past decade, significantly impacting local communities and transportation routes. The proposed pilot site is located in north-central Tajikistan, within the Lakhsh (Jirgatol) District. Consultations were held in October 2024, and the supplemental findings are presented in Annexes 1, 2, and 3. In Uzbekistan, the pilot communities, Pskem and Tepar, are located in the Pskem mountain range of the West Tien Shan near the border with Kyrgyzstan. Two glacial lakes are located in the upper reaches of the Pskem River: Shavurkul Lake and Ikhnach Lake, which contain 5 million and 4 million cubic meters of water, respectively. Detailed community profiles are provided in Annex 3 of the project, and baseline community consultation information is provided in Annex 1. The pilot communities for the project were selected on the basis of an ongoing dialogue with the participating governments. For the initial pilots, the governments identified communities that were currently exposed to an immediate GLOF threat and had a relatively high level of vulnerability. The selected communities were also reviewed at the project stakeholder validation workshop.

Barriers to Adaptation

Multiple barriers prevent effective DRR and adaptation to climate threats at a national and regional level in Central Asia.

Institutional barriers: at the institutional level, there is a lack of a policy framework for day-to-day coordination between local and national authorities and between countries in the region. This means that there is no regional cooperation for the assessment and monitoring of transboundary GLOFs. The lack of formal cooperation makes it extremely difficult to deal with transboundary threats, and it prevents authorities from benefitting from knowledge and good practice in other areas within and adjacent to their own country.

Moreover, there is low coordination and synergy between existing institutional structures. At present, there is no way to consolidate the existing knowledge on glaciers, glacial lakes, and GLOF events, which could enhance the ability of policy makers in Central Asia to understand the associated risks.

Organizational barriers: At the organizational level, the capacity of relevant authorities to monitor and reduce risk is weak. An underlying lack of knowledge about the distribution and severity of GLOF threats makes it very difficult to identify communities that are at high risk. This is caused by insufficient monitoring. While lake monitoring exists to a certain extent in countries like Kazakhstan and Kyrgyzstan, it consists of regular helicopter flights over the glaciated areas, which is not cost-effective or sustainable.

Furthermore, disaster management authorities lack the funding and expertise to conduct a risk analysis of the communities affected by GLOFs, which hinders authorities in identifying the most vulnerable communities exposed to GLOF threats. Current initiatives do not have the capacity to manage the risks posed by melting glaciers, including issuing early warning of GLOFs. Institutions are poorly equipped with modern technologies for early warning systems (EWS). Furthermore, there are no mechanisms available among disaster experts, managers and planners to develop local risk reduction plans in response to GLOFs. In fact, DRR stakeholders

at the national level do not have linkages with vulnerable groups at the community level that could inform their work.

In the research community, there are no formal links and very little cooperation on GLOF-related research across Central Asia, although joint research and technical exchange would be extremely beneficial, especially regarding transboundary hazards.

In addition, organizations lack the capacity to design and produce awareness-raising materials, such as educational materials for school-age children or maps and infographics for communities that are available in the relevant formats and languages.

Individual-level barriers: At the individual level, relevant authorities face a critical gap in knowledge concerning glacier lake distribution, risk mapping, and disaster prevention planning from GLOFs. They also lack information on how implement early warning systems and other adaptation measures. Furthermore, communities at risk are not trained in emergency planning or safety measures. In addition, young local scientists have not had an opportunity to acquire fundamental knowledge regarding the cryosphere, glacier lakes, and related hazards that will allow them to make substantive contributions to mapping, monitoring, mainstreaming DRR into practice.[7] All stakeholders lack a consolidated source of information on GLOFs and GLOF risks and risk reduction, and vulnerable groups cannot get the information they need through the formal and informal communication channels they use. Vulnerable groups also lack adequate awareness, education and training opportunities on GLOFs at the community level, especially in remote areas.

Project / Programme Objectives:

The objective of the proposed project is to strengthen adaptation to climate change in Central Asia by reducing societal risks and vulnerabilities associated with GLOFs. This objective also addresses SDGs 11 and 13 of the 2030 Agenda, particularly targets 11.5 and 13.1 and 13.3.

The project objective will be achieved by assessing societal risks and vulnerabilities associated with GLOFs and then addressing these risks and vulnerabilities. The approach will strengthen the monitoring, analytical and response capacities of institutions and government officials responsible for DRR, emergencies and CCA through community and gender-sensitive ground-level training and awareness campaigns, and through the establishment of early warning systems (EWS), supported with the necessary state-of-the-art monitoring strategies. The emerging and increasing risk associated with GLOFs, together with appropriate response and adaptation strategies will be brought to the forefront of attention for decision makers and communities in all of the participating countries.

The overall approach of the project is to assess vulnerability through work with technical experts and communities and then address vulnerability through targeted systems and measures while building capacity for prevention activities. The logic of the project intervention is provided in Figure 2. It is the regional approach that will contribute to improved coping with climate change and its consequences through information and experience exchange with regard to best practices in CCA and DRR. Discussion of the benefits of a regional approach is provided in Section II.A.

[7] A separate stakeholder consultation was held with university students and early-career researchers focusing on DRR topics in Almaty on March 13-14, 2019. Findings are provided in Annex 2.

Project / Programme Components and Financing:

Table 1: Project Components and Financing

Project/Programme Components	Expected Outcomes	Expected Outputs	Countries[8]	Amount (US$)
1. Strengthening national and regional capacity to monitor and assess GLOF hazards	Authorities in participating countries have improved knowledge of potential GLOF hazards and a coordinated national and regional approach to mapping and monitoring potential GLOF sites.	Appropriate mapping and monitoring strategies developed Up-to-date atlas on glacier lakes for all participating countries based on remote sensing data developed and maintained. Organizational capacity to implement and oversee mapping and monitoring strengthened, with an emphasis on transboundary hazards	Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan	820,000
2. Strengthening sub-national, national, and regional policies and approaches to meet needs of vulnerable communities	Decision-makers and vulnerable households are aware of GLOF threats and have the necessary information to plan measures to adapt to those threats.	Vulnerability assessment and exposure maps developed for endangered communities, including gender and sector-specific analyses. Local knowledge on GLOF risks and related adaptation needs documented and local risk reduction plans drafted for selected communities vulnerable to GLOFs.	Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan	1,364,800

		DRR and CCA concepts mainstreamed into sub-national development planning in the relevant country context		
3. Design and launch of EWS and risk reduction measures tailored to local contexts	A coordinated EWS network is designed and embedded in the institutional setting for disaster risk management at all levels.	Local to regional framework for EWS established and evaluated. Design and implementation plans for four site-specific EWS completed.	Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan	1,070,000
4. Targeted demonstration projects to introduce EWS technology and low-cost adaptation measures in vulnerable communities.	Risk from GLOF hazards reduced in pilot communities and relevant agencies have the means to maintain adaptation measures and upscale them to other vulnerable communities.	EWS tested in selected vulnerable communities. Complementary adaptation measures implemented. Authorities and population trained through simulation exercises and other means as needed. Maintenance and financing strategy developed for ensuring long-term sustainability of the EWS and complementary adaptation activities and the expansion of adaptation activities to other vulnerable communities.	Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan,	1,763,444

5. Knowledge exchange, stakeholder engagement, and communication.	Researchers, government authorities and communities have improved access to, and use, information on GLOF hazards and risk reduction measures to adapt to them.	Web-based knowledge-platform established on GLOF risks and adaptation strategies. Education and training programmes undertaken to equip stakeholders with knowledge and capacity to prepare for, respond to and recover from GLOF disasters. Knowledge and lessons learned from the targeted demonstration projects disseminated within Central Asia and across other high mountain regions.	Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan	910,000
6. Project/Programme Execution cost 7. Total Project/Programme Cost 8. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)				90,275 6,018,519 481,481
Country budget breakdown				
Kazakhstan	**Kyrgyzstan**	**Uzbekistan**	**Tajikistan**	
1,405,625	1,405,625	1,405,625	1,405,625	
Amount of Financing Requested				**6,500,000**

Table 1a: Project calendar of project milestones

Milestones	Expected Dates (tentative)
Start of Project/Programme Implementation	June 2020

Mid-term Review (if planned)	June 2022
Project/Programme Closing	May 2025
Terminal Evaluation	June 2025

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. *Describe the project / programme components, particularly focusing on the concrete adaptation activities, how these activities would contribute to climate resilience, and how they would build added value through the regional approach, compared to implementing similar activities in each country individually. For the case of a programme, show how the combination of individual projects would contribute to the overall increase in resilience.*

This project will reduce climate change induced risks and vulnerabilities from GLOFs in Central Asia through coordinated risk identification and community-embedded adaptation measures. More broadly, the project will build societal awareness and thereby resilience to the threat of climate change, particularly water-related disasters. Adaptation measures, including EWS, are strongly promoted by the Sendai Framework for Disaster Risk Reduction 2015-2030, to which Central Asian countries are committed. According to the United Nations Office for Disaster Risk Reduction (UNISDR), the following are four key elements of EWS: I. risk knowledge; II. monitoring and warning service; III. dissemination and communication; and IV. response capability. In addition, the project will enhance risk knowledge and response capability with activities that map potential threats and implement low-cost adaptation measures to reduce community risk. Capacity strengthening, highlighted in the 2030 Agenda under SDG 13 Target 13.1, will also be addressed in all project components through training, institutional twinning, participatory planning, and knowledge exchange. Finally, the project will support explicit measures to promote sustainability: the identification of post-project and expanded financing for EWS in vulnerable communities, and the dissemination of GLOF information and good practice in risk reduction in GLOF areas.

A core strength of this project is its focus on a ***regional approach*** to adaptation activities. This is crucial, as GLOFs represent far-reaching climate hazards that may originate in remote regions and cause damage in areas that are hundreds of kilometres downstream, possibly located in the territory of another country. Far-reaching GLOF disasters with transboundary impacts have already occurred in Central Asia; for example, the 1998 outburst event at the Archa-Bashy glacier in Kyrgyzstan caused the deaths of more than 100 residents of Shahimardan in neighboring Uzbekistan. The regional approach also takes advantage of the fact that the countries have similar government structures and share a common administrative and research past. Furthermore, a regional approach will allow the countries to utilize additional research capacity, such as the Central Asian Regional Glaciological Center under the auspices of UNESCO, based in Almaty and policy capacity, such as the Regional Center for Emergency Situations and DRR.

Therefore, this project emphasizes the development of common monitoring, assessment, and response strategies, while also recognizing that final implementation must be tailored to local physical, cultural and societal contexts. The project will facilitate several regional exchange workshops, enabling experiences and knowledge to be shared and transferred between partners, while the implementation of four distinct pilot demonstration projects will provide a basis for comparative evaluation, identifying successes and lessons learnt between countries. Such capacity building and development at multiple levels will ensure that the countries are well equipped and motivated to maintain long-term, sustainable adaptation strategies implemented under this project.

The project is directly aligned with four Adaptation Fund outcomes: Outcome 1 (Reduced exposure to climate change hazards and threats); Outcome 2 (Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses); Outcome 3 (Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level); and Outcome 4 (Improved policies and regulations that promote and enforce resilience).

Component 1: Strengthening national and regional capacity to monitor and assess GLOF hazards

This project component recognizes that a comprehensive and successful adaptation project addressing water-related disasters must be built on a robust foundation of best available understanding of current and future glacier evolution, which is the basis of GLOF threats across Central Asia. In a first step, knowledge on past and future variations in essential climate variables (primarily changes in temperature and precipitation, and the response of glaciers and permafrost), which in turn influence development and susceptibility of glacial lakes, will be reviewed, compiled and improved. GLOF threats can develop rapidly and have far-reaching effects. Hence, first-order monitoring strategies are best implemented at the regional-scale, using remotely sensed imagery, supported with available long-term ground-based measurements, and modelling approaches. Furthermore, anticipation of where new lakes may develop as glaciers continue to retreat, ensures adaptation strategies may be optimized for current, emerging, and future threats, and maladaptation can be avoided. Training of national responsible authorities in these methods and technologies will enable homogenous monitoring programs to be implemented across Central Asia.

The capacity building program will be broadened to include training modules on the fundamentals of glaciers, lakes, and hazards within national educational institutions with the subsequent goal of establishing inter-university cooperation and networking in the region in these sectors through the UNESCO UNITWIN program. While a common regional methodology framework will be applied, training will be tailored to the local context of each country, and it will help ensure the long-term sustainability of the adaptation measures implemented under Component 4. In addition, citizen science initiatives for monitoring glacier change will be considered in order to expand on-the-ground monitoring efforts. Finally, steps will also be taken to ensure that participation in GLOF monitoring and mapping, including supporting capacity strengthening, is gender-balanced.

Component 1 will encompass the following outputs and indicative activities:

<u>Output 1.1: Appropriate mapping and monitoring strategies developed</u>

Indicative activities under Output 1.1 will include:

1.1.1. Review and assessment of observed and projected changes in essential climate variables across Central Asia, providing context and basis for design of the lake monitoring programs, and establishing synergies with ongoing and future regional cryosphere initiatives (see Part II G).

1.1.2. Consultation with country authorities to develop a handbook and best-practice guidance documents, outlining a homogenous strategy for remote sensing and field-based monitoring of glacier lakes and surrounding periglacial terrain that uses common data sources and techniques. A citizen science component will be considered here.

1.1.3. User-friendly visualization and analytical toolbox for anticipating where new lakes and therefore threats will develop over the 21st century as glaciers retreat.

1.1.4. Monitoring strategies presented to governance structures at the national and regional level.

Output 1.2: Up-to-date atlas on glacier lakes for each country based on remote sensing data, supported by *in situ* measurements, developed and maintained.

Indicative activities under Output 1.2 will include:

1.2.1. Glacier lakes mapped across Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan for the most recently available satellite imagery (2018 – 2019); e.g., freely available Landsat or Sentinel images.

1.2.2. Retrospective mapping of previous lake distribution and extents for defined periods, to establish change in GLOF threat over past decades and identify rapidly emerging problems.

1.2.3. Estimation of key lake parameters (e.g. area, volume, mean depth), supported and validated with available *in situ* measurements.

1.2.4. Integration of findings into a user-friendly database (see Component 5) where mapped information on glacial lakes will be maintained by and available to local authorities along with the vulnerability assessment findings and community mapping carried out in Component 2.

Output 1.3: Organizational capacity to implement and oversee mapping and monitoring strengthened, with an emphasis on regional cooperation on transboundary hazards.

Indicative activities under Output 1.3 will include:

1.3.1. Training workshops with local authorities in each country to ensure understanding of mapping and monitoring strategies and to introduce adaptation response strategies.

1.3.2. Design and implementation of a capacity building and twinning program in national universities, ensuring next generation of young local scientists are equipped with fundamental knowledge regarding the cryosphere, glacier lakes and related hazards, as well as integrated DRM.

1.3.3. Regional workshops to facilitate exchange of knowledge and experience between countries, with a view to establishing a permanent ongoing exchange mechanism in the region.

Component 2: Strengthening local, national, and regional policies and approaches to address the needs of vulnerable communities

This component is framed by the concept of climate risk endorsed by the Intergovernmental Panel on Climate Change in their latest assessment reports (Special Report on Managing the Risk of Extreme Events and the Fifth Assessment Report). The concept encourages a holistic approach, recognizing that climate related risk results from a physical event or hazard (e.g. GLOF) intercepting with an exposed and vulnerable system (e.g. community). In this conceptual model, risk reduction strategies such as EWS are seen as a key tool for climate change adaptation.

There will be two scales to the risk assessment. Firstly, a *hazard assessment* for all lakes and associated downstream affected land areas will be conducted at the regional scale. While a core assessment procedure will be homogenised, some physical, societal, and economic drivers of risk may vary between countries, such that approaches will be tailored for the local context.

Secondly, the project will conduct *community assessments*, working with local authorities and community members to assess their baseline knowledge of risks, to gather local knowledge, and to identify local patterns and behaviours that may affect vulnerability and access to DRR information. The project will liaise with national organizations for the advancement of women and local authorities to ensure meaningful participation in the community assessments by women.

As a result of the assessments, critical GLOF risk hot spots will be identified in each country. These hot spots will be evaluated together with high-priority sites identified by local authorities, leading to local-scale assessments supported by field studies and validation at the most critical sites. This multi-level approach ensures that subsequent monitoring, preparedness, and EWS strategies are targeted to those lakes and downstream areas where risk of disaster is greatest. In these hot spots, the project will support the development of Local Risk Reduction Plans in conjunction with the vulnerable communities.

Finally, Component 2 will support development of DRR and CCA concepts to be mainstreamed into local development plans. During the project preparation phase, the sub-national planning process for provinces and districts will be surveyed for the participating countries and entry points for mainstreaming will be identified. These findings will serve as a baseline for the project activities under Output 2.4.

Component 2 will encompass the following outputs and indicative activities:

<u>Output 2.1: Vulnerability assessment and exposure maps developed for endangered communities, including gender and sector-specific analyses</u>

Indicative activities under Output 2.1 will include:

2.1.1. Development of a common GLOF hazard and risk assessment procedure, elaborated for the physical, social and environmental context of each country.

2.1.2. Preliminary estimates of the likelihood of outburst established for every current and anticipated future glacial lake, and downstream flood-prone land areas identified.

2.1.3. Assessment of vulnerability and exposure of communities and infrastructure within flood-prone land areas based on proxy indicators (e.g. population density, urban land area etc.) At least four women-only focus groups will be convened in the assessment process

2.1.4. Identification of hotspots (based on the findings from 2.1.1. – 2.1.3.) and compilation of comprehensive local-scale GLOF hazard assessment and maps for both current and future scenarios.

Output 2.2: Local risk reduction plans drafted for selected communities vulnerable to GLOFs.

Indicative activities under Output 2.2 will include:

2.2.1. Ground-level mapping and assessment of infrastructure and assets located within flood-prone valleys.

2.2.2. Community-level studies of vulnerability through participatory surveys and interviews. Evaluation of the risk perception of men and women in local communities exposed to GLOF hazards, including the local knowledge of current hazards and past events, and how this is affecting their daily lives.

2.2.3. Elaborated basket of hard and soft adaptation options, emphasising no-regret adaptation options. Hard options include artificial lake lowering, armouring of the lake dam and channel area etc, whereas soft options typically aim to reduce exposure and vulnerability of the community. This includes several no-regret options that are part of, and support a fully operational EWS, such as institutional training and capacity building, evacuation and response planning, training drills and community awareness raising.

2.2.4. Community level feasibility study to evaluate local adaptation needs and expectations.

2.2.5. Development of Local Risk Reduction Plans and discussion of plans with participating communities on the basis of information gathered under activities 2.2.1 and 2.2.4.

Output 2.3: DRR and CCA concepts mainstreamed into local development planning in the relevant country context.

Indicative activities under Output 2.3 will include:

2.3.1 Compilation of good practice in mainstreaming DRR and CCA into sub-national development planning, particularly in mountainous regions, and a review of its applicability for men and women in participating countries.

2.3.2 Preparation of policy/planning roadmaps for integrating DRR and CCA concepts into local planning documents.

2.3.3 Technical support for mainstreaming in selected districts, including training for local-level authorities on DRR and CCA concepts and CCA content for trainings such as those provided by UNISDR.

Component 3: Design and launch of EWS and risk reduction measures tailored to local contexts

Early Warning is "the provision of timely and effective information, through identified institutions, that allows individuals exposed to hazard to take action to avoid or reduce their risk and prepare for effective response". The importance and need to promote, invest in, develop, maintain and strengthen EWS is mentioned several times in the Sendai Framework. In Component 3 the institutional mechanisms will be evaluated and established if needed, and EWS concepts will be elaborated for the study sites in each country as defined by the needs of the participating governments and informed by the findings from Component 2. Information on potential pilot sites is provided in Annex 4 of this concept, based on national consultations with authorities in each of the participating countries, during the PPG phase. Specific activities to support gender-sensitive EWS design and launch are listed in Annex 3.

Component 3 will encompass the following outputs and indicative activities:

Output 3.1: Local to regional framework of institutional DRR context established and evaluated

Indicative activities under Output 3.1 will include:

3.1.1. Evaluation of the process, roles and responsibilities of institutions and organizations involved in EWS as mandated by law in all project countries. Synchronization of GLOF specific aspects with existing mechanisms, institutional entities and platforms for other types of hazards for creating an institutional infrastructure for multi-hazard management of disaster risks.

3.1.2. Establishment of required institutional mechanisms and framework conditions (if necessary).

3.1.3. Evaluation and establishment of responsibilities and protocols for the dissemination of warnings, including the evaluation of potential means for the communication of alerts and warnings to ensure all members of the population, both men and women, receive the message.

3.1.4. Evaluation of long-term funding possibilities of EWS, including maintenance costs.

Output 3.2: Design and implementation plans for four site-specific EWS completed

Indicative activities under Output 3.2 will include:

3.2.1. For each study site: Identification of the environmental parameters critical for GLOF hazards and evaluation of monitoring methods (sensors and specifications).

3.2.2. For each study site: Elaboration of a data storage and access system, pre-definition of warning thresholds.

3.2.3. For each study site: Elaboration of institutional integration of EWS protocols with existing authorities and institutional entities

3.2.4. For each study site: Identification and design of complimentary adaptation measures to reduce GLOF hazard and exposure (see basket of adaptation options – Output 2.2). A focus will

also be given to green adaptation options, such as tree plantation to stabilise slopes and reduce bank erosion.

3.2.5. Definition of community needs for GLOF early warning based on the documentation of local GLOF risk perception and adaptation needs. Who needs to be warned, why, when, and how.

3.2.6. Information and capacity building with involved authorities on EWS implementation, operation, and maintenance.

Component 4: Targeted demonstration projects to introduce technologies and best practices for EWS for glacier lakes

Based on the recommendation of the local authorities, and the results of the large-scale risk assessment (Component 2), this component will implement one EWS tailored to the requirements of each participating country. Communities will also implement complementary low-cost / no-cost adaptation measures to increase resilience, such as hazard zone demarcation, the identification of evacuation routes and safe zones, and the management of drainage channels. The advantage of promoting these complementary measures is that they can be scaled up to communities even in the absence of an EWS, and the project will consider using peer educators to reach target groups.

Component 4 will encompass the following Outputs and indicative activities:

Output 4.1: EWS tested in selected vulnerable communities.

Indicative activities under Output 4.1 will include:

4.1.1. Identifying a company/institute, if possible local, to take over the technical engineering, including the acquisition of suitable equipment, the construction of the EWS stations, and the electronic and software engineering for the data transfer, processing and storage.

4.1.2. Detailed technical planning of the EWS: Identification of survey, monitoring, and communication stations; design of alerting and warning infrastructure and means of communication

4.1.3. Test phase of EWS (ca. 12 months) for system calibration and adjustment and familiarization by responsible authorities

4.1.4. Adoption of low-cost / no-cost measures such as hazard zone demarcation and identifying safe zones and evacuation routes in the EWS communities and possibly in additional communities.

Output 4.2: Complementary adaptation measures implemented

Indicative activities under Output 4.2 will include:

4.2.1. Identifying a local company to implement civil engineering, including the construction of spillways, slope stabilisation measures (including tree plantations), channel maintenance, flood protection and deflection structures.

4.2.2. Detailed technical planning of the engineering measures: Site identification; design specifications of the structural measures, environmental impact assessment, and other necessary permitting.

4.2.3. Elaboration of maintenance plans and technical handbooks to ensure long-term operability and sustainability of the adaptation measures.

4.2.4. Adoption of low-cost / no-cost measures such as hazard zone demarcation and identifying safe zones and evacuation routes in the four EWS communities and at least four additional communities.

Output 4.3: Authorities and local communities trained through simulation exercises and other means as needed.

Indicative activities under Output 4.3 will include:

4.3.1. Capacity building and information activities for EWS calibration and operation for the relevant authorities in conjunction with the EWS provider selected in Activity 4.1.1.

4.3.2. Simulations with authorities and potentially affected population (or portions thereof) based on the EWS and supporting measures (e.g. evacuation routes and safe zones).

Output 4.4: Maintenance and financing strategy developed for ensuring long-term sustainability of the EWS and the expansion of adaptation activities to other vulnerable communities

Indicative activities under Output 4.3 will include:

4.4.1. Elaboration of a maintenance plan in collaboration with the involved authorities

4.4.2. Evaluation of potential internal and external funding sources and financing schemes for ensuring long-term operation of the EWS and other complementary adaptation measures

4.4.3. Development of specific recommendations for scaling up low-cost / no-cost measures to other communities exposed to GLOF risks

4.4.4. Development of a funding plan for the transfer of ownership, funding, maintenance and operation of the EWS and other complementary adaptation measures

Component 5: Knowledge exchange, stakeholder engagement, and communication

This component oversees the development and implementation of knowledge management, exchange, stakeholder engagement and communication activities arising out of components 1 - 4. The primary goal of this component is to ensure that these activities are harmonised across the region, through joint meetings and workshops, knowledge products (e.g. a web platform), and shared resources such as guidelines, policy briefs, and educational and outreach materials). In

this manner, implementation of activities will be cost-effective, and duplication of efforts can be avoided.

The project will use the approach of building on *existing* UNESCO and other regional information portals in order to ensure that the information provided will have a sustained, post-project presence on the Internet. It will also share information with other regional information portals that focus on DRR and climate change adaptation to reach a wider audience. Furthermore, the project will develop strategies for ensuring access to information for communities and user groups with low rates of internet connectivity, such as a 3G / 4G option. Participants in the community consultations held during project formulation frequently mentioned text messaging as the means they used for receiving information and warnings about disasters.

Activities conducted under this component must draw on the strengths and diversity of the regional program while being sensitive to local and site-specific requirements, thereby providing the foundation for successful and sustainable adaptation interventions. The project will pay special attention on communication channels for different target groups, which vary by type of media, community influencers, and language; it will also bear in mind that men and women in a given community may use different channels of communication.

Component 5 will encompass the following outputs and indicative activities:

Output 5.1: Web-based knowledge-platform established on GLOF risks and adaptation strategies

Indicative activities under Output 5.1 will include:

5.1.1. Establishment/enhancement of modern, user-friendly, web-based knowledge platforms, where data, maps, information and guidance documents produced under components 1 to 3 and other project reports (workshops, meetings) will be available to stakeholders and authorities as a basis for awareness raising and adaptation planning.

5.1.2. Adoption of a common regional template for the platform, allowing each country to tailor a cost-effective set-up that best suits their local context and needs

5.1.3. Funding and technical strategy developed to ensure long-term maintenance of the knowledge platforms

Output 5.2: Education and training programmes undertaken to equip stakeholders with knowledge and capacity to prepare for, respond to and recover from GLOF disasters

Indicative activities under Output 5.2 will include:

5.2.1. Engagement with national universities in each of the participating countries to ensure knowledge and understanding emerging from this programme is transferred to the next generation of young scientists working in Central Asia, in a form of networking, capacity building and new educational programmes (see also Output 1.3).

5.2.2. Enhancement and fostering of regional collaboration through cost-effective joint training and education programmes (see also Output 1.3).

5.2.3. Implementation of community level training based on common agreed standards and best practices, elaborated according to local experiences and contexts. (see also Output 4.2)

Output 5.3: Knowledge and lessons learned from the targeted demonstration projects disseminated within Central Asia and across other high mountain regions

Indicative activities under Output 5.3 will include:

5.3.1. Scaling-up experiences and lessons learnt for other EWS implementations in CA.

5.3.2. Exchange workshops with authorities from other than CA regions, and communication of outcomes and experiences to relevant institutions across high mountains in Asia, such as ICIMOD, Himalayan University network, DRR Youth network in ASPAC region, STAG and others

5.3.3. Knowledge products (mobile aps, radio spots, infographics, outreach and training material) for communities at risk and to visitors to these communities, adapted to specific audiences ranging from tourists to school teachers and their pupils.

5.3.4. Support extended to organization of scientific conferences in the region.

5.3.5. Education on DRR and CCA promoted at the local level for schools in GLOF-prone regions in the form of educational materials.

Figure 1 on the following page provides an overview of the logic of the proposed intervention and how the proposed activities correspond with the barriers identified in the project scoping process.

	Assess Vulnerability		*Address Vulnerability*		
	Strengthening Capacity to Monitor GLOF Risks	**Policies and Approaches for Vulnerable Communities**	**Development of EWS and On-the-Ground Measures for Sites**	**Targeted EWS Demonstrations**	**Knowledge Exchange and Communication**
Actions and Measures	*National and Regional Mapping / Monitoring Strategies *Regional GLOF Atlas for Central Asia *Coordinated monitoring for region	*Exposure mapping and hotspot identification *Vulnerability assessments local risk reduction plans for endangered communities *Mainstreaming DRR / CCA into regional development plans	*New local-to-regional coordination system for EWS *Design infrastructure and training for pilot EWS sites	*Piloting low-cost adaptation measures *Construction, testing, and training for EWS stations *Financing and scaling-up for EWS, other measures	*Web-based knowledge platform *Education and training programs *Dissemination of knowledge, lessons learned
Barriers	*No means of coordination on transboundary GLOF monitoring *Lack of Information on Changing GLOF Exposure Risks *Lack of Regional Coordination on GLOF Monitoring	*DRR authorities lack information to prioritize and address GLOF risks *Communities are not aware of options to reduce and mitigate disaster risk from GLOFs *DRR / CCA considerations are not mainstreamed into sub-national development plans	*Local warning needs are not known to DRR agencies *Endangered communities lack EWS infrastructure *Low coordination between regional DRR practitioners and local / regional authorities on risk reduction	*Communities lack training in preparedness and practical DRR measures *DRR practitioners focus primarily on response. *Lack of financial support for EWS systems	*Lack of communication between researchers and practitioners *Low levels of information /awareness on GLOFs *Good practice is not disseminated
	Lack of Capacity to Identify and Assess GLOF Risks and Threats		*Lack of Capacity to Address Threats in Endangered Communities and Support Adaptation*		

B. *Describe how the project /programme would promote new and innovative solutions to climate change adaptation, such as new approaches, technologies and mechanisms.*

This project provides an innovative holistic approach to climate change adaptation in Central Asia, bringing together the latest scientific understanding of glacier changes and related GLOF threats, design of adaptation strategies and implementation of a technologically advanced EWS, and comprehensive strengthening of institutional and societal capacities, including for the most vulnerable communities. The new scientific understanding and baseline knowledge resulting from this program will be centred on state-of-the-art approaches used for monitoring glacier lakes and their surrounding terrain, hazard and risk assessment and adaptation. Project partners from Switzerland bring long-standing expertise in these fields and have been at the forefront of developing modern remote sensing, ground-based, and modelling approaches optimised for regional-scale GLOF hazard and risk assessments, which is essentially lacking in CA national and local institutions. This partnership will ensure that local authorities and institutions are best equipped to monitor and respond to the rapidly emerging GLOF threat. Hazard and risk assessment procedures will be implemented within a modern Geographic Information System (GIS), and integrated within an innovative web-platform that provides user-friendly, intuitive, and interactive access to all stakeholders.

As emphasized in the Sendai Framework, EWS are a key mechanism to achieve DRR and CCA, through reducing societal vulnerability. According to UN standards[9], EWS comprise four inter-related elements as shown below, including detailed process understanding, communication aspects and capacity aspects, spanning far beyond the technical installations of measurement devices.

Figure 4: The four key elements of Early Warning Systems (Source: UNDP, 2018)

This project will implement a technologically advanced EWS that utilizes ground-based sensors and incorporates modern satellite-based earth observation, providing full system monitoring (Monitoring and Warning Component). Latest advances in communication technology will ensure timely and reliable transfer of data and warning services to

[9] Cf. the following documents:

- UN/ISDR 2006: *Developing Early Warning Systems: A Checklist*. Bonn: UN/ISDR Platform of the Promotion of Early Warning (PPEW).
- UNDP 2018: *Five approaches to build functional early warning systems*. United Nations Development Programme.

authorities and the communities. However, experiences have shown that technology needs to be balanced against local capacities, and hence there is heavy emphasis in this project towards education and training of local authorities and communities to ensure long-term success and sustainability of the adaptation measures. In this context it is of vital importance that local schools in GLOF-prone regions are actively involved in the project through learning exercises and also to ensure that parents and the rest of the community are informed about possible GLOFs and DRR measures (Dissemination and Response Capability Components).

Scientific and technological advances in modelling, monitoring and predicting capabilities would bring benefits to early warnings once science is translated into effective DRR actions (Risk Knowledge Component). Bridging the gap between scientific research and decision making will make it possible to fully exploit capacities of EWS technologies for societal benefit. Therefore, existing research networks, including of young researchers, who will pursue filed activities together with experts, will also be supported to allow for synergistic activities and interdisciplinary research. This will improve communication between scientists, and decision-makers, DRR experts, authorities in charge of emergencies and affected segments of the local population. Such coherent initiatives for collaborative action and adaptation to impacts of climate change in mountainous regions of CA, which are planned to be implemented in the project, are lacking in the region. Building capacities in DRR and early warning, as well as the related integration of disaster mitigation strategies into planning and policies, is one of the main recommendations of the UNEP state of the art analysis of EWS from 2012[10].

In recognition of the potential for this innovative project to provide a reference and guidance for broader CCA and DRR activities across Central Asia, the Project Implementation Unit (PMU) will be supported by an Information and Experience Sharing Committee (IESC) (Part III A.). This committee will further contribute towards ownership, high visibility, transparency and improved exchange of knowledge, experiences and information among stakeholder across Central Asia. In the context of Central Asia, the IESC is a real innovation as currently there are no modern/technological mechanisms in place, which lead to a better understanding of DRR caused by GLOFs and climate change.

C. *Describe how the project / programme would provide economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme would avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.*

The adverse impacts of climate change and particularly water-related disasters are recognized by the United Nations as one of the greatest threats to sustainable development globally. Considering GLOFs, recent disasters highlight the significant direct and indirect economic impacts that these extreme floods can have, and thereby, the corresponding benefits that a well-developed EWS can provide. A 2016 study[11] of global societal impacts from GLOFs revealed that there have been 7 deaths in Iceland, 393 deaths in the European Alps, 5745 deaths in South America and 6300 deaths in high mountain Asia. Around 15% of the GLOF events in high mountain Asia have inundated farmland, destroyed homes, damaged roads and damaged infrastructure. During the 2010

[10] UNEP 2012: *Early Warning Systems – A State of the Art Analysis and Future Directions*. Nairobi: Division or Early Warning Assessment (DEWA), United Nations Environment Programme (UNEP).

[11] Carrivick JL, Tweed FS. 2016. A global assessment of the societal impacts of glacier outburst floods. *Global and Planetary Change*. Elsevier B.V. **144**: 1–16. DOI: 10.1016/j.gloplacha.2016.07.001.

outburst from lake 513 in Peru up to 700 animals were killed[12], significantly impacting the livelihoods of local famers. Major GLOF disasters such as occurred in the Northern Indian village of Kedarnath in 2013, can also have long-lasting indirect influences on the economy as the tourism industry can be negatively impacted for several years[13]. Early warning systems can also prevent damage to critical infrastructure such as hydropower stations, as the warning system allows reservoirs to be shut-down and water-lever lowered in advance of the GLOF. Frequently it is the most marginalised and vulnerable members of societies who live in the most exposed riverside locations, and therefore the approach to hazard and vulnerability mapping employed under Components 1 and 2 of this project will identify such risk "hot spots". Hence, targeted measures implemented in this project that aim to increase societal resilience, reduce vulnerability, and thereby minimise losses to future GLOF events will provide direct and significant economic and social benefits, to those sectors and members of society who are most threatened. From an environmental viewpoint, damage and loss of valuable ecosystem services can be reduced, through GLOF mitigation and sustainable management of floodplain areas. For example, emphasis will be given to the conservation of forested slopes which provide natural flood buffering and protection. In fact, by focussing on the implementation of GLOF EWS, this project provides an environmentally-friendly, and cost-effective adaptation measure that minimise permanent modification of the natural environment. In the design of complimentary measures that include hard engineering options, potential adverse environmental impacts will be carefully assessed and mitigated to the extent possible.

Bridging the gap between scientific knowledge and decision making will make it possible to fully exploit capacities of EWS technologies for societal benefit. The project will also bring indirect economic and societal benefits as a result of strengthened capacities, awareness, and engagement in CCA. For example, the hydro-meteorological and cryospheric monitoring that will primarily serve as a basis for the EWS, will also provide data for improved management of hydrological resources and agriculture. Education around the need for, and importance of an EWS will be framed within a broader context to raise community awareness of climate change and environmental issues. In the process of enhancing disaster preparedness, non-governmental and community-based organizations will benefit from strengthened communication and outreach capabilities, which will be crucial to the successful and sustainable implementation not only of the GLOF EWS, but also broader CCA initiatives. The proposed project would address such crucial shortcomings in disaster preparedness, and thereby significantly reduce societal vulnerabilities to future GLOF events, and ultimately minimise human and economic losses.

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

Environmental and Social Considerations

[12]Carey M, Huggel C, Bury J, Portocarrero C, Haeberli W. 2012. An integrated socio-environmental framework for glacier hazard management and climate change adaptation: lessons from Lake 513, Cordillera Blanca, Peru. *Climatic Change*. Springer Netherlands **112**(3–4): 733–767. DOI: 10.1007/s10584-011-0249-8.

[13] Ziegler AD, Wasson RJ, Bhardwaj A, Sundriyal YP, Sati SP, Juyal N, Nautiyal V, Srivastava P, Gillen J, Saklani U. 2014. Pilgrims, progress, and the political economy of disaster preparedness - the example of the 2013 Uttarakhand flood and Kedarnath disaster. *Hydrological Processes* **28**(24): 5985–5990. DOI: 10.1002/hyp.10349.

Environmental Considerations

Implementation of the project, and particularly the EWS, will strictly adhere to local environmental policies and best practices. A typical GLOF EWS does not contribute towards any foreseeable negative environmental impacts. It is important to note that *the project as designed will not involve construction or earthworks that would be subject to an environmental impact assessment.* The adaptation measures in addition to the EWS are instead focused on hazard zone demarcation and the identification of evacuation routes and safe zones.

Social Considerations

On the societal level, early engagement of the community and other stakeholders during the project preparation period has ensured that the needs, expectations and wishes of the community were addressed. The community consultations were conducted in such a way so that each step of the project implementation is complemented by the outcomes of these consultations with specific indicators to be jointly developed. Community leaders and women's group leaders participated in the organized meetings. Furthermore, consultation in affected communities will be ongoing throughout project implementation.

Gender. As women and men are affected differently by disasters and climate change, in particular due to the higher likelihood of women to be living in poverty, their different vulnerabilities and capacities will be analysed, and their gender-specific concerns and priorities will be addressed. In DRR, women "typically face greater mortality, health risks, and domestic and sexual violence in hazard events…." and may face greater challenges to accessing social protection mechanisms such as insurance and safety nets."[14] The same study suggested "Increasing access to information and participation in risk management and early warning systems. During the project, women will be recognized for their resilience in the face of disaster and for the roles they play as active agents of change in helping communities to recover and adapt. The policy-related work is designed to contribute to gender equality by improving the balance of power between women and men in Central Asia to improve adaptation and resilience to climate change, thus contributing to SDG 5 of the 2030 Agenda.

Gender equality varies substantially across the region. For example, when measuring countries by their score on the Gender Development Index (GDI), Kazakhstan is ranked 56th globally, while Kyrgyzstan, Uzbekistan and Tajikistan are ranked 84th, 105th, and 129th, respectively.[15] However, vulnerable communities in the region, especially in rural and mountainous areas, face common issues: women are responsible for maintaining households due to the outmigration of the working population, primarily men, in order to earn money in cities and abroad. The overall percentage of women in the villages participating in the community consultations ranged from 49% to 62%, while the percentage of working-age women to working age men was higher (see Annex 2).

While a majority of participants in the community consultations had a positive view of women's participation in community decision-making, the project will consider potential barriers to participation, particularly given women's roles in maintaining households and in child rearing (see Annex 3). Therefore, in the course of the project it will be essential to support and increase women's participatory and leadership role in addressing GLOFs risk reduction in their communities. Women consultants will be used to obtain information in women-only community meetings, if necessary.

[14] GFDRR 2016. Gender Action Plan: 2016-2020. Fall 2016 Consultative Group meeting. Washington: GFDRR: 5.
[15] UNDP 2017. Human Development Data. hdr.undp.org. Accessed May 2, 2019.

During the project preparation phase, community consultations were used to gauge women's roles in potential pilot communities and explore the best means for involving and communicating with women and men. Of the total ~~333~~ 401 participants in the community consultations (including those conducted in the proposed new target sites for Kyrgyzstan in 2022), for example, ~~4041~~% were women. National machineries for the advancement of women and women's NGOs were involved in the stakeholder consultation, and an initial gender assessment and gender action plan for project implementation, which is included as Annex 3, addresses these issues in greater detail. The initial gender assessment was later updated to include the key observations of the community consultations conducted in the proposed new target sites for Kyrgyzstan along with Tajikistan, notably in relation to gender-differentiated effects. Finally, the Full Proposal has been reviewed by the gender focal point at the UNESCO Natural Sciences Sector, HQ and the ~~Cluster Office~~Regional Office for Central Asia.

Indigenous Peoples and vulnerable groups: The project will also pay special attention to the most vulnerable communities, namely, indigenous and ethnic minorities in mountainous areas, by developing evidence-based adaptation practices. The project region is home to many indigenous cultures as well as ethnic minorities, which often belong to socially-disadvantaged groups. In Tajikistan ~~alonethe~~ initial pilot site~~, for example,~~ the Pamir region is inhabited by Shughnis, Rushanis, Wakhis, Yazgulyamis, Ishkashimis and other groups (Gunt Valley and Shakhdara River valley) while another minority, Yaghnobi people inhabit Zeravshan valley. Similarly, in the newly proposed pilot area in the Surkhob basin, communities in villages such as Dashti Murghon, Obshoron, and Duaghba (located in the Surkhob sub-district of the Lakhsh District) have experienced regular, annual glacial lake outburst floods over the past decade, which have had significant implications for local populations and transportation routes. These communities are most directly affected by the climate change impact on glacier melting, which has resulted in frequent and vast mudflows, property damage, and the destruction of irrigation channels.

Community consultations during the project preparation period assessed the prevalence of vulnerable community groups, including the elderly (approximately 10% of populations of the 20 communities consulted), vulnerable children, women-headed households (nearly 10% of the pilot communities in Uzbekistan), and community members with disabilities. The vulnerability assessment under Component 2 will be carried out in close consultation with and involvement of these community members in each participating country to assess the existing exposure of households, ensuring that the most vulnerable groups in the most exposed locations receive the most benefit from the project.

D. *Describe or provide an analysis of the cost-effectiveness of the proposed project / programme and explain how the regional approach would support cost-effectiveness.*

The cost-effectiveness of the proposed project was assessed in two ways: 1) A cost-effectiveness analysis of the project approach;[16] and 2) an assessment of the efficiency and cost-effective aspects of project management.

Cost effectiveness of the proposed approach

Baseline Costs

The damage caused by GLOFs under a "do-nothing" scenario can be very high, not only for primary damage (loss of life, damage to infrastructure, buildings and agricultural land),

[16] This analysis was informed by UNFCCC (2011) *Assessing the Costs and Benefits of Adaptation Options: An Overview of Approaches.* Bonn: UNFCCC.

but also secondary effects (e.g., disruption of primary transportation routes, energy supply, tourism decline, and the economic isolation of entire regions). A prime example of this multi-faceted damage occurred in the July 2015 mudflow in the Gorno-Badakhshan Autonomous Oblast (GBAO) - the initial pilot area ~~of~~in Tajikistan -, ~~-~~where 80% of the communities in GBAO lost electricity due to infrastructure damage, and a temporary lake threatened downstream hydropower plants and infrastructure, including in a neighbouring region. In the proposed new pilot site in the Surkhob basin, similar challenges persist. As recently as July 2024, a major mudflow struck this region, originating as an outburst flood from the Saidoi Nasafi (Baralmos) Glacier; comparable events have been occurring annually since at least 2017. These mudflows have repeatedly damaged the major transportation corridor, resulting in significant economic disruptions and impairing the connectivity of local villages to essential services, crops, and livestock. Although houses in these villages are generally situated at safe elevations above the river channel, the 2024 events led to the destruction of several buildings.

Relief and rehabilitation costs related to GLOF disasters normally vastly exceed the cost of DRR measures, in particular if secondary damages are considered as well. Hence, the implementation costs of EWS can be significantly outweighed by the direct avoidance or reduction in damages caused by a GLOF event.

Intervention Costs

It is generally accepted that a DRR approach to GLOFs is more cost-effective than the baseline of disaster response and remediation. However, measures that are available under a “do something” scenario vary widely in cost. The costliest measure would be resettlement, which would also involve unacceptable amounts of social and economic disruption in affected communities. The next most costly measure would be community infrastructure retrofitting, which would be prohibitively expensive due to the need to retrofit in proximate communities and in downstream areas. In addition, retrofitting would still leave community members vulnerable to loss of life in the event of a GLOF. The next most expensive set of measures in terms of economic costs would be targeted infrastructure work, such as artificial drainage construction work or protective dams, which have been employed in Almaty.

EWS is commonly agreed upon as the most effective initial approach to DRR in communities that are exposed to GLOFs. Remote sensing can provide a means of tracking glacial lake formation and hot spots. Capacity building in exposed communities, including community monitoring to complement remote sensing efforts, is even less expensive and generates social benefits of community empowerment. Finally, low-cost / no-cost measures such as hazard zone demarcation, the identification of evacuation routes and safe zones, and the management of drainage channels represent the least expensive option.

Given the relative costs and benefits of possible DRR measures, the project has selected the three least-expensive interventions (EWS, capacity building, and low-cost / no-cost measures), which in combination will generate significant benefits in the form of increased safety and significant cost avoidance.

Cost-Effective Aspects of Project Management

On the implementation level, the regional approach of the program will enable methods and approaches to be replicated across countries, with lessons learned and best practices shared between partners. The hazard and risk assessment in Component I will be based on freely available remotely sensed imagery and datasets, using techniques that have been optimised for regional-scale applications. Following the identification of risk hot spots

adaptation resources can then be targeted to the most critical locations, and implementation tailored to the local environmental and societal context. Tangible outputs emerging from the program (e.g., guidance documents, policy briefs, education and training materials, web portal) will be based on common templates, which are subsequently fine-tuned for each country, minimising the duplication of efforts and enhancing the cost-effectiveness of program implementation. Remote sensing is considered as the most effective first phase approach in GLOF risk reduction and preparedness. Under this project it will facilitate rapid and complete coverage of large and extremely remote mountainous areas, thus allowing to identify potentially dangerous localities, including at trans-boundary level, for closer study. In this manner, time and expense are reduced.

Where possible, links to existing regional programmes and activities will be established and strengthened. The project will utilize existing national institutions, NGOs working locally~~, including Aga Khan for Habitat (AKAH) in Tajikistan~~, which will reduce transaction costs. The project will make use of these already established projects, thus diversifying financial risks and increasing financial flexibility.

Furthermore, the integrated EWS implementations to be elaborated in this project can draw on the experience gained by the partners from the University of Zurich over the past several years in the Andes of South America, where pioneering GLOF EWS have been designed and implemented. This expertise is complemented by long-lasting experience in cryosphere monitoring with different techniques in many mountain regions worldwide, including glaciers in the Pamir and Tien Shan. In both South America and Central Asia, the University of Zurich serves as a long-term strategic partner with the Swiss Agency for Development and Collaboration (SDC). Integrating this know-how, directly into the proposed Central Asia project, including the experience in capacity building for the academic, public and private sectors, brings significant benefits and enhances cost-effectiveness.

In addition to the cost-effective benefits relating to the EWS, emphasis in this project is given to capacity building and training at multiple levels of society; these elements are incorporated into all of the project components. These relatively low-cost activities represent classic “no-regret” adaptation responses, which will bring immediate benefits to the communities, while also offering benefits over a range of possible future scenarios. In other words, even if in the best-case scenario a particular EWS is never activated by a GLOF event, the implementation and associated capacity building process will have led to a significant reduction in vulnerability of the threatened communities. As a by-product, the community builds awareness and resilience not only in relation to GLOFs, but more generally in relation to climate-driven changes and related hydro-meteorological threats. At the institutional level, regional workshops will provide a cost-effective opportunity to build and enhance collaboration across Central Asia, strengthening the capacity of the region to respond to the emerging threats of climate change, and particularly those related to the cryosphere. Engagement with local universities to ensure knowledge and understanding emerging from this programme is transferred to the next generation of local scientists working in CA is also a sustainable way of addressing knowledge on GLOF risks for future generations. Finally, outreach through schools will raise awareness among pupils and their families.

In conclusion:

- Using a DRR approach will reduce the substantial economic and social costs of GLOFs in the participating countries
- The proposed intervention is less costly than other possible approaches considered

- The development and application of coherent methods, procedures and activities across the region will strongly increase the cost-effectiveness, i.e. the impact per unit of investment, will thus be clearly larger as compared to a local or national effort.
- The application of good practices from similar communities in other regions will also contribute to the cost-effectiveness of the intervention

E. *Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist. If applicable, please refer to relevant regional plans and strategies where they exist*.

The proposed activities under this project are aligned with key national strategies and plans and also with country commitments to multilateral environmental agreements. None of the participating countries has adopted a national strategy or concept on climate change adaptation; however, adaptation strategies are under development in several countries or have been developed but not endorsed.

In Kazakhstan, the proposal is aligned with the following national strategies: Kazakhstan 2050, the Strategic Development Plan of the Republic of Kazakhstan until 2025 (2017), the state programme for water resources management in Kazakhstan 2014-2020, and the Concept of Kazakhstan on Transition to Green Economy. In Kyrgyzstan, the project is aligned with the National Development Strategy of the Kyrgyz Republic for 2018-2040, including the priority directions for the development of the Kyrgyz Republic for 2023, which was endorsed by the National Council for Sustainable Development of the Kyrgyz Republic in 2018. In Tajikistan, the project is aligned with the National Development Strategy (NDS) of the Republic of Tajikistan 2030, the National Action Plan of the Republic of Tajikistan for Climate, the National Environmental Action Plan of the Republic of Tajikistan (NEAP, adopted in 2006), the National Action Plan of the Republic of Tajikistan on Climate Change (2003), the National Disaster Risk Reduction Strategy for 2019-2030 (2018), and the State Program for Monitoring and Preservation of Glaciers until 2030. In Uzbekistan, the project is aligned with the National Development Strategy 2017-2021.

Furthermore, the project is aligned with the 2030 Agenda for Sustainable Development (applicable to all countries), the UNFCCC (signed by all countries), and the UNECE Convention on Access to Information, Public Participation in Decision-Making, and Access to Justice in Environmental Matters (Aarhus Convention), which has been signed by Kazakhstan, Kyrgyzstan, and Tajikistan. Finally, Kazakhstan and Kyrgyzstan have appointed Sendai Framework focal points.

D. *Describe how the project / programme is consistent with national or sub- national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, sector strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.*

The project proposal has been prepared in accordance with prevailing National Sustainable Development Strategies and Adaptation Plans. A wide range of relevant national development programs and plans of participating regions were studied to identify the countries' main priorities and needs in the field of CCA, which forms the basis of the project concept. The provisions of the following documents were considered during the elaboration of the concept:

Kazakhstan:

- Kazakhstan 2050 Strategy;
- National Communications to the UNFCCC (III-VI and VII).

Kyrgyzstan:
- National Sustainable Development Strategy of the Kyrgyz Republic for 2013-2017;
- Program of the Kyrgyz Republic on Transition to Sustainable Development for 2013-2017;
- Priorities for Adaptation to Climate Change in the Kyrgyz Republic till 2017.

Tajikistan:
- National Action Plan for Climate Change Mitigation;
- National Communication of the Republic of Tajikistan under the UN Framework Convention on Climate Change.

Uzbekistan:
- National Strategy of Sustainable Development of Uzbekistan.

In addition, current country activities on adaptation that are relevant to climate change adaptation were reviewed during project formulation. In *Kazakhstan*, the country's Nationally Determined Contribution (NDC) under the Paris Agreement does not address adaptation. However, the country has received readiness funding under the Green Climate Fund that will include support for the following activities: "Strengthen knowledge, capacities, processes, systems and procedures for Climate Change Adaptation within… relevant key stakeholders, including the Ministry for Agriculture, Ministry for Health Care and Social Development, Ministry for Investment and Development, Office of the Prime-Minister and the local authorities, to enable them to fully comply with its role."[17]

The NDC submitted by *Tajikistan* includes language on climate change adaptation. Specifically, the country states its intention to reduce the impacts of dangerous weather events by implementing a set of policies that include the State Programme for Study and Preservation of Glaciers of the Republic of Tajikistan for 2030, the National Strategy for Disaster Risk Management of the Republic of Tajikistan, and the National Plan for Emergency Preparedness and Response.[18] The NDC also states the country's intention to reduce "vulnerability to the impacts of climate change by means of full-scale integration of the climate resilience and adaptation measures into the planning and development of the green infrastructure" in areas that include resilience to hydrometeorological hazards, disaster risk reduction, and glacier monitoring.[19] Tajikistan has developed a National Adaptation Plan for 2016-2030 that focuses on the integration and mainstreaming of DRR planning and adaptation planning; the plan is awaiting government approval. In January 2018, the country received a readiness grant from the Green Climate Fund to support the identification of priorities for adaptation projects.

The NDC submitted by *Uzbekistan* states the country's intention to continue its efforts in capacity building to support adaptation. It establishes climate change adaptation as a priority direction, and the NDC specifically identifies "Development of early warning systems about dangerous hydrometeorological phenomena and climate risk management" as a priority activity under "Adaptation of social sector to climate change."[20]

[17] GCF Readiness Proposal (2017): 5.
[18] Intended Nationally Determined Contribution (INDC) towards the achievement of the global goal of the UN Framework Convention on Climate Change (UNFCCC) by the Republic of Tajikistan (2015): 2.
[19] Ibid.: 2-3.
[20] Intended Nationally Determined Contribution (INDC) of the Republic of Uzbekistan (2017): 6.

Relevant national strategies on DRR in the region were also considered, including the National Strategy for Comprehensive Safety of Population and Territories of the Kyrgyz Republic from Disasters and Emergencies; National Disaster Risk Management Strategy of the Republic of Tajikistan 2019-2030, and the State Programme of Uzbekistan on Forecasting and Preventing Emergency Situations. The DRR strategies of the CA countries are primarily in line with the priorities of the Sendai Framework, which also was instrumental for the project development. The Sendai Framework, which succeeded the Hyogo Framework of Action was adopted by UN Member States, including Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan, on 18 March 2015 at the 3rd World Conference on Disaster Risk Reduction. As a result of this Conference, the CA countries issued a joint regional statement, where the governments of Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan confirmed their commitments to the implementation of the Sendai Framework, emphasizing the need to consolidate the efforts of all interested parties, including international organizations, to foster regional cooperation in DRR. The Sendai Framework has become the accepted approach in dealing with DRR in Central Asia, and Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan have all committed to the use of the Sendai Framework Monitor to improve disaster loss data collection. This step is consistent with the Plan of Action for the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 and its milestones for the period of 2016-2020 in Central Asia and South Caucasus region.

In their national statements on DRR, the governments of Kyrgyzstan and Tajikistan have highlighted water-related disasters. Considering their prevailing transboundary effects, cooperation between the countries of the CA region was recognized as the only rational way to address water-related disasters and risks associated with them. The need to increase the resilience of populations, communities and countries to disasters, especially water-related disasters, was emphasized as one of the main focuses in implementing the Sendai Framework. Strengthening global and regional cooperation in DRR was recognized as crucial for the region.

Finally, Kazakhstan, Kyrgyzstan, and Tajikistan are parties to the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice (the Aarhus Convention). Project activities are consistent with the provisions of the Convention, such as elements that support environmental education increased awareness of environmental information.

The proposed project is also highly aligned with the priorities of participating countries regarding development cooperation. The following table summarizes the corresponding priority outcomes in country planning frameworks.

Table 2: Corresponding Development Priorities by Country, UNDAF[21]

Country	Priority Area	Outcome	Indicator
Kazakhstan	Pillar 1: reduced disparities and improved human development	Outcome 1.3: Ecosystems and natural resources protected and sustainably used, and human settlements resilient to natural and manmade disasters and climate change	Indicator 1: Percentage of settlements and cities that have implemented resilience-building measures as per international recommendations (Sustainable Development Goals, and Sendai Framework for Disaster Risk Reduction)

[21] *Sources:* Partnership Framework for Development, Kazakhstan, 2016-2020; UNDAF for the Kyrgyz Republic 2018-2022; UNDAF for Tajikistan: 2016-2020; Uzbekistan UNDAF: 2016-2020.

Kyrgyzstan	Environment, climate change, and disaster risk management	Outcome 3: By 2022, communities are more resilient to climate and disaster risks and are engaged in sustainable and inclusive natural resource management and risk-informed development	Indicator 3.1 Existence of national and local disaster risk reduction strategies, adopted and financed, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030 (11.b.1;11.b.2)
Tajikistan	Resilience and Sustainability	Outcome 6: People in Tajikistan are more resilient to natural and man-made disasters and benefit from improved policy and operational frameworks for environmental protection and sustainable management of natural resources	Indicator 6.5. Emergency Preparedness Capacity Index Indicator 6.6. Number of disaster impact alleviation plans and policies (at all levels) Indicator 6.8. proportion of rural communities with increased capacity to manage shocks and risks
Uzbekistan	Environmental Protection, to ensure sustainable development	Outcome 6: By 2020, rural population benefit from sustainable management of natural resources and resilience to disasters and climate change	Indicator 6.8: % of rural communities in disaster prone areas are able to apply proactive disaster risk reduction activities (including through modern ICT) according to HFa and post-HFa framework

F. *Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.*

The EWS will build on international standards regarding climate change adaptation activities, including the components of i) understanding risks, ii) monitoring and alert, iii) communication, iv) response. The project is in full compliance with the Environmental and Social Policy of the Adaptation Fund (see Section II.L and Section III.C).

The project concept is also in line with relevant national laws and standards of environmental protection, human safety and protection from the natural hazards, including the following:

- Civil Defense Law of the Republic of Kazakhstan (1997);
- Law of the Kyrgyz Republic on Civil Defense (#54 from 24 May 2018);
- Law providing for legal conditions of disaster management of the Republic of Kazakhstan (1993);
- ST RT GOST R 14031-2010 – National standard of Tajikistan: Environment management. Assessment of ecological efficiency. General requirements;
- O'z DSt 1016:2002 – National standard of Uzbekistan: Safety in emergency situations. Monitoring and forecasting of emergency situations. Main provisions;
- O'z DSt 1017:2002 - National standard of Uzbekistan: Safety in emergency situations. Monitoring and forecasting of emergency situations. Damaging factors. Nomenclature of the parameters of damaging effects;
- O'z DSt ISO 14001:2009 - National standard of Uzbekistan: Environment management. Technical conditions and guidelines for use;
- Model Act on International Disaster Assistance through the Inter-Parliamentary Assembly of the CIS (2014 -- regional).

In addition, the project acknowledges the laws and regulations in Central Asia regarding environmental impact assessment:

- KAZ: Law of the Republic of Kazakhstan of 21 October 2000, No. 86-II “On the Adhesion of the Republic of Kazakhstan to the Convention on Environmental Impact Assessment in a Transboundary Context”
- KAZ: Law of the Republic of Kazakhstan “On the Protection of the Environment”
- KAZ: Law of the Republic of Kazakhstan “On Environmental Expert Review”
- KYR: Law of the Kyrgyz Republic of 12.01.2001, No. 6 “On Ratification of the EIA Convention” in the Kyrgyz Republic;
- KYR: Instruction on Environmental Impact Assessment (EIA) Procedures for Proposed Activities in the Kyrgyz Republic;
- KYR: Law on Ecological Expertise (State Environmental Review) 1999 (2003, 2007)
- TAJ: Law on Environment Protection (2012)
- TAJ: Law on the State Ecological Expertise (2012)
- TAJ: Procedure of Environmental Impact Assessment (adopted by the Resolution of the Government of the Republic of Tajikistan No. 509 as of 01.08.2014)
- TAJ: Procedure to implement State Ecological Expertise (approved by the Resolution of the Government of the Republic of Tajikistan No. 697 as of December 3, 2012)
- TAJ: List of objects and types of activity for which preparation of documentation on Environment Impact Assessment is mandatory (adopted by the Resolution of the Government of the Republic of Tajikistan No. 253 as of June 3, 2013)
- UZB: Regulation on State Environmental Expertise, Resolution of the Cabinet of Ministers No. 491, 31 Dec 2001

If the complementary adaptation measures that will be designed under Output 2.2 and implemented under Output 4.2 involve activities that necessitate an EIA (e.g. significant earthworks), the project will comply with all relevant legislation. All construction or earthworks undertaken under project activities will conduct all necessary assessments and obtain all required permits.

There is also some specific guidance in participating countries regarding dam construction and GLOFs.

- In Kazakhstan, significant earthworks or work related to drainage channels would fall under the following sections of the construction code: Complex 1.02: Engineering Surveys for construction and design (Basic Provisions: 1.02-18-2004); Complex 2.03: Protection Against Hazardous Impacts (Engineering Protection in the Areas of Flooding: SNiP RK 2.03-10-2002); and Complex 3.04 (Waterworks: SNiP RK 3.04-02-2008; Dams from Soil Materials: SNiP RK 3.04-02-2008; and Loads and Impacts [of ice] on Hydrotechnical Structures: SNiP RK 3.04-40-2006). In addition, Kazselezashchita, the government agency responsible for mudslides, avalanches, and landslides, has internal, proprietary documentation, including a standard approach for GLOF drainage, internal guidance on the mudslide observation and risk assessment.
- In Kyrgyzstan,the appropriate reference document is the “Procedure for Determining Flood and Mudflow Zones during Outbursts of Mountain Lakes.”[22]
- In Tajikistan, construction and/or earthworks is covered by Building Norms and Rules of the Republic of Tajikistan (ISS Th 11-01-2005 “Composition and procedure for the development, coordination and approval of project documentation for the construction of enterprises, buildings and structures”). These norms also address a range of issues at the design stage of investments.

[22] Erokhin, S.A., et. al. *System of regulatory documents in the construction domain SP 22-02-01.* Bishkek: 2001 [in Russian].

- In Uzbekistan, the relevant regulations that would apply are a part of building codes: SNiP 2.01.15-90. Engineering protection of territories, buildings and structures from open geological processes.[23]

In cases where afforestation for slope stabilization is used as a complementary measure, a permit or review process will not be required.

At present, both Kazakhstan and Kyrgyzstan are signatories of the UNECE Convention on Environmental Impact Assessment in a Transboundary Context (the Espoo Convention).The project also acknowledges that legislation and regulations may be enacted in the course of project implementation that will update legal requirements involving EIAs and other related measures (e.g. draft legislation that has been developed in Kazakhstan with the support of UNECE, and the government of Tajikistan has recently analyzed the alignment of its legislation with the Espoo Convention, also with UNECE). All construction or earthworks undertaken under project activities will conduct all necessary assessments and obtain all required permits.

The project manager will work with the National Execution Teams and government stakeholders to monitor all relevant legislative and regulatory developments in order to ensure that all project activities comply with legislation that is in force. Additional information on safeguarding activities to comply with relevant legislation and regulations is provided in Sections II.L and III.C.

G. *Describe if there is duplication of project / programme with other funding sources, if any.*

At present, there is no national level project in any of the Central Asian countries which exclusively addresses the need for ground-level work on GLOF risk reduction, nor is there a regional project focusing on GLOFs. Even after comprehensive analysis of various water-hazard-related activities, the risk of duplication can be assessed as zero.

Therefore, this UNESCO-AF project will be the only regional initiative addressing GLOFs within the full context of CCA, extending from baseline knowledge and capacity building, monitoring and anticipation, through to development and implementation of adaptation strategies. The funding required from the Adaptation Fund thus will enable the implementation of first project in Central Asian countries with a tangible, science-, community- and evidence-based GLOF risk reduction effort.

The UNESCO-AF project will work to ensure that the assessment of GLOF hazards and risks, and the associated implementation of adaptation strategies, draw upon the best available hydro-meteorological and cryospheric baseline data from the region, and from existing knowledge platforms. Networking with global and regional research and resource centres working on GLOF issues will be established to institutionalize a well-connected knowledge base and analytical framework. As described under Component 1 of this proposal, synergies and links will be established with the following ongoing and planned projects in relation to glaciers, glacier melting-related risks, and climate change adaptation:

"Climate Adaptation and Mitigation Program for the Aral Sea Basin (CAMP4ASB)": (World Bank, 2015-2021; project cost: USD 44.78 million). CAMP4ASB does not cover risks associated with GLOFs and the establishment of EWS, but rather focuses on enhancing regionally-coordinated access to improved climate change knowledge services for key stakeholders (e.g., policy-makers, communities, and civil society) in Central Asian countries by establishing regional climate knowledge services. The project aims to provide technical assistance, as well as minor public works, goods (including software and

[23] Design Fundamentals, 1991 [in Russian].

equipment), and training, at both the regional and national levels, to develop a unified, integrated regional analytical platform for climate-resilient and low emission development, with improved data, information, knowledge, and decision-support tools. Component 5 of the UNESCO-AF project may be able to utilize knowledge platforms developed under the CAMP4ASB project for the dissemination of GLOF-related information and project lessons learned, but the CAMP4ASB project will not have access to this type of information in the absence of the proposed UNESCO-AF project.

"Central Asia Hydrometeorology Modernization Project (CAHMP)": (World Bank, 2011-2021; project cost: USD 27.7 million). CAHMP is designed "to improve the accuracy and timeliness of hydromet services in Central Asia, with particular focus on Kyrgyz Republic and Republic of Tajikistan."[24] The first component of the project, which is designed to ensure that countries in Central Asia can share, use, exchange, and archive common hydromet data and information, is highly relevant to the UNESCO-AF project for its activities on data collection and hazard forecasting. Two activities that will be undertaken in Kyrgyzstan are directly relevant to UNESCO-AF project activities include Activity B.2.4, which creates an automatic monitoring system for previously identified and assess high-mountain lakes with GLOF potential (USD 500,000) to provide on-line data on the state of high-risk lakes; and Activity B.2.5., which will create a mobile response unit to monitor high-risk lakes, glaciers, and mudflow hazard sites (USD 100,000). These activities and activities under the third component, which involves technical assistance to strengthen the capacity of the hydromet service in Tajikistan, will work in tandem with the UNESCO-AF project, and the project will coordinate training and capacity-strengthening activities with CAHMP to avoid overlap or duplication. The UNESCO-AF project will utilize the CAHMP project's assessments where possible to avoid duplication, and it will liaise with the project management in order to identify which data can be utilized.

"Strengthening the resilience of Central Asian countries by enabling regional cooperation to assess high altitude glacio-nival systems to develop integrated methods for sustainable development and adaptation to climate change": (UNDP-GEF, under development; project cost: appr. USD 6.2 million). The proposed project, which will be executed by UNESCO, currently involves Kazakhstan, Tajikistan, Turkmenistan and Uzbekistan, although Kyrgyzstan may also participate. The project has five components, and it focuses very broadly on glacio-nival systems and is expected to result in advances in knowledge about the impacts of climate change on glacio-nival systems in Central Asia and national and regional policies and strategies to address these impacts. The UNDP-GEF and UNESCO- AF projects are complementary: the UNDP-GEF project will generate research findings and high-level institutional capacity that will benefit the UNESCO-AF project. At the same time, the UNESCO-AF project will be able to contribute specific knowledge and capacity-strengthening related to glacial lakes and GLOFs. The UNESCO-AF project will coordinate closely with the UNDP-GEF proposed project in the following ways:

- Under UNDP-GEF Component 1, it will contribute data and project findings to the database on glacio-nival systems and permafrost for Central Asia;
- Under UNDP-GEF Component 2, the UNESCO-AF project will contribute findings from its atlas of glacial lakes to the broader catalogue of the status and changes of glacio-nival systems in the regions, and it will utilize research on the vulnerability of glacio-nival systems where relevant; The UNESCO-AF project will benefit from strengthening of the national and regional glacial centers, and it will coordinate closely with the project on the development of a regional Strategic Action Program on glacio-nival systems that can support institutional coordination in areas including glacial lake monitoring.

[24] http://projects.worldbank.org/P120788/central-asia-hydrometeorology-modernization-project?lang=en

- Under UNDP-GEF Component 3, the UNESCO-AF project will provide input on monitoring protocols and on national monitoring programs for glacio-nival and permafrost monitoring.
- Under UNDP-GEF Component 4, the UNESCO-AF project will benefit from findings from demonstration projects in each of the participating countries on best practices in integrated management. It should be noted that the UNDP-GEF demonstration projects focus on mountain ecosystems rather than communities, and so it is expected that the activities the two projects will not overlap, but rather will provide helpful findings that may enhance results.
- Under UNDP-GEF Component 5, which focuses on information dissemination and awareness-raising, there are several activities where the projects could benefit from coordination on knowledge sharing and training.

"Debris flow and outburst flood hazard in Tian Shan under impact of changing climate (DEFenCC)" (SCOPES initiative; project cost: approximately USD 200,000) The DEFenCC project, which recently ended, was led by the University of Bern, Switzerland, and aimed primarily at improving the understanding of past and current GLOF and debris-flow processes at case study sites in the Tien Shan Mountains. Linkages between the Swiss university partners and participating experts from scientists from the Russian Federation will ensure that relevant scientific findings emerging from the findings of the DEFenCC project will feed into this larger, adaptation-focused project. This project finished in 2018.

"Climate Services: Enforcing and utilizing baseline data for DRR and WRM in Central Asia" (Swiss Development Cooperation, 2017-2020), project budget: CHF 800,000). Partnership will be established with this project, which is implemented by the World Glacier Monitoring Service (WGMS) and the University of Fribourg in Central Asian countries. Cooperation with UNESCO is already foreseen in the capacity development of young women and girls in glaciology and the development of education modules for universities. The UNESCO-AF project could also benefit from data obtained in the course of this project, thus linking it with Components 1 and 2 of the proposal. The UNESCO-AF project will liaise with this project in order to disseminate the educational materials that it produces, including through ministries and its network of universities.

Other UNESCO Projects: Linkages will also be established with two other ongoing UNESCO efforts at the global level: i) The impact of glacier retreat in the Andes: International Multidisciplinary Network for Adaptation Strategies, for exchange of information including links with the Snow Glacier Networks; and ii) Addressing Water Security: Climate Impacts and Adaptation responses in Africa, Asia and Latin America/Caribbean, on knowledge management, as well as sharing the experiences of this project with other similar initiatives in participating countries, the wider region and the international community.

"Regional Project on Ecosystem-based Adaptation (EbA) to Climate Change in high mountainous regions of Central Asia" (GIZ as part of the International Climate Initiative, or IKI, 2015-2020). The German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) supports this initiative, and the project is under implementation in Tajikistan, Kyrgyzstan and Kazakhstan in close cooperation with government partners and other development partners. The concept of EbA aims to increase the resilience of people reliant upon services provided by nature, by addressing the degradation of ecosystems and thereby reducing their vulnerability to climate change. The project's objective is therefore to test innovative and cost-efficient climate informed approaches and strategies for EbA, also addressing institutional, economic, technical and informational barriers. In the framework of the project, an EbA method has been developed based on

piloting experiences in small watersheds in At Bashy (Naryn, Kyrgyzstan) and Bartang (GBAO, Pamir, Tajikistan). In order to scale up the method at national level, replication of the method is needed for fine tuning. The replication will be done until mid-2020. The proposed UNESCO-AF project will exchange information on good adaptation practices with this GIZ regional project.

Relevant country programming: "Tajikistan: National Disaster Risk Management Project," is a USD 10 million project that is funded by the Asian Development Bank (ADB). The project, which was launched in 2018, is designed to reduce economic losses in Tajikistan from natural hazards by mainstreaming DRM into government institutions and strengthening capacity to manage natural hazards and minimize losses. The ADB project will also involve the development of a roadmap for DRR financing, which will be important to Output 4.3 of the UNESCO-AF project.

Finally, the project has already established linkages with *community-level projects* in the participating countries. For example, the project ~~will communicate~~ communicate with the AKAH in Tajikistan within the initial pilot site, which implemented a remote geohazard capacity building and monitoring project in 13 communities in Zaravshan Valley in Tajikistan. This team will be a crucial partner in collaborating in activities under Components 2 and 4 in Tajikistan.

H. *If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.*

Knowledge is defined as the understanding of reality based on people's experience, analysis and exchange. In the context of the proposed project, knowledge is recognized as the key to adapt successfully to climate change in the mountainous areas of Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan. This knowledge has to be created, co-produced, compiled and made available for stakeholders and the interested public.

As described in Section A of Part II of this document, the project will develop an internationally, regionally, nationally and locally institutionalized knowledge base and analytical framework for long-term tracking and management of GLOF and related climate change risks in the target countries. A result-based KM system will be designed and implemented in consultation with all stakeholders using the latest technical expertise. A KM platform needs to tailored to the local context and is a strategic part of the project. It reflects the activities and outputs all five components of the project. Clear mechanisms to manage knowledge and share/disseminate experiences need to be defined and created from the beginning. These mechanisms need to be institutionalized at a national and regional level such that the benefits of the regional cooperation are sustainable.

Guiding principles and objectives for the KM system are:
- Keeping track of experience gained, presenting global, national and especially local knowledge on CCA with special reference to GLOFs, what kind of interventions work, identification of learning objectives and indicators;
- Develop an enabling environment for sharing the climate change knowledge amongst the CA stakeholders;
- Establish a climate change KM coordination framework, which engages all stakeholders;
- Develop the capacity of the coordinating unit to effectively lead the management of GLOF/climate change knowledge;
- Develop and implement a mechanism for monitoring the application of GLOF/climate change knowledge by policy makers and people at the frontline of climate change impacts;
- Maintain a robust and up-to-date GLOF/climate change KM system.

The KM system is a central part of the overall communication strategy of the project. It has to be developed with the participation of all project partners and stakeholders to identify the needs and capabilities of everybody directly involved and of all relevant target groups (media, politicians, public). The aim is to get strong identification with the project, to develop ownership and have a high visibility, which will eventually lead to sustainability.

As a regional project there will be challenges from a language standpoint (English, Russian, Kazakh, Kyrgyz, Tajik, Uzbek), as well as from a technological standpoint (web-based, multi-media, radio, TV, print). It will be crucial to communicate effectively and efficiently. Therefore, a communication strategy for the project will be developed and implemented, which will highlight dissemination of project experiences to communities, educational institutions, NGOs, Civil Society Organizations, private sector institutions with a stake in the issue, and the larger public. This strategy will detail the use of print and electronic media and other communication channels (roundtables, participative community workshops, posters, brochures, booklets, pamphlets, news articles, radio and TV broadcasts, and web-based items). Lessons learnt from the project will be provided via a number of national, regional and international communication channels to increase their outreach (including radio and TV news pieces). This will enable adoption of project experiences in the up-scaling of EWS and other response strategies outside of the immediate project area.

In addition, the project website will serve as a workspace to be shared by project experts and stakeholders. Awareness campaigns through social media to the public and available communication tools for reaching the most remote populations are planned. Highest priority will be given to sustainability. Web site/resources beyond the duration of the project must be maintained. This can be achieved through a strong involvement of national governments, regional institutions and NGOs, including an approach that builds on existing information platforms and resources.

I. *Describe the consultative process, including the list of stakeholders consulted, undertaken during project / programme preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.*

Context

The proposed project emerged from a multi-year dialogue with countries in Central Asia. The declaration of the International conference on water-related natural disaster reduction, held in 2008 in Dushanbe, stated that research on the impacts of climate variability and change on water related disasters should be increased, in particular with the aim to develop adaptation strategies and mitigation measures. Water scarcity coupled with climate change related disasters was also recognized as a critical challenge in the CA region during the high level international conference on the implementation of the “Water for Life” decade, held in Dushanbe in June 2015.

Similarly, UNESCO with partner agencies such as the UN Centre for Preventive Diplomacy in Central Asia (UNRCCA), the World Bank, International Fund for Saving the Aral Sea (IFAS) in 2013 started an initiative on *“The Impact of Glaciers Melting in Central Asia on National and Trans-Boundary Water Systems”*, bringing together scientists and policy makers to discuss the issue of climate change and agree on a joint roadmap. During the international seminar in Almaty, Kazakhstan, April 2013, it was highlighted that natural disasters like landslides and GLOFs will affect the socio-economic development of the region.

In a follow-up seminar, held in Dushanbe, Tajikistan in November 2014, with participation of delegations (national representatives) of five CA states and Afghanistan, a special action plan was designed on glacier monitoring and glacier-induced hazard risk reduction, in which the GLOFs were highlighted.[25] During the last seminar, held in Bishkek, Kyrgyzstan in November 2016, which discussed the progress made on the Dushanbe, and during which the project proposal was reviewed by all CA country participants and international experts in a group work, the following was agreed:

- To support UNESCO's regional project proposal "Reducing vulnerabilities of populations in the Central Asia region from glacier lake outburst floods in a changing climate" for submission to the Adaptation Fund.
- To support the interest of Kazakhstan and Afghanistan to participate in the above project.
- To develop uniform criteria of glacier lake outburst risk, their classification and the assessment of risk and vulnerability of the population living below the mountain valleys.
- To develop a methodology for glacier lake monitoring and EWS in the project countries.
- To facilitate the organization of glacier lake monitoring in the project countries.
- Key areas for each participating country were suggested as potential project sites, but more information needs to be obtained *in situ*.
- To analyse and evaluate existing projects/data/situation in the field of GLOFs.
- To recommend undertaking a socio-economic analysis of risks for the population and infrastructure in the potential project sites.
- To promote education/training for local communities in the potential project sites, as well as strengthen the training of specialists in the field of glacier lake monitoring and installation of EWS.

The project proposal has been prepared in accordance with prevailing National Sustainable Development Strategies, Adaptation Plans and DRR strategies. Given the potential participation of all relevant Central Asian countries, a wide range of relevant national development programs and plans of Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan were studied to identify the countries' main priorities and needs in the field of CCA, which form the basis of the project concept.

Stakeholder Consultations: Project Concept Stage

Capacity and needs assessments were conducted by UNESCO starting in late 2014, during and following the above UNESCO co-organized seminars held on the topic of Glacier Melting and Climate Change, implemented in close cooperation with relevant government and scientific counterparts in DRR and water from the region.

From September 2015 to July 2017 additional consultations were conducted with preselected potential project partners in countries and international partners/experts in the area in the course of various meetings. Ensuring that the identified area for action would meet the priorities and needs of the Governments and receive support from key national partners was crucial. For this purpose, UNESCO held consultative meetings with number of international actors involved in DRR and CCA active in each country, but notably national institutions that are involved in this subject (Ministries of Emergency Situations, State Agencies on Environment Protection and Forestry, Academy of Sciences, research institutions, NGOs). Separate consultations on specifically on the project proposal were held in Kyrgyzstan (including a discussion of potential pilot communities) in February 2017 and in Tajikistan in April 2017. All these consultations proved successful and received full

[25] http://unrcca.unmissions.org/Portals/unrcca/Articles%20and%20Publications/Glacier_book_ENG.pdf

support by key national partners and relevant government counterparts. In addition to the country AF focal point endorsement letters, an endorsement letter for the project concept was received by the Committee on Emergency Situations, Ministry of Internal Affairs of Kazakhstan in July 2016.

Stakeholder Consultations: Project Formulation Stage

Stakeholder consultations during the project formulation have been broad and robust. UNESCO has held multiple meetings with government stakeholders in participating countries in 2018 and 2019, and it has also met with a variety of CSOs, including regional organizations and national and regional environmental NGOs.

Community consultations in vulnerable communities were also held in each country in March-April 2019, ~~and~~ May 2022 and October 2024. The consultations covered a total of ~~29~~ 18 villages in four countries with a combined population of more than 1010~~2~~,000. More than 270 people (including local government officials, NGOs representatives, and villagers) participated in 8~~7~~ community consultations in mountainous areas: 2 consultations covering 2 villages in Kazakhstan; 2 consultations covering 11 villages in Kyrgyzstan; 2~~1~~ consultation covering ~~14~~ 3 villages in Tajikistan; and 2 consultations covering 2 villages in Uzbekistan. More than seven nationalities were represented among the participants. Most of the consultations included awareness-raising presentations and question-and-answer sessions in addition to the completion of structured questionnaires by participants. Women formed 4~~0~~% of the participants in the community stakeholder consultations.

In addition, the project consulted a group of 30 university students and young researchers in March 2019 at a DRR-related meeting in Almaty, administering the stakeholder questionnaire and discussing potential participation for emerging researchers under project activities.

It should be noted that the entire consultation and project drafting process was guided by the AF recommended approach as described in the AF documents: Results Framework and Baseline Guidance - Project Level, Environmental and Social Policy of November 1003 and the Instructions for Preparing a Request for Project Funding of November 2013. Thereby special attention has been given to the inclusion of marginalized groups, women, ethnic minorities, indigenous people.

Finally, on July 24, 2019, UNESCO organized a Stakeholder Validation Workshop in Almaty, Kazakhstan. A list of participants is included in Annex 2. Representatives from all participating countries provided current information on government and non-governmental initiatives, and representatives from the pilot communities also attended the workshop. Stakeholders expressed their support for the project, and no serious objections were raised. Participants emphasized the need for outreach and awareness raising at the level of governmental decision-makers, and several participants emphasized the importance of using the science-based assessments in the first two project components to underpin the activities in the other three components. The discussion also resulted in the identification of the CESDRR Centre as a conduit for information, and its annual inter- ministerial forums to act as a mechanism to exchange project findings for policy making.

Stakeholder Involvement

The following table presents a list of project stakeholder, their involvement in the project's design and preparation, and their proposed role in project implementation. Annex 2 provides additional, more detailed information about meetings with stakeholders, including formal consultations, and a summary of their input and feedback.

Table 3: Overview of Stakeholder Involvement in Project Design and Implementation

Stakeholder	Relevance to Project / Involvement in Project Design	Proposed Role in the Project
Country-Level Stakeholders		
Kazakhstan		
Ministry of Ecology, Geology and Natural Resources (Department of Climate Policy and Green Technologies)	Department of Climate Policy and Green Technologies of the Ministry of Ecology, Geology and Natural Resources is an institutional focal point for the UNFCCC in Kazakhstan. The Ministry has been consulted and has contributed to the formulation of the project.	As the designated authority for the AF, the Department will liaise with the project, as necessary, on matters related to the project implementation.
Committee for Emergency Situations, Ministry of Internal Affairs	Committee carries out functions in the field of civil protection related to Disaster Management and Emergency Response against natural and man-made emergencies, the provision of emergency medical and psychological assistance to the population, fire safety and civil defense organization of the Republic of Kazakhstan. The Committee is tasked with formation and implementation of state policy in the field of civil protection, as well as the implementation of intersectoral coordination in this area. The Committee was consulted on the development of the project.	Focal Point on Disaster Risk Reduction activities in the Republic of Kazakhstan.
Kazhydromet	Kazhydromet is a national institution with a monitoring network including water observation points. This government agency is also authorized to issue disaster warnings. Kazhydromet is actively involved in projects related to climate change and contributes to the implementation of reporting under the UNFCCC. Kazhydromet has been consulted during formulation of the project.	The project will support communication, coordination and information sharing with Kazhydromet.
Kazseleza-shchita	Kazselzashchita is a state agency under the Committee for Emergency Situations with its regional departments. The agency focuses on disaster prevention and response for mudslides, avalanches, and landslides. It carries out preventive engineering measures and maintains and repairs public works designed to prevent natural disasters, including a focus on moraine and glacier lakes. The agency has been consulted and has contributed to the formulation of the project.	State agency “Kazselezashchita” will be involved in the development, launch and implementation of the EWS in Kazakhstan.
Institute of Geography of the Academy of	The Institute conducts several lines of research that are directly relevant to the project. The Institute also houses a Department of Glaciology, which conducts	The Institute of Geography will be involved in conducting a scientific assessment of

Sciences of Kazakhstan	year-round monitoring and research at three remote stations in the Northern Tien Shen mountain range. Research focuses on snow-ice and water resources in a changing climate. The Institute has been consulted and has contributed to the formulation of the project	the hazards and risks of the GLOFs.
Civil Society Organizations (CSOs)	CSOs provide important links to local communities and have already played a role in project preparation. For example, the Public Fund "Center "Cooperation for Sustainable Development" (CSD) organized a series of community-based consultations for vulnerable communities at risk of GLOF, living in the Nauryzbai district of Almaty city, as well as in the Esik and Talgar towns of the Almaty region.	CSOs will be involved in conducting community-level activities in the pilot areas, in particular, trainings at the local level of the communities at risk from GLOFs.
Selected local governments	In the framework of the project formulation, consultations were held with local communities living in the Nauryzbai district of Almaty city, as well as in Esik and Talgar towns of Almaty region, which are at risk of GLOF. Consultations were held with the participation and assistance of representatives of local authorities in Almaty city, Esik and Talgar towns. Local governments in the potential pilot communities provided their active support for the community consultations, and they provided demographic data that has been used in the project documentation.	These governments have immediate responsibility for the welfare of the pilot communities. Local authorities will be involved in risk reduction and climate change adaptation planning at the local level.
Participating vulnerable communities	As part of the project preparation, in 2018–2019, consultations were held with local communities living in areas at risk of GLOF: in the Nauryzbai district of Almaty city, as well as in Esik and Talgar towns of Almaty region. Vulnerable communities in Almaty, Esik and Talgar took direct part in consultations through questionnaires, verbal and written interviews and, thus, made a significant contribution to the formulation of the project proposal. Vulnerable communities are in the focus of this project. Community members from potential pilot communities have participated actively in the community consultations described in Annex 2, and a community representative attended the July 2019 Stakeholder Validation Workshop.	Participating communities and vulnerable groups are the main consumers and beneficiaries of project outcomes. They will help to shape concrete measures for vulnerable communities and will provide and receive information related to the hazards and risk reduction.
Kyrgyzstan		
State Agency on Environment Protection and Forestry under the Government of the Kyrgyz Republic	The state agency is responsible for implementing and ensuring compliance with environmental policies and regulations in Kyrgyzstan. It oversees international environmental cooperation. It houses focal point of the UNFCCC. The Agency was	As the designated authority for the AF, the State Agency will liaise with the project as necessary on matters related to the project implementation.

	consulted during the formulation of the project.	
Ministry of emergency situations of the Kyrgyz Republic	The Ministry is the state body responsible for DRR and emergency response in Kyrgyzstan. In the structure of the Ministry, there is the Department of Monitoring and Forecasting of Emergencies, as well as the Department for Prevention and Response of Consequences of Emergencies, aimed at preventing and responding to disasters. Consultations were held with the Ministry during project formulation	Focal Point on Disaster Risk Reduction activities in Kyrgyz Republic
Kyrgyzhydromet	Kyrgyzhydromet under the Ministry of Emergency Situations of Kyrgyzstan performs such functions as forecasting, modeling and research. Consultations were held with Kyrgyzhydromet during formulation of the project	The project will liaise, coordinate and exchange information with Kyrgyzhydromet.
Central Asian Institute for Applied Geosciences (CAIAG)	CAIAG is a non-profit scientific institution in the Kyrgyz Republic. Climate, water and geo-ecology are among the areas of CAIAG activity. The Institute has compiled and published a series of maps on hazardous natural processes and phenomena in Kyrgyzstan, which include hazards to GLOFs. Consultations were held with CAIAG during formulation of the project	The institute will be involved in conducting a scientific assessment of GLOF hazards and risks and implementation of the EWS.
Institute of Water Problems and Hydro-Power, National Academy of Sciences	The institute is focused on conducting fundamental research and applied research in the field of rational use of water and water-energy potential of the Kyrgyz Republic. The Institute has developed a National Policy Strategy on the use of transboundary water resources, and also conducted research in the field of a modeling various hydrological processes.	The Institute will be involved in conducting a scientific assessment of the GLOF hazards and risks in collaboration with CAIAG.
Kyrgyz National University	The University is a large, well-equipped scientific and educational center of Kyrgyzstan, which is relying in its activities on advanced development and technology. It has a widely branched infrastructure for numerous educational and scientific programs, educational and laboratory facilities, educational and methodological, organizational and educational activities. The university successfully conducts research in the field of basic natural sciences, as well as social and human sciences. Consultations were held with the University during project development.	The University will be involved in the transfer of knowledge gained through the project to students and young professionals in the form of networking, capacity building and new educational modules and programs.
Local governments	In the framework of the project formulation, consultations were held with local communities living in areas at risk of GLOF: in the villages of Baytik, Kashka-Suu, Ala-Archa,	These governments have immediate responsibility for the welfare of the pilot communities. Local

	Leshoz, Birbulak in Alamedin District, and Bokonbaevo, Ton, Jeruy, Kek-Say, Temir-Kanat, Ak-Say villages in Ton District. Consultations were held with participation and assistance of representatives of local authorities. Local governments in the potential pilot communities provided their active support for the community consultations, and they provided demographic data that has been used in the project documentation.	authorities will be involved in risk reduction and climate change adaptation planning at the local level.
Participating vulnerable communities	Consultations were held with local communities living in areas at risk of GLOF: in the villages of Baytik, Kashka-Suu, Ala-Archa, Leshoz, Birbulak in Alamedin District, and Bokonbaevo, Ton, Jeruy, Kek-Say, Temir-Kanat, Ak-Say villages in Ton District. The vulnerable communities of the villages in Ala-Archa and Ton-Tosor valleys were directly involved in the consultations.	Participating communities and vulnerable groups are the main consumers and beneficiaries of project outcomes. They will help to shape measures for communities and will provide and receive information related to the hazards and risk reduction.
Tajikistan		
Committee for Environmental Protection under the Government of the Republic of Tajikistan	The Committee coordinates the activities of state bodies in the field of environmental protection, as well as state control over the use of natural resources, protection of land, mineral resources, forests, water and other resources. In the field of climate change, the Committee oversees the activities of the Hydrometeorology Agency. The Committee was consulted during the formulation of the project.	As the designated authority for the AF, the Committee will liaise with the project as necessary on matters related to the project implementation.
Committee of Emergency Situations and Civil Defence under the Government of the Republic of Tajikistan	The Committee is a government agency tasked with disaster risk reduction and response. The Committee reviews and analyzes disaster risk assessments in the context of climate change, and has a department responsible for evacuation and resettlement. The Committee is based in Dushanbe city and has representatives in every region and district of the country. The Committee was consulted during the formulation of the project.	Focal Point on Disaster Risk Reduction activities in the Republic of Tajikistan.
Agency on Hydrometeorology of the Republic of Tajikistan	As a National Focal Point for the UNFCCC, the Agency contributes to addressing climate change issues and coordinates climate change activities in the country. The Agency operates the Center for the Study of Climate Change and the Ozone Layer. The Center processes information and reports on all aspects related to climate research, mitigation of its changes and adaptation to them, which led to the development of a National Action Plan on Adaptation to Climate Change and a	The project will liaise, coordinate and exchange information with the Agency.

	National Adaptation Strategy 2012-2030 The Agency was consulted during the formulation of the project.	
State Scientific Institution "Center for the Glaciers Study under the Academy of Sciences of the Republic of Tajikistan"	The Center conducts research in the field of glaciology in order to study and carry out continuous monitoring of glaciers and other water sources in the Republic of Tajikistan. The Center was consulted during the formulation of the project	The Center for the Study of Glaciers will be involved in conducting a scientific assessment of the hazards and risks of the GLOFs.
Institute of Geology, Earthquake Engineering and Seismology under the Academy of Sciences	The institute is currently the leading organization of the republic in scientific research of geological structure and minerals, seismology and seismic resistant construction. The Institute was consulted during the formulation of the project.	The project will liaise and exchange information with the Institute.
Institute of Water Problems, Hydropower and Ecology of the Academy of Sciences	The Institute conducts scientific research in the field of water resources, as well as the development of general energy and hydropower industry in Tajikistan. The structure of the Institute consists of several departments and laboratories, including the Laboratory of Climatology and Glaciology. Consultations were held with the Institute during project formulation	The Institute will be involved in ensuring the transfer of knowledge gained through the project to students and young professionals in the form of networking, capacity building and new educational modules and programs.
Ministry of Energy and Water Resources	The Ministry carries out activities to regulate the use and protection of water resources, as well as functions in the implementation of the country's water and energy policy. In addition, the Ministry coordinates the activities of various ministries and departments on the management, use and protection of water resources. Consultations were held with the Ministry during project formulation	In the framework of the project, communication and information exchange will be maintained with the Ministry.
Tajik National University	The University is a major educational, scientific and cultural center, which plays a large role in the development of science, education and culture, enhancing national identity and training highly qualified personnel. The University has faculties, research and educational laboratories that provide training in various fields, including the natural sciences, both fundamental and applied. Consultations were held with the University during project formulation	The University will be involved in the transfer of knowledge gained through the project to students and young professionals in the form of networking, capacity building and new educational modules and programs.
Aga Khan Agency for the Habitat (AKAH)	The Aga Khan Agency for the Habitat in Tajikistan is a member of the Aga Khan Development Organization. In order to respond to the growing hazards, posed by	The Agency will be involved in conducting an assessment of hazards and risks from the

	natural disasters and climate change, the Agency conducts various activities aimed at enhancing the preparedness and response of people living in high-risk disaster-prone areas. Consultations were held with the Aga Khan Habitat Agency during project formulation, including on the communities involvement	GLOFs, as well as in conducting community-level activities in pilot areas.
Local governments	In the framework of the project ~~formulation~~, consultations were held with local communities living in Surkhob basin: Dashti Murghon, and Duaghba villages of Surkhob sub-district, Lakhsh district of the Direct Rule Districts ~~Shugnan region of the Gorno-Badakhshan Autonomous Region~~, which is at risk of GLOFs from Saidoi Nasafi (Baralmos) Glacier. Consultations were held with the participation and assistance of representatives of local authorities. Local governments in the potential pilot communities provided their active support for the community consultations, and they provided demographic data that has been used in the project documentation.	These governments have immediate responsibility for the welfare of the pilot communities. Local authorities will be involved in risk reduction and climate change adaptation planning at the local level.
Participating vulnerable communities	~~In the framework of the project formulation, Cconsultations were held with lL~~ocal communities living in in Surkhob basin: Dashti Murghon, Obshoron and Duaghba villages of Surkhob sub-district, Lakhsh district of the Direct Rule Districts, are at direct risk of GLOFs from Saidoi Nasafi (Baralmos) Glacier. Vulnerable communities from two~~eight~~ settlements / villages participated directly in the consultations~~., and contributed to the formulation of the project proposal~~	Participating communities and vulnerable groups are the main consumers and beneficiaries of project outcomes. They will help to shape measures for communities and will provide and receive information related to the hazards and risk reduction.
Uzbekistan		
Center of Hydrometeorological Service under the Ministry of Emergency Situations of the Republic of Uzbekistan (UzHydromet)	The mandate of this government agency focuses on hydro-meteorological forecasting, and it issues disaster warnings in case of extreme weather events. The tasks of the Center include the development and improvement of the state system of hydrometeorological observations, hydrometeorological support of economic sectors, research, improvement of short-term and long-term weather forecasting, river flow, climate change. UzHydromet also works in research related to climate change and reporting on the UNFCCC. Consultations were held with UzHydromet during project formulation.	As the designated authority for the AF, Uzhydromet will liaise with the project as necessary on matters related to the project implementation. The project will maintain communication, coordination and exchange of information with UzHydromet.
Ministry of Emergency Situations	The Ministry is the central government body that manages and coordinates work in the field of civil protection, prevention and response to emergency situations, caused by accidents and natural disasters. It is	Focal Point on Disaster Risk Reduction activities in the Republic of Uzbekistan

	responsible for overseeing and coordinating government disaster relief efforts. Consultations were held with the Ministry during project formulation.	
Institute of Geology and Geophysics under the State Committee on Geology and Mineral Resources	The Institute is a multidisciplinary scientific institution in which scientists solve topical and applied problems of geology, glacial geology, geoecology, geophysics, and other related areas. The Institute continues to make a significant contribution to the development of the fundamentals of geology and the expansion of the mineral resource base of the country. Consultations were held with the Institute during project formulation.	The Institute will be involved in conducting a scientific assessment of the hazards and risks of GLOFs. In addition, the Institute will be involved in conducting activities at the local community level in the pilot areas.
National University of Uzbekistan named after Mirzo Ulugbek	The National University of Uzbekistan named after Mirzo Ulugbek is one of the leading higher educational institutions of the country. About fifty scientific schools operate in the University. For the implementation of the inextricable connection of theory and practice in the process of teaching at the University, the material and technical base of three sites for field practice, thirty-two research and training laboratories, three educational and experimental centers, one inter-university scientific laboratory and two rare objects is being strengthened. To date, the University has trained over one hundred thousand specialists in various fields of knowledge, making a significant contribution to the staffing of various sectors of the economy of Uzbekistan. Consultations were held with the University during project formulation.	The University will be involved in the transfer of knowledge gained through the project to students and young professionals in the form of networking, capacity building and new educational modules and programs.
Local government in the project site area	As part of the project formulation, consultations were held with local communities living in the Tepar and Pskem villages that are at risk of GLOFs. Consultations were held with the participation and assistance of representatives of local authorities. Local governments in the potential pilot communities provided their active support for the community consultations, and they provided demographic data that has been used in the project documentation.	These governments have immediate responsibility for the welfare of the pilot communities. Local authorities will be involved in risk reduction and climate change adaptation planning at the local level.
Participating vulnerable communities	As part of the project formulation, consultations were held with local communities living in areas at risk of GLOFs - in the villages of Tepar and Pskem. In order to provide a better understanding and assessment of the vulnerability of local communities to the effects of climate change, including the hazards of glacier lakes, a survey of the local population was conducted. Thus, vulnerable communities of the villages of Tepar and Pskem were directly involved in	Participating communities and vulnerable groups are the main consumers and beneficiaries of project outcomes. They will help to shape measures for communities and will provide and receive information related to hazards and risk reduction.

	the consultations and contributed to the formulation of the project proposal.	
Regional and International Stakeholders		
Center for Emergency Situations and Disaster Risk Reduction (CESDRR)	The Center is a permanent interstate body, an international organization, established to ensure effective mechanisms for mitigating risks of emergency situations and mitigating their consequences, as well as stimulating regional and international cooperation. The tasks of the Center also include mitigating disaster risk factors, identifying, assessing and monitoring disaster risks and predicting them. The Center was consulted during the formulation of the project. UNESCO supported the CESDRR in establishing the Regional Science and Technology Council for Emergency Situations and Disaster Risk Reduction in Central Asia, which is designed to bridge the gap between science and policy in the field of the DRR.	CESDRR will be engaged as a platform for distribution of knowledge and lessons-learnt about the risks, from targeted demonstration projects. Its annual inter-ministerial forums on DRR will be used as a regional mechanism to exchange project findings for supporting policy making
University of Central Asia (UCA)	The University, which has a branch in Dushanbe and Khorog cities, has a research unit of mountain communities that conducts interdisciplinary research to support the development of mountain regions in Central Asia. The University also created a knowledge center for data and information related to the Central Asian mountain communities.	The project will maintain communication with the University and exchange information.
University of Zurich (Switzerland)	The University has a wide profile and long-term experience in glacier lakes research, including aspects of their formation, assessment and monitoring, as well as in the field of GLOF modeling and assessment of associated hazards, vulnerabilities and risks. The formulation process of the project proposal was coordinated with the University specialists, who were consulted repeatedly.	The University will be responsible for the implementation project components related to the EWS and associated with it.
UN agencies involved in the DRR and CCA areas	The UN office for Disaster Risk Reduction (UNDRR) has worked with the European Civil Protection and Humanitarian Aid Operations to support the development of a Plan of Action for implementing the Sendai Framework in Central Asia.[26] UN country planning frameworks provide an opportunity to coordinate DRR and CCA activities across a range of hazards. UN agencies also implement a variety of CCA and DRR projects at the country and regional level.	UNESCO's efforts in regional cooperation towards application of science in Central Asia is coherent to the UNISDR Plan of Action on Implementation of the Sendai Framework for Central Asian and South Caucasus region (Chapter IV, article 6)

[26] UNISDR, ECHO (2016): Plan of Action: Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in Central Asia and South Caucasus Region.

	From CCA/DRR perspective, the GLOF project is at the intersection of climate change and disaster risk reduction issues and viewed through the prism of rising temperature in the mountains – glaciers melting process - formation of the new glacial lakes, with a potential breakthrough (GLOFs) – hazard to downstream living communities. Other UN agencies whose activities are specifically related to the project are the UNRCCA, UNICEF, UN Development Program, UN-Environment and UN-Women.	UNESCO's efforts conforms the UNISDR "The Sendai Seven Campaign" in terms of installation of the GLOFs EWS and the year of 2022, dedicated to the Target (g): Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030. The activities and expertise of the UNRCCA, UNICEF, UN Development Program, UN-Environment and UN-Women to some extent relate to individual components of the project and can be used in its implementation.
International Financial Institutions (IFIs)	The World Bank is currently implementing two projects that have potential synergies, one on hydromet strengthening and one on climate change knowledge and capacity strengthening (see Section G). Relevant areas include EWS in Kyrgyzstan (under the WB project: "Central Asia Hydrometeorological Service Modernization Project (CAHMP)." This activity includes the following: Creating an automatic monitoring system for previously identified and assessing high mountain lakes with high risk of GLOF. Installation of a system for automatic monitoring of water levels in lakes and other meteorological parameters, which provides data on the on the state of risky lakes in the real time, helping to population in the lower territories. Real-time monitoring data will be available to both Kyrgyzhydromet and the Ministry of Emergency Situations, which, in turn, is responsible for preparedness and forecasting of the potential floods. This will be associated with preventive evacuation measures in case of an increased risk of flooding. Under component B.2.5, the following activities are envisaged: Establishment of a mobile response team for monitoring lakes, glaciers and dangerous places with increased risk. Purchase of laptops, mountaineering	Coordination of activities and synergies with IFI projects.

	equipment, photo and video cameras, binoculars, GPS navigators, portable weather stations, steam drills for ice, communications equipment (radio stations, satellite phones), theodolites, tents, sleeping bags, camp utensils, special clothing and other devices life support. Staff training will also be conducted. Such a unit will allow quickly assess dangerous situations and assist in taking immediate preventive measures to reduce the hazards	
Bilateral development agencies	Bilateral development agencies, such as the German Society for International Cooperation (GIZ, Germany) and the Swiss Agency for Development and Cooperation (SDC).	The project will maintain constant communication with bilateral development agencies through direct communication and participation in donor forums. In addition, interaction will be established with ongoing GIZ and SDC projects and initiatives implemented in the region.
Research institutes and universities outside of the Central Asia	Moscow State University, University of Reading, University of Fribourg and others who have relevant data and experience in the project's objectives, taking into account their previous and current research initiatives.	Enhancement and fostering of regional collaboration through cost-effective joint training and education programmes (see Output 1.3).
International Centre for Integrated Mountain Development (ICIMOD)	ICIMOD conducts research in Himalayan mountainous areas that is directly relevant to the project on topics ranging from climate change adaptation in mountain areas to the differentiated impacts of climate change on women and men. ICIMOD also has extensive experience in modelling glacier change and measuring glacier mass and loss.	The project will share information and best practices with ICIMOD on an ongoing basis
Private Sector Companies	The private sector manufactures equipment that is necessary for the pilot EWS systems.	The project will procure the hardware and communications equipment necessary for the pilot EWS system from private sector company/ies.

J. *Provide justification for funding requested, focusing on the full cost of adaptation reasoning.*

Component 1: Strengthening national and regional capacity to monitor and assess GLOF hazards

Baseline (without AF resources):

The Soviet Union had a long tradition in glaciology and a strong hydro-meteorological monitoring system with well-trained specialists. After the fall of the Soviet Union this system collapsed and the CA states found themselves left alone with the consequence that most research and monitoring of glaciers ceased for decades. With financial and technical support of IFIs and bi-lateral aid agencies the situation changed slowly with the result that knowledge about climate change and the effects of glacier melting in the CA mountains became available: “The situation is alarming - glaciers melt at a very fast rate”. Today no comprehensive or homogenous first order mapping and monitoring program on the regional level has been implemented, and databases on glacier lakes remain unequally developed and maintained.
The lack of a regional approach to monitoring glacial lake development means that the threats are not addressed equally and there is no common basis for the design of response and adaptation strategies. Without a common regional approach, lakes which may provoke far-reaching or transboundary floods have not been systematically addressed. Monitoring systems are installed sporadically. The level of expertise within local responsible authorities remains unequal both between countries as well as between areas with different population levels. The involvement and capacity of the young scientists, especially women, remains extremely low.

Adaptation alternative (with AF funding):

In conjunction with greater regional cooperation in the framework of this project, the strengthening of relevant institutions will take place for developing strategies towards hazards of a trans-boundary nature, such as GLOFs. Responsible authorities extend their capabilities beyond simply monitoring known threats, to the anticipation of where new potentially hazardous lakes will emerge as glaciers continue to retreat, allowing adaptation planning to be forward looking, and avoiding possible maladaptation. Rapidly emerging threats are identified and a common approach to monitoring and reporting lake developments is implemented across the region, with particular emphasis given to transboundary catchments. The causes and processes leading to hazardous lake formation are understood and communicated to a wide-range of stakeholders. Engaging communities within the knowledge generation process enhances their understanding of the changing natural environment in which they live, and raises their awareness of the threats that are faced. In this manner, knowledge and awareness become the foundation for building resilience and reducing societal vulnerabilities. Regional workshops and joint training will enable knowledge to be exchanged and methodologies fine-tuned based on local experiences.

Capacity building of the next generation of young scientists ensures the long-term sustainability of the monitoring programmes across the region.

Component 2: Strengthening sub-national, national, and regional policies and approaches to address the needs of vulnerable communities

Baseline (without AF resources):

No comprehensive or homogeneous first order GLOF risk assessment has been completed for Central Asia, meaning that some significant threats could remain undetected. Without a common assessment framework, the regional distribution of GLOF risk remains unclear and transboundary threats have not been systematically assessed. This may have prevented capacity building programs and other adaptation initiatives from reaching the most endangered or marginal communities and sectors, where potential

losses from GLOFs could be greatest. Consideration has not been given to the possible changes in frequency and magnitude of future GLOF events, or change in exposure of communities and infrastructure, that will result from the growth and formation of new lakes over coming decades.

Adaptation alternative (with AF funding):

A first homogeneous assessment of GLOF risk across the participating countries, providing the scientific basis for informed and collaborative adaptation planning. Risk hot spots are identified under both current and future climatic conditions, allowing adaptation resources to be targeted to those locations where society or sectors can benefit most. Within these hot spots, local hazard maps created for both current and future conditions, and exposed communities engaged with local authorities to develop a set of possible adaptation solutions, which are firmly embedded and supported within the local context. Transboundary risks identified and communicated across partner countries.

Component 3: Design and launch of EWS and risk reduction measures tailored to local contexts

Baseline (without AF resources):

The country preparedness and capacity of risk mitigation remains uneven including country capacity to react in case of the transboundary threats. Information for local communities is dispersed unevenly, and threats to remote and indigenous communities remain higher in all countries. Usually in CA the ministries have disaster management departments at national as well as province level and, in some cases, district level. However, a common problem is the general lack of equipment and finance available to these entities. Furthermore, despite the large amount of information that is available to them, resources and working practices are outdated. Another issue involves forecasting departments which although they are included within the ministries and have a good technical understanding of disaster prevention and preparedness, they lack a practical approach and coordination. As indicated by Tajik authorities, there is a lack of EWS on geohazards and water-related hazards. Moreover, those that exist are not properly translated into the local context, and local populations (local communities are not educated) especially the most vulnerable, remain at a highest risk from these hazards.

Adaptation alternative (with AF funding):

Institutional mechanisms and framework conditions for effective DRR are established in all four countries, enabling transboundary hazards to be addressed as well. For the selected sites (one in each country) an adequate EWS solution is designed and implementation plans are elaborated, based on the findings of component 2 and taking into account the local knowledge as well as the needs of the potentially affected population. On the local and regional level, roles and responsibilities related to the designed EWS are clarified between involved authorities to ensure better coordination. The established institutional mechanisms not only allow for the successful implementation of the designed GLOF EWS, but also provide the required framework conditions for effective DRR in general. Local populations, especially the most vulnerable are engaged, informed, educated, and develop GLOFs resilience.

Component 4: Targeted demonstration projects to introduce technologies and best practices for EWS for glacier lakes

Baseline (without AF resources):

The capacity of local research and public institutions, as well as companies will continue to evolve only slowly and sporadically.

There is currently a lack of complex, comprehensive and coordinated EWS in Central Asia. Lake monitoring, for example, uses helicopters in Kazakhstan and Tajikistan. However, no complex and coordinated system exists up to date in each of the countries. Besides the EWS response protocols remains outdated and uncoordinated between the countries.

Adaptation alternative (with AF funding):

At one site a state-of-the-art EWS for GLOFs has been implemented in collaboration with the local private sector. The EWS is operated by the responsible authorities, which were capacitated and trained for the operational service and maintenance. Financing for long-term maintenance is assured. Authorities and local population are well-trained to respond immediately and appropriately if a warning is activated. This demonstration EWS serves as an example for information and capacity building of authorities from the other two countries, and lessons learnt from this implementation can be transferred and scaled up to other potential EWS implementation sites in CA and beyond.

Component 5: Knowledge exchange, stakeholder engagement, and communication

Baseline (without AF resources): Despite numerous international/regional meetings and conferences, institutionalised knowledge exchange between countries/stakeholders remains very low, especially between responsible government bodies. Modern communication media (e.g., web-based knowledge exchange platforms) have not been developed in the context of CCA and disaster risk management. Emergency preparedness remains uneven between communities, especially for those communities for which the level of threat is currently deemed low, but which might change in the future.

Adaptation alternative (with AF funding):

Risks associated with the rapidly changing cryosphere are elevated to be both a focus and stimuli for regional cooperation and exchange in the area of CCA across Central Asia. All key stakeholders have access to the knowledge and information needed for robust adaptation planning. Technical capacities and financial strategies are in place to ensure the long-term maintenance and sustainability of monitoring and adaptation strategies, and to ensure knowledge exchange mechanisms (e.g., the web-platform) remain active and accessible to all stakeholders. Permanent mechanisms are in place to ensure that local knowledge continues to feed into the decision-making process, and vice-versa, enhanced communication is maintained between the authorities and communities. Lessons learned and best practices established from the implemented project serve as a template for regional-scale CCA projects across high mountains in Asia, and more globally.

K. *Describe how the sustainability of the project / programme outcomes has been taken into account when designing the project / programme.*

The project idea and design is the result of a long process, which started during consultations with CA governments and discussions during conferences and national and local consultations over the last three years. From the very beginning sustainability was the guiding principle when defining objectives, expected outcomes, outputs and activities of this project.

The project builds on existing institutions and will work out accepted mechanisms for efficient DRR action. Involvement of and close collaboration with Governments and responsible regional and national and local authorities at all stages of the project are crucial as well as collaboration with and involvement of the local population from the beginning of the design throughout the entire implementation. The involvement of school children in local educational programmes, as well as strengthening knowledge of students - future researchers in Central Asia - also contributes towards sustainability in addressing GLOF risks.

The following strategies and lines of action are planned to secure sustainability of the EWS:
Sustainability must be ensured along three main components of the EWS: technical, institutional, and social components. Full sustainability can only be achieved when all three components are sustainable on their own but also in relation to the other two:

1. Sustainability on a technical level requires appropriate technical instruments for the local conditions, both in terms of physical high-mountain environment and local technical capacities available at the sites and in the region. The technical components of the EWS need to be adapted to local capacities, including to a level that capacities can be built and strengthened within the project.
2. Sustainability on an institutional level is particularly important and the frequent source of failure as past experience demonstrates. Technical capacities of the responsible institutions are again an important element but not sufficient. Clear responsibilities need to be defined during the process of the design and implementation of the EWS. Key is the long-term maintenance of the EWS and for this purpose financial and personnel resources need to be planned and secured in the budgets of the local or national institutions. Budget restrictions need to be taken into account from the beginning of the project. Ownership of the EWS equipment will be transferred to the respective national hydrometeorological agencies at the conclusion of the project. Coupled with institutional training and capacity building, this approach has proved successful in several other related projects.
3. Sustainability on the social level can only be achieved when the EWS has high acceptance within the local population. Their involvement from the beginning is critical to achieve this objective. The social conditions need to be carefully analysed from the beginning and strategies be defined to achieve long-term acceptance and support by the local affected population. Ownership is the ultimate objective.
4. The following aspects, derived from different project components, will also contribute to the sustainability of the project:

- Capacity development at multiple levels will ensure that the countries are well equipped and motivated to maintain long-term, sustainable adaptation strategies implemented under this project.
- Education, capacity building and twinning programmes developed and implemented in local universities, will ensure that young local scientists are equipped with fundamental knowledge regarding the cryosphere, glacier lakes, and related hazards.
- Identifying a company/institute, if possible locally, to take over the technical engineering, including the acquisition of suitable equipment, the construction of the EWS stations, and the electronic and software engineering for the data transfer, processing and storages, is also foreseen.
- A maintenance and financing strategy will be developed during the project for ensuring long-term sustainability of the EWS in the countries.

In regard to the long-term maintenance and sustainability of complimentary adaptation measures, focus is given to awareness raising, and training and capacity building at the community level (under Outcome 5). This is particularly relevant for the management of

drainage channels and further engineering measures, ensuring that communities are aware of the importance of keeping waterways and defense structures clear of rubbish and other debris, and ensuring that engineered structures are respected and protected from vandalism.

Project experiences from Pakistan, Bolivia, and elsewhere in the world show that early engagement and strong awareness raising campaigns are crucial to ensure that community groups take pride and ownership in the maintenance of waterways for flood mitigation. Such community-based training and awareness raising was a cornerstone of the successful recent Pakistan GLOF project under AF (with UNDP), where more than 1,000 people, including 50 percent women, in vulnerable communities were sensitized and made aware of GLOF-related hazards, preparedness and adaptation options. The project will build on these and other positive experiences with community engagement to ensure sustainability of the proposed adaptation measures in Central Asia. For example, tree planting to enhance stability and reduce erosion from channel banks will be undertaken with school groups or other community organizations, and this approach represents a very long-term, sustainable, low-cost adaptation measure.

To ensure the highest likelihood of long-term financial sustainability, activities under Output 4.4 will include a comprehensive mapping of national and external funding agencies (bilateral or multilateral, NGO's, etc.) who could be in a position to support longer-term maintenance of the EWS and other adaptation measures. This approach will be further supported with the development of detailed financial plans. Experiences from EWS implementation in Latin America show that the authorities eventually responsible for the operation and maintenance of the system need to be involved from the very beginning of the process. It needs to be clear from the beginning, that they will get a site-tailored, modern EWS that is complemented by other measures, but at the same time, they will need to develop ownership of these systems and commit to take over operational and financial responsibility once the system will be handed over to them.

A successful strategy for achieving sustainable, long-term financing of EWS and other risk reduction measures involves first raising awareness regarding the associated costs by including them in the annual budget. Then, sources or donors for these costs need to be identified. Development of ownership for the measures by the authorities is crucial for this. The project does not aim to cover these costs directly, as this would increase the risk of a lack of financial resources for maintaining the systems once the direct financial support by the project ends.

The urgency of the matter is also underlined by an increasing number of natural hazards, which for example took place in the Panj River basin along the Tajik-Afghan border in 2017. Entire villages were buried by mudflows, the river changed its course, and the Pamir highway was blocked for 10 days. The dangers are real and the governments in the region recognize that non-action is more expensive than action and they ask the international community to make knowledge, information and experience available. Because of more and more reoccurring water-related hazards the governments are increasingly concerned and therefore projects to monitoring of glacier lakes, thus adapt to climate change, will become a high priority and subsequently will lead to sustainability.

L. *Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.*

Environmental and social impacts and risks relevant to the project were identified through stakeholder consultations, community consultations with potential beneficiaries, and the use of a screening checklist (provided in Annex 5). Risks are summarized below.

Checklist of environmental and social principles	Risk Mitigation Measures Required	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law		X[27]
Access and Equity	X	
Marginalized and Vulnerable Groups	X	
Human Rights	X	
Gender Equity and Women's Empowerment		X[28]
Core Labour Rights	X	
Indigenous Peoples	X	
Involuntary Resettlement	X	
Protection of Natural Habitats	X	
Conservation of Biological Diversity	X	
Climate Change	X	
Pollution Prevention and Resource Efficiency	X	
Public Health	X	
Physical and Cultural Heritage	x	
Lands and Soil Conservation	X	

The project is classified as "B" in accordance with the Adaptation Fund guidance on impact classification due to the presence unidentified sub-projects (USPs) in Outputs 2.1 and 2.2 (design) and Outputs 4.1 and 4.2 (implementation) of the project.

[27] EWS and complementary adaptation measures will be subject to country-specific legislation.
[28] While the screening processes did not identify any ways in which the project design or activities would potentially reproduce discriminations against women, there was a consensus among experts consulted that the project should take pro-active steps to encourage women's participation in all project activities; hence, this element will be managed for compliance.

Project activities with potential (limited) adverse impact are small-scale, community-based, and localized. They will be co-managed with local communities where possible. Communities will have a stake in avoiding negative environmental and social impacts. Cascading and/or cumulative negative impacts are highly unlikely. Proposed project activities requiring additional environmental screening, assessment, and/or permitting represent a minor part of the project, and no-impact measures and measures with co-benefits for the environment (e.g. slope tree planting for slope stabilization) will be prioritized.

Monitoring for unexpected environmental or social impacts is included under project M&E activities (see Section III.C) and will be reported on annually.

The proposed new target sites for Kyrgyzstan (Ala-Archa and Ton-Tosor) were screened against the above-listed environmental and social principles and have not altered the results of the initial risk screening.

The proposed new target site for Tajikistan (Saidoi Nasafi (Baralmos) Glacier) was screened against the above-listed environmental and social principles and has not altered the results of the initial risk screening.

PART III: IMPLEMENTATION ARRANGEMENTS

A. *Describe the arrangements for project / programme management at the regional and national level, including coordination arrangements within countries and among them. Describe how the potential to partner with national institutions, and when possible, national implementing entities (NIEs), has been considered, and included in the management arrangements.*

This project will be implemented by the UNESCO Cluster Office in Almaty in collaboration with the Governments of Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan and in partnership with the University of Zurich, Switzerland, as well as the participation of local, national and regional institutions and authorities.

A unique strength of this project will be the integration of international expertise and experience from the Swiss partners, with regional and local experts in Central Asia under the auspices of UNESCO, thus highlighting the North-South cooperation. To optimise the exchange of knowledge and capacity building between partners, all project activities will be implemented with teams consisting of experts at various levels.

As the UN specialized agency in the sciences, UNESCO aims at developing a deeper scientific comprehension of the occurrence and distribution of natural hazards in time and space. In fact, UNESCO is mandated to facilitate and promote the use of science and technology to contribute to disaster risk reduction (DRR) and conflict resolution. Reinforcing scientific cooperation is a key element for improving capacity for disaster reduction. By operating at the interface between natural and social sciences, education, culture and communication, UNESCO plays a vital role in constructing a global culture of resilient communities. The Organization is closely involved in the conceptual shift in thinking away from post-disaster reaction to pre-disaster action. UNESCO has many scientific programmes in place that deal with the study of natural hazards and the mitigation of their effects. UNESCO is committed to the Sendai Framework and operates in accordance with its four Priorities for Action.

UNESCO also works to build the scientific knowledge base to help countries manage their water resources in a sustainable way through the UNESCO International Hydrological Programme (IHP). In close cooperation with scientists worldwide, the IHP plays a vital role to establish a scientific and technological base for the sustainable management of water resources threatened by global climate change. The IHP strategy (Phase VIII, 2014-2020), "Water Security: Responses to Local, Regional and Global Challenges" among other themes is focusing on water-related disasters. UNESCO is coordinating projects and activities at global level on scientific collaboration including monitoring glaciers, snow and permafrost conditions and evaluating the implications of climate change on water resources and will provide feedback to develop appropriate adaptive strategies that countries need. In particular, UNESCO is engaged in supporting capacity building activities in glacier monitoring. It has been co-organizing and co-sponsoring trainings for young specialists from the CA (both in Tien Shan and Pamir mountains) and Andean region in the methods of glaciological monitoring for determining the parameters of glaciers mass balance. Two summer schools on "Glacier Mass Balance Measurements and Analysis for young researchers from Kyrgyzstan, Tajikistan and Russia" and "Permafrost and Potentially Dangerous Glacier Lakes", were held in July - August 2016 in Kyrgyzstan, supported by UNESCO.

The University of Zurich, which will execute designated activities and support in-country organizations in others. University of Zurich, due to its extensive and interdisciplinary research and teaching in the field of climate change, has been selected by the United Nations Academic Impact (UNAI) as the global hub for SDG 13 'climate action' (https://academicimpact.un.org/content/sdg-hubs). The group of the University of Zurich has longstanding experience and a scientific track record in glacier lake science, including aspects of past and future lake formation, lake and slope instability assessment and monitoring, both on the ground and by remote sensing methods, GLOF modelling, as well as assessment of hazards, vulnerabilities and risks. Recently, the University of Zurich has been instrumental in designing and implementing GLOF early warning systems in the Andes of Peru, in close collaboration with national and local partners from the public and private sectors and governmental authorities. Further recent expertise is also available from collaborations on GLOFs in Pakistan, India or Tajikistan, including capacity building of local experts, both governmental and non-governmental. Recognising this long-standing expertise, University of Zurich led in 2017 an international working group in the development of guidelines for glacier hazard and risk assessment[29] Currently the University of Zurich team is consulting the Government of India for the development of guidelines for the management of glacier related risks in the Indian Himalayan region.

UZH experts have ongoing activities in Central Asia and long-standing relationships with regional experts. Under Component 1 (Strengthening national and regional capacity to monitor and assess GLOF hazards), UZH will undertake applied analysis and capacity building to support mapping and identification of hot spots. Under Component 2 (Strengthening sub-national, national, and regional policies and approaches to meet needs of vulnerable communities), UZH will provide advisory services to support the vulnerability assessment and selection of adaptation options. Under Component 3 (Design and launch of EWS and risk reduction measures tailored to local contexts), UZH will work with a local partner (to be selected) to develop comprehensive site-specific assessments and the detailed design of 4 EWS—one in each country—and complementary measures in a total of 7 communities. They will also oversee the work of the local partner in evaluating sensors and equipment; elaborating the energy supply system; and designing communication and

[29] GAPHAZ 2017: *Assessment of Glacier and Permafrost Hazards in Mountain Regions – Technical Guidance Document*. Prepared by Allen, S., Frey, H., Huggel, C. et al. Standing Group on Glacier and Permafrost Hazards in Mountains (GAPHAZ) of the International Association of Cryospheric Sciences (IACS) and the International Permafrost Association (IPA). Zurich, Switzerland / Lima, Peru, 72 pp.

data storage systems and infrastructure. Under Component 4 (Targeted demonstration projects to introduce EWS technology and low-cost adaptation measures in vulnerable communities), UZH will conduct a scientific-technical assessment of the pilots and will provide advice on coordination with the local partner and authorities in the participating communities. Finally, UZH will provide technical and scientific capacity building to experts in the participating countries and will disseminate key findings from the project through activities in Component 5 (Knowledge exchange, stakeholder engagement, and communication)
The project technical and scientific activities will be conducted under the guidance of the UNESCO staff in UNESCO Almaty Office in consultation with UNESCO Headquarters in Paris and in cooperation with the UNESCO National Office in Tashkent (for Uzbekistan). UNESCO will have responsibility to secure the establishment and supervision of the Project Management Unit (PMU) that will be located in the UNESCO Almaty Office.

Financial management of the funding will be the responsibility of UNESCO. It will manage the funds in accordance with its financial rules and regulations, monitor expenditures, and maintain fiscal oversight of all expenditures.

The management structure will be as follows:

Project Steering Committee (PSC). The PSC will be established, which will provide strategic guidance for the implementation of the project. The PSC will be chaired by UNESCO and will include one senior government official from each country, UNESCO representatives, a representative of the main international implementing partners. The PSC will oversee project execution and will act as the main policy guidance body for the project.

The Project Management Unit (PMU) which will be based in UNESCO Almaty Office, will have the following tasks:

- co-ordinating institutional arrangements for management of the activities in the participating countries, the information sharing committee and the steering committee;
- co-ordinating policy and legislative development regarding GLOF;
- development of the KM and communication strategy;
- conducting and overseeing awareness and education activities;
- ensuring that possible partner agency programmes are fully integrated into the project framework;
- monitoring the results of the demonstration projects and supporting their integration into wider development programmes;
- monitoring technical assistance provided by the contracting agencies, including all institutional strengthening services provided to local communities and government bodies;
- conducting and monitoring all training activities;
- ensuring linkages to regional GLOF activities;
- reviewing annual work plans;
- developing the KM system.

An **Information and Experience Sharing Committee (IESC)** will be established as part of the project and will represent a hub for international cooperation within the project's context and beyond. It will have an inter-ministerial nature, formed by high level representatives of the various governmental agencies/ministries of the four countries involved in CCA and DRR. The IESC will be organized according to the following guidelines:

- The IESC will be convened on an as-needed basis (at least once annually) to exchange information on project approaches and findings in the four participating countries and from other projects in other regions as relevant.
- As both governments and CSOs will participate, the IESC will also be used to identify any situations in future projects where there may be potential overlap or duplication so that these situations can be resolved at a very early stage.
- The IESC will be kept informed on activities and outputs in all components of the projects with a view to their completeness and viability in current operating conditions.
- The IESC members will be nominated by the Project Board and the Project Manager.
- The UNESCO Almaty cluster office will function as the Secretariat of the IESC.
- Participation in the IESC will not be renumerated by the project and is considered an in-kind contribution by government agencies and other organizations.
- Participation in the IESC does not carry any expectation of employment with the project or with UNESCO.

National Execution Teams (NET) will be established in each of the four project countries. The NET will be headed by a country coordinator and one to four national experts. Country coordinators will assist the Project Manager in coordinating project activities, they will also assist in securing regular engagement and coordination with the regional and local organizations, institutions and authorities involved in project implementation. They will be chosen among candidates nominated by the countries on the basis of agreed criteria.

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

Mitigation measures against unexpected circumstances will be considered in the full project design, which will be defined through an inception phase undertaken with all involved stakeholders. Potential risks are summarized in the following table.

Table 4: Project Risks and Proposed Risk Mitigation Strategies

Risks:	Level	Mitigation measures/strategy
Financial and Economic		
• The overall economic situation is deteriorating, and migrant workers are returning to Central Asia and governments in the region do not consider DRR a high priority any more. • Governments reduce their funding for DRR	Low	The project will ensure that the necessity for DRR is continuously emphasized through public awareness campaigns, meetings with specialists and decision makers. Parliamentary committees will be kept educated through translation of project results into policy briefs.
Technical		
• The proposed technical solutions might prove to be too ambitious. • The web-based management/content management	Low-Med	Early involvement of stakeholders in project planning will ensure that solutions will meet their expectations and requirements.

system might face acceptance problems. • There is a lack of internet access in rural areas.		The main EWS strategy will be planned in a way that a low-tech solution will be available, too. Instead of only internet-based solutions, a 3G / 4G solution will be considered. The project will lobby for affordable internet access in mountainous areas.
Social and Political		
• The political and security situation in pilot districts may affect project implementation or weaken the interest of stakeholders to address adaptation planning issues. • Lack of incentives for local communities to cooperate in activities that do not yield immediate results, but aim at longer-term resilience, may reduce stakeholder engagement and strong participation. • Implementing partners for local level initiatives and pilot sites for project implementation may shift during project implementation, due to unforeseen (e.g. political, lack of interest) reasons. • Hazard and risk mapping can lead to marginalised and vulnerable communities being potentially victimised, when their land-holdings or habitations are identified as being located within high risk zones.	Low	Project implementation is based on a combination of field-based investigations and remotely based monitoring. Can be tailored in the event of political or security instability. The project will emphasize DRR strategies that bring both immediate and longer- term benefits; e.g., “no-regrets” adaptation strategies. Early and ongoing engagement with communities will be critical, so that they are aware of the benefits to their lives and livelihoods. The project will engage and communicate with a wide-range of local experts and implementing partners, so that there is no dependency on a single agency. The comprehensive training undertaken with local authorities and decision-makers will highlight the full range of adaptation options available. EWS is a measure that protects exposed people and resources and enables inhabitants to live safely in high risk zones. This avoids their victimisation.
Institutional/Management/Governance		
• Delays in recruitment of qualified project staff may affect the timeframe of project activities. • Government and non-governmental agencies do not contribute adequately to the project at different levels. • Changing staff is slowing down	Low-Med	Providing good perspective to collaborators in order to keep them in the project. Top government officials consider the project as a high priority Ensure local governments take ownership of the project through early

project implementation.		engagement. Participation of local government officers to partner countries (e.g. Switzerland) where they may learn from common experiences with CCA. Capacity building at university level, to ensure next generation of young scientists is well qualified for future government positions.
Environmental		
• Adverse climatic conditions may damage adaptation measures being implemented. • Technical construction of the EWS requires access and some potential disturbance to the natural landscape, at least during the installation phase. • Identified high risk flood zones may be considered of low importance for environmental protection, and therefore neglected.	Low-Med	Project implementation will use latest best-practices and equipment used and proven in harsh environmental conditions. The technical equipment does not require heavy lifting or transportation, minimising disturbances to the natural environment during the installation phases. EWS represent an environmentally friendly adaptation measure, with no permanent alteration of the natural landscape (compared to engineering measures for example). Training of communities and local authorities will highlight the importance of maintaining and even enhancing the natural environment in high risk flood zones. For example, vegetation stabilises river banks and reduces erosion.

Over the course of the project, a risk log will be regularly updated at intervals of no less than every six months in which critical risks to the project have been identified and addressed.

Consistent involvement of a diverse set of partners, including local government agencies/departments, NGOs and communities will further reduce these risks.

C. Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy of the Adaptation Fund.

The project's categorization and compliance with the ESP has been outlined in Part II, Section L. In line with AF guidelines, the project has followed a stepwise approach

(depicted in the Figure below) towards addressing those risks identified that require mitigation.

Table 5: Management and Monitoring of Residual Risks Related to the Overall Project Design

Principle	Residual Risk	Mitigation Measure	Respon-sibility	Monitoring Indicator	Budget
Compliance with the Law	Adaptation measures implemented under the project may require permits and as such present a risk of non-compliance with local legislation if not properly monitored.	The USPs that are identified in project Outputs 2.1 and 2.2 will be screened at the community level and will bear in mind all necessary procedures such as EIAs, permits, and codes where applicable. Activities with a medium or high risk will not be considered for inclusion in the project. Screening and monitoring will continue as the EWS and complementary adaptation measures are implemented under Outputs 4.1 and 4.2.	UNESCO Staff, Implement ing Partners	At least 4 pilot communities will have undertaken complement ary adaptation options (such as work on channels and/or slope stabilization) in conformity with applicable regulations.	No additional budget
Gender Equity and Women's Empowerment	Women's status and representation may limit their meaningful participation in project activities	Men and women will participate fully and equitably. Women will be consulted in on-site, in-depth community assessments at the project preparation stage. An Initial Gender Assessment and Gender Action Plan have been developed to ensure that women are meaningfully engaged in project activities and realize an equitable share of project benefits (see Annex 2). Specific project indicators will ensure that results-based management will cover meaningful participation of both women and men.	UNESCO Staff, Implemen-ting Partners, NETs	Indicators are provided under the Gender Action Plan in Annex 2	No additional budget

Overview of the Approach to Environmental and Social Management

As the applicant, UNESCO has applied four key mechanisms to comply with the AF ESP:

1. Program-Level Quality Assurance: As elaborated in Part II, Section L. UNESCO's as accredited applicant and IE with oversight responsibilities and core policy to lead in application of environmental, gender and social principles.

2. Project-Level Quality Assurance: As elaborated in Part II, Section L. Screening, by IE, EE and partners in the four countries, of proposed project scope and activities for potential harmful impacts and risks.
3. Screening of impacts and possible risks of proposed project in relation to the 15 core principles of ESP: Categorization of the project as “B.”
4. Development and application of ESMP: As per guidelines of the Adaptation Fund. The ESMP is further elaborated below.

Finally, in accordance with the project Monitoring and Evaluation approach, progress reporting will pay specific attention to the compliance issues. The high level of existing stakeholder involvement also ensures a low risk of non-compliance. Whenever potential non-compliance issues arise, the Grievance mechanism can be activated.

The following table represents the approach to environment and social risk management that UNESCO will undertake as the IE.

Table 6: Overview of the Environmental and Social Management Plan for the proposed project

Steps Taken	Responsible Party	Timeframe
Project team awareness and training on compliance with ESP and gender guidelines, monitoring process and related issues Description: UNESCO, as the Implementing Entity, will provide an introduction and training to all project partners, staff, and experts at project inception in order to ensure that all principal project partners have the required knowledge and awareness level regarding their responsibilities with regards to the provision of the Environmental and Social Policy of the AF as well as the promotion of human rights, including specifically the grievance handling mechanism of the AF. The ESP of the AF will be used as the primary guidance to ensure compliance. The introduction and training on the relevant concept and tools for compliance will be used for the for all of the participants.	Core project team and partners, National Execution Teams (NETs)	During the Project Inception phase
Awareness and training for key project stakeholders, in particular: a) government partners, and b) pilot communities and associated project staff and consultants, with particular reference to vulnerable groups and indigenous peoples. Description: In order to prevent the exacerbation of existing inequalities, the project will identify vulnerabilities in pilot communities during the project inception phase and will monitor the impact of the project during the entire implementation period. As part of participatory processes, community dialogues, training and close collaboration with national and local authorities will enable participation of vulnerable and marginalized groups	Core project team and partners, NETs	During the first year of project implementation, repeating as necessary.

and successful identification, management and mitigation of risks.		
Re-assessment of impacts and risks on two levels: 1) The project as a whole; and 2) The USPs in each of the pilot sites Description: For each pilot community, the comprehensive risk screening and mitigation plan will be re-visited, following further detailing of the work plans (i.e. project locations, target groups, specific activities related to effective community response to early warnings, and project interventions to be defined in greater detail during the EWS planning phase). For each pilot community, the comprehensive risk screening and mitigation plan will be re-visited, following further detailing of the work plans (i.e. project locations, target groups, specific activities related to effective community response to early warnings, and project interventions to be defined in greater detail during the EWS planning phase).	UNESCO and the Project Management Unit (PMU) and teams working in pilot communities	During the Project inception phase and upon the start of activities in the pilot communities
Updated reporting on compliance with ESP and gender guidelines and update of the monitoring system Description: As part of the compliance approach, ESMP and progress monitoring, the status and issues arisen will be reported at the end of the Inception Phase. The Inception Phase will re-visit and improve on any inadequacies in the proposed environment and social risk monitoring or mitigation.	UNESCO and project partners	In the project inception report
Validation of the monitoring and evaluation approach, and reporting with clear and verifiable indicators and means of verification Description: The project team will build on the proposed M&E approach and, when required, can update the approach in accordance with the latest AF guidelines. M&E for the ESMP is further described in the text following this table.	UNESCO and project partners	In the project inception report
Periodic progress reporting as prescribed in the project management plan Description: Periodic progress reporting as prescribed in the project management plan, and as per AF guidelines. UNESCO, as the Implementing Entity, will prepare the final environmental and social assessment reporting for the AF and in a suitable format for people, communities, and other stakeholders involved in the project. A special section of the progress reports will be dedicated to stakeholders and vulnerable groups in each pilot area, including monitoring data on women's participation.	UNESCO and the PMU and teams working in pilot communities	Concurrent with scheduled M&E activities

Gender issues assessment and assurance of positive impacts and compliance Description: The Terms of Reference for a gender specialist engaged for the project will be prepared during the inception phase and the involvement of that specialist in M&E planning and monitoring will be ensured. The project manager will refer to the gender action plan for monitoring projects results in this area and supporting the meaningful participation of women in project activities.	Dedicated gender experts engaged from/through UNESCO	Ongoing
Project M&E activities, including systematic progress monitoring, collection of stakeholder feedback, and reviews M&E for the ESMP is further described in the text following this table.	UNESCO and project partners	Ongoing
Project Steering Committee assessment of compliance The role of the PSC is addressed in the table below on roles and responsibilities for ESMP implementation and monitoring.	Invited by UNESCO to assess and provide feedback	Concurrent with PSC meetings and additionally as required
Awareness and activation of grievance mechanism The grievance mechanism is further described in the text following this table.	UNESCO and the country project staff and experts	As needed.

ESMP Monitoring

Systematic progress monitoring and collection of stakeholder feedback and reviews. As the IE, UNESCO will establish a project M&E and reporting mechanism through which it will monitor and report on the following: 1) project progress and results (on the basis of verifiable indicators and means of verification) and 2) impact assessment and compliance with ESP Principles. This will be done throughout project implementation. As the project will focus on the implementation of activities in pilot communities, monitoring and reporting processes will place particular emphasis on the local level and will include the following:

For the project as a whole and for each of the four pilot EWS communities and other communities participating in the complementary adaptation measures developed under Output 2.2 and implemented under Outputs 4.2, the UNESCO and the PMU will undertake the following steps:

1. Semi-annual workplan preparation and approval assessed by means of checklist on potential negative impacts and risks and for each of the fifteen Environmental and Social Core Principles (Table 4).
2. Upon completion of semi-annual workplans, country teams will be specifically requested to report any issues pertaining to adverse environmental and social impacts, and/or mitigation actions implemented or considered.
3. An annual summary statement / communique will be prepared on the basis of which further public consultations and associated activities can take place.
4. In each pilot area, a small representative committee of local and national stakeholders will be involved. This committee will approve/endorse:

a. the overall outcome of the environmental and social impact assessments, and
b. possible mitigation actions for unforeseen adverse impacts.

As the project will focus implementation in the pilot areas, consultation and mobilization of project support and understanding by local stakeholders and their representatives is essential. If necessary, a grievance mechanism can be utilized (see ESMP 10).

5. National partners, in their supporting roles for project implementation will be involved in and support steps 1-4. This process will be overseen by UNESCO as IE and reported on at semi-annual project meetings. The ultimate responsibility for implementation of the M&E mechanism rests with the IE.

UNESCO and the project partners have in the project formulation and initial screening process (Concept Note and Proposal stage) carefully considered any potential direct, indirect, transboundary, and cumulative impacts in the project's area of influence. This assessment is supported and substantiated by considerable earlier and ongoing work on GLOFs and DRR by the project partners in the countries and regions involved. On this basis, it is concluded that project interventions are unlikely to have any serious adverse environmental or social impacts. Hence the project has been classified as Category B. The monitoring approach outlined in the section above will ensure - in case of doubt or due to unforeseen developments - that any potential risks can be mitigated, and any negative impacts prevented.

If, against expectations, project implementation generates negative environmental or social impact, it will be addressed through the M&E mechanism and reflected in periodic project reporting. Annual reporting on the project will include a section detailing the status of the ongoing environmental and social impacts and risks, as well as a consideration of gender issues. Reports will include, where necessary, a description of any corrective actions taken during the reporting period. The mid-term review and terminal evaluation reports will also include a detailed evaluation of the project's performance with respect to gender and environmental and social risks mitigation.

The following tables provides an overview of the roles and responsibilities of various project actors regarding ESMP implementation and oversight.

Table 7: Overview of responsibilities for ESMP implementation and monitoring by responsible party

Responsible Party	Role / Responsibility
Implementing Agency (UNESCO)	Ensure that the project complies at all times with AF ESP Principles. Oversee risk mitigation measures.
Executing Agency (Almaty Cluster Office)	Monitor ESMP implementation and ensure that the project adheres to all national and international legal and regulatory frameworks. Disseminate information on the ESMP and grievance mechanism to all stakeholders and participating communities. Assess the effectiveness of ESMP risk mitigation measures on an ongoing basis and adjust them as necessary.
Project Steering Committee	Review ESMP compliance during regularly scheduled meetings (and more frequently if indicated) and make recommendations as needed.
Project Manager	Oversee the ESMP implementation and the gender action plan.
Implementing Partners	Oversee compliance with all national and international legal and regulatory frameworks that are applicable to their associated project activities.

	Notify the project manager and the executing agency in the event that activities may result in unexpected environmental and/or social risks. Monitor the effectiveness of risk mitigation activities and document lessons learned.

Grievance Mechanism

All direct beneficiaries of the project and other related stakeholders will be informed about the grievance mechanism and the complaint-handling mechanism of the project. The IE with project partners will produce public information materials (leaflets and brochures) that explain the project, complete with detailed contact information of persons in charge (name, position, address, phone, email), and including access to information regarding the ad hoc complaint handling mechanism for the AF. These public information materials will be distributed during community consultations and general awareness-raising activities.

As part of the project's ESMP as well as progress and results monitoring, stakeholder feedback and reviews will be collected systematically. Focus will be placed on the results evaluation of tangible measures and activities in the four pilot areas (where the closest connections occur between stakeholder interests and needs and the intended effects and impacts of the project).

As part of the monitoring and evaluation process, a grievances modality will be set up - both for the project as a whole (as part of the project's website and information portal), and as part of the specific evaluation and progress data collection (M&E) in the pilot areas. This approach will allow concerned stakeholders to raise issues (anonymously if they wish), to the project management implementers at all levels of implementation.

The grievance mechanism process to be implemented in the project will be composed of five steps:

- Receipt and registration
- Acknowledgement
- Screening
- Investigation
- Response

In the event that the response leads to successful resolution of the grievance, the process will be closed out and the entire process will be documented. In the event that the response is not satisfactory to the affected parties, there will be an appeals process.

Overall, the grievance mechanism process will support receiving, evaluating, and addressing project-related grievances from local communities and other stakeholders. It will be possible to express grievances via submission on the website or by phone. Receipt of the grievance will always be acknowledged, recorded and subsequently investigated in a timely manner. Where relevant, resolved grievances will be included among the Frequently Asked Questions on the project website in order to prevent any future misunderstandings.

Unidentified Sub-Projects (USPs)

As noted in Section II.L, Outputs 2.1 and 2.2 involve the identification and design of USPs, while Outputs 4.1 and 4.2 involve the implementation of measures that are selected. The projects in question are classified as USPs for the following reason:

- Effective risk identification in line with the Adaptation Fund ESP is not possible for the EWS because the specific environment and social setting of the activity is not presently known.

Once the USPs under Components 2 and 4 have been identified and defined, they will be screened for compliance with the principles of the AF ESP to ensure that any potential unwanted impacts of these activities are anticipated, avoided, reduced, or mitigated. Activities will be rated by risk category (low, medium, high), which will determine what further action is required, and high-risk USPs will not be developed or implemented. Potential risks, whether social or environmental, will also be assessed at the community level. Any identified risks will be subject to monitoring and follow-up to ensure that planned mitigation measures are implemented and effective. All USPs that require further assessment, permitting, etc., will be closely supervised to ensure that they obtain the necessary approvals. Relevant legislation and regulations that pertain to potential USPs are listed in Section II.L. Tables 6 and 7 above provide additional information how the project will address risks related to USPs.

D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

The performance of the action will be monitored on a regular basis through missions, reporting and assessments by interviewing the people involved, as well as through questionnaires. Regular monitoring will include an analysis by UNESCO's Field Offices (FOs) of the comprehensive reports and assessments prepared by consultants conducting capacity-building activities. The action implementation team will follow the action through regular communication with the national officials, consultants and AF delegations and will be available to intervene or initiate corrective action, as needed.

Dedicated support by the PMU of the UNESCO Cluster Office in Almaty will be provided on a regular basis. A comprehensive Results Framework of the project will be defined with execution indicators for project implementation as well as the respective means of verification. An M&E system for the project will be established based on these indicators and means of verification. Targeted M&E activities for the proposed project include the following:

A Project Inception Workshop will be conducted within three months of project start up with the full project team, relevant government counterparts and UNESCO. The Inception Workshop is crucial for building ownership for the project and to finalize a work plan for the first year of the project. An objective of the Inception Workshop will be to present the modalities of project implementation and execution, document agreement for the proposed executive arrangements amongst stakeholders, and to assist the project team to understand and take ownership of the project's goals and objectives. Another key objective of the Inception Workshop is to introduce the project team which will be instrumental in project implementation. An Inception Workshop Report will be prepared and shared with participants to formalize agreements decided during the meeting.

A risk log will be regularly updated at intervals of no less than every six months in which critical risks to the project have been identified. Half yearly Progress Reports will be prepared by the PMU and verified by the Project Steering Committee. Annual Project Reports will be prepared to monitor progress made since the start of the project and in

particular for the previous reporting period. These annual reports include, but are not limited to, reporting on the following:

• Progress made towards project objectives and project outcomes - each with indicators, baseline data and end-of-project targets;
• Project outputs delivered per project Outcome (annual);
• Lessons learned/good practices;
• Reporting on project risk management.

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

The project will undergo an independent Mid-Term Evaluation (MTE) at the mid-point of project implementation, which will determine progress being made toward the achievement of outcomes and identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. An external Terminal Evaluation (TE) will be conducted two months after project closure.

The following table provides a summary of the M&E plan and corresponding costs.

Table 8: Overview of M&E Activities

Type of M&E activity	**Responsible Parties**	**Budget US$ (excluding project team staff time)**	**Time frame**
Inception Workshop (IW) and Report	PMU, UNESCO	Indicative cost: 10,000	Within first three months of project start up
Measurement of Means of Verification for project indicators	PMU National Project Coordinators (NPC)	Indicative cost: 15,000	Start, mid and end of Project and annually when required
Annual and Quarterly Progress reviews	PMU, NPC	0 (staff time only)	Quarterly and Annually
Workplan Screening for Compliance with ESMP	PMU	0 (staff time only)	Bi-Annually
Steering Committee Meetings	PMU	Travel, indicative cost: 10,000	Following Project IW and subsequently at

			least once a year
Periodic status reports	PMU NPC	Indicative cost: 12,000	To be determined by PMU but following UNESCO regulations
Technical reports	PMU and NET	Indicative cost: 6,000	To be determined by PMU
Mid-term External Evaluation	PMU, NPC External Consultants (i.e. evaluation team)	Indicative cost: 20,000	At mid-point of planned project implementation.
Terminal Report	PMU UNESCO Local Consultants	0 (staff time only)	At least 1 month before the end of the project
Audit	UNESCO, PMU, NPC	Indicative cost: 90,000	At least 1 month before the end of the project
Visits to field sites	Project staff, Government representatives	Indicative costs: 17,000	At all stages of project implementation
Final Evaluation	PMU, UNESCO, Independent external Consultants	Indicative costs: 30,000	At least 1 month before the end of the project
TOTAL indicative COST		USD 210,000	

E. Include a results framework for the project / programme proposal, including milestones, targets and indicators.

Table 9: Project Results Framework

Goal	**Communities in Central Asia are more resilient to natural disasters and climate change.**					
Project Strategy	**Objectively Verifiable Indicators**					
	Indicator	Baseline	Target	Sources of Verification	Assumptions	Respons ibility
Objective: Strengthen adaptation to climate change in Central Asia by reducing societal risks	Number of beneficiari es (AF Core	0	*By the end of the project:* At least 1,400 direct beneficiaries (of that at least 700	Site surveys; project documenta tion; independe	The political situation within and between participating countries will not change in	UNESC O

Goal	Communities in Central Asia are more resilient to natural disasters and climate change.					
Project Strategy	**Objectively Verifiable Indicators**					
	Indicator	Baseline	Target	Sources of Verification	Assumptions	Respons ibility
and vulnerabilitie s associated with GLOFs	Indicator) [30] Early Warning Systems (AF Core Indicator) Category: Floods	1) Risk knowledg e: 1. 2) Monitorin g and warning service: 0-1. 3) Dissemin ation and communic ation: 0-1. 4) Response capability: 0.	women and 400 youth) and at least 11902,99013 5 indirect beneficiaries (of that 50,000 women and 45,000 youth).[31] *By the end of the project:* 1) Risk knowledge: 3. 2) Monitoring and warning service: 3. 3) Dissemination and communicatio n: 3. 4) Response capability: 3.	nt MTR and TE Data records for EWS; Interviews	a way that would jeopardize project activities and regional cooperation. Participating governments continue to see GLOFs as a threat to communities that requires action.	
Outcome 1: Authorities in participating countries have improved knowledge of potential GLOF hazards and a coordinated national and regional approach to mapping and monitoring potential GLOF sites.						
Output 1.1: Appropriate mapping and monitoring strategies developed and endorsed	Number of authorities engaged in mapping and monitoring activities Presence of a strategy for GL mapping and monitoring	20 authoritie s (and of that number, 10 women) consider themselve s to be involved in GL mapping and monitorin g	*By the end of the project:* 40 authorities (and of that number, 20 women) consider themselves to be involved in GL mapping and monitoring By the end of the project, each participating country has a	Interviews; GL mapping and monitoring strategies	Participating governments understand the value to shifting some resources and activities from disaster response to disaster prevention	PM NETs

[30] Core impact indicators are detailed in Tables 9A and 9B.

[31] Youth target for direct and indirect beneficiaries will be finalized pending the initiation of EWS work in pilot communities.

Goal	Communities in Central Asia are more resilient to natural disasters and climate change.					
Project Strategy	**Objectively Verifiable Indicators**					
	Indicator	Baseline	Target	Sources of Verification	Assumptions	Responsibility
		No country-level strategies for GL mapping and monitoring	GL mapping and monitoring strategy			
Output 1.2: Up-to-date atlas on glacier lakes for all participating countries based on remote sensing data developed and maintained	Percentage of watershed mapped for all participating countries	A very limited percentage of the watershed is mapped using older data; in situ measurements have been taken only in a few cases	By the end of the project, 347,000 km2 is mapped using recent (2015-2016) data	Atlas; project documentation	Participating countries will continue to have access to free satellite data and to retrospective watershed data	PMU NETs
Output 1.3: Organizational capacity to implement and oversee mapping and monitoring strengthened, with an emphasis on transboundary hazards.	Number of targeted institutions with increased capacity to minimize exposure to climate variability risks **(AF Output Indicator 2.1.2)** Number of capacity-strengthening workshops	-- --	By the end of the project, 16 institutions have increased capacity to minimize exposure to climate variability risks By the end of the project, at least 4 regional workshops and 8 workshops with local authorities have been conducted to	Workshop documentation, including papers and presentations; other project documentation; interviews	Government agencies and universities will allocate specialists and time to participate in conferences and capacity-strengthening activities	PMU NETs UZH

Goal	**Communities in Central Asia are more resilient to natural disasters and climate change.**					
Project Strategy	**Objectively Verifiable Indicators**					
	Indicator	Baseline	Target	Sources of Verification	Assumptions	Respons ibility
			strengthen monitoring capacity			
Outcome 2: Decision-makers and vulnerable households are aware of GLOF threats and have the necessary information to plan measures to adapt to those threats.						
Output 2.1: Vulnerability assessment and exposure maps developed for endangered communities, including gender and sector-specific analyses	Number of communities with exposure maps	One community has undergone hazard mapping, but this does not include gender and sector-specific analysis	By the end of the project, 8 communities (2 in each country) will have completed vulnerability assessments and exposure maps	Review of project documentation, community interviews	Communities will be receptive to the project and will participate actively in the mapping exercises. Sufficient data will be available for meaningful mapping.	PMU NETs
Output 2.2: Local knowledge on GLOF risks and related adaptation needs documented and local risk reduction plans drafted for selected communities vulnerable to GLOFs	Number and type of risk reduction actions or strategies introduced at local level **(AF Output Indicator 3.1.1)**	No local risk reduction plans exist in the pilot communities.	*By the end of the project:* At least 8 communities will participate in the development of a risk reduction strategy. At least 4 of the strategies will include EWS and complementary adaptation measures.	Risk reduction strategies; project documentation; community site visits.	Communities will be receptive to the project and will participate actively in the mapping exercises. Sufficient data will be available for meaningful mapping.	PMU NETs
Output 2.3: DRR and CCA concepts mainstreamed into sub-national development planning in the relevant country context.	Number of targeted development strategies with incorporated climate change priorities enforced **(AF Output Indicator 7.2)**	DRR concepts are not mainstreamed into sub-national development plans.	By the end of the project, at least 8 local or district development plans include GLOF planning and response.	Development plans; project documentation.	Participating sub-national governments will support the integration of CCA issues into development plans	PMU NETs Govt partners

Goal	**Communities in Central Asia are more resilient to natural disasters and climate change.**					
Project Strategy	**Objectively Verifiable Indicators**					
	Indicator	Baseline	Target	Sources of Verification	Assumptions	Respons ibility
Outcome 3: A coordinated EWS network is designed and embedded in the institutional setting for disaster risk management at all levels.						
Output 3.1: Local to regional framework for EWS established and evaluated	Number of staff trained to respond to, and mitigate impacts of, climate-related events (by gender) **(AF Output Indicator 2.1.1)** DRM framework for GLOFs is integrated into country-level multi-hazard DRM frameworks	Approximately 24 staff in participating countries address DRR issues generally (including 12 women), but they lack specific expertise on GLOF risk reduction and management	24 staff have received specialized training or participated actively in the EWS framework (including 12 women)	Training logs; project documentation; interviews	Participating governments will allocate sufficient time and appropriate staff for training and capacity-strengthening activities. Governments continue to be receptive to the approach of having an integrated, multi-hazard DRR strategy	PMU NETs
Output 3.2: Design and implementation plans for four site-specific EWS completed	Site-specific studies for pilot communities	Vulnerable communities exposed to GLOFs lack EWS	*By the mid-point of the project:* Site-specific studies have been completed for each pilot community.	Pilot studies; documentation of equal participation by women in definition of community needs	Communities will not tamper with EWS installations	NETs UZH
Outcome 4: Pilot communities reduce risk from GLOF hazards and relevant agencies have a means of maintaining adaptation measures and upscaling to other vulnerable communities.						
Output 4.1: EWS tested in selected vulnerable communities.	Presence of EWS system	None of the vulnerable communities surveyed has an	*By the end of the project:* At least 4 communities have an EWS in operation.	Country-level project documentation; site visits; independe	EWS will be accepted by the communities	NETs UZH

Goal	Communities in Central Asia are more resilient to natural disasters and climate change.					
Project Strategy	**Objectively Verifiable Indicators**					
	Indicator	Baseline	Target	Sources of Verification	Assumptions	Respons ibility
		EWS that monitors and responds directly to GLOF threats		nt mid-term and terminal evaluation		
Output 4.2 Complementary adaptation measures implemented	Presence of complementary adaptation measures	None of the vulnerable communities surveyed during the community consultations had undertaken any adaptation measures	*By the end of the project:* At least 4 pilot communities will have undertaken complementary adaptation options (such as work on channels and/or slope stabilization) in conformity with applicable regulations. At least 7 pilot communities will have undertaken low-cost / no-cost adaptation options (such as hazard zone demarcation, evacuation route planning, etc.)	Country-level project documentation; site visits; independent mid-term and terminal evaluation	Low-cost / no-cost measures will be accepted by the communities	NETs UZH
Output 4.3: Authorities and population trained through simulation exercises and other means as needed.	Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriat	Community consultations indicated that while nearly all vulnerable community residents	*By the end of the project*, at least 80% of people in the target communities are aware of measures to adapt to climate change (and, of that, at	Site visits; interviews; independent mid-term and terminal evaluation	Awareness-raising activities will ensure that communities understand the importance of simulation exercises	NETs UZH Local partners

Goal	Communities in Central Asia are more resilient to natural disasters and climate change.					
Project Strategy	**Objectively Verifiable Indicators**					
	Indicator	Baseline	Target	Sources of Verification	Assumptions	Respons ibility
	e responses **(AF Output Indicator 3.1.1)** Of that number, percentag e of women, vulnerable groups Number of training drills	were concerne d about climate change, far fewer could identify adverse impacts, and even fewer appropriat e response s. Communit ies do not participat e in hazard drills	least 50% women and youth / vulnerable groups) By the end of the project, all pilot communities have participated in at least 2 EWS drills.			
Output 4.4: Maintenance and financing strategy developed for ensuring long-term sustainability of the EWS and the expansion of adaptation activities to other vulnerable communities.	# of financing sources identified Presence of a maintenan ce and financing strategy	Governm ents have expresse d interest, but funding has not been identified No maintena nce and financing strategy exists	*By the end of the project:* At least one source of financing has been identified for each participating country. *By the end of the project:* Each participating country has a maintenance and financing strategy for the EWS systems	Project documenta tion; reporting on support received; governme nt gazettes.	Country-level interest and international interest in support for EWS will remain strong.	PMU NETs
Outcome 5: Researchers, government authorities, and communities can access and exchange information they need on GLOF hazards and risk reduction measures to adapt to them.						
Output 5.1: Web-based knowledge-platform established on	Usage of web platform	Several climate change web	*By the end of the project:* The web platform has at least 100	Website; user statistics	Target community will have consistent	PMU

Goal	**Communities in Central Asia are more resilient to natural disasters and climate change.**					
Project Strategy	**Objectively Verifiable Indicators**					
	Indicator	Baseline	Target	Sources of Verification	Assumptions	Respons ibility
GLOF risks and adaptation strategies.	Number of stakehold ers who are aware of the platform and who access it more than once.	platforms exist with informatio n on Central Asia, but they do not contain informatio n on GLOFs.	unique visitors annually from within the participating countries.		access to the internet and skills necessary to obtain information from the platform	
Output 5.2: Education and training programmes undertaken to equip stakeholders with knowledge and capacity to prepare for, respond to and recover from GLOF disasters.	Number of staff trained to respond to, and mitigate impacts of, climate-related events, by gender ***(AF Output Indicator 2.1.1)***	GLOF response training is not specificall y provided to governme nt staff.	By the end of the project: 24 staff, and of that number 12 women, trained to respond to, and mitigate impacts of GLOFs	Training logs; other project documenta tion.	Staff will have sufficient time and interest to participate meaningfully in training.	PMU UZH
Output 5.3: Knowledge and lessons learned from the targeted demonstration projects disseminated within Central Asia and across other high mountain regions.	Extent to which project lessons are scaled up to other communiti es in Central Asia Number of knowledg e products for institutions supporting mountain communiti es and for people at risk	-- Local communiti es lack accessibl e, targeted materials on GLOF response.	*By the end of the project:* Lessons learned from the project will be incorporated in at least 16 communities at risk of GLOFs. *By the end of the project:* At least 6 knowledge products have been produced and distributed to disseminate good practice and lessons learned from the project.		People and finances will be sufficient to replicate elements of the project approach in additional communities. Project knowledge will be codified on a regular basis through implementatio n. Other communities will perceive the relevance of the lessons	PMU NETs UZH Local partners

Goal	Communities in Central Asia are more resilient to natural disasters and climate change.					
Project Strategy	Objectively Verifiable Indicators					
	Indicator	Baseline	Target	Sources of Verification	Assumptions	Respons ibility
					learned through the project.	

Table 9A: Summary Table for AF Core Impact Indicator "Number of Beneficiaries"

Adaptation Fund Core Impact Indicator "Number of Beneficiaries"				
Date of Report				
Project Title	Reducing vulnerabilities of populations in the Central Asia region from glacier lake outburst floods in a changing climate			
Country	Multi-Country (Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan)			
Implementing Agency	UNESCO			
	Baseline	Target at Project Approval	Adjusted Target First Year of Implementation	Actual at Completion
Direct Beneficiaries Supported by the Project	0	1,400	1,400	
Female Direct Beneficiaries	0	700	700	
Youth Direct Beneficiaries[32]	0	400	400	
Indirect Beneficiaries Supported by the Project	0	89,000	11902,990135	
Female Indirect Beneficiaries	0	45,000	50,000	
Youth Indirect Beneficiaries[33]	0	45,000	45,000	

[32] Youth target will be finalized upon the final selection of the pilot communities that will receive the EWS and those that receive other adaptation measures. The project will strive for equal representation of young women and young men among youth beneficiaries.

[33] Youth target will be finalized upon the final selection of the pilot communities that will receive the EWS and those that receive other adaptation measures. The project will strive for equal representation of young women and young men among youth beneficiaries.

Table 9B: Summary Table for AF Core Impact Indicator "Early Warning Systems"

Adaptation Fund Core Impact Indicator "Early Warning Systems"				
Date of Report				
Project Title	Reducing vulnerabilities of populations in the Central Asia region from glacier lake outburst floods in a changing climate			
Country	Multi-Country (Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan)			
Implementing Agency	UNESCO			
	Baseline	Target at Project Approval	Adjusted Target First Year of Implementation	Actual at Completion
Adopted Early Warning Systems *(Category targeted – 1, 2, 3, 4; and absolute number)* *(1) risk knowledge,* *(2) monitoring and warning service,* *(3) dissemination and communication,* *(4) response capability.*	*(1) risk knowledge = 1* *(2) monitoring and warning service = 0/1* *(3) dissemination and communication = 0/1* *(4) response capability = 0*	*(1) risk knowledge = 3* *(2) monitoring and warning service = 3* *(3) dissemination and communication = 3* *(4) response capability = 3*		
Hazard *(select from the list on page 2)*	Floods (for all components)	Floods (for all components)		
Geographical coverage *(km2)*		Component 1:[34] 347,000 km^2 Components 2-4:[35] 6,255 km^2		
Number of municipalities	0	7 (for Components 3 and 4)		

[34] Of that: 47,000 km^2 in Kazakhstan, 170,000 km^2 in Kyrgyzstan, 110,000 km^2 in Tajikistan, and 20,000 km^2 in Uzbekistan.

[35] This total reflects the EWS catchment area for communities in the four participating countries as follows: 1,300 km^2 in Kazakhstan (2 communities); 1,150 km^2 in Kyrgyzstan (2 communities); 1,~~905~~700 km^2 in Tajikistan ~~13~~ communit~~ies~~y~~;~~; and 1,900 km^2 in Uzbekistan (2 communities).

F. Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund

Table 10: Project Alignment with the Adaptation Fund Results Framework

Project Objective(s)[36]	**Fund Outcome**	**Fund Outcome Indicator**	**Grant Amount (USD)**
Strengthen adaptation to climate change in Central Asia by reducing societal risks and vulnerabilities associated with GLOFs	Outcome 1: Reduced exposure to climate-related hazards and threats	1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis	6,500,000
Project Outcome(s)	**Fund Output**	**Fund Output Indicator**	**Grant Amount (USD)**
Authorities in participating countries have improved knowledge of potential GLOF hazards and a coordinated national and regional approach to mapping and monitoring potential GLOF sites.	Output 2: Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events	2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events (by gender) or 2.1.2 No. of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)	820,000
Decision-makers and vulnerable households are aware of GLOF threats and have the necessary information to plan measures to adapt to those threats.	Output 7: Improved integration of climate-resilience strategies into country development plans	7.2. No. of targeted development strategies with incorporated climate change priorities enforced	1,364,800
A coordinated EWS network is designed and embedded in the institutional setting for disaster risk management at all levels.	Output 1.2: Targeted population groups covered by adequate risk reduction systems	1.2.1. Percentage of target population covered by adequate risk-reduction systems	1,070,000
Pilot communities reduce risk from GLOF hazards and relevant agencies have a means of maintaining adaptation measures and upscaling to other vulnerable communities.	Output 1.2: Targeted population groups covered by adequate risk reduction systems	1.2.1. Percentage of population covered by adequate risk-reduction systems	1,763,444
	Output 3: Targeted population groups participating in adaptation and risk reduction awareness activities	3.1.1 No. and type of risk reduction actions or strategies introduced at local level	
Researchers, government authorities, and communities can access	Output 2: Strengthened capacity of national and sub-	2.1.2 No. of targeted institutions with increased capacity to	910,000

[36] The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

and exchange information they need on GLOF hazards and risk reduction measures to adapt to them.	national centres and networks to respond rapidly to extreme weather events	minimize exposure to climate variability risks (by type, sector and scale)	

G. Include a detailed budget with budget notes, broken down by country as applicable, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

Table 11: Budget by Outputs

	Budget $
COMPONENT 1: Strengthening national and regional capacity to monitor and assess GLOF hazards	-
Outcome 1: Authorities in participating countries have improved knowledge of potential GLOF hazards and a coordinated national and regional approach to mapping and monitoring potential GLOF sites.	
Activity 1 - Output 1.1: Appropriate mapping and monitoring strategies developed and endorsed	70,000.00
Activity 2 - Output 1.2: Up-to-date atlas on glacier lakes for each country based on remote sensing data developed and maintained	300,000.00
Activity 3 - Output 1.3: Organizational capacity to implement and oversee mapping and monitoring strengthened, with an emphasis on regional cooperation on transboundary hazards	450,000.00
Total Outcome 1	**820,000.00**
COMPONENT 2: Strengthening sub-national, national, and regional policies and approaches to address the needs of vulnerable communities	
Outcome 2: Decision-makers and vulnerable households are aware of GLOF threats and have the necessary information to plan measures to adapt to those threats	
Activity 4 - Output 2.1: Vulnerability assessment and exposure maps developed for endangered communities, including gender and sector-specific analyses	250,000.00
Activity 5 - Output 2.2: Local risk reduction plans drafted for selected communities vulnerable to GLOFs	590,000.00
Activity 6 - Output 2.3: DRR and CCA concepts mainstreamed into sub-national development planning in the relevant country context	524,800.00
Total Outcome 2	**1,364,800.00**
COMPONENT 3: Design and launch of EWS and risk reduction measures tailored to local contexts	
Outcome 3: A coordinated EWS network is designed and embedded in the institutional setting for disaster risk management at all levels	
Activity 7 - Output 3.1: Local to regional framework of institutional DRR context established and evaluated	62,400.00
Activity 8 - Output 3.2: Design and implementation plans for four site-specific EWS completed	1,007,600.00

Total Outcome 3	**1,070,000.00**
COMPONENT 4: Targeted demonstration projects to introduce technologies and best practices for EWS for glacier lakes	
Outcome 4: Pilot communities reduce risk from GLOF hazards and relevant agencies have a means of maintaining adaptation measures and upscaling to other vulnerable communities	
Activity 9 - Output 4.1: EWS tested in selected vulnerable communities	1,180,000.00
Activity 10 - Output 4.2: Complimentary adaptation measures implemented	500,000.00
Activity 11 - Output 4.3: Authorities and population trained through simulation exercises and other means as needed	68,444.00
Activity 12 - Output 4.4: Maintenance and financing strategy developed for ensuring long-term sustainability of the EWS and the expansion of adaptation activities to other vulnerable communities	15,000.00
Total Outcome 4	**1,763,444.00**
COMPONENT 5: Knowledge exchange, stakeholder engagement, and communication	
Outcome 5: Researchers, government authorities, and communities can access and exchange information they need on GLOF hazards and risk reduction measures to adapt to them	
Activity 13 - Output 5.1: Web-based knowledge-platform established on GLOF risks and adaptation strategies	130,000.00
Activity 14 - Output 5.2: Education and training programmes undertaken to equip stakeholders with knowledge and capacity to prepare for, respond to and recover from GLOF disasters	476,038.00
Activity 15 - Output 5.3: Knowledge and lessons learned from the targeted demonstration projects disseminated within Central Asia and across other high mountain regions	303,962.00
Total Outcome 5	**910,000.00**
Project Execution Cost (Activity 16)	
Cost recovery (Internal UNESCO Staff time (P) - P-3 in Almaty Cluster Office)	44,712
Cost recovery (Internal UNESCO Staff time (P) - D-1 in Almaty Cluster Office)	13,095
Cost recovery (Internal UNESCO Staff time (G) - L-7 in Almaty Cluster Office)	5,468
Steering Committee Meetings	10,000
Visits to field sites	17,000
Total Project Execution Cost	**90,275**
Total project costs (direct costs)	**6,018,519**
IE fee 8%	**481,481**
AMOUNT OF FINANCING REQUESTED	**6,500,000**

Table 12: Activity Based Budget

Adaptation Fund

Activity Based Budget

Project title:	Reducing vulnerabilities of populations in the Central Asia region from glacier lake outburst floods in a changing climate
Date submitted:	1/20/2020
Implementing organisation:	UNESCO Office in Almaty
Project duration:	5 years
Project cost:	$ 6,500,000

Total cost	$ 6,500,000
Year 1	$ 830,033
Year 2	$ 2,127,869
Year 3	$ 1,964,830
Year 4	$ 749,043
Year 5	$ 828,225

COMPONENT 1: Strengthening national and regional capacity to monitor and assess GLOF hazards

OUTCOME 1: Authorities in participating countries have improved knowledge of potential GLOF hazards and a coordinated national and regional approach to mapping and monitoring potential GLOF sites

Activity 1 - Output 1.1: Appropriate mapping and monitoring strategies developed and endorsed

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Contracts for Services with organizations	35000	35,000				$70,000.00
Subtotal						**$70,000.00**

Activity 2 - Output 1.2: Up-to-date atlas on glacier lakes for each country based on remote sensing data developed and maintained

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Contracts for Services with organizations / Iplementation partners agreement	150000	150,000				$300,000.00
Subtotal						**$300,000.00**

Activity 3 - Output 1.3: Organizational capacity to implement and oversee mapping and monitoring strengthened, with an emphasis on regional cooperation on transboundary hazards

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Service Contracts for National Coordinators in 4 countries	20000	20,000	20,000	20,000	20,000	$100,000.00
Contracts for Services with organizations	50000	50000	50000	50000	50000	$250,000.00
Individual Consultants	20000	20000	20000	20000	20000	$100,000.00
Subtotal						**$450,000.00**

Total OUTCOME 1						**$820,000.00**

COMPONENT 2: Strengthening sub-national, national, and regional policies and approaches to address the needs of vulnerable communities

OUTCOME 2: Decision-makers and vulnerable households are aware of GLOF threats and have the necessary information to plan measures to adapt to those threats

Activity 4 - Output 2.1: Vulnerability assessment and exposure maps developed for endangered communities, including gender and sector-specific analyses

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Contracts for Services with organizations	30000	40,000	60,000	60,000	60,000	$250,000.00
Subtotal						**$250,000.00**

Activity 5 - Output 2.2: Local risk reduction plans drafted for selected communities vulnerable to GLOFs

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
International consultants	20,000	20,000				$40,000.00
International consultants			20,000	20,000	20,000	$60,000.00
Contracts for Services with organizations / IPAs	50000	50,000	130,000	130,000	130,000	$490,000.00
Subtotal						**$590,000.00**

Activity 6 - Output 2.3: DRR and CCA concepts mainstreamed into sub-national development planning in the relevant country context

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Service Contracts for National Coordinators in 4 countries	30000	30000	30000	30000	30000	$150,000.00
Contracts for Services with organizations	60000	60000	71,600	71,600	71,600	$334,800.00

Travel	20000	20000				$40,000.00
Subtotal						**$524,800.00**

Total OUTCOME 2						**$1,364,800.00**

COMPONENT 3: Design and launch of EWS and risk reduction measures tailored to local contexts

OUTCOME 3: A coordinated EWS network is designed and embedded in the institutional setting for disaster risk management at all levels

Activity 7 - Output 3.1: Local to regional framework of institutional DRR context established and evaluated

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Service Contracts for National Coordinators in 4 countries	12480	12480	12480	12480	12480	$62,400.00
Subtotal						**$62,400.00**

Activity 8 - Output 3.2: Design and implementation plans for four site-specific EWS completed

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Individual consultants		36,350				$36,350.00
Travel	10000	10,000	10000	10000	10000	$50,000.00
Contracts for Services with organizations / IPAs		563,650	357,600			$921,250.00
Subtotal						**$1,007,600.00**

Total OUTCOME 3						**$1,070,000.00**

COMPONENT 4: Targeted demonstration projects to introduce technologies and best practices for EWS for glacier lakes

Outcome 4: Pilot communities reduce risk from GLOF hazards and relevant agencies have a means of maintaining adaptation measures and upscaling to other vulnerable communities

Activity 9 - Output 4.1: EWS tested in selected vulnerable communities

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Local consultants	10,000	20,000	20,000	20,000	20,000	$90,000.00
International consultants		30,000	20,000			$50,000.00
Travel		10,000	20,000	10,000		$40,000.00
Equipment for EWS installation in 4 pilot sites		260,000	400,000			$660,000.00

Contracts for Services with organizations		140,000	200,000			$340,000.00
Subtotal						**$1,180,000.00**

Activity 10 - Output 4.2: Complementary adaptation measures implemented

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
International consultants		15,000				$15,000.00
Training Workshop and Conference		10,000				$10,000.00
Contracts for Services with organizations		175,000	200,000	100,000		$475,000.00
Subtotal						**$500,000.00**

Activity 11 - Output 4.3: Authorities and population trained through simulation exercises and other means as needed

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Individual consultants					8,000	$8,000.00
Contracts for Services with organizations					10,000	$10,000.00
Training Workshops and Conferences					40,000	$40,000.00
Miscellaneous (other supplies for conferences, e.g. stationery, bags, etc.)					10,444	$10,444.00
Subtotal						**$68,444.00**

Activity 12 - Output 4.4: Maintenance and financing strategy developed for ensuring long-term sustainability of the EWS and the expansion of adaptation activities to other vulnerable communities

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Individual consultants					15,000	$15,000.00
Subtotal						**$15,000.00**

Total OUTCOME 4						**$1,763,444.00**

COMPONENT 5: Knowledge exchange, stakeholder engagement, and communication

Outcome 5: Researchers, government authorities, and communities can access and exchange information they need on GLOF hazards and risk reduction measures to adapt to them

Activity 13 - Output 5.1: Web-based knowledge-platform established on GLOF risks and adaptation strategies

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total

Local consultants	30,000		5,000	5,000	5,000	$45,000.00
International consultants	20,000					$20,000.00
Equipment	10,000					$10,000.00
Contracts for Services with organizations	30,000	10,000	5,000	5,000	5,000	$55,000.00
Subtotal						**$130,000.00**

Activity 14 - Output 5.2: Education and training programmes undertaken to equip stakeholders with knowledge and capacity to prepare for, respond to and recover from GLOF disasters

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Service contract for project assistant / National coordinators	12000	12000	12000	12000	12000	$60,000.00
Individual Consultants	10000	5,000	5,000	6,738		$26,738.00
Travel	10000	10,000	10,000	10,000	9,000	$49,000.00
Contracts for Services with organizations	40000	40,000	40,000	30,000	30,000	$180,000.00
Project Administrator (Service contract)	27060	27060	27060	27060	27060	$135,300.00
Training Workshop and Conference		5000	5000	5000		$15,000.00
Inception Workshop and Report	10000					$10,000.00
Subtotal						**$476,038.00**

Activity 15 - Output 5.3: Knowledge and lessons learned from the targeted demonstration projects disseminated within Central Asia and across other high mountain regions

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Individual consultants	10000	20,000	10,000	5,000		$45,000.00
Measurement of Means of Verification for project indicators (IC contract, $3,000 per year)	3000	3000	3000	3000	3000	$15,000.00
Periodic status reports (IC contract, $2400 per year)	2400	2400	2400	2400	2400	$12,000.00
Technical reports (IC contract, $1200 per year)	1200	1200	1200	1200	1200	$6,000.00
Contracts for Services with organizations	5000	20,000	7,500	5,000	6,490	$43,990.00
Mid-term External Evaluation (IC contracts)			20,000			$20,000.00
Final Evaluation (IC contracts)					30,000	$30,000.00
Audit					90,000	$90,000.00
Training Workshops and Conferences		10,000	7,000	4,972		$21,972.00
Miscellaneous (other supplies for conferences, e.g. stationery, bags, etc.)	10000	10,000				$20,000.00
Subtotal						**$303,962.00**

Total OUTCOME 4						**$910,000.00**

Activity 16 - Project Execution Cost						
Item	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Cost recovery (Internal UNESCO Staff time (P) - P-3 in Almaty Cluster Office)	11,040	8,280	8,280	8,280	8,832	$44,712
Cost recovery (Internal UNESCO Staff time (P) - D-1 in Almaty Cluster Office)	2,619	2,619	2,619	2,619	2,619	$13,095
Cost recovery (Internal UNESCO Staff time (G) - L-7 in Almaty Cluster Office)	1,350	810	1,148	810	$1,350.00	$5,468
Steering Committee Meetings	2000	2000	2000	2000	2000	$10,000
Visits to field sites	3400	3400	3400	3400	3400	$17,000
Total Project Execution Activities						**$90,275**

Total project costs (direct costs)	**$6,018,519**
IE fee 8%	**$481,481**
AMOUNT OF FINANCING REQUESTED	**$6,500,000**

H. Include a disbursement schedule with time-bound milestones.

Table 13: Project Disbursement Schedule

	Upon Agreement Signature	First Disbursement (rcd. at time of agreement)	One year after project start	Y3	Y4	Y5	**Total**
Scheduled Date		01/06/2020	01/06/2021	01/06/2022	01/06/2023	01/06/2024	
Project Funds		768,549	1,970,249	1,819,287	693,559	766,875	6,018,519
Implementing Entity Fee		61,484	157,620	145,543	55,485	61,349	481,481
TOTAL		830,033	2,127,869	1,964,830	749,044	828,224	6,500,000

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

A. Record of endorsement on behalf of the government[37] *Provide the name and position of the government official and indicate date of endorsement for each country participating in the proposed project / programme. Add more lines as necessary. The endorsement letters should be attached as an annex to the project/programme proposal. Please attach the endorsement letters with this template; add as many participating governments if a regional project/programme:*

Mr. Olzhas Agabekov, Head, Climate Change Department, Republic of Kazakhstan	July 23, 2019.
Mr. Mirslav Amankulov, Director, State Agency of Environment Protection and Forestry, Kyrgyz Republic	February 3, 2020
Ms. Dinara Kutmanova, Minister, Ministry of Natural Resources, Ecology and Technical Supervision	June 17, 2022
Mr. G.K. Gulmahmadzoda, Chairman of the Committee for Environmental Protection Ministry of Foreign Affairs Republic of Tajikistan	July 29, 2019
Mr. Bakhriddin Nishonov, First Deputy Director General, Uzhydromet, Republic of Uzbekistan	July 18, 2019

[6.] Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

B. Implementing Entity certification *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (Kazakhstan 2050 Strategy; National Action Plan for Climate Change Mitigation of the Republic of Tajikistan; National Strategy of Sustainable Development of Uzbekistan) and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
Krista Pikkat, Director, UNESCO Cluster Office in Almaty Implementing Entity Coordinator	
Date: *19.02.2020*	Tel. and email: +7 7272 582643 ext. 502; e-mail: k.pikkat@unesco.org
Project Contact Person: **Kristine Tovmasyan**, Dr, Programme Specialist, UNESCO Cluster Office in Almaty	
Tel. and Email: +7 7272 582643 ext. 506; e-mail: k.tovmasyan@unesco.org	

ANNEX 1: STAKEHOLDER CONSULTATION SUMMARY

Consultations with project stakeholders for the proposed project were undertaken in accordance with guidance provided under the Adaptation Fund's Environmental and Social Policy (approved November 2013 by the AF Board and amended in March 2016), specifically paragraph 33: "Implementing entities shall identify stakeholders and involve them as early as possible in planning any project/programme supported by the Fund."

The project concept originated from ongoing discussions with participating country stakeholders in government, academia, and civil society. Formal and informal discussions have taken three forms: 1) Discussions at regional meetings on environment, water resources, climate, and DRR; 2) Structured discussions with government representatives; and 3) Consultations in communities exposed to GLOF risks that are likely to participate in the EWS pilot phase.

Regional Meetings

The project concept has been presented at a number of regional meetings during the project concept and formulation stage. These have included the following:

- March 2019 Youth and DRR Event (Almaty)
- June 2018 2nd Central Asia and South Caucasus (CASC) Sub-Regional Platform for Disaster Risk Reduction (Armenia)
- June 2018 Climate and Water Forum (Dushanbe)

Structured Discussions

In January 2019, bilateral meetings were held with the Government of Kyrgyzstan regarding its participation in the project. As a result of these talks, the Government endorsed the project and has participated in project formulation activities and community consultations.

In addition, at the March 2019 Youth and DRR event, the project formulation team distributed questionnaires to participants regarding their knowledge and opinions on DRR, climate change adaptation, and women's roles in both areas.

Community Consultations

In the spring of 2019, the project formulation team conducted a series of community consultations in communities that were deemed likely to participate in the EWS pilot programs under the project. The team held a series of events in two villages each in Kazakhstan, Kyrgyzstan, and Uzbekistan, followed by a consolidated event in one town in Tajikistan for representatives from eight different villages.

Techniques used to gather information during the consultations included Q-and-A sessions, focus group discussions, and questionnaires in languages used by community members. The agenda differed from country to country, and most consultations also included presentations to raise awareness regarding DRR and climate change. Table A1.1 provides the overall characteristics of the consultations, including the number of women who were consulted. Broader demographic information about the villages is available in Table A3.1 in Annex 3.

Table A1.1: Focus Group Composition by Country

Profile: Focus Group Participants				
Village/Town	Men (N)	Women (N)	Total	Women (%)
Issyk	40	30	70	43
Talgar	8	11	19	58
KAZ total	48	41	89	46
Ala-Archa	31	15	46	33
Ton-Tosor	19	21	40	53
KYR total	50	36	86	42
Dashti Murghon	19	21	40	53
Duaghba	14	14	28	50
TAJ total	33	35	68	51
Tepar	8	4	12	33
Pskem	14	5	19	26
UZB total	22	9	31	29
TOTAL	153	121	274	44

Additional Consultations

Kyrgyzstan

Following the approval of the project document by the Adaptation Fund Board, discussions during the project inception activities identified two communities in Kyrgyzstan that would be more suitable for piloting the activities planned under the project due to their increased vulnerability to GLOFs: Ala-Archa and Ton-Tosor. Consultations were held in April and May of 2022, and the supplemental findings are presented in this Annex and in Annexes 2 and 3.

A total of 86 community stakeholders in the two new communities were consulted in gender-disaggregated focus groups. In Ala-Archa, 33% of the participants were women, and in Ton-Tosor, 53% of the participants were women.

The following section provides a discussion of selected findings by topic, followed by a presentation of the results at the country and village level.

Tajikistan

Following the approval of the project document by the Adaptation Fund Board, an additional pilot site with a high risk of GLOFs has been identified during project implementation activities. This new location has experienced recurrent glacial lake outburst floods (GLOFs) annually over the past decade, significantly impacting local communities and transportation infrastructure. Consultations were conducted in October 2024, and the supplemental findings are detailed in this Annex, as well as in Annexes 2 and 3.

A total of 648 community stakeholders in the two new communities were consulted in gender-disaggregated focus groups. In Dashti Murghon, 53% of the participants were women, and in Duaghba, 50% of the participants were women.

Overall Findings

Disaster Response and Recovery: Two questions dealt directly with disaster response and recovery. The first asked "Do people in the community generally help each other after a flood or other disaster" and the second asked "After a flood or other disaster, who do you think is responsible for the recovery of the community?" Most respondents felt that people generally helped each other, and most also felt that the government was responsible for disaster recovery efforts.

In Kazakhstan, 74% of participants said that people generally helped each other after a disaster. In Issyk, for example, community members recalled that following flooding, villagers worked to clear flood channels before rescue services arrived and provided assistance to those who lost houses. 73% felt that the government was responsible for disaster recovery. In the initial communities in Kyrgyzstan, 73% said that people generally helped each other after a disaster, while 87% felt that the government was responsible for disaster recovery. In the new pilot communities, 90% of respondents felt that the government (specifically the Ministry of Emergency Situations and local authorities) was responsible for disaster recovery. In the initial communities in Tajikistan, respondents commented that "For sure" people helped each other. Participants cited the example of an avalanche in 2015, when two people were killed. The communities in Imom, Varshez, and neighboring villages cleaned up the avalanche by hand over the course of a month, found the dead bodies, and gave them to family members. The second question, which was asked of the group as a whole, elicited the response that the government was responsible for disaster recovery. In the new pilot communities, the survey showed that there is a lack of knowledge and resources among the population to deal with or mitigate the effects of glacial lake outburst failure (GLOF). Many local residents do not receive guidance on how to deal with such an emergency, which increases their vulnerability. In Uzbekistan, 100% of those consulted agreed with the statement that people in their village helped each other during and after natural disasters. Likewise, 77% of respondents felt that it was the government's responsibility to assist with disaster recovery (followed by 16% of people who felt that people themselves were responsible—note that more than one answer to the question was permitted).

These responses indicate that community-level drills and participation in EW activities may be well selected, as there seems to be a high degree of social cohesion in the villages. The view that the government is responsible for response and recovery indicates that the governments will be accepted partners in the EWS program.

Hazard maps: Participants were also asked "Do you know whether there are any hazard maps for your community?" Although overall awareness of the maps was low, these answers varied widely, even within countries. In Kazakhstan, 86% of the participants did not know whether hazard maps for their communities were available. In the initial pilot communities in Kyrgyzstan, there were village differences between whether people were aware of risk maps: in Tösh-Bulak, 92% of respondents were aware of risk maps, while in Yurievka, 90% did not know whether their community had a risk map. In the new pilot communities, the majority of local respondents were not aware of the hazard maps available for their communities that were developed by the Department of Monitoring and Forecasting of the Ministry of Emergency Situations.

In Tajikistan, the presence of the maps was noted by the facilitators, but awareness was not cross-checked awareness ["The former FOCUS and current AKAH have assessed all the 365 villages

throughout GBAO and Varshez, Imom, Charthem, Miyonkhar, Sardem, Oqmamad, Rojak and Goz villages were included. The last assessments conducted under COSE project (SDC) and all the collected data presented to communities including maps that can clearly explain how people should act during any emergencies. AKAH specialists are updating the maps and other collected data every five years and can see the trend in changes within the villages."]. In the new pilot communities, the majority of local respondents were aware of the hazard maps available for their communities that were developed by the Department of Monitoring and Forecasting of the Ministry of Emergency Situations.

In Uzbekistan, 81% of the respondents did not know whether there were hazard maps for their communities. Overall, the responses indicate the need to emphasize community training and outreach to supplement hazard mapping exercises.

Preventive measures: Participants were asked "What measures, if any, have you taken to protect your house and/or family from floods?"

Preventive measures mentioned by the respondents varied widely and included the following:

- Evacuation
- Preparation of documents for quick evacuation
- Building houses in "safe" locations
- Deepening irrigation channels, building a drainage system
- Communicating with emergency services
- Buying sandbags
- River bank stabilization
- Tree planting and terracing
- Cleaning the stream flow
- Constructing the path to the safe haven
- Relocation of houses under threat to safer sites

In some cases, the question was interpreted as asking about what kinds of measures *should* be undertaken. For example, in both villages in Kyrgyzstan, respondents wrote "It's necessary to build dams," and in the new pilot communities of Ala-Archa and Ton-Tosor, answers referred to dams, gabions, and early warning systems. Several did not / could not list the measures they had taken. Several other participants said that they would "protect their families," but were not able to describe how they would do that.[1] In addition, many participants reported that they had not undertaken any preventive measures (including *94% of respondents* in the communities in Uzbekistan).[2]

Again, the responses indicate a need for a community-specific approach. They also indicated that some communities could learn from their counterparts elsewhere in the region.

Women and Vulnerability / Impact: These results are discussed in Annex 3 (The Initial Gender Analysis).

Sources of EW Information: Respondents were asked "How do you get information about floods and other dangerous events?" While answers varied widely by community, when the Ministry of Emergency Situations was a source of information, it seemed to have good levels of penetration.

[1] Yurievka consultation, Kyrgyzstan (2019).

[2] This may have been influenced by the location of their homes and/or the perception of safety and will require additional study.

The rate of respondents accessing warning information also varied, as did the number of respondents who were not receiving warning information.

In Kazakhstan, participants were asked during a presentation on natural disaster safety about the most suitable and convenient sources of information about precautionary measures. The most frequent answers were as follows: television, the rotation of the tutorial video in public transport, newspapers, social networks, etc. In the initial communities in Kyrgyzstan, the most common source of information on disasters was mass media (45% of respondents), closely followed by the Ministry of Emergency Situations (40%), but the format of the Ministry's messages was not specified. Only 5% of respondents reported that they not receive any warning information about natural disasters. In the one of the new pilot communities in Kyrgyzstan, Ala-Archa, respondents stated that they got general information from the Kyrgyz Hydromet Service and from the Ministry of Emergency Situations (warnings via text message) and from official information sources on the internet. In Ton-Tosor, respondents stated that the main information on this topic comes from television and radio. They noted that radio Sputnik Kyrgyzstan very often hosts broadcasts with local scientists where environmental problems are discussed.

In Tajikistan, the facilitator stated that the communities obtained information from the hydromet agency, the Committee on Emergency Situations, "mobile communication," an NGO, TV, and the internet. In the new pilot communities in Tajikistan, Saidoi Nasafi (Baralmos) Glacier, respondents stated that they also get general information from the Committee on Emergency Situations, mobile communication, and TV. More than half of the community members surveyed in Uzbekistan (52%) reported getting their information about natural disasters by text message from the Ministry of Emergency Situations. The next most common source of information was via other villagers (16%), followed by a telephone call from the Ministry (6%). It should be noted that 23% of those consulted said that they did not receive warnings about natural disasters from any source. These findings indicated that warning systems and awareness-raising materials should cover several communication channels, and that the project should identify and address groups that are not currently receiving warning information.

Individual reports were compiled for the country consultations and are available upon request. Summaries of the consultations are as follows:

Kazakhstan

In Kazakhstan, UNESCO worked with a CSO, the Center for Sustainable Development (CSD), to conduct consultations in Issyk (Esik) and Talgar. CSD produced questionnaires in Kazakh and Russian, organized the consultations, and then conducted the consultations. In order to encourage participation, letters of support were provided by the district governments of the corresponding districts in the Almaty region. Local governments provided venues for the consultations, and CSD designed a program that included presentations and the completion of surveys relating to climate risk exposure, awareness and knowledge of climate change, and feedback related to the project activities. Consultations were held on April 9 and April 11, 2019.

The youngest participant of the meetings was 15 years old, the oldest one was 73. To determine the ethnic composition of the respondents, the question of nationality was included in the questionnaire. Nearly 88% of respondents were Kazakhs. Other participants represented the following nationalities: Russian, Turk, Uighur, Kara-kalpak, Azerbaijanian.

Talgar (KAZ) Consultation (Photo credit: CSD)

During the survey, it was revealed that many segments of the population are either themselves vulnerable because of serious illness or social status (single mother, mother of many children, retired), or else live with such people. Among the socially vulnerable groups were identified the following: extremely vulnerable children and youth (orphans, working children), single mothers, persons with serious illnesses, mother of many children, etc.

In Issyk, several participants recalled the loss of life and property in the 1963 mudslide as well as more recent flooding and mudslides. In Talgar, participants recalled mudslides in 2013-2014, floods in 2015, and a 2018 mudslide elsewhere in their district. The mudslides had a serious impact on the well-being of the community – in addition to victims whose houses were destroyed, the events were traumatic for children, who were evacuated by helicopter and who were unable to attend school for some time. When asked about vulnerability to flooding and mudslides, 34% of the participants were not sure what kinds of buildings were at risk, although others identified older buildings, flimsy newer buildings, buildings constructed from mud bricks, and buildings near rivers or ravines.

Money for measures (1.5 million KZT), the majority opted to spend it on prevention and the most common measure proposed was cleaning and deepening public drainage systems.

In both consultations, community members said that they received information about natural disasters by emergency text from the Committee for Emergency Situations as well as from television, the internet, and friends and relatives. However, two participants in the Talgar consultations said that they did not receive natural disaster warnings. During a presentation on natural disaster safety, the participants were asked about the most suitable and convenient for them source of information obtaining about on precautionary measures. The most frequent answers were as follows: television, the rotation of the tutorial video in public transport, newspapers, social networks, etc.

As CSD, the facilitator, concluded, “During the analysis of survey forms, it was revealed that the level of vulnerability of local communities to the effects of climate change is very high, and it is necessary to take measures to prevent them. The vulnerability of the local population is expressed, inter alia, in the fact that: some residents do not know that they live in GLOFs-prone areas; many of them do not understand how much the consequences of climate can affect them and their families; few of the respondents take any preventive measures, etc. In this regard, the

implementation of the UNESCO project is a timely, useful and very important tool for enhancing adaptation measures to climate change, in particular in Esik and Talgar towns."[3]

Kyrgyzstan – Initial Communities

In Kyrgyzstan, UNESCO worked with the Central Asian Institute for Applied Geosciences (CAIAG) to conduct consultations in two villages: Tösh Bulak and Yuryevka. Local governments provided venues for the consultations. The format of the consultations combined presentations about GLOFs and DRR with discussion and the completion of questionnaires that had been prepared in Kyrgyz and Russian. Community members attending included those from the following nationalities: Kyrgyz, Russian, Azerbaijani, and Ukrainian.

Yurievka (KYR) Consultation: Presentation on Natural Disasters (Photo Credit: CAIAG)

In Tösh-Bulak, community members recalled the damage done by previous floods due to heavy rainfall. These included crop and livestock losses and damage to houses and the local bridge. In Yurievka, community members recalled a late-season snowfall that led to loss of life and livestock and damage to houses.

[3] "Technical report on the organization of community-level stakeholder consultations in Kazakhstan in GLOFs-prone areas: Esik town and Talgar town" (2019). Almaty: Public Fund "Center for Sustainable Development," p. 15

Tösh-Bulak (KYR) Consultation (Photo Credit: CAIAG)

73% said that people generally helped each other after a disaster. While those answering "yes" to the question were much higher in Tösh-Bulak (91%) than in Yurievka (52%), the facilitators hypothesize that the relatively high numbers of "yes" and "don't know" responses were due to the fact that the village had not experienced a major disaster in its history. 90% of those answering felt that the government was responsible for disaster recovery, and the opinions were consistent across both villages (91% and 89% in Tösh-Bulak and Yurievka, respectively).

There were also village differences between whether people were aware of risk maps (41% of those answering said "yes"): in Tösh-Bulak, 92% of respondents were aware of risk maps, while in Yurievka, 90% did not know whether their community had a risk map.

If given USD 3500, the most common response to how it should be spent on preventive measures was "build a dam." However, some responses ("help victims") indicated that there may be a lack of understanding regarding the difference between disaster prevention and disaster response. Significant differences between the villages were also evident in responses to self-assessed knowledge of climate change (83% considered their knowledge of climate change as "good" in Tösh-Bulak, while only 10% of those in Yurievka gave themselves that rating).

The opinions of the two groups were similar on whether climate change was a serious problem (100% and 86% in Tösh-Bulak and Yurievka, respectively), but differed somewhat on whether climate change affected them or would affect them personally (100% and 32%, respectively).

Kyrgyzstan – new pilot villages (2022 consultations)

For the new pilot villages, UNESCO worked with the Tien Shan Geological Society (TSGS) to organize consultations in the new pilot communities. The first consultation was in Ala-Archa village. The people were mainly from Baytik, Kashka-Suu, Ala-Archa Park and Leshoz nearest village to Ala-Archa valley. The second consultation was in Jeruy village. The people were mainly from Bokonbaevo, Ton, Jerui, Aksay, Terek-Say and Keksay. The format of the consultations

combined presentations about GLOFs and DRR from experts from TSGS, the Kyrgyz Academy of Sciences, and the Ministry of Emergency Situations. The communities then divided into groups of men and women to complete questionnaires that had been prepared in Kyrgyz and Russian.

Ton-Tosor (KYR) Consultation (Photo Credit: TSGS)

In Ala-Archa, the most frequent natural disasters that have occurred in the area have been debris flow after heavy rains and GLOFs. Respondents observed that both types of hazards have occurred more frequently due to climate change in the last 20 years. Respondents also mentioned drought. For floods, seasonality has also changed; in the past, they occurred in June and July, while now they occur in July and August. The last major event in 2003 destroyed many houses in Kashka-Suu village and bridges in Baytik. Respondents also mentioned other consequences: debris flows damaged community infrastructure, including bridges, irrigation systems, and water pipes; rockslides have affected the road to Ala-Archa National Park several times and blocked the access to the park for tourists, leading to economic losses for the park; in 2003, debris flow affected many houses in Kashka-Suu; and in 2012, a GLOF damaged the infrastructure of Ala-Archa Park and local roads. In Ton-Tosor, debris flows were reported as the main hazards threatening settlements and agricultural land. There have been several major GLOFs in the past 50 years, some of them catastrophic. For example, the 2008 Zyndan Lake GLOF destroyed infrastructure, and led to the death of community members. The Chetyndy Lake GLOF in 2013 also caused damage to agricultural fields and destroyed the cemetery. Several local residents also mentioned mudflows in the village of Temir Kanat in 1989 and 2001 in the village of Jerui in 2007 and 2016.

Ala-Archa (KYR) Consultation (Photo Credit: TSGS)

Respondents in Ala-Archa stated that mutual assistance was very important in emergency situations. The example of a mudslide in 2003 in Kashka-Suu was given to demonstrate how people can help each other to evacuate. In addition, after the mudslide in 2003, local residents were independently engaged in rebuilding bridges that had been destroyed. Respondents in the Ton-Tosor consultation reported helping each other during emergencies by sharing their personal equipment (mainly tractors) and motor vehicles for emergency response. In 2013, after the Chetyndy Lake GLOF, local residents were mainly engaged in recovering the affected territories on their own, and they participated in the construction of a protective dam in the village of Jeruy that was led by the Ministry of Emergency Situations.

In the Ala-Archa consultation, participants stated that if they had 3500 USD to spend on disaster risk reduction, they would spend it on riverbank protection measures. In Ton-Tosor, 82% of the respondents answered that they would spend this money on protective measures, strengthening riverbanks, and cleaning and rehabilitation of irrigation canals. 18% answered that they would use this money to move to a safe place, but they also noted that this money is not enough to buy a new land parcel.

Knowledge on climate change varied across the two communities. In one, respondents stated that climate change was caused by global warming (30%) and large numbers of vehicles (40%); however, 30% also felt that climate change was caused by burning plastic and rubber. In the other community, 92% agreed that climate change and global warming were the same thing. Climate change was described by the two groups as a “big problem” and a “serious problem.” The communities expressed no objections to proposed project activities, and they showed a high interest in the hazard maps, interactions with scientists, and an increased understanding of the risks to their homes and other property.

Tajikistan – Initial Communities

In Tajikistan, UNESCO worked with the Aga Khan Agency for Habitat to organize a consultation for villagers from various communities in the Shugnan District (a map is provided in Annex 4). The consultation was held in the village of Varshez on April 16, 2019. Village heads and a central government official were also invited to attend the presentations discussions, as local support for the project will be critical to its success.

Varshez (TAJ) Consultation (Photo Credit: AKAH).

In terms of historical climate events and natural disasters, participants recalled several events in the recent and more distant past. For example, participants recounted that because of debris flow in 1958, one bridge, one house, main road, a water mill, and croplands were completely destroyed. Participants also noted the harsh winters and hard snows in 2011, which brought economic and social losses to the community of Varshez. During that winter, the main road was blocked for 15 days, which resulted in an increase in the cost of food, other essentials, and fodder for animals. The snows also damaged infrastructure, such as canals. Participants noted a similar situation in other parts of the Gund Valley. In addition, an avalanche affected the community in 2015, when two people died, and a 2016 earthquake affected many houses in Varshez and Imom. The facilitators noted that "Around 671 hh, 8 schools, 5 health center, 2 library, more than 13 mini shops, main road, 9 bridge, cropland are under debris flow. Based on the community responses and AKAH data the mentioned threats can affect local schools, main roads, health centers, library of both Varshez, Imom and Shazud."

Participants stated that if they had 3500 USD to spend on disaster risk reduction, they would do the following: relocate houses to safer sites, stabilize the riverbank, dig trenches and drainage ditches, construct the basement of the houses at highest level possible, or plant trees. They were also asked about the project, which was described during the consultation, and they made the following recommendations: 1) It would be ideal if the project could work with the sub-district volunteers that work with AKAH by involving them in trainings and other activities; 2) The project should increase the number of trainings and campaigns/evacuation drills for all communities, especially in remote areas; and 3) The project should offer separate trainings or information sessions on the topics of climate change and first aid.

Tajikistan – new pilot villages (2024 consultations)

For the new pilot villages, UNESCO worked with Agency for Hydrometeorology of the Committee on Environmental Protection under the Government of the Republic of Tajikistan to organize consultations in the new pilot communities. Community consultations were held in the villages of Dashti Murghon, Obshoron and Duaghba nearest villages to Baralmos valley. The consultations

involved a wide range of stakeholders, including men, women, youth, older people, representatives from the Lakhsh Local Administration and the Lakhsh District Emergency Department. The information gathered during the consultations will be considered important for advancing current or developing future projects on climate change topics and, in particular, the impacts of glacial lake outburst floods.

Focus group discussions (FGDs) were chosen as the best method to obtain information from the community about the GLOF situation in their area, as this approach allows for a deeper understanding of local issues and experiences, and facilitates a more open exchange of views and ideas among participants. To ensure an affective and impactful communication the consultations were held in Tajik language and all the survey forms were prepared in local language. Moreover, men and women were divided into two focus groups to increase the effectiveness of the discussions. This approach allowed each participant to freely express their opinions and ideas and to focus on specific issues related to community safety and sustainability.

Process of focus group discussion in Dashti Murghon

In Lakhsh district where the pilot site is located, a representative of the district administration, provided information on glacial lake emergencies occurring in the region. It was also noted that glacial mudslides, from the Saidoi Nasafi (Baralmos) Glacier and other glaciers, pose a serious natural threat to the local population and infrastructure. In the proposed pilot area, eight glacial mudslides have been recorded in the last three years, causing significant economic damage. These natural disasters destroy infrastructure, agricultural land, power lines and most importantly the Dushanbe-Lakhsh-Osh highway (250 to 257km), resulting in large financial losses for the region and threatening the lives and livelihoods of the local population.

Despite the district's high exposure to disaster risks associated with glacial lake outbursts, the district administration does not have any programs or targeted funding to prevent glacial mudflow risks. This poses serious threats to the safety of the local population and infrastructure and highlights the need to develop and implement effective risk management or adaptation strategies to minimize potential impacts.

The survey showed that there is a lack of knowledge and resources among the population to deal with or mitigate the effects of glacial lake outburst failure (GLOF). Many local residents do not receive guidance on how to deal with such an emergency, which increases their vulnerability.
The lack of clear evacuation instructions or risk zone maps, inadequate early warning system, and lack of training programs for local communities all pose serious risks.
In addition, a lack of resources, such as specialized equipment, rapid response infrastructure and skilled personnel, greatly complicates the ability to prevent or minimize the impact of disasters in that area.

This requires a sophisticated program of community education improved warning and coordination systems, and the provision of financial and material resources to cope with the effects of such an economic crisis.

Uzbekistan

In Uzbekistan, UNESCO worked with a national expert, Maxim Petrov, to conduct consultations in the villages of Pskem and Tepar on April 6 and 7, 2019. The consultations included active participation by both men and women, and they included a wide range of ages and social groups. Participants included community members of four nationalities: Tajik, Uzbek, Kazakh, and Kyrgyz.

Tepar Consultation, UZB (Photo Credit: M. Petrov)

In Tepar, participants recalled the 2001 floods, during which one person was killed, three were injured, and the bridge was washed out. Two participants remembered a 1969 mudslide. In Pskem, participants recalled floods, mudslides, and an avalanche in the late 1950s and 1960s. One participant mentioned a 2018 mudslide in Urungachsai.

Pskem Consultation

Opinions about community assistance and disaster recovery were highly consistent across both communities consulted. Overall, 100% of those consulted agreed with the statement that people in their village helped each other during and after natural disasters. Likewise, 77% of respondents felt that it was the government's responsibility to assist with disaster recovery (followed by 16% of people who felt that people themselves were responsible—note that more than one answer to the question was permitted).

The vast majority of the respondents (84%) had not taken any measures to reduce disaster risk to their families or property. 94% said that were they to receive USD 3500 for disaster risk reduction measures, they would spend it, although there was no specification on how.

Self-assessed climate change knowledge was quite low: 74% of respondents felt that they did not know about climate change, while other respondents answered "poor" and "a little." The most positive assessment was "not bad" (1 respondent). Nonetheless, climate change was perceived by 74% of the respondents as "a serious problem" and 94% of respondents agreed with the statement "Do you think that climate change is affecting you personally, or that it will affect you personally?" As one respondent wrote, "We all live on Planet Earth, and climate change affects us all."[4]

More than half of the community members surveyed in Uzbekistan (52%) reported getting their information about natural disasters by text message from the Ministry of Emergency Situations. The next most common source of information was via other villagers (16%), followed by a telephone call from the Ministry (6%). It should be noted that 23% of those consulted said that they did not receive warnings about natural disasters from any source.

Consultation with Youth and Young Professionals in DRR

On 13-14 March 2019, UNESCO held a Regional Workshop on Mobilization of Youth and Young Professionals in Science for Disaster Risk Reduction (DRR) in Central Asia in Almaty, Kazakhstan. The workshop gathered 30 young women and men between the ages of 18 and 32 who expressed a willingness to take on DRR challenges in the region and work on natural hazards issues. The participants were bachelors and masters students and young researchers in institutes

[4] Tepar consultation.

and national agencies related to natural hazards from Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan. In the course of the workshop, the organizers collected 20 questionnaires that were similar to those used in community consultations from these participants.

Survey participants noted 20 natural disasters across the region from 1998 to 2018 based on their knowledge and personal experience. They included the following:

- "In 2009, floods, mudflows and landslides occurred on the Pamir River. As a result, the village was washed away."
- "The Pamir earthquake in 2015, Murghaaob, Tajikistan."
- "Flooding in Tajikistan in 2009, the Kulob town."
- "The flood in Darvaza border area in Tajikistan, summer 2018."
- 2012-2013 floods in Kulob town."
- "Flood on Talas River, Amanbaevo village, on February 13, 2015."
- "In 2008 in the village of Nura, the Kyrgyz Republic there was an earthquake of 8 on the Richter scale."
- "Yes, in 2018 in the southern region of Uzbekistan there was a flood and mudflows. The Ministry of Emergency Situations of Uzbekistan evacuated about 500 households to safe zones."
- "The flood in Shakhimardan in 1998."
- "Rainfall mudflows became frequent due to climate change (Bolshaya Almatinka river, June 2006)"
- "More than 1600 mm of precipitation fell in the Fergana Valley (Uzbekistan). Mudflow in the area of Lake Kolsai (Kazakhstan) in March 2018. 35 mm of precipitation fell, which is 180% of the norm. In February 2015, a very early thunderstorm was observed in Almaty, which is an amazing phenomenon. In March 2019, flooding in the East Kazakhstan region."
- "The landslide in Kolsai 19 April 2018."
- "Floods due to frequent rains in 2010, 2017 and 2018."
- "In 2015, flooding in Nauryzbai district of Almaty. 200 houses were restored."

As regards damage caused by disasters, participants identified loss of life, the destruction of houses, and household flooding. Participants also suggested that in the future the average temperature would continue to rise, the melting of glaciers would accelerate, and the number of natural disasters would increase.

Most of the participants receive information about floods and other dangerous situations on TV, via the Internet and to a lesser extent by SMS alert. Their experience shows that during disasters, residents of the affected region, and sometimes the whole country, help each other with food, clothes and medicines, and sometimes provide temporary housing. More than half of the respondents certain that the state is responsible for recovery after natural disasters, since they are primarily in charge of emergency risks.

With regard to the risks of houses and buildings, survey participants to a greater degree believe that all buildings alongside rivers have a high risk, and houses with low and weak foundations are at risk. According to more than half of the participants, there are schools, hospitals and roads prone to flooding throughout the region. As an example, one of the participants pointed to a school in Kyzyagash, a village in the Almaty region of Kazakhstan.

Also, most of the participants are aware of the existence of maps showing areas prone to natural hazards. It should be noted, however, that the majority of respondents are employees of institutions and government agencies in the field of natural hazards.

30% of participants claim that they constructed a bypass channel to protect their own homes from floods, and 20% prepared alarming suitcases. Moreover 7 out of 15 people said that if they had 1.5 million tenge (approximately USD 3500), they would have spent it to protect the house from floods and mudflows.

On the gender issue of women's vulnerability, the votes were equally divided, 50% of respondents believe that women and men are equally and differently affected by floods and other significant weather events. Despite this, 45% of respondents says that women are actively involved in the place of management, but it is still necessary to expand the role of women in disaster risk reduction issues at the local level.

By the end, more than half of survey participants responded that they are well aware of the climate change subject, and that air pollution, global warming and anthropogenic factors contribute to climate change. And as a result of climate change, most people see the melting of glaciers and the greenhouse effect. All respondents believe that climate change is a serious problem for the region, and all have confirmed that climate change personally affects each of the participants and residents of the region.

Project Proposal Validation Workshop

Finally, on July 24, 2019, UNESCO organized a Stakeholder Validation Workshop in Almaty, Kazakhstan. A list of participants is provided hereby. Representatives from all participating countries provided current information on government and non-governmental initiatives, and representatives from the pilot communities also attended the workshop. Stakeholders expressed their support for the project, and no serious objections were raised. Participants emphasized the need for outreach and awareness raising at the level of governmental decision-makers, and several participants emphasized the importance of using the science-based assessments in the first two project components to underpin the activities in the other three components. The discussion also resulted in the identification of the CESDRR Centre as a conduit for information, and its annual inter-ministerial forums to act as a mechanism to exchange project findings for policy making. A field visit was organized in collaboration with the Kazakh authorities to a GLOF-prone area in the vicinities of Almaty, during which participants got acquainted with the consequences of mudflows in vicinities of Almaty, visited the mudflow protection dam and familiarized themselves with the work of Kazakh authorities as well as scientific institutions in addressing risks from debris flows, including those that originate from GLOFs.

Participants of the final project proposal validation workshop, UN house, Almaty, 24 July 2019

Participants of the final project proposal validation workshop, visiting GLOF prone area in vicinities of Almaty, Essyk town

Project proposal validation workshop

List of participants

24 July 2019
Almaty, Kazakhstan

#	Name	Affiliation	Contacts
Kazakhstan			
1	Ainur Kopbayeva	Ministry of Ecology, Geology and Natural Resources	a.kopbayeva@energo.gov.kz
2	Akhmetkal Medeu	Institute of Geography	ingeo_2009@mail.ru
3	Svetlana Dolgikh	Kazhydromet	svetlana_dolgikh@mail.ru
4	Yerlan Alibekov	Committee of Emergency Situations	
5	Yerlan Iskakov	MFA Representative in Almaty	
6	Saltanat Sabitova	MFA Representative in Almaty	
Kyrgyz Republic			
7	Bolot Moldobekov	CAIAG	b.moldobekov@caiag.kg
8	Kyialbek Kurganbaev	Ministry of Emergency Situations	kyalbek78@mail.ru
9	Rasul Baikhadzhaev	Kyrgyzhydromet	spg@meteo.kg
10	Ryskeldi Asankhodzhaev	Kyrgyzhydromet	spg@meteo.kg
Tajikistan			
11	Abdulhamid Kayumov	Glacier Research Center, Academy of Sciences of Tajikistan	abdkaumov@mail.ru
12	Karimjon Abdualimov	Tajikhydromet	abdualimov@mail.ru
13	Nilufar Nazirova	Committee of Environmental Protection	nilufar-nazirova@mail.ru
14	Shurhatjon Shoismatov	Committee for Emergency Situations and Civil Defense	ums.mchs_tj@mail.ru
Uzbekistan			
15	Bekzod Khikmatov	Ministry for Emergency Situations	inter@fvv.uz
16	Maxim Petrov	Institute of Geology and Geophysics, Academy of Sciences of Uzbekistan	maxpetr1962@gmail.com
17	Nadezhda Gavrilenko	Uzhydromet	nadejda.gn@gmail.com
18	Natalia Agaltseva	Uzhydromet	natalya.agaltseva@gmail.com
Turkmenistan			
19	Stanislav Aganov	"Turkmensuvylymtaslama" Institute	aganov_stas@mail.ru
International Organizations and partners			
20	Ardak Zhanguzhinov	CESDRR	

21	Dmitriy Petrakov	Moscow State University	dpetrakov@gmail.com
22	Idris Jonmamadov	Aga Khan Agency for Habitat	idris.jonmamadov@akdn.org
23	Khurshed Abduqodiri	GIZ Tajikistan	khurshed.abduqodiri@giz.de
24	Larisa Kazantseva	Community representative, Esik town	
25	Maria Shahgedanova	University of Reading	m.shahgedanova@reading.ac.uk
26	Martin Hoelzle	Fribourg University, department of geosciences	martin.hoelzle@unifr.ch
27	Medet Kuletov	Akimat of Enbekshikazakh district, Esik town	
28	Murat Kasenov	Kazselezaschita	kasenov-1968@mail.ru
29	Pakizat Sailaubekova	Public Fund "Center "Cooperation for Sustainable Development"	csd.center.projects@gmail.com
30	Roy Sidle	Mountain Societies Research Institute, University of Central Asia	roy.sidle@ucentralasia.org
31	Rustam Issakhojayev	CAREC	
32	Zafar Makhmudov	CAREC, Director	
33	Satbek Sarzhanov	Institute of Geology / Youth Network for Disaster Risk Reduction	sarzhan-satbek@seismology.kz
34	Simon Allen	University of Zurich	simon.allen@geo.uzh.ch
35	Susan Legro	International Expert	susan@ecoltdgroup.com
36	Vasily Kapitsa	Institute of Geography	vasil.geo@mail.ru
37	Vitaly Salnikov	Al-Farabi Kazakh National University	vitali.salnikov@kaznu.kz
38	Yusuf Raimbekov	Aga Khan Agency for Habitat	
39	Zamira Marven	Kazselezaschita	sarsebekovazamira1@gmail.com
40	Dhergalbek Ukashev	CESDRR	ukashev_g@mail.ru
41	Adilzhan Atanov	Volunteer	
UNESCO			
42	Anil Mishra	UNESCO HQ Paris	a.mishra@unesco.org
43	Kristine Tovmasyan	UNESCO Almaty	k.tovmasjana@unesco.org
44	Yagshimyrat Annamyradov	UNESCO Almaty	y.annamuradov@unesco.org
45	Natalya Kim	UNESCO Almaty	n.kim@unesco.org
46	Serikzhan Atanov	UNESCO Almaty	s.atanov@unesco.org
47	Anaer Yeerjiang	UNESCO Almaty	a.yeerjang@unesco.org
48	Aigul Kudiyarova	UNESCO Almaty	a.kudiyarova@unesco.org

ANNEX 2: INITIAL GENDER ANALYSIS AND ACTION PLAN

This assessment is designed to conform to guidance from the Adaptation Fund Board on Gender.[5] It is seen as one component of the project's holistic approach to gender throughout the project cycle in the following way:

- This document represents a **gender analysis** as recommended under AF procedures.
- The **project framework** includes gender-specific activities, such as working to maximize women's participation in local risk reduction planning. It also includes targets for women's meaningful participation, and the project monitoring and evaluation budget supports the collection of gender-disaggregated data.
- In addition, the project will monitor the **share of women and men who are direct project beneficiaries**, and it will also monitor the nature of these benefits.
- Finally, project targets and activities will be monitored in **project reporting**, both in annual reports and in the mid-term evaluation and the terminal evaluation.

The initial gender assessment here provides country and regional context on gender issues and identifies areas relevant to project design and implementation in climate change adaptation and specifically for strengthening adaptation to GLOF threats. The inputs for this analysis include a desk study and review of demographic data and research literature, expert consultations, and direct input from women and men in communities at risk of GLOF hazards.

The assessment is followed by a Gender Action Plan that will serve as a guide for project management and M&E activities.

Regional and Country Context

As a UN Women regional summary notes, "The four Central Asian countries' total population of 60 million people is spread out over a vast area nearly as large as the European Union.… Despite the recent decade of economic growth, the four countries face economic development disparities and widely varied labour markets, with dynamic labour migration flows common."[6]

Even in areas where Central Asian countries share common attributes, there are contrasts. On one hand, women have high rates of literacy in Central Asia compared to many other world regions, with a 100% youth literacy rate and a 1.00 gender parity index.[7] However, women are "Underrepresented in all elected and appointed bodies in Central Asia, women's representation in Central Asia parliaments has sunk to under 22.5 per cent (Kazakhstan – 26…Tajikistan – 17%, Uzbekistan – 22%)."[8] However, the common problems facing women in Central Asia are relatively clear: "Throughout Central Asia, women are disproportionately affected by poverty, gender discrimination, persistent wage gaps between women and men, exploitation and limited opportunities for career advancement."[9]

Kazakhstan

[5] AFB 2017.
[6] UN Women 2018. http://eca.unwomen.org/en/where-we-are/kazakhstan. Accessed May 4, 2018.
[7] UNESCO 2016: 27.
[8] Ibid.
[9] Ibid.

Kazakhstan is the second most populous country in Central Asia, with a population of approximately 18 million people. 44% of people live in rural areas.[10] Women comprise approximately 50.7% of the population, and slightly more than half of the population is under the age of 30. Life expectancy for women in 2015 was 76.9 years, while for men it was 67.5 years.

The 2016 National Human Development report identifies gender inequality as one of the six main sustainable development challenges facing the country.[11] Inequality also varies in different parts of the country. For example, women's pay differentials vary by administrative region; women earn 18-27% less than men in Almaty and the surrounding administrative region, but 28-37% less in the Kyzylorda region. (NHDR 2016: 35). In some resource extractive regions, the pay gap is magnified by relatively high wages in the mining sector. The percentage of women in public leadership positions also varies by region, with fewer than 12% of women in these positions in Kyzylorda and 18-24% in the Almaty region, and up to 30% in Aktobe and Kostanay.[12]

Kyrgyzstan

Kyrgyzstan has a population of approximately 5.8 million people, and approximately 52% are women. The 2016 National Human Development Report found that "According to official 2014 data the share of children living in poverty was 37.9 per cent, and those in extreme poverty was 1.7 per cent."[13] The same report also found that poverty in Kyrgyzstan had a stronger impact on women than on men due to gender gaps in education and equality.

Women's participation in the formal labor market has decreased over the past several decades, but women are relatively active in the informal labor market. [14] Because women are more likely to have multiple sources of paid income than men, one study noted that "…there is a significant difference in employment strategies between women and men. The traditional terminology of 'poverty' and 'unemployment' does not adequately reflect gender differences in the position of women in the labor market."[15] Rural women face special challenges related to employment, and UN Women, FAO, IFAD and WFP cooperated on the Acceleration of Rural Women's Economic Empowerment (ARWEE) programme, which was designed to increase rural women's meaningful participation in local decision-making and development planning processes.

Tajikistan

The population of Tajikistan is approximately 8.4 million people. 49.5% of the population is male. 34.3% of the population is under the age of 15, and that figure includes more than 1.2 million girls.[16] As a UN Women summary notes, "In rural areas, nearly 75 per cent of the people live below the poverty line. Women suffer disproportionately from this poverty. For every 100,000 live births, 65 women die from pregnancy-related causes; the adolescent birth rate is 42.8 per 1000 live births. The highest risk of poverty occurs in households headed by women, the uneducated

[10] Source: Statistical Committee of the Republic of Kazakhstan

[11] NHDR 2016:8.

[12] Ibid.: 36 (figures for 2013).

[13] Khasanov et al 2016: 25.

[14] Ibraeva 2011: 5.

[15] Ibid.

[16] Source: State Statistical Commission 2016.

heads or with many children." The same summary notes that women's representation in politics and decision-making is below international standards.[17]

Women in Tajikistan also face special problems related to the country's status as the highest source of outbound migrant labor in the region. Nearly 1 in 5 citizens work in other countries, and in 2014 their remittances totaled 41.7% of the national GDP.[18]

As the UN Women summary notes, "Most of the emigrants are male. Their left-behind or abandoned wives become de-facto heads of households, solely responsible for generating family income – despite limited access to education, resources, micro-credit, social protection and employment, particularly in rural settings. In 2009, IOM reported 300,000 abandoned households, 70 per cent of them with children.

"Abandonment is exacerbated by the negative social norms and traditional attitudes to women's status and rights within the family and society. Tajik parents often put more resources into boys as future breadwinners, creating a bleak future for girls and severely limiting women's economic self-sufficiency."[19]

Finally, it is notable that the participation of women in Tajikistan in decision-making related to disaster preparedness and response is rare.[20]

Uzbekistan

Uzbekistan is the most populous country in Central Asia, with one third of the region's population, or more than 32 million people.[21] Two thirds of this population is younger than age 30. Despite steady economic growth in the last decade, the impact of economic growth on improving livelihoods has been inadequate. Poverty rates are higher in rural areas, and while differences in the rates between rural and urban areas decreased from 8% in 2001 to 6.7% in 2013, they still exist.[22] Disparities in economic and social development remain not only between rural and urban areas but also between regions of the country. Poverty in Uzbekistan has distinct rural and regional dimensions: 49.2% of people live in rural areas[23]; 47% of the southern provinces are classified as poor, and 27% as extremely poor. This "development gap" can be explained by the fact that economic growth since 2001 has occurred mainly in regions with strong manufacturing sectors, extractive industries, and modern services.

Women comprise approximately 50.4% of the population, although there are fewer women than men in urban areas (993.0 per thousand) and more in rural areas (1013.5 per thousand). Gender assessments focusing on Uzbekistan generally concur that there are two different trends in the development of gender equality. On one hand, women have relatively high levels of equality in access to education and health outcomes. On the other hand, women face barriers to access to economic opportunities and to political and public participation.[24]

---

[17] http://eca.unwomen.org/en/where-we-are/tajikistan. Accessed May 4, 2018.
[18] Ibid.
[19] Ibid.
[20] Ibid.
[21] Source: State Committee of Statistics of the Republic of Uzbekistan, see https://stat.uz/ru/ofitsialnaya-statistika/demografiya-i-trud/demograficheskie-pokazateli
[22] *Millenium Development Goals Report: Uzbekistan 2015*: p. 18.
[23] Ministry of Economy of Uzbekistan (2011).
[24] ADB 2012; CER 2015.

Participation rates for women in the labor force are only 47.9%, as compared to 61.4% for men.[25] However, the share of women's employment has increased slightly from 2000-2013 – latest year for data – from 44% to 45.7%.[26] While national gender-differentiated employment statistics are not available, ILO-modeled estimates indicate that female unemployment was approximately 10.8% of the female labor force in 2014 (estimates for male unemployment as a part of the male labor force in 2014 were 10.4%. Both figures represented a slight decline from estimates for the year 2000 (11.0% and 10.7%, respectively). Women's positions at work vary depending on the size of the business in question: in 2012, women ran 40.4% of small enterprises and 13.7% of microenterprises were run by women.[27]

Gender Equality Policy and Institutional Framework

CEDAW and CEDAW reporting

Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan are all signatories of the UN Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). As a signatory, each country files periodic reports to the Convention. Kazakhstan has not filed a periodic report since its second report, which was filed in 2005. Kyrgyzstan last filed a periodic report in 2007, when it filed its third periodic report. Tajikistan filed a combined first, second, and third report in 2005. Uzbekistan most recently filed its fifth periodic report, which it presented to the CEDAW Committee in November 2015.

Country CEDAW reports for these countries have not mentioned discrimination or organizations and measures to address discrimination in the area of disaster preparedness, response, or decision-making.

Relevant Legislation and Institutions

Key policies and regulations related to gender in the Central Asia region are listed in Table 1.

Table A3.1: Key Gender-Related Legislation and Institutions in Central Asia

County	Primary and Secondary Legislation	Key Government Agencies
Kazakhstan	Law on State Guarantees of Equal Rights and Equal Opportunities of Men and Women (2009, amended 2013) Strategy for Gender Equality	The National Committee for Women's and Family Affairs under the President of Kazakhstan
Kyrgyzstan	Law on State Guarantees for Ensuring Gender Equality (2003) Decree on Measures for Gender Policy Improvement (2006)	

[25] UNDP Country Programme Document 2016-2020 (2015).

[26] Center for Economic Research, 2015: 38.

[27] Ibid.: 38.

	National Action Plan on Gender Equality (2015-2017)	
Tajikistan	Constitution of the Republic of Tajikistan National Strategy for Enhancing the Role of Women in the Republic of Tajikistan	The Committee for Women's and Family Affairs (The Women's Committee)
Uzbekistan	Constitution of the Republic of Uzbekistan Country Welfare Improvement Strategies	Women's Committee of Uzbekistan Parliamentary Committees on Labor and Social Protection

Source: legislationonline.org; ADB.

It should also be noted that non-governmental organizations can play significant roles in women's awareness-raising and empowerment, and there are examples of NGOs that address women's issues in all participating countries (e.g. the Forum for Women's NGOs in Kyrgyzstan, which is a founder and coordinator of the Central Asian Forum of Women's NGOs).[28]

In addition, all of the participating countries have adopted the 2015 UN Sustainable Development Goals (SDGs). As a result, they have committed to progress under SDG 5: "Achieve gender equality and empower all women and girls." As a result, countries are to take steps to achieve this goal, to achieve nine specific targets that include ensuring the provision of necessary public services and infrastructure (5.4) and ensuring women's access to communication technologies (5.B), and to monitor progress towards the targets established.

Relative Measures of Gender Equality and Discrimination

Gender Development Index (GDI)

In 2014, UNDP introduced a new measure into its Human Development Reports: the GDI. This measure is based on the sex-disaggregated Human Development Index, which is defined as a ratio of the female to the male HDI. As such, the GDI is meant to identify gender inequalities in three basic dimensions of human development: health (measured by female and male life expectancy at birth), education (measured by female and male expected years of schooling for children and mean years for adults aged 25 years and older); and command over economic resources (measured by female and male estimated GNI per capita). The 2016 GDI values for Central Asian countries and their relative global rankings are as follows:

Table A3.2: GDI Values and Relative Ranking by Country (2016)[29]

County	GDI	Global Rank
Kazakhstan	1.006	56
Kyrgyzstan	.967	120
Tajikistan	.930	129
Uzbekistan	.946	105

[28] http://forumofwomenngos.kg/about-us-2/ Accessed May 4, 2018.
[29] UNDP 2017. Human Development Data. hdr.undp.org Accessed May 4, 2018.

Social Institutions and Gender Index (SIGI)

This measure, which has been developed by the OECD and results in a score between 0 and 1, clusters 108 countries into five levels of discrimination: very low, low, medium, high and very high. In 2014, the SIGI value for Kazakhstan was .1196, which placed it in the category of "low" levels of discrimination. The SIGI value for Kyrgyzstan (.1598) placed it in the "medium" category in terms of discrimination, as did the SIGI values for Tajikistan (.1393) and Uzbekistan (0.1475).[30]

Global Gender Gap Index (GGGI)

The World Economic Forum also calculates a gender index: the Global Gender Gap Index. Uzbekistan is not among the 142 countries covered by the World Economic Forum's Global Gender Gap Reports. However, the other participating countries are ranked: Kazakhstan is 52nd, Kyrgyzstan is 85th, and Tajikistan is 95th. These countries all outperform the neighboring countries in the Caucasus region, but Kyrgyzstan and Tajikistan are still among the lowest rated countries in the region.[31]

Gender Statistics

Countries in Central Asia have undertaken various statistical exercises related to gender. A 2013 ADB report noted that while substantial progress had been made in the area of generating and reporting gender disaggregated statistics in the Central Asian region, the data "lack a strategic focus on the relevant gender inequality issues in a country."[32] For example, the State Statistics Committee in Kazakhstan has periodically published a compendium of gender statistics entitled "Women and Men in Kazakhstan,"[33] and in October 2017, an expert from Kazakhstan presented at the 11th annual meeting of the Inter-Agency and Expert Group on Gender Statistics under UN ECOSOC. In Kyrgyzstan, a similar "Women and Men" statistical compendium has also been published by the National Statistical Committee. In Uzbekistan, the State Statistical Committee has established a Gender Statistics Portal,[34] and a similar portal has been launched in Tajikistan[35] supported by a technical assistance project (2014-2016) from the Asian Development Bank.

Gender Issues in CC Adaption and DRR

A consultative group meeting for the Global Facility for DRR found that women "typically face greater mortality, health risks, and domestic and sexual violence in hazard events…." and may face greater challenges to accessing social protection mechanisms such as insurance and safety nets."[36] The same study suggested "Increasing access to information and participation in risk management and early warning systems."

In addition, the study noted that humanitarian response efforts also run the risk that post-disaster needs assessments will fail to capture and compensate the unpaid work that women do in their communities, and the possible increase in their unpaid work following disasters in the form of

[30] OECD 2016. http://www.genderindex.org/ranking. Accessed May 4, 2018.
[31] World Economic Forum 2017: 16-20.
[32] Klasen et al 2013: 2-3.
[33] http://stat.gov.kz/
[34] http://gender.stat.uz/
[35] http://www.stat.tj/en/Gender6/gender12/
[36] GFDRR 2016: 5.

caring for affected community members. Two conclusions of the study are directly relevant to the proposed project:

- "Women's economic empowerment is key to resilience— removing constraints to economic activities and increasing women's participation in income-earning opportunities and access to productive assets in pre and post-disaster context.
- Need to better capture gender disaggregated and losses in post-disaster assessments."[37]

Other literature has addressed women's higher vulnerability to natural disasters. For example, "Studies have shown that disaster fatality rates are much higher for women than for men due, in large part, to gendered differences in capacity to cope with such events and insufficient access to information and early warnings."[38] The same review indicates that there are additional factors, such as a "direct relationship between women's risk of being killed during disasters and their socio-economic status."[39] That said, country-specific knowledge of the differential effects of climate change impacts on women and different coping strategies used is at its inception, and there are many knowledge gaps.[40] Furthermore, efforts that might provide this information are not fully supported; for example, in Tajikistan, the work plan of the Women's Committee for the support of its chapters includes climate change, but it has no dedicated financing.[41]

However, it is also important to keep in mind the 2018 CEDAW general recommendation on gender-related dimensions of DRR in the context of climate change: "The vulnerability and exposure of women and girls to disaster risk and climate change are economically, socially and culturally constructed and can be reduced."[42] In addition, "The categorization of women and girls as passive 'vulnerable groups' in need of protection from the impact of disasters is a negative gender stereotype that fails to recognize the important contributions to disaster risk reduction, post-disaster management and climate change mitigation and adaptation strategies that women are already making."[43]

The recommendation notes that in order to be compliant with the Convention, countries must ensure that their policies and programs related to DRR are consistent with three general principles: equality and non-discrimination, participation and empowerment, and access to justice (para. 27). The recommendation also states that "parties should take concrete, targeted, and measurable steps to:

- (a) Identify and eliminate all forms of discrimination, including intersecting forms of discrimination, against women in disaster risk reduction and climate change policies, legislation, policies, programmes, plans, and other activities. Priority should be accorded to addressing discrimination in relation to the ownership, access, use, disposal, control, governance and inheritance of property, land and natural resources, as well as barriers that impede the exercise by women of full legal capacity and autonomy in areas such as freedom of movement and equal access to economic, social and cultural rights including food, health, work and social protection. Women and girls should also be empowered through specific policies, programmes and strategies so that they are able to exercise

[37] Ibid.
[38] Ikeda in UNDP 2013: 5.
[39] Ibid.: 3.
[40] ADB 2014: xiii.
[41] ADB 2016: 10.
[42] CEDAW (2018): 3.
[43] UNISDR and UNDP in CEDAW (2018): 4.

their right to seek, receive and impart information related to climate change and disaster risk reduction;

- (b) Create effective mechanisms to guarantee that the rights of women and girls are a primary consideration in devising measures on disaster risk reduction and climate change at the local, national, regional and international levels. Measures must be taken to ensure that quality infrastructure and critical services are available, accessible and culturally acceptable, for all women and girls on a basis of equality.[44]

Gender Issues Related to GLOF Threats

Risk perception literature has addressed GLOFs, but the findings are at times contradictory. That said, one study in Nepal found that "Interview results of the present study support the conclusion that women possess higher sensitivity to the threat of hazards. More women (42 per cent) said they were afraid of an impending GLOF event, while only a few male respondents (22 per cent) said they perceived a GLOF risk."[45]

Some information on gender-related issues in GLOF DRR projects is also available in the form of case studies and evaluations of completed projects. For example, a 2008 case study from Nepal found that women in some cases faced double discrimination because of gender and because of minority ethnic status.

A terminal evaluation of a GLOF DRR project in Pakistan reported the following: "Women and children are the one who are most vulnerable to disaster as they mostly remain at home and also couldn't escape easily and men could not help if suddenly any disaster take place as most of the men will be in off farm employments mainly away from the village. Project therefore made efforts to include women in activities that were not seen offensive culturally and that provide practical knowledge to safeguard in disaster events. Project organised 107 awareness workshops which were participated by 2375 local women. Project also conducted DRM training for disabled men and women. Besides, some additional workshop on DRM planning, consultation workshop, provincial DRM planning meeting, meeting for disabled men and women were also conducted. Similarly, women were also made aware through Radio awareness programs and IEC material distribution. Also women are included purposely and they are represented in the village DRM committees. But due to nature of the work and cultural barrier, women were not included in other laborious activities like EWS, repairing of trail, construction of walls, bio-engineering, monitoring of Glaciers and training on rescue operations."[46] That project also conducted specific workshops for women, and included these workshops for women as an activity-level indicator.[47]

[44] CEDAW 2018: 8-9.
[45] Dahal and Hagelman 2011: 5.6.
[46] Rijal and Ali 2015: 16-17.
[47] Ibid.: 28.

Community Consultation in Pskem, Uzbekistan (April 2017).

Project-Specific Gender Issues

During the project formulation stage, the project formulation team organized community consultations in each participating country. Efforts were made to include women and men in equal numbers, and the resulting participation in the consultations ranged from 29% women in the consultations in Uzbekistan to 46% women in the consultations in Kazakhstan (4-country average: 38%).

In order to get a sense of information and attitudes about gender and climate change, two questions were included in the community surveys. One asked "Would you say that women and men are affected differently by floods and other significant weather events? How?" The other asked "How much would you say that women participate in local government? In community meetings?" Answers to these questions varied significantly from village to village. For questions about gender-differentiated effects, 41% of respondents in Kazakhstan felt that women and men were affected differently, while 21% felt that they were not affected differently, and 37% didn't know. In the initial pilot communities in Kyrgyzstan, 55% of the respondents felt that women and men were affected differently, while 26% did not and 21% didn't know. In one of the new pilot communities (Ton-Tosor), the majority of respondents answered that women and men are differently exposed to the actions of dangerous natural processes because they are physically differently developed. In the initial pilot communities in Tajikistan, the consensus among participants seemed to be that there were gender differences in how men and women were affected. During the consultation meeting at the new pilot site, the majority of respondents stated that floods and other extreme weather events impact women by affecting their mental and emotional well-being, forcing them to leave their homes, and exacerbating existing mental health conditions.In Uzbekistan, 83% of those answering the question saw a gender difference, while 13% (n = 3) did not, and 4% (n = 1) didn't know.

Most respondents did not elaborate on how gender influenced the effects of natural disasters, although more than one respondent noted that men's roles were to help women and children relocate during a natural disaster. In one consultation in Kyrgyzstan (Ala-Archa), respondents felt that disasters have the same negative impact on women and men, with the difference that men are more involved in the recovery process after natural disasters, because they repair houses and roads after events. Respondents in this consultation observed that men were also involved more in evacuation because they are physically stronger. Other respondents stated that women were more susceptible to stress, took responsibility for children, and were weaker.

Interestingly, when young DRR researchers and professionals were asked the same questions, their answers differed.[48] For example, the respondents were evenly divided as to whether women and men were affected differently by natural disasters. Given that this group will be studying and working in the DRR sector, it may be important to communicate international consensus on gender-related dimensions of DRR.

Recommendations

In general, the project should encourage women's participation, empowerment, and access to justice in all project activities as recommended in the CEDAW General Recommendation No. 37. Specific action items are included in the proposed Action Plan on the following page.

It should also be noted that the project provides an excellent opportunity to study how improvements in DRR generally and in early warning systems specifically may affect men and women differently. The project should not only collect gender-disaggregated data, but it should provide this data and other project findings to other organizations and promote the use of this information in reporting to relevant UN conventions. In addition, the project provides an opportunity to develop community-level DRR programming that includes a specific focus on women and girls, including their roles in the community, communication channels, baseline risk reduction and adaptation activities, and needs during and after GLOFs. Project interventions that are designed and implemented using a gendered approach should be documented and shared as a part of the project's knowledge management activities.

Gender Action Plan

The IE notes that it is responsible for providing support on gender capacity to executing entities and local communities and stakeholders as per AFB 2017 (II.10). Through project design and implementation, the IE will comply with key UN mandates on gender equality and the empowerment of women, including the 1979 Convention on the Elimination of All Forms of Discrimination of Women (CEDAW), the 1995 Beijing Declaration and Platform of Action, and the Sustainable Development Goals.

[48] See Annex 2 of this document for a description of the DRR and Youth consultation.

Objective	Action	Indicator	Responsible Institution
Output 1			
Ensure gender-balanced participation in GLOF monitoring and mapping and supporting capacity strengthening	Establish an appropriate target for women researchers' participation in the mapping exercise and development of monitoring protocol. Monitor levels of participation and adjust outreach strategy as needed.	At least a certain percent (TBD) of participating researchers are women [OR the project actively encourages the participation of women researchers in the mapping exercise and in capacity strengthening activities]	PIU
Output 2			
Support active women's participation in the vulnerability and exposure maps developed for endangered communities and in local risk reduction plans	Consult with women of diverse backgrounds during the assessment and mapping process Monitor the participation of women in the activities and ensure that activities are scheduled for appropriate times and places Ensure an appropriate mix of male and female project workers to conduct focus groups and planning activities	At least three women's focus groups convened during the vulnerability assessment and local risk reduction consultations. Number of instances where gender issues are incorporated into the findings of the vulnerability assessment and the local risk reduction plans	PIU, NIEs
Output 3			
Ensure women's participation in the development of early warning systems.	Provide administrative support to encourage women's participation in the placement of the EWS and in identification of evacuation routes and safe zones.	Number of men and women participating in placement activities.	PIU, NIEs

	Determine roles for EWS operation and maintenance that are sensitive to cultural norms.		
Output 4			
Ensure that training related to the EWS and low-cost, no-cost adaptation measures reaches both men and women	Ensure that women receive sufficient information to participate meaningfully in simulation exercises and other means as needed. Liaise with local women's committee organizations when providing training on DRM and ensure that training times and languages consider women's needs.	Number of women participating in community assessment and planning activities. Gender profile of residents in pilot communities participating in drills. Number of women attending training and information sessions (absolute numbers and as a % of total participants).	PIU, PR contractor, local partners
Output 5			
Women and men have equal access to information generated by project activities.	Use information on women's media preferences to target outreach and knowledge products	Percentage of website visitors that are women Number of women (absolute and as a % of total users) who report receiving information distributed by the project about GLOF hazards and risk reduction measures	PIU, portal contractor
Monitoring and Evaluation / Project Management			
Increase understanding of how project benefits may vary by gender	Undertake gender-disaggregated surveys on project outcomes Ensure equal participation in bottom-up reporting mechanisms and include women (and girls as appropriate) in monitoring activities	Gender-disaggregated data are available Report on gender differences in project benefits; e.g. changes in risk perception	PIU

Raise awareness regarding GLOFs, early warning systems, and DRM	Consult both men and women in the development of promotional materials Collect baseline data on awareness and knowledge levels among men and women Assess the most appropriate communication channels for information, keeping in mind that they may be different for women and men.	Increase in awareness levels regarding GLOF risks and risk reduction measures among both men and women Baseline data available for both men and women Project communication strategy that reflects both men's and women's communication channels	PIU
Ensure that the Project Implementation Unit and national partners have a solid understanding of gender mainstreaming in project implementation	Offer a training block on gender mainstreaming (with an emphasis on data collection, participation strategies, and gender and energy issues) during the project inception workshop. Ensure that women have leadership roles in project implementation	Training block on gender mainstreaming in the project inception workshop and/or utilization of UNESCO eLearning unit on gender mainstreaming. Project organogram indicates women in leadership roles	PIU, UNESCO

Sources

Adaptation Fund Board. 2017. Guidance Document for Implementing Entities on Compliance with the Adaptation Fund Gender Policy.

Asian Development Bank. 2016. *Tajikistan Country Gender Assessment*. Manila: ADB.

Committee on the Elimination of Discrimination against Women (CEDAW). 2018. *General Recommendation No. 37 on Gender-related dimensions of disaster risk reduction in the context of climate change. CEDAW/C/GC/37.* 7 February 2018.

Khasanov, Rafkat et al. 2016. *National Human Development Report: Trade and Development in Kyrgyzstan.* Bishkek: UNDP in the Kyrgyz Republic.

Klasen, Stephan, et al. 2013. "Gender Statistics in Development Planning for Central and West Asia." Manila: ADB, July 2013.

Dahal, Khila Raj and Ronald Hagelman III. "People's risk perception of glacial lake outburst flooding: a case of Tsho Rolpa Lake, Nepal" in Environmental Hazards. Volume 10, Issue 2 (June 2011): 154-170.

Global Facility for Disaster Reduction and Recovery (GFDRR). 2016. Gender Action Plan: 2016-2020. Fall 2016 Consultative Group meeting. Washington: GFDRR.

Ibraeva, G., et al. 2011. World Development Report 2012 Gender Equality and Development Background Paper. Kyrgyz Country Case Study. Washington, DC: World Bank.

Ikeda, K., 'Gender Differences in Human Loss and Vulnerability in Natural Disasters: A Case Study from Bangladesh', *Indian Journal of Gender Studies*, 2:2: 171–93, 1995; Neumayer, E., and T. Plumper, 'The Gendered Nature of Natural Disasters: The Impact of Catastrophic Events on the Gender Gap in Life Expectancy, 1981-2002', *Annals of the Association of American Geographers*, issue 97, 1997; Oxfam, 'The Tsunami's Impact on Women', Briefing Note, March 2005. In Habtezion, Senay et al. 2013. *Gender and Disaster Risk Reduction*. New York: UNDP.

National Human Development Report. 2016. Sustainable Development Goals and Capability Based Development in Regions of Kazakhstan. Astana: UNDP, 2016.

OECD. 2016. Social Institutions and Gender Index (SIGI). http://www.genderindex.org/ranking. Accessed May 4, 2018.

Rijal, Arun and Jawad Ali. 2015. "Reducing Risks and Vulnerabilities from Glacial Lake Outburst Floods in Northern Pakistan: Report of the Terminal Evaluation Mission (UNDP-AF-Govt of Pakistan)."

UN. 2012. UN System-wide Action Plan (UN-SWAP) for implementation of its policy on gender equality and the empowerment of women (CEB/2006/2).

UNDP. 2011. "Ensuring Gender Equity in Climate Change Financing." New York: UNDP.

UNDP. 2010. "Clean Development Mechanism: Exploring the Gender Dimensions of Climate Finance Mechanisms." New York, UNDP.

UNESCO. 2016. Global Education Monitoring Report 2016: Gender Review: Creating Sustainable Futures for All. Paris: UNESCO.

UNISDR. 2015. *Global Assessment Report on Disaster Risk Reduction: Risk and Poverty in a Changing Climate.*

UN Women. 2014. Guidance on the Development of Gender Equality the Empowerment of Women Policies. New York: UN Women Coordination Division, May 2014.

UN Women. 2018. Europe and Central Asia: Kazakhstan http://eca.unwomen.org/en/where-we-are/kazakhstan

UN Women. 2018. Europe and Central Asia: Tajikistan. http://eca.unwomen.org/en/where-we-are/tajikistan

World Bank. 2011. "Integrating Gender Issues in Community-Based Disaster Risk Management. East Asia and the Pacific Region Sustainable Development Guidance Note; No. 4." World Bank, Washington, DC. © World Bank. https://openknowledge.worldbank.org/handle/10986/26532 License: CC BY 3.0 IGO.

World Economic Forum. 2017. The Global Gender Gap Report. Geneva: WEF. http://www3.weforum.org/docs/WEF_GGGR_2017.pdf Accessed May 4, 2018.

ANNEX 3: OVERVIEW OF PILOT SITES

The following table provides an overview of the demographic characteristics of the proposed pilot sites. Descriptions of the sites are provided below by country.

Table A3.1: Summary Characteristics of Pilot Sites as Approved by the Adaptation Fund Board

Profile: Communities											
Village/Town	Elderly %	# of HHs in village	Number of W in Village	Number of Men in Village	Total	% of Women in Village	# of Ethnic Groups	Vulnerable Children	Women HH	Disabled
Issyk	11	9294	16961	16239	33200	51	7+	1		5
Talgar	10	12009	21922	20978	42900	51	4+			2
KAZ total	10	21303	38883	37217	76100	51				7
Ala-Archa	2		5865	5635	11500	51	3	33	0	99
Ton-Tosor	3		4704	4896	9600	49				
KYR total	2		10569	10531	21100	50				99
Dashti Murghon	20	164	471	468	939	50			18	
Obshoron	18	130	370	401	771	48			16	
Duaghba	20	143	367	408	775	47			19	
Sartalo	7	31	128	121	249	51			6	NA
Char	6	19	82	71	153	54			6	
Zarinrud		556	1250	1120	2370	53				
Lakhsh		388	1332	1013	2345	57				
Mugh		165	512	445	957	54				
Samarmand		132	459	459	918	50				
Chashmasor		307	792	685	1477	54				
Chorgul		160	456	403	859	53				
Shirinob		182	499	495	994	50				
Kayondeh		67	242	301	543	45				
Safeddara		221	756	1025	1781	42				
Chorsu		350	1107	1275	2382	46				
Gulzoron		48	126	122	248	51				
Domanakukh		31	82	81	163	50				
Mehrobod		245	646	672	1318	49				
Sebiston		68	181	192	373	49				
Tojvaron		101	226	249	475	48				
TAJ total	4	3508	10084	10006	20090	50			65	
Tepar	26	150	580	350	930	62	4	22	16	6
Pskem	5	72	549	366	915	60	4	20	12	5
UZB total	16	222	1129	716	1845	61	8	42	28	11
TOTAL	8	25033	60665	58470	**119135**			42	93	117

Table A3.2: Characteristics of the Two New (2022) Pilot Sites for Kyrgyzstan

River Basin	Village / Town	Number of respondents	Gender	Age	Nationality	Total Population
Ala-Archa	Baytik	5	4 male 1 female	From 16 to 61	Kyrgyz 99%	2 541
	Kashka-Suu	13	8 male 5 female		Uzbek Uigur 1%	1331
	Ala-Archa	5	3 male 2 female			50
	Leshoz	15	10 male 5 female 6			100
	Birbulak	8	male 2 female			300
Ton - Tosor	Bokonbaevo	4	3 male 1 female	From 22 to 60	Kyrgyz 100%	10 648
	Ton	2	1 male 1 female			1405
	Jeruy	9	8 male 1 female			529
	Кек-Say	11	2 male 9 female			855
	TemirKanat	9	3 male 6 female			1068
	Eshperov (Ak-Say)	5	2 male 3 female			1910

Additional Notes

Tajikistan

Table A43.31: Characteristics of the New (2024) Pilot Sites for Tajikistan

River Basin	District	Sub-district (Jamoat)	Village	Number of respondents	Gender		Total Population	Gender		Nationality
					Men (N)	Women (N)		Men (N)	Women (N)	
Surkhob	Lakhsh (Jirgatol)	Surkhob	Dashti Murghon	40	19	21	939	468	471	Tajik
	Lakhsh (Jirgatol)	Surkhob	Obshoron				771	401	370	Tajik
	Lakhsh (Jirgatol)	Surkhob	Duaghba	28	14	14	775	408	367	Tajik
	Lakhsh (Jirgatol)	Surkhob	Sartalo	Indirect beneficiaries			249	121	128	Tajik
	Lakhsh (Jirgatol)	Surkhob	Char				153	71	82	Tajik
	Lakhsh (Jirgatol)	Lakhshi bolo	Zarinrud				2370	1120	1250	Tajik
	Lakhsh (Jirgatol)	Lakhshi bolo	Lakhsh				2345	1013	1332	Tajik
	Lakhsh (Jirgatol)	Lakhshi bolo	Mugh				957	445	512	Tajik
	Lakhsh (Jirgatol)	Lakhshi bolo	Samarmand				918	459	459	Tajik
	Lakhsh (Jirgatol)	Lakhshi bolo	Chashmasor				1477	685	792	Tajik
	Lakhsh (Jirgatol)	Lakhshi bolo	Chorgul				859	403	456	Tajik
	Lakhsh (Jirgatol)	Lakhshi bolo	Shirinob				994	495	499	Tajik
	Lakhsh (Jirgatol)	Lakhsh	Kayondeh				543	301	242	Tajik
	Lakhsh (Jirgatol)	Lakhsh	Safeddara				1781	1025	756	Tajik
	Lakhsh (Jirgatol)	Lakhsh	Chorsu				2382	1275	1107	Tajik
	Lakhsh (Jirgatol)	Saylobod	Gulzoron				248	122	126	Tajik
	Lakhsh (Jirgatol)	Saylobod	Domanakukh				163	81	82	Tajik
	Lakhsh (Jirgatol)	Saylobod	Mehrobod				1318	672	646	Tajik
	Lakhsh (Jirgatol)	Saylobod	Sebiston				373	192	181	Tajik
	Lakhsh (Jirgatol)	Saylobod	Tojvaron				475	249	226	Tajik
TOTAL				68	33	35	20090	10006	10084	Tajik 100%

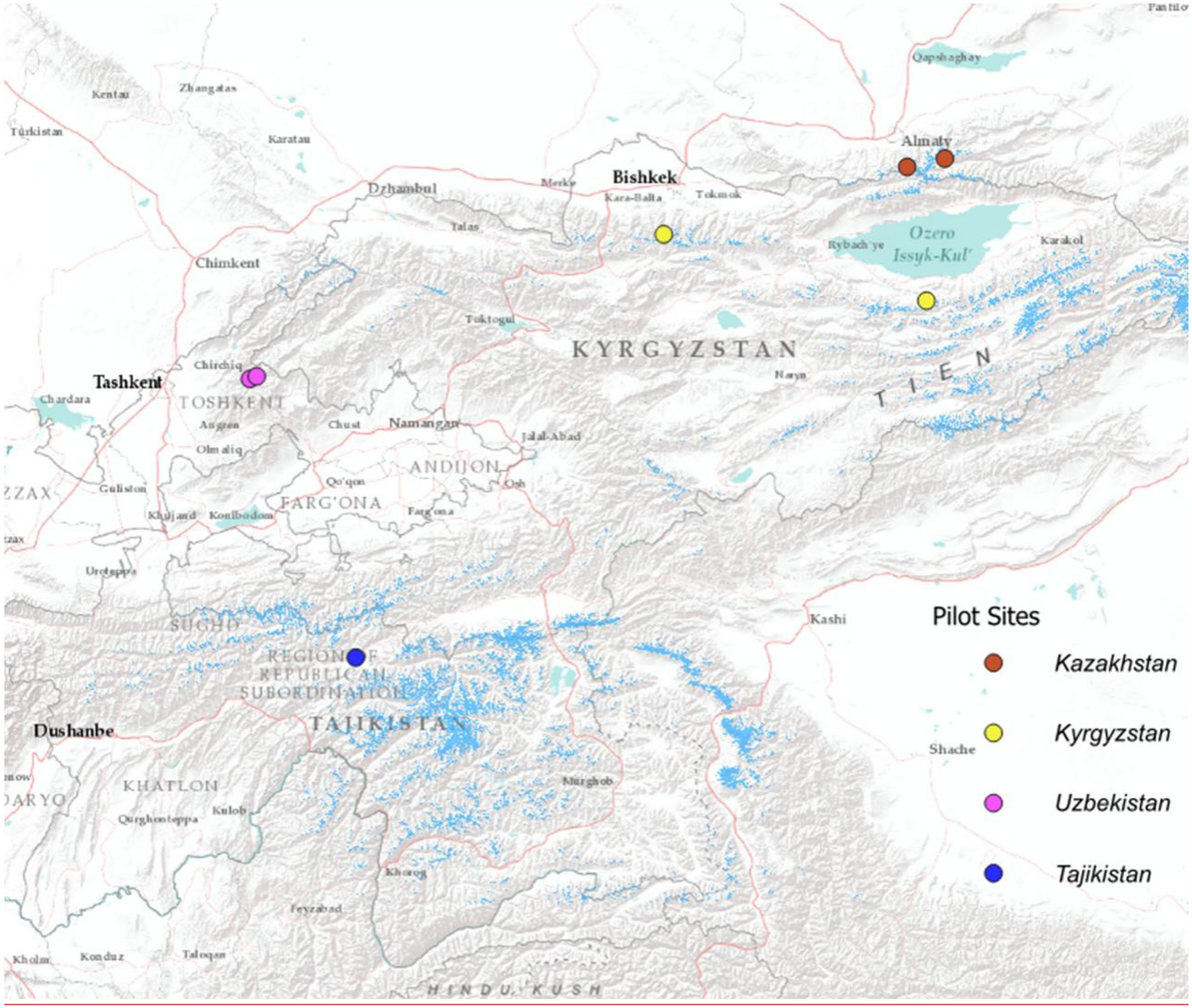


Figure A3.1: Map of affected communities in Tajikistan

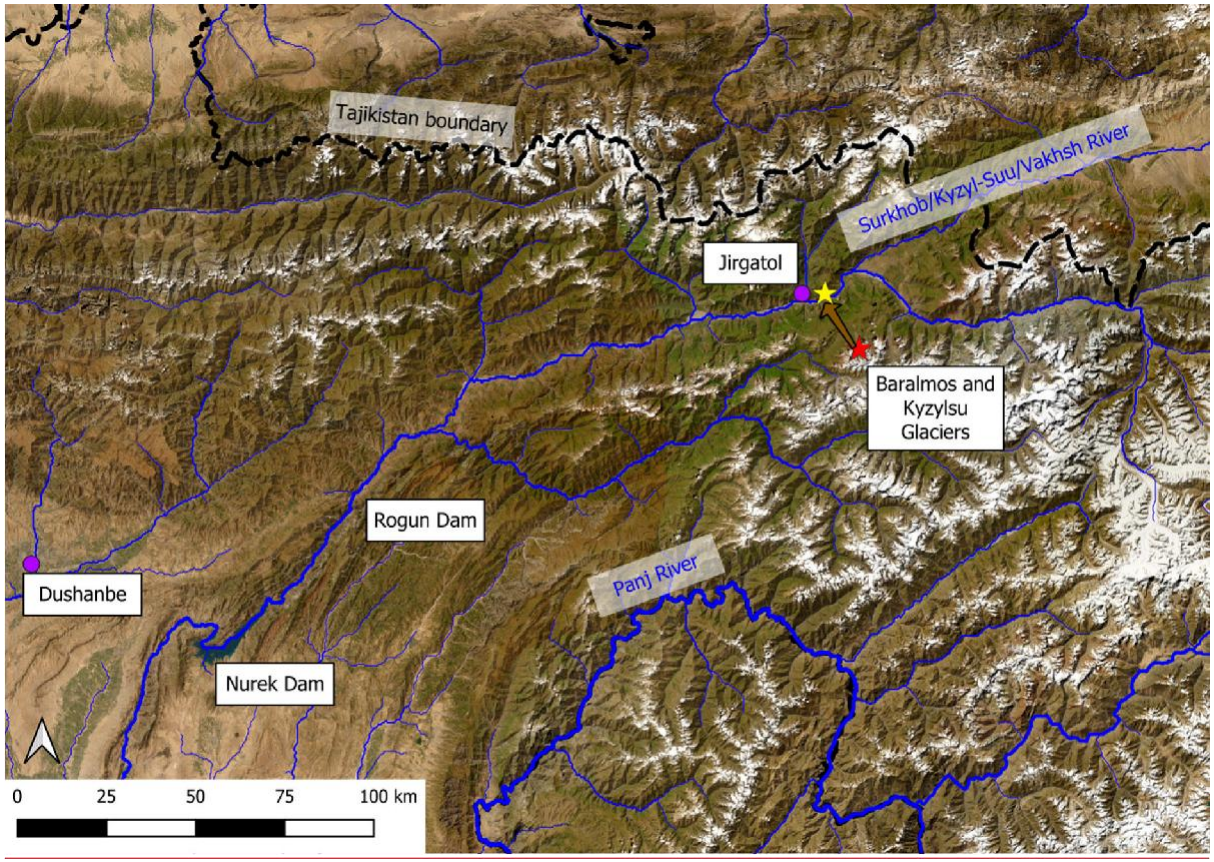


Figure A3.2: Context of the Saidoi Nasafi (Baralmos) Glacier outbursts and mudflows within Tajikistan.

Overview of the new Baralmos pilot site

The area affected by the Saidoi Nasafi (Baralmos) and Kyzylsu glaciers' outburst floods and mudflows is within Lakhsh (Jirgatol) District, located in north central Tajikistan, 6 km east of Jirgatol village (Figure 1). The mudflows run into the Surkhob (Vakhsh, Kyzyl-Suu) River, a transboundary river basin and a major tributary of the Amu Darya River system, supplying water and sediment that flows 150 km downstream to the Rogun Dam project and Nurek Dam.

Surkhob basin: Communities (Dashti Murghon, Obshoron and Duaghba villages of Surkhod sub-district, Lakhsh district of the Direct Rule Districts) in the Surkhob basin vulnerable to glacier lake outburst floods (GLOFs) from Saidoi Nasafi (Baralmos) Glacier.

The motivation for the change in pilot communities are three-fold: 1) The local and international project partners continue to have difficulties under the current political situation to work effectively in the original pilot site in the GBAO, and the successful implementation and long-term sustainability of the installations cannot be guaranteed with any confidence. 2) The proposed new location has experienced regular and repetitive (annual) glacial lake outburst floods over the past decade, with major implications for communities and transportation routes. 3) The proposed new location outside of the GBAO is easily accessible, and both the local and international project partners have long-term monitoring activities already in place at the related glaciers, with annual visits occurring since 2021, ensuring the feasibility of implementation at this site.

As recently as July 2024, a major mudflow affected this region, originating as an outburst flood from the Saidoi Nasafi (Baralmos) Glacier; similar events have occurred annually since at least 2017. These mudflows have repeatedly damaged the major transportation corridor in the region, leading to associated economic disruptions, and threatening the connectivity of the villages to their crops, animals, and lifelines (health services, etc.). This route is also the major historic trade route to Kyrgyzstan, and although its use is currently reduced owing to political tensions, under normal conditions, disruptions to this route lead to economic impacts on a district, national and even regional scale. While houses in the affected villages are typically located at a safe elevation above the river channel, the 2024 events destroyed several buildings.

Uzbekistan

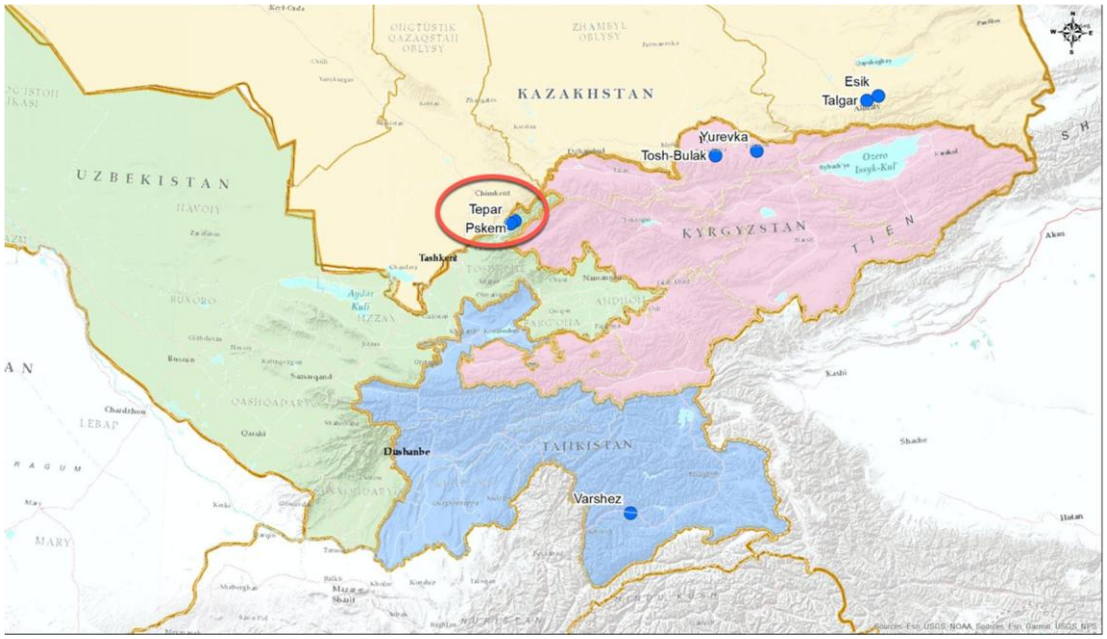


Figure A3.2: Map of affected communities in Uzbekistan

The pilot site in Uzbekistan involves two villages in the middle reaches of the Pskem River, Tepar and Pskem. They were selected due to their location, as they are closest to potential GLOF sites. Two glacial lakes are located in the upper reaches of the Pskem River: Shavurkul Lake and Ikhnach Lake, which contain 5 million and 4 million cubic meters of water, respectively. The Pskem river valley is the site of frequent natural disasters in the form of mudslides and landslides.

Shayurkul Lake

Ikhnach Lake

Kazakhstan

Figure A3.3: Map of affected communities in Kazakhstan

In Kazakhstan, the pilot towns Esik and Talgar are located in Almaty region in Tien-Shan foothills, surrounded by ridges. Due to the large number of the glacial lakes prone to outburst, the cities are considered as a disaster- prone area. For example, as a result of the heat and abundant glacier melting, on 7th of July 1963, a mudflow in Esik town, claimed nearly a thousand lives and caused enormous damage to the city infrastructure.

Kyrgyzstan

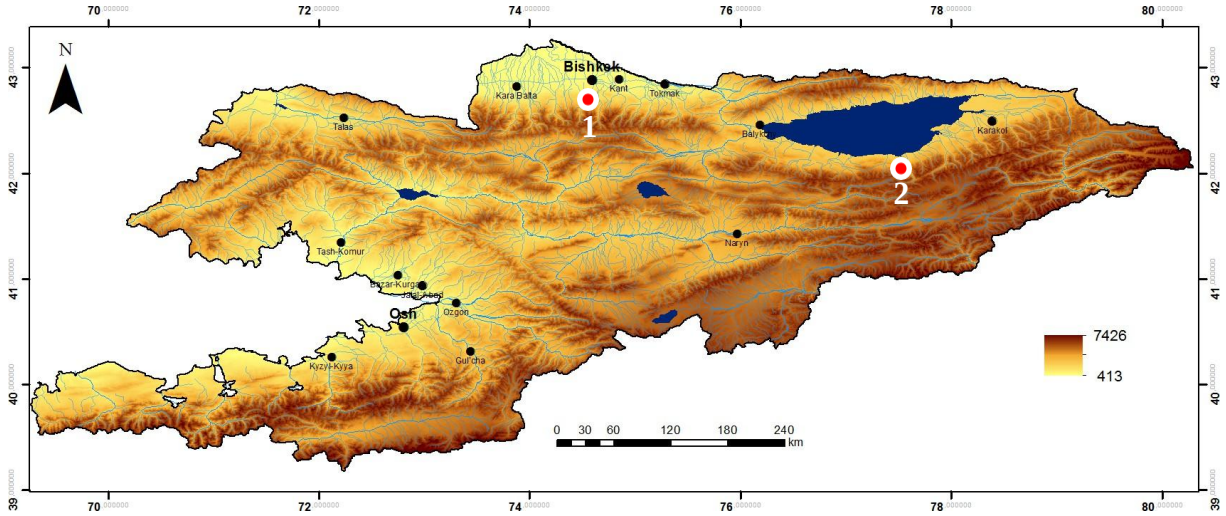


Fig. A3.4: New (2022) Pilot sites in Kyrgyzstan

The new (2022) pilot sites consist of the following two locations:

Site No. 1: Communities vulnerable to glacier lake outburst floods (GLOFs) from lakes located in the Ala-Archa River valley on the northern slope of the Kyrgyz range;

Site No. 2: Communities vulnerable to GLOFs from lakes in the Ton-Tosor River basin on the northern slope of the Terskey-Alatoo range.

The reasoning behind the change in pilot communities was two-fold: 1) The new communities were experiencing greater exposure to climate threats in the form of unstable lakes; and 2) The total population of communities that would benefit from project activities was significantly greater in the new sites.

The most intensified mudflow activity is observed in valleys where a dense network of river valleys, *sais*[49] and gullies with steep slopes are developed, and an easily-eroded loose clastic material is present. The reliefs of the northern slopes of the Terskey-Alatoo and the Kyrgyz range exhibit these characteristics. These ridges have the highest number of outburst-prone high mountain lakes, which pose a threat to people and infrastructure near the corresponding riverbeds. According to the latest inventory, there are 146 lakes in the Terskey-Alatoo ridge and 60 lakes in the Kyrgyz range. The most recent

[49] *Sai* - a term used in Central Asia for a gully or gulch

catastrophic mudflows caused by GLOFs occurred on the Terskey-Alatoo ridge in 2008 (Zyndan lake outburst) and 2013 (Chetyndy). In the Kyrgyz range, outbursts have occurred in 2009 (Takyrtor), 2012 (Teztor), 2017 (Chelektor), and 2021 (Akpay).

In contrast to the originally-proposed rural settlements Tösh-Bulak (Sokuluk valley) and Yurievka (Issyk-Ata valley), the Ala-Archa and Ton-Tosor sites have a greater number of unstable outburst lakes according to a recent inventory. The 2021 Akpay lake outburst in the Sokuluk valley showed that a high-mountain lake could fill up under certain circumstances in only a few months and then break through.

Overview of the Ala-Archa Site

The Ala-Archa River valley is one of the most mudflow prone mountain valleys of the northern Tien Shan. There are more than 15 lakes in the Ala-Archa River valley (Figure A3.5). A number of factors such as powerful glaciation, high-altitude outburst prone lakes, deep dissected relief and its significant steepness, high altitude of watershed ridges, huge amounts of loose clastic material contribute to mudflow formation. Therefore, the risks of floods and mudflows on the territory of Ala-Archa National Park remain a highly acute and important issue.

The most dangerous natural phenomena in the Ala-Archa River valley is mudflow from side valleys. It can block the river and cause a massive stream after outburst of mudflow blockage, that further can pass through the valley and damage residential and commercial facilities of the national park, as well as roads and electric lines.

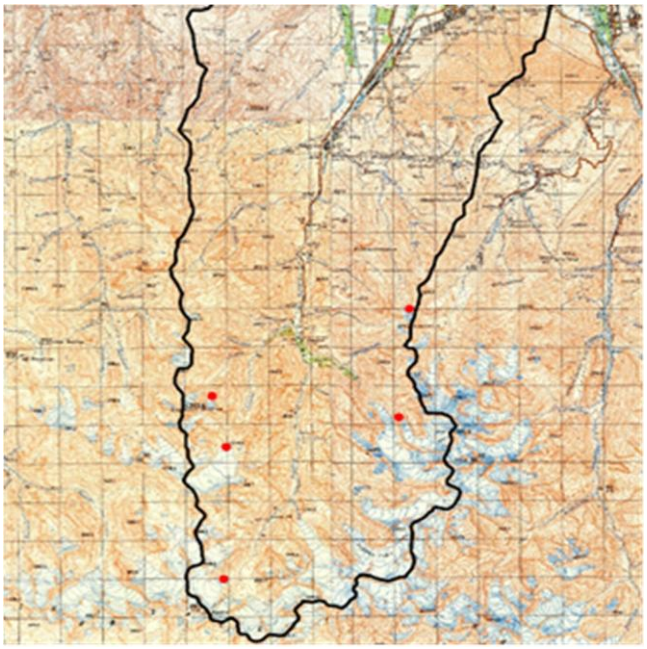


Figure A3.5. Ala-Archa river basin

Lake outbursts occurred repeatedly in the past. In June 1988, a lake formed in the upper reaches of the Teztor River valley (Adygene River basin); its volume reached 150,000m^3 before the outburst. In 1953, an outburst of this type of lake resulted in a powerful mudflow, traces of which are currently observed on the Adygene alluvial fan. The temporary dam of the mudflow blocked the Ala-Archa River, and a further outburst led to the formation of a powerful flood, which flowed down the river valley with a discharge rate that reached 50m^3/sec. In 1988, the outburst of the lake occurred gradually. A flood passed through the Teztor and Adygene valleys, which did not change into a mudflow. The flood caused an increase in the Ala-Archa River's discharge by only 8–10m^3/s [1]. In 2012, after the Teztor Lake outburst, a powerful flood damaged the water pipeline of the Kelechek company and recreation areas; the flood's discharge rate reached 30 m^3/s and reached Bishkek City.

Outbursts of interglacial reservoirs can cause mudflows along the Ak-Say River. There is a powerful mudflow center in the middle part of this valley. Mudflows were observed in the 1960s, 1970s, and early 1980s in the Ak-Say River basin. At present, a depression that is 40m deep and approximately 100m in diameter has formed at the end of the glacier. The depression has not yet filled with water. However, this is quite possible if interglacial meltwater runoff channels become blocked. Outbursts

of these types of lakes are very dangerous, as they could lead to mudflows in the Ak-Say River basin that would be even more powerful than before.

Overview of the Ton-Tosor Site

According to experts, there are from 8 to 16 lakes in the Aksai-Ton River valleys (Figure A3.6; estimates from CIARG and Kyrgyz Academy of Sciences, respectively). All lakes belong to the moraine-glacial type and are unstable. These lakes are characterized by rapid filling of depressions within a few months and subsequent outbursts. It is not possible to separate one or two lakes in this valley, since the depressions of most of the lakes are now empty or slightly filled. Also, after the Zyndan (2008) and Dzheruy (2013) GLOFs, mudflow protection dams were built to protect local communities and adjacent territories.

Figure A3.6. Mudflow after the Chetyndy GLOF

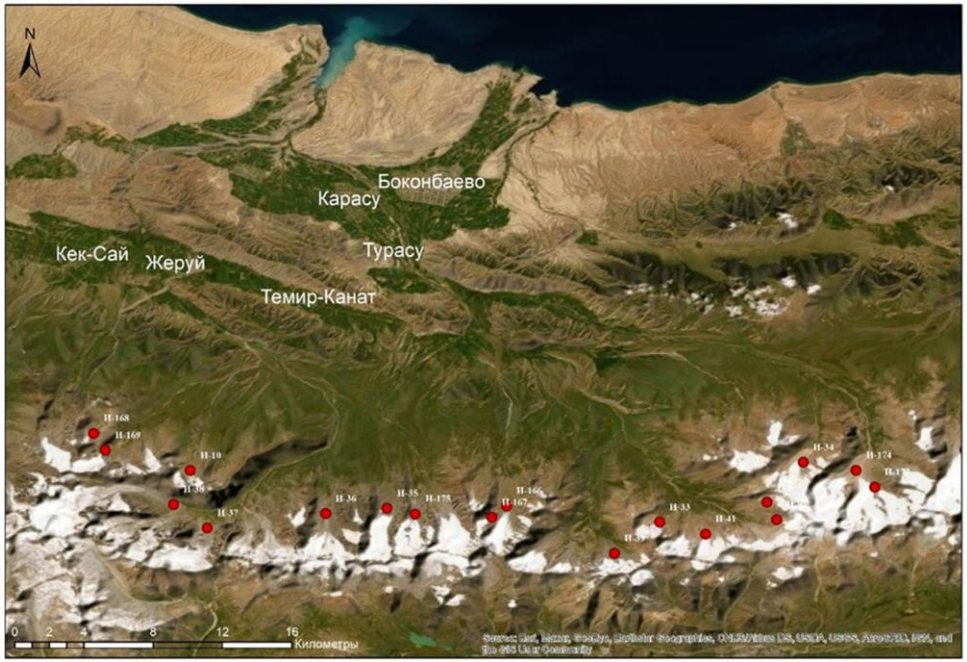


Figure A3.7. Location map of outburst lakes in the Aksay-Ton river basin

ANNEX 4: LIST OF ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AF	Adaptation Fund
AKAH	Aga Khan Agency for Habitat
CA	Central Asia
CCA	Climate Change Adaptation
CCDR	Centre for Climate Change and Disaster Reduction (Tajikistan)
CESDRR	Kazakhstan-Kyrgyzstan Center for Emergency Situations and Disaster Risk Reduction
DRR	Disaster Risk Reduction
DIPECHO	Disaster Preparedness ECHO Programme
EU	European Union
EWS	Early Warning System
FP	[Adaptation Fund] Funding Proposal
GEF	Global Environmental Facility
GIS	Geographic Information Systems
GLOF	Glacier Lake Outburst Floods
ICIMOD	International Centre for Integrated Mountain Development
IESC	Information and Experience Sharing Committee
IFI	International Financial Institution
M&E	Monitoring and Evaluation
MIE	Multilateral Implementing Entity
MTR	Mid-Term Review
NET	National Execution Teams
NGO	Non-Governmental Organization
PMU	Project Management Unit
PSC	Project Steering Committee
SDG	Sustainable Development Goal
TE	Terminal Evaluation
TSGS	Tien Shan Geological Society
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNISDR	United Nations Office for Disaster Risk Reduction
USD	United States Dollar

ANNEX 5: Social and Environmental Screening Checklist

Note: Community consultations and risk screenings in the ~~two~~ new ~~(2022)~~ pilot areas in Kyrgyzstan (2022) and Tajikistan (2024) have not altered the results of the following risk screening.

Checklist of Potential Environmental and Social Risks	
Principles 1: Human Rights	**Answer (Y/N)**
1. Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	No
2. Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups?	No
3. Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups?	No
4. Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them?	No
5. Are there measures or mechanisms in place to respond to local community grievances?	Yes
6. Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	No
7. Is there a risk that rights-holders do not have the capacity to claim their rights?	No
8. Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	No
9. Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project-affected communities and individuals?	No
Principle 2: Gender Equality and Women's Empowerment	
1. Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	No
2. Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	No
3. Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	No
4. Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services?	No
Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below	
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management	

1.1	Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services?	No
1.2	Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?	No
1.3	Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)	No
1.4	Would Project activities pose risks to endangered species?	No
1.5	Would the Project pose a risk of introducing invasive alien species?	No
1.6	Does the Project involve harvesting of natural forests, plantation development, or reforestation?	No
1.7	Does the Project involve the production and/or harvesting of fish populations or other aquatic species?	No
1.8	Does the Project involve significant extraction, diversion or containment of surface or ground water?[50]	No
1.9	Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	No
1.10	Would the Project generate potential adverse transboundary or global environmental concerns?	No
1.11	Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area?	No
Standard 2: Climate Change Mitigation and Adaptation		
2.1	Will the proposed Project result in significant greenhouse gas emissions or may exacerbate climate change?	No
2.2	Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	No
2.3	Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)?	No
Standard 3: Community Health, Safety and Working Conditions		
3.1	Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	No
3.2	Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	No
3.3	Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	No

[50] Level of diversion is not deemed to be significant in the project as it is currently proposed.

3.4	Would failure of structural elements of the Project pose risks to communities? (e.g. collapse of buildings or infrastructure)	No
3.5	Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions?	No
3.6	Would the Project result in potential increased health risks (e.g. from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)?	No
3.7	Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	No
3.8	Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	No
3.9	Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)?	No
Standard 4: Cultural Heritage		
4.1	Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? (Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)	No
4.2	Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	No
Standard 5: Displacement and Resettlement		
5.1	Would the Project potentially involve temporary or permanent and full or partial physical displacement?	No
5.2	Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	No
5.3	Is there a risk that the Project would lead to forced evictions?	No
5.4	Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?	No
Standard 6: Indigenous Peoples		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	No
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	No
6.3	Would the proposed Project potentially affect the rights, lands and territories of indigenous peoples (regardless of whether Indigenous Peoples possess the legal titles to such areas)?	No

6.4	Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	No
6.4	Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	No
6.5	Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	No
6.6	Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	No
6.7	Would the Project potentially affect the traditional livelihoods, physical and cultural survival of indigenous peoples?	No
6.8	Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	No
Standard 7: Pollution Prevention and Resource Efficiency		
7.1	Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts?	No
7.2	Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)?	No
7.3	Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs?	No
7.4	Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	No
7.5	Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	No

Attachment

JUSTIFICATION NOTE
FOR CHANGES IN PILOT COMMUNITIES

Summary of Proposed Changes

The proposed revision would replace the communities in Tajikistan nominated in the 2020 Funding Proposal with the following pilot communities:

Surkhob basin: Communities (**Dashti Murghon, Obshoron and Duaghba villages of Surkhod sub-district, Lakhsh district of the Direct Rule Districts)** in the Surkhob basin vulnerable to glacier lake outburst floods (GLOFs) from Saidoi Nasafi (Baralmos) Glacier.

The motivation for the change in pilot communities are three-fold: 1) The local and international project partners continue to have difficulties under the current political situation to work effectively in the original pilot site in the GBAO, and the successful implementation and long-term sustainability of the installations cannot be guaranteed with any confidence. 2) The proposed new location has experienced regular and repetitive (annual) glacial lake outburst floods over the past decade, with major implications for communities and transportation routes. 3) The proposed new location outside of the GBAO is easily accessible, and both the local and international project partners have long-term monitoring activities already in place at the related glaciers, with annual visits occurring since 2021, ensuring the feasibility of implementation at this site.

As recently as July 2024, a major mudflow affected this region, originating as an outburst flood from the Saidoi Nasafi (Baralmos) Glacier; similar events have occurred annually since at least 2017. These mudflows have repeatedly damaged the major transportation corridor in the region, leading to associated economic disruptions, and threatening the connectivity of the villages to their crops, animals, and lifelines (health services, etc.). This route is also the major historic trade route to Kyrgyzstan, and although its use is currently reduced owing to political tensions, under normal conditions, disruptions to this route lead to economic impacts on a district, national and even regional scale. While houses in the affected villages are typically located at a safe elevation above the river channel, the 2024 events destroyed several buildings.

Over the first 3 years of the project, the political situation in the GBAO became increasingly unstable, and the associated risk to the project implementation has been noted in the annual reporting. During the 2023 mission of the project team to the region, the mission came under close scrutiny of The State Committee for National Security, particularly with respect to the presence of an international project partner. It has since become clear, that the foreseen local implementation partner (Aga Khan Agency for Habitat) faces increasing difficulty working in GBAO, and is not in a position to guarantee the timely and successful installation of the Early Warning System over the remaining time-frame of the project.

Given these concerns, a high-level meeting was undertaken on 6 May 2024 in Dushanbe with representatives of the Committee of Emergency Situations and Civil Defence (CoES) and the Agency on Hydrometeorology, to discuss the best way forward. Based on these discussions, it became clear that there was no mechanism to improve the likelihood of successful implementation in GBAO, and there was mutual agreement that a site change to the Surkhob

basin would be in the best interests of the ministries, and optimize the success of the project in Tajikistan.

Overview of the Proposed Pilot Site in Surkhob basin

The area affected by the Saidoi Nasafi (Baralmos) and Kyzylsu glaciers' outburst floods and mudflows is within Lakhsh (Jirgatol) District, located in north central Tajikistan, 6 km east of Jirgatol village (Figure 1). The mudflows run into the Surkhob (Vakhsh, Kyzyl-Suu) River, a transboundary river basin and a major tributary of the Amu Darya River system, supplying water and sediment that flows 150 km downstream to the Rogun Dam project and Nurek Dam.

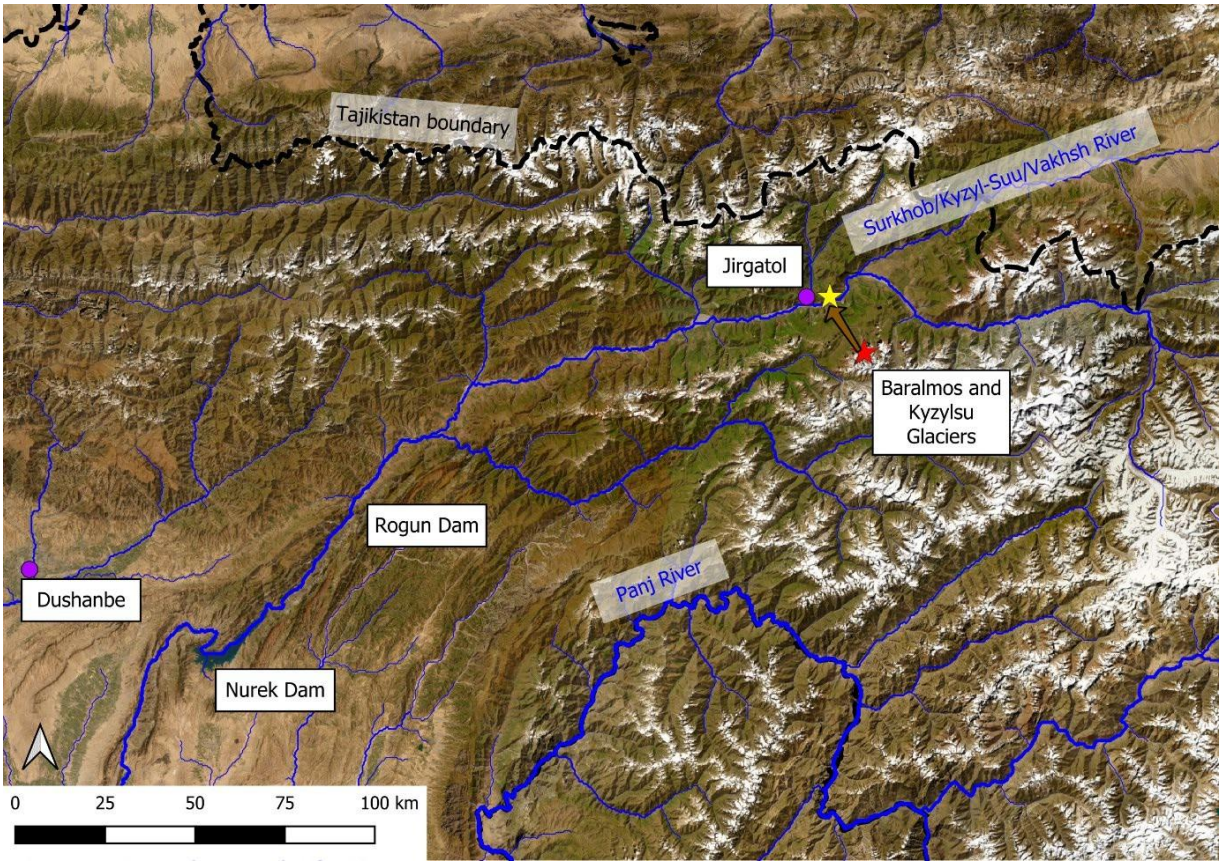


Figure 1. Context of the Saidoi Nasafi (Baralmos) Glacier outbursts and mudflows within Tajikistan.

Satellite observations from PlanetScope and Sentinel-2, confirmed by CoES responses, indicate that at least one mudflow event emanating from Saidoi Nasafi (Baralmos) Glacier has occurred in each of the past seven years. These events begin as a drainage of surface and internal stored waters from Saidoi Nasafi (Baralmos) Glacier, which then enters a highly erodible and steep mountain stream, entraining large volumes of unconsolidated sediments and transitioning into a mudflow as the mass descends 2000m elevation in ~15km stream distance before entering the Vahksh/Surkhob/Kyzyl-Suu river valley at a major valley constriction (Figure 2).

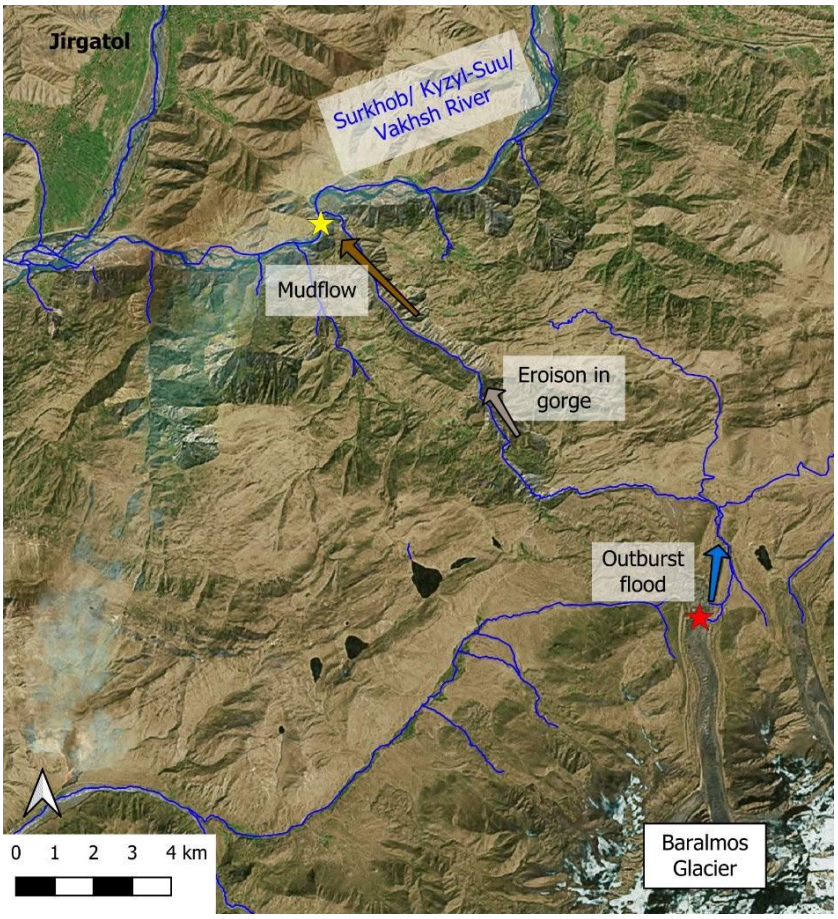


Figure 2. Configuration of Saidoi Nasafi (Baralmos) Glacier and flow path of outburst floods.

In recent years, the injection of this mass of water and sediment has significantly altered the river valley's geometry and sediment budget. This has led to large-scale upstream river flooding damaging several road segments on an annual basis, a sudden and hazardous interruption of the main local thoroughfare (Figure 3). The enhanced erosion associated with increased river stage followed by water level lowering has progressively damaged a long stretch of this road. In 2024, the mudflow led to partial diversion of the river onto the road itself, destroying several buildings (Figure 4).

Figure 3: Flooding of the Surkhob River due to the mudflow in 2023, which deposits considerable volumes of sediment at a constriction of the river channel. The flooded road is visible at the right of the frame.

Figure 4: Mudflow in the Surkhob River which destroyed several buildings in July 2024, resulting from a Glacial Lake Outburst from Saidoi Nasafi (Baralmos) Glacier.

At present, several depressions that are each 40m deep and approximately 200m in diameter have formed at the end of the glacier. These depressions fill annually due to snowmelt and drain suddenly due when increased water pressure enables the water to find a subsurface outlet. Over the past seven years, the lake basins have gradually grown, increasing the drainage magnitude.

Furthermore, historic satellite images from 1998, prior to the glacier's last surge event, showed that a much larger lake (1.2km x 0.7km) had formed, which then drained during the surge. This points to a possible much larger drainage scenario in the near (<15 years) future. Outbursts of these types of lakes are very dangerous, as they could lead to mudflows that would be even more powerful and destructive than before.

- Reasons for including the Surkhob basin in the priority list are as follows: There are three settlements in the immediate vicinity of the annual outburst floods, which are directly and considerably affected: This includes Dashti Murghon (939 people as of 2024), Obshoron (771 people as of 2024) and Duaghba (775 people as of 2024). In case of mudflow infrastructure, agricultural land, power lines and most importantly the Dushanbe-Lakhsh-Osh (Kyrgyz Republic) highway (250 to 257km) are suffered, resulting in large financial losses for the region and threatening the lives and well-being of the local population. While these three communities are most strongly affected, the interruption of transport isolates a considerable portion of the Lakhsh (Jirgatol) district from access to the rest of Tajikistan, including 17 communities (villages) of 4 jamoats (sub-districts) containing 17,605 residents. Furthermore, Rogun and Nurek Hydro Power Plants are located downstream of the Surkhob river. It is highly probable that with increasing frequency and volume of glacial lake outbursts and as a consequence increased mudflow, the process of sedimentation in these reservoirs will probably accelerate, which may have a significant impact on both the economy and the ecosystem and environment.
- The installation of an Early Warning System (EWS) in the Surkhob basin is vital to protect the 2,485 residents of Dashti Murghon, Obshoron, and Duaghba villages from glacier lake outburst floods (GLOFs), while also supporting hazard mitigation and transport management for the 17,605border region residents of Lakhsh (Jirgatol) district. These floods have repeatedly disrupted livelihoods, damaged infrastructure, and cut off access to essential services like healthcare and agriculture. A lack of resources, evacuation plans, and community preparedness significantly increases vulnerability. The EWS will provide critical early alerts, reduce disaster risks, and empower communities to respond effectively, ensuring their safety and economic stability.
- The major east- west transportation corridor connecting via Dushanbe the Tajik-Kyrgyz and Tajik-Uzbek road networks, is exposed to GLOFs and mudflows in this basin. Any interruptions to this corridor bring local, district, national and even regional economic impacts.

- Interruption to trade and tourism resulting from GLOFs in this region directly impact the lives and livelihoods of local communities.
- The AF-funded project GLOFCA can capitalize on several years of experience and monitoring undertaken on the glaciers and lakes in the basin, led by Glacier Research Center (GRC) of the Tajik Academy of Sciences (GLOFCA partner), in partnership with Swiss institutions. Monitoring equipment is already installed that can be rapidly transformed into a functioning Early Warning System.
- The Glacier Research Center (GRC) of the Tajik Academy of Sciences, and GLOFCA implementing partners at the University of Zurich already have good familiarity and relationships with the government authorities in this region. There are no permitting or logistical constraints, and high levels of local engagement and ownership are foreseen
- Due to glaciers retreat, existing lakes are actively developing and new ones are appearing in this basin, enhancing future GLOF risks in this basin.

Figure 5: Major Asian Highways (AH) traversing Tajikistan (from University of Central Asia, 2012).

Recommendations for the pilot site and next steps:

It is recommended to install an early warning system responding to the threat from Saidoi Nasafi (Baralmos) Glacier in the Surkhob Basin, to protect the important downstream infrastructure and local communities. The early warning system will allow to alert road users and thereby prevent loss of life, and warn villages in advance of an impending threat, such to avoid human causalities, and reduce impacts on livelihoods.

In support of the Early Warning System, low-cost and other complimentary adaptation measures are planned, including demarcation of safe zones along the transportation corridor, evacuation planning and community awareness raising, through to engineering efforts to divert the worse outburst flood events away from harm's way.

The necessary community consultations and relevant procedures have conducted in communities included in the new proposed site in order to ensure compliance with the Environmental and Social Policy of the Adaptation Fund. Furthermore, all activities conducted at the site will be covered by the Environmental and Social Monitoring Plan as described in the Funding Proposal.

Information sources:

Shokhboz Asadov, (2012): Tajikistan's Transit Corridors and their Potential for Developing Regional Trade, University of Central Asia Report, Institute of Public Policy and Administration, Working Paper no.6. https://www.ucentralasia.org/media/vd0ffas1/uca-ippa-wp-6-tajikistan-transit-coridor-eng-1.pdf

ADAPTATION FUND

unesco

Government of the Republic of Tajikistan
Committee for Environmental Protection
Agency for Hydrometeorology

COMMUNITY CONSULTATION REPORT

FOR A NEW PILOT AREA
WITHIN THE FRAMEWORK OF THE PROJECT "REDUCING VULNERABILITIES OF POPULATIONS IN THE CENTRAL ASIA REGION FROM GLACIER LAKE OUTBURST FLOODS IN A CHANGING CLIMATE" (GLOFCA).

Dushanbe – 2024

Agency for Hydrometeorology

Contents

Background

On October 15-16, 2024 within the framework of the project "Reducing vulnerabilities of populations in the Central Asia region from glacier lake outburst floods in a changing climate" (GLOFCA), meetings and surveys of communities were held in the Lakhsh district, Districts of Republican Subordination (DRS) of the Republic of Tajikistan in order to determine the state of danger of glacial lakes on the Baralmos glacier.

Consultation meeting with the population, community members and other stakeholders was carried out in coordination between the Agency for Hydrometeorology of the Committee on Environmental Protection under the Government of the Republic of Tajikistan and the UNESCO Regional Office in Almaty.

The main objective of these consultations was to assess specific locations in the GLOF high risk zone and to identify areas at potential risk of glacial lake outburst. Considering this, it was also analyzed how the community would act knowing the current hazardous situation and their awareness of the state of the mountains surrounding their villages. The results of all this work will serve as a basis for the modification of the pilot project area in Tajikistan.

Community consultation was held by the specialists from the Agency for Hydrometeorology of the Committee for Environmental Protection under the Government of the Republic of Tajikistan in the villages of Dashti Murghon, Obshoron and Duaghba for the newly proposed pilot site. The following responsible team members from Agency of Hydrometeorology were involved in the process:

1. Mr. Nazirzoda Kamolidini - Deputy Head of the Glaciology Center of the Agency for Hydrometeorology;
2. Mr. Khodjiev Abdusamad - Head of Glaciers, Snow and Avalanches Research Department, Glaciology Center of the Hydrometeorology Agency;
3. Ms. Safaralizoda Omina - Specialist of Forecasting Department, Information and Archives, Glaciology Center, Hydrometeorology Agency;
4. Mr. Irgashev Jamshed - Expert of the Hydrometeorology Agency on coordination of organization of events in cities and regions of the country.

Initially, it was planned to hold consultation meetings in three villages, however given the weather conditions, consultations were held in two villages: the village of Dashti Murghon and the village of Duaghba. Due to heavy rains, it became impossible to get to the village of Obshoron.

The consultations involved a wide range of stakeholders, including men, women, youth, older people, representatives from the Lakhsh Local Administration and the Lakhsh District Emergency Department. The total number of participants during the community consultation were **68 people (33 male/35 female)**.

The information gathered during the consultations will be considered important for advancing current or developing future projects on climate change topics and, in particular, the impacts of glacial lake outburst floods.

Methodology

Focus group discussions (FGDs) were chosen as the best method to obtain information from the community about the GLOF situation in their area, as this approach allows for a deeper understanding of local issues and experiences, and facilitates a more open exchange of views and ideas among participants. To ensure an affective and impactful communication the consultations were held in Tajik language and all the survey forms were prepared in local language. Moreover, men and women were divided into two focus groups to increase the effectiveness of the discussions. This approach allowed each participant to freely express their opinions and ideas and to focus on specific issues related to community safety and sustainability.

Consultation process

The first meeting was held with the Deputy Head of Lakhsh district administration, Mr. Jabborzoda Mukim Amon on October 15 from 09:00 to 10:00, where the mission agenda and planned activities were agreed (***Annex 1*** – *Agenda - Community Consultations*).

Meeting with the representative of the Lakhsh district administration

Discussion of the main tasks of the pilot project

During the conversation, detailed information about the objectives and main components of the GLOFCA project was presented. The discussion highlighted that the main objective of the project is to reduce the risk of glacial lake outbursts in the face of climate change. The project includes several key components such as monitoring of lakes and establishing an early warning system, strengthening infrastructure to prevent outbursts, and improving preparedness of local authorities and vulnerable communities.

In addition, the project has planned activities aimed at conducting training programs for the population, developing evacuation plans and cooperating with international organizations to attract technical and financial assistance.

Identification of needs and proposals of the authorities

During the conversation, Mr. Jabborzoda Mukim Amon, representative of the district administration, provided information on glacial lake emergencies occurring in the region. It was also noted that glacial mudslides from the Baralmos Glacier and other glaciers, pose a serious natural threat to the local population and infrastructure. In the proposed pilot area, eight glacial mudslides have been recorded in the last three years, causing significant economic damage. These natural disasters destroy infrastructure, agricultural land, power lines and most importantly the Dushanbe-Lakhsh-Osh highway (250 to 257km), resulting in large financial losses for the region and threatening the lives and livelihoods of the local population.

Meeting with the Head of Emergency Situations Department of Lakhsh District

Despite the district's high exposure to disaster risks associated with glacial lake outbursts, the district administration does not have any programs or targeted funding to prevent glacial mudflow risks. This poses serious threats to the safety of the local population and infrastructure and highlights the need to develop and implement effective risk management or adaptation strategies to minimize potential impacts.

Analysis of legal and organizational aspects of the project

Legal and organizational aspects of the project were also discussed during the meeting. The representative of the district administration noted that, taking into account national interests, they are fully prepared to implement the project in the region and to implement the planned activities. This includes both coordination of all necessary legal documents and organization of interaction with local communities and other stakeholders to ensure successful implementation of the project objectives and its sustainable development.

Meeting with the Head of Emergency Situations Department of Lakhsh District

The second meeting was held from 10:30 to 11:30 with the Head of Emergency Situations Department of Lakhsh district Mr. Zainiddinov Farrukh during which the experience related to glacial mudflows in the region was discussed.

Experience with the occurrence of mudflows in the region shows that this phenomenon is becoming more frequent and threatening to the local population and infrastructure. Over the past few years, there have been several cases where heavy rainfall and glacial melt have resulted in mudslides, causing significant damage to agriculture, roads and residential structures.

Local authorities and emergency services are actively working on improving monitoring and early warning systems to inform the population about possible risks in a timely manner. An important part of the work is to conduct training activities for residents so that they know how to act in case of a threat.

Action plan and key steps in the action plan

The emergency action plan includes risk assessment, establishment of an early warning system, development of evacuation plans and community training, as well as strengthening infrastructure and coordination between different organizations. Monitoring and evaluation of the effectiveness of the measures taken are also important steps. All measures under the action plan are coordinated annually with the General Planning Headquarter of the Committee for Emergency Situations and Civil Defense (CoES) under the Government of Tajikistan to ensure coordination of efforts at all levels and to ensure that the measures taken are in line with current safety requirements and standards.

Identification of needs and proposals of government agencies

For more effective planning and implementation of disaster management measures, it is necessary to identify the needs and suggestions of government agencies includes analyzing the current challenges and problems faced by the agencies in the field of disaster risk management. The main requirement and suggestion of government agencies is to attract more financial resources to improve infrastructure, upgrade monitoring and early warning systems, as well as to conduct training programs for the public taking into account the GLOF issue in the district. (***Annex 2*** *- Questionnaire for the emergency situation representative of Lakhsh district*).

Meeting with Communities

Community Consultation in Dashti Murghon village

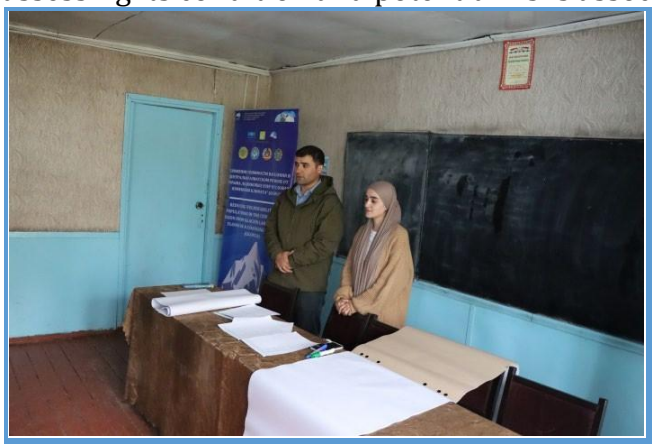
According to the plan, on October 15, 2024, after the meeting with representatives of the government authorities, a meeting with the population was organized in Dashti Murghon village of Surkhob jamoat (sub-district) of Lakhsh district. The meeting was held in the school of the village with the participation of 40 people including 19 male, 21 female and youth *(**Annex 3** – List of participants in Dashti Murghon village).* Men and women were divided into two focus groups to increase the effectiveness of the discussions. This approach

allowed each participant to freely express their opinions and ideas and to focus on specific issues related to community safety and sustainability.

According to the agenda in both focus groups, the Facilitator made a welcoming speech. In his speech he welcomed the participants on behalf of the Agency for Hydrometeorology of the Committee for Environmental Protection under the Government of Tajikistan and UNESCO-Adaptation Fund GLOFCA project and briefly explained the purpose of the community consultation and outlined the current situation. After that, in the men's group moderated by Mr. Khodjiev A. and in the women's group moderated by Ms. Safaralizoda O. briefly explained the situation of climate change and GLOF in the mountain villages of Surkhob jamoat and its impact on the communities in case of breaching. Both moderators asked the questions based on the questionnaire prepared in Tajik language (***Annex 4*** - *Tajik version of focus group questions*).

It should be noted that the detailed information led to good discussions among the participants in both groups. A representative of Emergency Situation Department also participated in the meeting and contributed to better sensitization on natural disasters in the district.

During the meeting, brief information was also provided on the result of monitoring of the surface of Baralmos Glacier presented by the Glacier Research Center of the National Academy of Sciences of Tajikistan. The monitoring result showed that the glacier is unstable. The presence of glacial lakes also indicates its active changes. These lakes can have a significant impact on the dynamics of the glacier and represent an important factor for assessing its condition and potential risks associated with climate change.



The result of the consultation works show that there is an increase from the upper two tributaries of the glacier, and their flow is directed towards the tongue part of the glacier. By 2019, the tributaries unite in the main trunk of the glacier and continue moving towards its lingual part, which indicates active processes of glacier dynamics and changes in its structure. As a result of active dynamics, dozens of glacial lakes were formed on the glacier body and their outbursts formed repeated debris flows.

After presenting the situation of floods caused by climate change, the groups presented their opinions based on the questionnaire. Based on the questionnaires, it is clear that the main problems in rural areas are related precisely to climatic conditions, and in certain seasons of the year this creates difficulties for the life and economy of the population. Questionnaire with the provided answers in Dashti Murghon village is available below.

№	Questions	Answers
Group 1 – Male – Dashti Murghon Village		
1	Can you name a significant climate event/emergency that has occurred in your community? Weather events? Floods? When did they occur?	In the summer season, the warming climate, melting glaciers, the coming of floods, destruction of roads, electrical wires and the village becomes dangerous as a result of the warming climate, melting glaciers, the coming of floods.
2	How did these events affect your community (town/village)? What kind of damage was caused?	These events damaged canals, people were unable to plant crops on time, roads were closed.
3	What climate events do you think are likely to happen in the future? Why?	Floods are expected due to excessive rainfall or warming weather.
4	How do you get information about flooding and other hazardous situations?	From television and from CoES notifications.
5	Do people in your community (city/town) help each other after floods or other natural disasters? Can you give examples of this?	As a result of natural disasters, we need help from road builders to open roads.
6	Who do you think is responsible for rebuilding the community after a flood or other natural disaster?	The local government should take action to address these disasters.
7	In your opinion, how many homes and other buildings in the community are at risk of flooding? Is there a school, medical facility, or sidewalk that could be flooded?	Homes, schools, medical centers, and other important public facilities are far from the floods.
8	Do you know if there are hazard maps for your community?	Yes. The Emergency Committee meets with us in May and June regarding these natural disasters and provides us with a map of the risk of glacial avalanches and their impact on our village.

Agency for Hydrometeorology

№	Question	Answer
Group 2 – Male – Dashti Murghon Village		
1	What measures have you taken to protect your home and/or family from flooding?	Building plows, cleaning roads, building patches, planting trees on hills.
2	If you had 100,000 dollars (1,067,445.00 TJS) to increase your safety from floods, how would you spend it?	Construction of bridges over large flood pipes, planting of various trees in bushes, strengthening of dams.
3	Would you say that floods and other extreme weather events affect women and men differently? How would you say	Leaving home affects men's and women's mental and emotional well-being, especially those with mental illness. Men may experience increased stress, anxiety and feelings of social isolation as men are less likely to seek support and express emotions openly.
4	To what extent do you think women participate in local government? In public meetings?	Women of the village are actively participating in local meetings and management of local affairs.
5	How much/what do you know about climate change?	Climate change results in warmer weather and floods that inundate and wash away cultivated land.
6	What factors do you think are contributing to climate change?	Deforestation and soil erosion, which reduce the forest's ability to absorb CO_2, are reducing the forest cover in our region, as the glacial floods that occur every year reduce the forest cover in our village year after year. these are the main factors that contribute to climate change.
7	What do you think are the effects of climate change?	Rising global temperatures are melting glaciers, rising sea levels and increasing natural disasters such as landslides, avalanches and melting glacial mudslides.
8	Can you say that climate change is a very serious problem or a minor problem?	Climate change is a very serious issue as it is already having serious impacts on ecosystems, economies and human health, as well as threatening future generations. Especially in our village, the growing season and harvest season have changed due to climate change.
9	Do you think climate change is happening now or is it affecting you personally?	Climate change is already happening and its effects in the form of flooding are affecting our community. We think the affect may be rising food prices, changing weather patterns and the onset of glacial floods that have destroyed our road that connects us to other regions.
10	What measures have you taken to protect your home and/or family from flooding?	To protect the home and family from flooding, we should take measures such as storing valuables in airtight containers and developing an emergency evacuation plan that you can check with CoES.

№	Question	Answer
Group 1 – Female – Dashti Murghon Village		
1	Can you name a significant climate event/emergency that has occurred in your community? Weather events? Floods? When did they occur?	In August, due to unfavorable weather conditions, glaciers melted in some villages causing material damage to people. e.g. damage to highways, damage to overpasses, breakage of electric cables, depending on the causes of the listed events, the population suffers.
2	What climate events do you think may happen in the future? Why?	Due to heavy snowfall at least 3.4 meters of snow has fallen, and our people cannot solve their problems due to floods, landslides, damaged roads. In our opinion, there is a serious danger ahead of us with heavy snowfall, rainfall and rising lake water.
3	What climate events do you think might happen in the future? Why?	In the future we are afraid that there will be a lot of snow and avalanches. Because of heavy rains we are threatened with all kinds of accidents. Cattle deaths, shortage of fodder, etc.
4	How do you get information about floods and other dangerous situations?	We are informed by telephone, television and radio. CoES workers also provide the information.
5	Do people in your community (city/town) help each other after floods or other disasters? Can you give examples of this?	The villagers help each other. They clean each other's houses after a flood.
№	**Question**	**Answer**
Group 2 – Female – Dashti Murghon Village		
1	What measures have you taken to protect your home and/or family from flooding?	Planting trees near the yard. Cleaning the gutters that run past our yard and house. Floods and natural disasters, successive rainstorms, are more common during the spring season.
2	Can you say that floods and other extreme weather events affect women and men differently? How would you say	It has a negative effect. Floods have a serious effect on land, roads, wheat and potato crops, houses and all living things.
3	How much/what do you know about climate change?	Factors of climate change are the increase in industrial plants, decrease in forested areas, increase in the number of vehicles. Climate change is currently having a negative impact on us. Warming wind and weather has had a negative impact on the farmer.
4	How much/what do you know about climate change?	Floods, avalanches, snow and rain, thunder and lightning are all considered climate change.
5	What do you think are the consequences of climate change?	The effects of climate change are heavy rains, flooding, damage to many people and homes.

Community Consultation in Duaghba village

After Dashti Murghon village, the next community meeting was organized in Duaghba village of Surkhob jamoat of Lakhsh district on October 16, 2024. The meeting was also held in the school of the village with 14 male and 14 female (***Annex 4*** - *List of participants in Duaghba village*). Men and women were divided into two focus groups to make the discussions more effective. As in the first village at the beginning Facilitator welcomed all participants on behalf of the Agency for Hydrometeorology and UNESCO gave a brief overview of the purpose of conducting this survey within the GLOFCA project.

Then in the men's group Mr. Khodjiev A. and in the women's group Ms. Safaralizoda O. briefly explained the situation of climate change and GLOF in the mountain villages of Surkhob jamoat and its impact on communities in case of a breakthrough.

To clarify the situation on the issues at hand, the groups were also provided with details on the status of Baralmos Glacier and its lakes, which led to good discussions among the participants in both groups. After presenting the situation of climate change induced flooding, the groups presented their views based on a questionnaire. It is clear from the questionnaire that the problem of debris flows, especially of glacial origin, is widely known in the village, which made the discussions more productive.

Focus group discussion in Duaghba

Agency for Hydrometeorology

Questionnaire with the provided answers in Duaghba village

№	*Question*	Answer
	Group 1 – Male – Duaghba Village	
1	Can you name a significant climate event/emergency that has occurred in your community? Weather events? Floods? When did they occur?	During the summer season, the village becomes dangerous due to the warming climate, melting glaciers, flooding, destruction of roads and electrical wires.
2	How did these events affect your community (town/village)? What kind of damage was caused?	As a result of these events, canals were damaged, the population was unable to plant crops on time, and roads were closed.
3	What climate events do you think are likely to happen in the future? Why?	Floods are expected due to excessive rainfall or warming weather.
4	How do you get information about flooding and other hazardous situations?	As a result of non-compliance with the environmental situation, exhaust gases, including; landfills, factories and enterprises.
5	Do people in your community (city/town) help each other after floods or other natural disasters? Can you give examples of this?	As a result of natural disasters, we need help from road builders to open roads.
6	Who do you think is responsible for rebuilding the community after a flood or other natural disaster?	Local government must take action to address these disasters.
7	In your opinion, how many homes and other buildings in the community are at risk of flooding? Is there a school, medical facility, or sidewalk that could be flooded?	The village we live in is under threat of natural disaster.
8	Do you know if there are hazard maps for your community?	The Emergency Situations Committee holds meetings for us in May and June about these disasters.
№	**Questions**	**Answers**
1	What measures have you taken to protect your home and/or family from flooding?	Building plows, clearing roads, building patches, planting trees on hills.
2	If you had 100,000 dollars (1,067,445.00 TJS) to increase your safety from floods, how would you spend it?	Building bridges over large flood pipes, planting various trees in bushes, strengthening dams.
3	Would you say that floods and other extreme weather events affect women and men differently?	Influencing the mental and emotional state of women leaving their place of residence, suffering from any mental illness.
4	To what extent do you think women participate in local government? In public meetings?	Actively participating in local meetings and managing local affairs.
5	How much/what do you know about climate change?	Climate change is the warming of the Earth due to harmful gas emissions, deforestation and pollution. It leads to melting ice, rising sea levels and extreme weather that threatens people, animals and nature.
6	What factors do you think are contributing to climate change?	Climate change is happening because of harmful gas emissions from burning coal, oil and gas,

		deforestation and air pollution from cars and factories.
7	What do you think are the effects of climate change?	Climate change is causing the Earth to warm, ice to melt and sea levels to rise. All of this damages nature, destroys homes and infrastructure, and makes life more difficult for people, threatening food and health.
8	Can you say that climate change is a very serious problem or a minor problem?	Climate change is a big problem because it affects us all. It destroys nature, threatens human and animal life, and creates problems in the economy and society.
9	Do you think climate change is happening now or is it affecting you personally?	Climate change is already happening, and it affects all of us. We see it in the form of hot years, heavy rainfall, floods and droughts. These changes can affect our health, food and daily life.
10	What measures have you taken to protect your home and/or family from flooding?	It exists and has an effect: the road is blocked, it causes damage

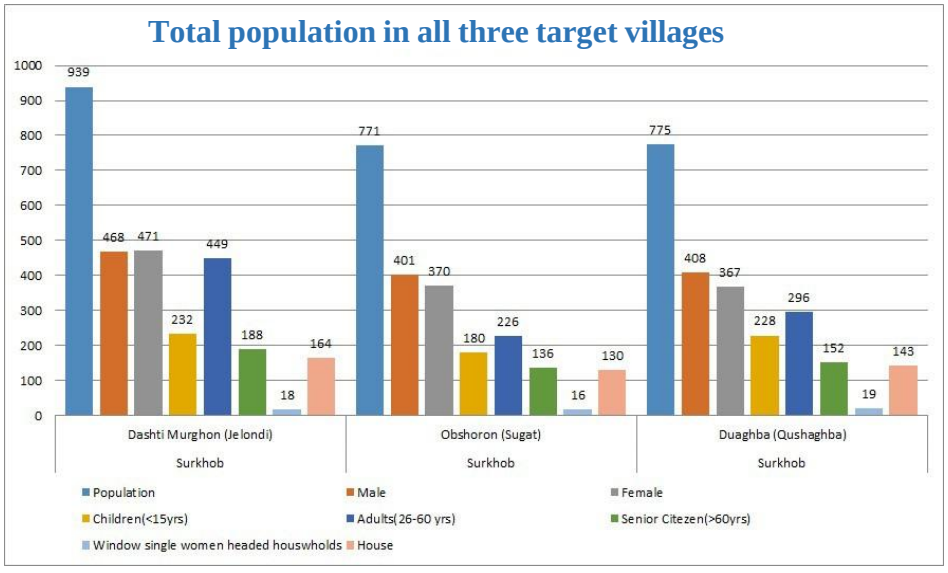
№	Questions	Answers
Group 1 – Female – Duaghba Village		
1	Can you name a significant climate event/emergency that has occurred in your community? Weather events? Floods? When did they occur?	In 1998, at 7 o'clock in the morning, a major flood occurred in the village of Duaghba, which washed away the house of one household and caused great damage to all the houses of the residents.
2	How did these events affect your community (town/village)? What damage was caused?	These events for us are like a terrifying event that we fear every night when it rains. We think that this rain may cause flooding and damage our homes.
3	What climate events do you think may happen in the future? Why?	Severe hurricanes, floods, droughts and wildfires are likely to occur more frequently in the future. This is because the warming of the planet is causing more energy in the atmosphere, making such events more powerful and destructive.
4	How do you get information about floods and other dangerous situations?	We receive information about flooding and other dangerous situations through the news, apps on our phones, and from local authorities and emergency services who report such events and warn of possible threats.
5	Do people in your community (city/town) help each other after floods or other disasters? Can you give examples of this?	Yes, they have financial assistance from the village, the community, and the state. If a flood destroys a house, all the people come together and help each other.
6	Who do you think is responsible for rebuilding the community after a flood or other natural disaster?	Disaster recovery is the responsibility of local governments, state agencies, non-profit organizations, volunteers, and residents themselves to work together to rebuild the community.
№	**Questions**	**Answers**
Group 2 – Female – Duaghba Village		

1	What measures have you taken to protect your home and/or family from flooding?	To protect ourselves from natural disasters, we need to plant trees to protect our region from natural disasters.
2	To what extent do you think women participate in local government? In public meetings?	Our women are very active in all public affairs. For example, women work more than men in the educational institution. A woman also works in the health center. In today's society, women are more active than men.
3	How much/what do you know about climate change?	When the weather becomes cloudy, rainy, windy - this is climate change. Many people are also affected by lightning strikes. This happened in our neighborhood. Two or three people died because of lightning.
4	What do you think are the consequences of climate change?	The effects of climate change are as follows: for example, when the rains increased this year, it affected planting and harvesting. It has affected the sowing and harvesting period of crops.
5	What measures did you take to protect your home and/or family from flooding?	When there was a natural disaster in our village and the road flooded. It becomes an obstacle for us to travel to the center of the district and bring the sick to the center.

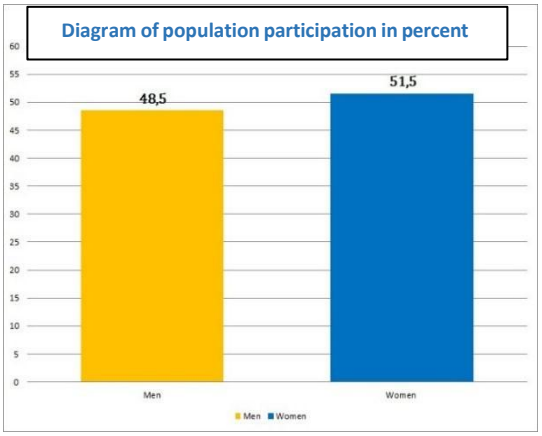
Outcome

Community consultation in the new proposed pilot area revealed that mainly three villages (Dashti Murghon – 939 pop., Obshoron – 771 pop., and Duaghba – 775 pop.) of Sukhrob sub-district of Lakhsh district with a total population of 2,485 in the Surkhob basin are vulnerable to glacier lake outburst floods (GLOFs) from Baralmos and Kyzylsu glaciers.

Occurred floods have repeatedly damaged the main transport corridor in the region, causing economic disruption and jeopardizing the connection of villages to their crops, animals, and health care service. Although houses and other social facilities in the affected villages are usually located at a safe elevation above the river level, in 2024 there was case when the floods destroyed several buildings.



Agency for Hydrometeorology



During the consultation works 74 people were involved, including 68 participants from focus group discussion, Government Representative – Mr. Jaborzoda Mukim Amon; CoES Department Representative – Mr. Zainiddinov Farrukh; Chairperson of District Women Committee – Ms. Tursunova Nigina; Representative of Surkhob Jamoat – Mr. Gaforov Azam Khursandovich; Deputy Chairman of Jamoat – Mr. Kululov Mazori; Military Officer of Jamoat – Mr. Jumaev Iskandar.

As was mentioned above according to the plan, another meeting was to be held with the population of Obshoron village, but due to continuous rains for several days, the road to the village became impassable and it became impossible to get there. Nevertheless, general information about the situation in this village and their exposure to possible risks was obtained during the conversation with the Chairman of Surkhob Jamoat – Mr. Gaforov Azam Khursandovich.

The survey showed that there is a lack of knowledge and resources among the population to deal with or mitigate the effects of glacial lake outburst failure (GLOF). Many local residents do not receive guidance on how to deal with such an emergency, which increases their vulnerability.

The lack of clear evacuation instructions or risk zone maps, inadequate early warning system, and lack of training programs for local communities all pose serious risks.

In addition, a lack of resources, such as specialized equipment, rapid response infrastructure and skilled personnel, greatly complicates the ability to prevent or minimize the impact of disasters in that area.

This requires a sophisticated program of community education (component 4 of GLOFCA project), improved warning and coordination systems (component 3), and the provision of financial and material resources to cope with the effects of such an economic crisis.

Verification process

1. **Which of the listed project outputs and activities would be most important to you?**
   a) Component 3 of the project is very important for the community to know where to evacuate in case of emergency and to have time to notify other villages about the situation.
   b) The community considers component 5 of the project as the third priority for easy access to and dissemination of information regarding GLOF Dashti Murghon village also suggest adding other lakes that are in the pilot area and have breakthrough risks so that people are better informed.

2. Are there activities that should be included but are not?

Agency for Hydrometeorology

a) Activities to identify all glacial lake outbursts in the area would be very good to include in the project (CoES representative);

b) Include a study for the construction of a new bridge for Obshoron village (Chairman of Surkhob Jamoat);

c) Include first aid training both theoretically and practically. This can help community members to provide good support during any emergency situations. Although such trainings are conducted every year by the CoES, but Duaghba village believes that this is not enough;

d) The project should create a village hazard map, indicating risk and safe zones.

3. Are there any activities that seem unnecessary to you?

All activities that the project includes are important and timely.

4. Is there anything else you would like to share?

a) In Duaghba village there was such a proposal that to carry out bank protection works along 250 km of the road "Dushanbe-Vahdat-Resht-Jirgatol-Saritosh".

Summary Table

Identify Risks					Flaws/ defects
Date	**Organization**	**Natural Hazards**	**Vulnerability**	**Early Warning System**	
15 – 16 October 2024	Agency for Hydrometeorology of the Committee on Environmental Protection under the Government of the Republic of Tajikistan Government of the Republic of Tajikistan Department of Emergency Situations and Civil Defense of Lakhsh District Executive Body of public authorities of Lakhsh district Community members representing the	In case of glacial floods, it destroys the road between villages and the main bridge of Obshoron village, 250 km of the road "Dushanbe-Vahdat-Resht-Jirgatol-Saritosh" (the road has already been partially destroyed), power lines for upstream villages (currently being rebuilt), the bridge leading to Dashti	-	The neighborhood does not have an early warning system in place. Residents will be informed of weather conditions and warnings from the appropriate and warnings from the relevant authorities of approaching floods.	No comments

	active group, youth members, women, elders etc.	Murghon village is almost destroyed due to the collapse of the Surkhob River banks during the mudflow. As well as land plots of residents of neighboring villages (many large cracks in the side walls of the transit zone of the mudflow channel were recorded).			

Annexes:

Annex 1 – Agenda – Community Consultations

Annex 2 - Questionnaire for the CoES representative of Lakhsh district.

Annex 3 – List of participants in Dashti Murghon village

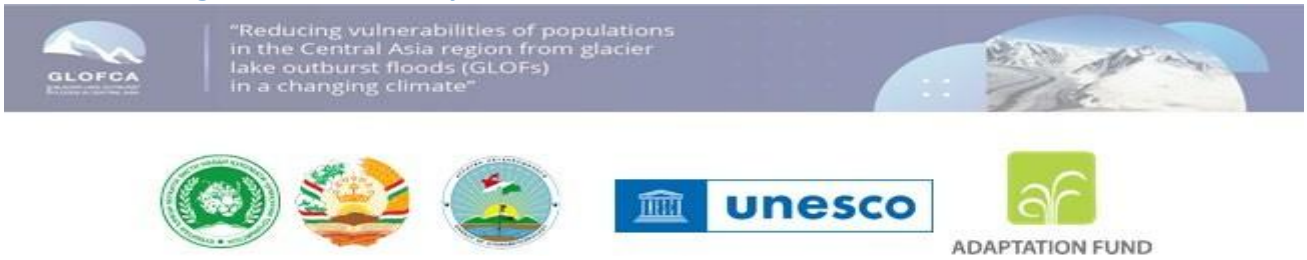
Annex 4 – List of participants in Duaghba village

Annex 5 - Tajik version of focus group questions

Annex 6 - Photo reports of the mudflow result

Agency for Hydrometeorology

Annex 1. Agenda – Community Consultation



Stakeholder consultation program

Date: 15 – 16 October 2024

Language of the event: Tajik and Russian

Date	***Description***
Date 1 (15/10/2024)	**Local Authority of Lakhsh District** **09:00-10:00 - Meeting with representatives of the state authorities of Lakhsh District** ➢ Discussion of the main objectives of the pilot project; ➢ Determination of the needs and proposals of the authorities; ➢ Analysis of the legal and organizational aspects of the project. **10:00-11:00 - Meeting with the staff of the emergency department of the Lakhsh district.** ➢ Experience related to the phenomenon of glacial flooding in the region; ➢ Action plan and key steps within the action plan; ➢ Identification of needs and proposals of government agencies.
	12:00-13:00 – Lunch

Agency for Hydrometeorology

	Location: Dashti Murghon village. Surkhob jamoat **13:30-14:30 – Meeting with community representatives.** ➢ Presentation of the project and its benefits for the village; ➢ Collection of ideas and proposals for the development of infrastructure and the socio-economic situation. **14:30-15:30 - Involvement of villagers (women, youth) in the discussion.** ➢ Organization of a round table for the exchange of opinions; ➢ Special needs and problems of these groups; ➢ Assessment of the needs of rural areas for the coming years. **16:00 – 17:00 – continuation of the discussion.** ➢ Discussion of participation in the project and possible initiatives to support women and youth; ➢ Formation of a list of priority tasks.
	17:00 - 17:30 - Summary of all proposals and presentation of the result.
Day 2 (16.10.2024)	**Location: Duaghba village** **09:00-11:00 – Meeting with community representatives.** ➢ Presentation of the project and its benefits for the village; ➢ Collection of ideas and proposals for the development of infrastructure and the socio-economic situation. **11:00 – 13:00 – Interview with women and youth representatives.** ➢ Organization of a round table to exchange views; ➢ Specific needs and problems of these groups; ➢ Assessment of rural needs for the coming years; ➢ Discussion of participation in the project and possible initiatives to support women and youth; ➢ Formulation of a list of priority tasks.
	13:00 - 14:00 – Lunch
	14:00 - 15:00 - A summary of all proposals and presentation of the result.

Agency for Hydrometeorology

Annex 2. Registration list of Community Consultation in Dashti Murghon villages, 15 Oct.2024.

UNESCO

ADAPTATION FUND

Чадвали иштирокчиён / Registration Form

Барои тадқиқот оид ба арзёбии осебпазирии ҷомеа аз тағйирёбии иқлим ва обхезии кӯли пиряхӣ (GLOF) дар деҳаҳои Дашти Мурғон, Дуағба ва Сунгат, ноҳияи Лахши Ҷумҳурии Тоҷикистон

Сана/Date: ____________________

№	Ному насаб/Name	Вазифа/Titel	Деха/Village	Телефон/Telephone	Имзо/Signature
1.	Яминова Хуронон	Хонашин	Дашти Мурғон	931-31-40-36	хуронон.
2.	Шодмирзоева Х.	Хонашин	Дашти Мурғон		[illegible]
3.	Давлатмирова М	Фаррош	Дашти Мурғон		[illegible]
4.	Лолаева З.	Фаррош	Дашти Мурғон.	907-32-48-41	[illegible]
5.	Алданазаров Х	Фаррош	Дашти Мурғон		[illegible]
6.	Рагабова Д	Хонашин	Дашти Мурғон		[illegible]
7.	Хушакова И	Фаррош	Дашти Мурғон		[illegible]
8.	Султонова Г	Хонашин	Дашти Мурғон		[illegible]
9.	Махмадиева Ф	Хонашин	Дашти Мурғон	938-10-56-86	Фотима.
10.	Махмадиева Ш	Хонашин	Дашти Мурғон	931-41-52-42	шахноза
11.	Гадоева Мавлуда	Хонашин	Дашти Мурғон		[illegible]
12.	Самадова Азиза	Омузгор	Дашти Мурғон	908382329	[illegible]
13.	Каримова Х	хонанда	Дашти Мурғон		[illegible]
14.	Чумаева М	хонанда	Дашти Мурғон		[illegible]
15.	Зарафамохи Р	хонанда	Дашти Мурғон		[illegible]
16.	Абулова Ч	хонанда	Дашти Мурғон		[illegible]
17.	Пулатоева Б	хонанда	Дашти мурғон		[illegible]
18.	Нуралиева С	хонашин	Дашти мурғон	934-50-42-74	[illegible]
19.	Эмонова Хадича	хонашин	Дашти мурғон		[illegible]
20.	Махмадалиева М	хонашин	Дашти мурғон		[illegible]
21.	Саймуродова Т	хонашин	Дашти мурғон		[illegible]
22.					

Agency for Hydrometeorology

Чадвали иштирокчиён / Registration Form

Барои тадқиқот оид ба арзёбии осебпазирии ҷомеа аз тағйирёбии иқлим ва обхезии кӯли пиряхӣ (GLOF) дар деҳаҳои Дашти Мурғон, Дуағба ва Сунгат, ноҳияи Лахши Ҷумҳурии Тоҷикистон

Сана/Date: ____________________

№	Ному насаб/Name	Вазифа/Titel	Деҳа/Village	Телефон/Telephone	Имзо/Signature
1.	Чумаев Я	р/х/д	д.Д. мургон	901909007	[illegible]
2.	Тӯйчиев З	омузгор	д. Д. мургон	931202036	[illegible]
3.	Мохмадиев С	омузгор	д. Д. мургон	777-01-15-18	[illegible]
4.	Холов А	омузгор	д. Д. Мургон	008-44-64-43	[illegible]
5.	Аиданазаров З	Посбон м №36	д. Д. Мургон	935-28-51-17	[illegible]
6.	Қаюмов Дусмурод	р/х/д	д.Д. мургон	921-31-40-36	[illegible]
7.	Сидиков Насрло	р/х/д	д.Д. мургон	11111-43-18	[illegible]
8.	Бурхонов С	р/х/д	д.Д-мургон	935621597	[illegible]
9.	Имонқулов С	ронанда	Д. кушаи	907-01-05-04	[illegible]
10.	Имонқулов С	омузгор	д. Д-мургон	004-04-10-03	[illegible]
11.	Абдуваҳев С	р/х/д	д. Д. мургон	931 87 78 93	[illegible]
12.	Сафаров С.	р/х/д	д. Д. мургон	936.36.12.17.	
13.	Аиданазаров В	р(х)д	д. Д. мургон	931 07 99 56	[illegible]
14.	Умаров А	р(х)д	д. Д. мургон	933 39 25 71	
15.	Аиданазаров Х	р(х)д	д. Д. мургон	931 30 17 75	[illegible]
16.					

Чадвали иштирокчиён / Registration Form

Барои тадқиқот оид ба арзёбии осебпазирии ҷомеа аз тағйирёбии иқлим ва обхезии кӯли пиряхӣ (GLOF) дар деҳаҳои Дашти Мурғон, Дуағба ва Сунгат, ноҳияи Лахши Ҷумҳурии Тоҷикистон

Сана/Date: ____________________

№	Ному насаб/Name	Вазифа/Titel	Деҳа/Village	Телефон/Telephone	Имзо/Signature
1.	Чумаев И.	Р.(ноҳия)	д. Д. мургон	901-22-88-51	[illegible]
2.	Аиданазаров А.	р - хозаин	д. Д. Мургон	933 90 95 10	[illegible]
3.	Аиданазаров М	кор-Хоҷагидорӣ	д. Д. Мургон	001 33-17-72	[illegible]
4.	Сулаймонов Б	Омузгор	д. Д. Мургон	006 44 62 98	[illegible]
5.					

Agency for Hydrometeorology

Annex 3. Registration List of Community Consultation in Duagba village, 16 Oct. 2024

39.	Фазмиддиндуат	омӯзгор	Д дуағба	003 88 42 97	[signature]
40.	Ҳодиева М	омӯзгор	Д дуағба	004-11-46-70	[signature]
41.	Сайдалимова С	Хонанда	Д. дуағба	900-98-71-74	[signature]
42.	Нозиддинова З	хонанда	Д дуағба	907-78-29-85	[signature]
43.	Дилафариди М	хонанда	Д. дуағба	004-66-13-74	[signature]
44.	Кулова М.	кормандӣ ошхона	Д. Дуағба	00077 06 75	[signature]
45.	Зайниддинова П	омӯзгор	Д. Дуағба		[signature]
46.	Набиева М	хонанда	Д. Дуағба		[signature]
47.	Додарзонова Ф	Хонанда	Д. Дуағба		[signature]
48.	Назирова Д	хонанда	Д Дуағба		[signature]
49.	Лоиқова Ф	хонашин	Дуағба	006 55 95 51	[signature]
50.	Ҳусейнова Т	хонашин (Фаррош)	Дуағба	000-80-82-89	[signature]
51.	Ходиева Н	Фаррош	Дуағба	902-02-88-98	[signature]
52.	Сайдалиева М.	Мудири Бунёди С.	Дуағба	900-80-91-47	[signature]
53.					

...двали иштирокчиён барои тадқиқот оид ба арзёбии осебпазирии ҷомеа аз тағйирёбии иқлим ва обхезии кӯли пиряхӣ (GLOF) дар деҳаҳои Дашти Мурғон, Дуағба ва Сунгат, ноҳияи Лахши Ҷумҳурии Тоҷикистон

	Ному насаб	деҳа	телефон	Имзо
1.	Асалов. Назрхуҷа	Дуағба	900075635	[signature]
2.	Рамазони Орифхуҷа	д. Дуағба	903.00.16.93	[signature]
3.	Сайфалинов Хуҷамди	Дуағба	900 98 71 74	[signature]
4.	Нозидинов Олим	д Дуағба	907479081	[signature]
5.	Нуралиев Фойзали	Дуағба	900112005	[signature]
6.	Давлатмоев Фарҳод	Д дуағба	001227594	[signature]
7.	Абдурахмонов Парвиз	Дуағба	906729595	[signature]
8.	Асалов Пирмазмад	Дуағба	906 88 10 84	[signature]
9.	Биргизбеков Аминиддин	Дуағба	000224129	[signature]
10.	Баротов. Қаҳрамон	Д Дуағба	889007239	[signature]
11.	Каримов. Абдували	д. Дуағба	000668286	[signature]
12.	[illegible] Собир	д Дуағба	801312321	[signature]
13.	Лойков Ривожиддин	д-Дуағба	004-11-8278	[signature]
14.	Махмудов Соймурод	д Дуағба	553.336115	[signature]

Agency for Hydrometeorology

Annex 4: Questionnaire for the CoES representative of Lakhsh District

General Information:

- What position do you hold in your organization?
- What experience do you have in emergency management?

Risk Understanding:

- How well is your organization aware of the risks associated with glacial lake outbursts?
- What measures are in place to monitor glacial lake conditions in your region?

Plans and strategies:

- Does your organization have a developed glacial lake outburst contingency plan?
- What key steps are included in this plan (evacuation, prevention, response, etc.)?

Equipment and Resources:

- What equipment is used to monitor glacial lakes?
- Does your organization have sufficient resources for emergency response (equipment, people, finances)?

Coordination of actions:

- How is coordination between different organizations (EMERCOM, local authorities, scientific institutes) carried out in case of threat of glacial lake outburst?
- Are joint drills or exercises conducted to deal with such emergencies?

Consequence assessment:

- What consequences could a glacial lake outburst have for your region (flooding, destruction of infrastructure, etc.)?
- How is potential damage assessed before and after a breakout?

Previous experience:

- Have there been any glacial lake outbursts in your region? If so, how did your organization respond to them?
- What lessons have been learned from previous glacial lake emergencies?

Issues and Challenges:

- What are the main challenges your organization faces in preparing for glacial lake outburst emergencies?
- What changes would you suggest improving the response to such situations?

Additional questions:

- What additional measures, in your opinion, need to be taken to prevent and eliminate the consequences of glacial lake outbursts?

Agency for Hydrometeorology

Annex 5: Tajik version of focus group questions

№	Саволҳо	Ҷавобҳо
	Гурӯҳи якум	
1	Оё шумо метавонед як ҳодисаи муҳими иқлимӣ/фавқулоддаро, ки дар ҷомеаи шумо рух додааст, номбар кунед? Ҳодисаҳои обу ҳаво? Обхезиҳо? Онҳо кай рӯй доданд?	
2	Ин воқеаҳо ба ҷомеаи шумо (шаҳр/шаҳр) чӣ гуна таъсир расониданд? Чӣ гуна зарар расонида шуд?	
3	Ба фикри шумо кадом ҳодисаҳои иқлимӣ метавонанд дар оянда рӯй диҳанд? Чаро?	
4	Шумо дар бораи обхезӣ ва дигар ҳолатҳои хатарнок маълумотро чӣ гуна қабул мекунед?	
5	Оё одамон дар ҷамоати шумо (шаҳр/шаҳр) пас аз обхезӣ ё дигар офатҳои табиӣ ба ҳамдигар кӯмак мекунанд? Метавонед ба ин мисолҳо оваред?	
6	Ба фикри шумо, кӣ барои барқарорсозии ҷомеа пас аз обхезӣ ё дигар офатҳои табиӣ масъул аст?	
7	Ба назари Шумо, чанд ҳиссаи хонаҳо ва дигар биноҳо дар ҷомеа зери хатари обхезӣ қарор доранд?Оё мактаб, муассисаи тиббӣ ё роҳраве ҳаст, ки зери об монда метавонад?	
8	Оё шумо медонед, ки оё барои ҷомеаи шумо харитаҳои хатар вуҷуд доранд?	

Agency for Hydrometeorology

№	Саволҳо	Ҷавобҳо
Гурӯҳи дуюм		
1	Шумо барои аз обхезӣ муҳофизат кардани хона ва/ё оилаатон чӣ гуна чораҳо андешидаед?	
2	Агар шумо барои баланд бардоштани бехатарии обхезӣ 100 000 доллар (1067 445,00 сомонӣ) дошта бошед, онро чӣ гуна сарф мекардед?	
3	Метавонед бигӯед, ки аз обхезӣ ва дигар ҳодисаҳои шадиди обу ҳаво ба занҳо ва мардон гуногун таъсир мерасонанд? Чӣ хел?	
4	Ба фикри шумо, то чӣ андоза занон дар идоракунии маҳаллӣ иштирок мекунанд? Дар маҷлисҳои ҷамъиятӣ?	
5	Шумо дар бораи тағирёбии иқлим чӣ қадар/чиро медонед?	
6	Ба фикри шумо кадом омилҳо ба тағирёбии иқлим мусоидат мекунанд?	
7	Ба фикри шумо, оқибатҳои тағирёбии иқлим чӣ гунаанд?	
8	Оё шумо бигӯед, ки тағирёбии иқлим як мушкили хеле ҷиддӣ аст, мушкилоти ҷиддӣ ё мушкилоти хурд?	
9	Ба фикри шумо, тағирёбии иқлим айни замон аст ё шахсан ба шумо таъсир мерасонад?	
10	Шумо барои аз обхезӣ муҳофизат кардани хона ва/ё оилаатон чӣ гуна чораҳо андешидаед?	

Annex 6 - Photo reports of the mudflow result

Agency for Hydrometeorology

Reducing vulnerabilities of populations in the Central Asia region from glacier lake outburst floods in a changing climate (GLOFCA)

UNESCO-Adaptation Fund GLOFCA Project Steering Committee Meeting

1 April 2025, 15:00 – 16:30 Almaty time, Online, Zoom platform

Minutes

Participants:

1. Ms Elena Osipova, Chair, Programme Specialist/Head of Natural Sciences Unit, UNESCO Regional Office in Almaty
2. Ms Diana Aripkhanova, GLOFCA Project Manager, UNESCO Regional Office in Almaty
3. Ms Larissa Kogutenko, AF-GEF Project Coordinator for Kazakhstan, UNESCO Regional Office in Almaty (note taker)
4. Ms Aizhan Mamedaliyeva, Chief Specialist of Climate Policy Department, Ministry of Ecology and Natural Resources of the Republic of Kazakhstan
5. Mr Nursultan Kairbekov, Chief Specialist of Emergency Prevention Department, Ministry of Emergency Situations of the Republic of Kazakhstan
6. Mr Daurbek Sakyev, Director of the Hazards Monitoring and Forecasting Department of the Ministry of Emergency Situations of the Kyrgyz Republic
7. Mr Kamolidini Nazirzoda, Deputy of the Center for Glaciology, Agency for Hydrometeorology, Committee of Environmental Protection under the Government of the Republic of Tajikistan
8. Mr Jamshed Kamolzoda, Head of Population and Territories Protection Main Department, Committee for Emergency Situations and Civil Defense (CoES) under the Government of the Republic of Tajikistan
9. Ms Natalia Agaltseva, Head of the Climate Monitoring and International Projects Department, Uzbekistan Hydrometeorological Service Center (Uzhydromet) of the Republic of Uzbekistan
10. Mr Simon Allen, Senior Research Associate, University of Zurich

Agenda of the Meeting:

1. Overview of the GLOFCA project results for 2024
2. Overview of the GLOFCA project work plan for 2025
3. Discussion on a no-cost extension of the GLOFCA project
4. AOB (next PSC meeting, etc.)

Opening Session:

Ms Diana Aripkhanova, GLOFCA Project Manager, UNESCO Regional Office in Almaty, welcomed all attending members of the Project Steering Committee (PSC). The agenda was approved.

1. **Overview of GLOFCA project results for 2024:**

Following the agenda, Ms Aripkhanova began the presentation with an overview of the GLOFCA project results for 2024, placing particular emphasis on monitoring the indicators of the project's five components, which require discussion.

It was noted that most of the planned activities under **the first component** have been successfully implemented. The presentation showcased the target indicators. In particular, under the first point, the project exceeded its plan by engaging 64 authorities (instead of the planned 40), all of which consider themselves to be involved in the glacier lake mapping and monitoring process. However, the target for women's participation has not yet been met, with only 16 women involved instead of the planned 20. Additional consultations with the donor will be conducted regarding this indicator. Since the project is still ongoing, there remains an opportunity to achieve the target, particularly with the upcoming installation of the Early Warning System (EWS), which also includes monitoring functions. National coordinators will submit additional requests on this matter.

Additionally, it was noted that by the end of the project, the capacity of several institutions in climate risk reduction had been strengthened. The list of organizations engaged in the project includes all national partners.

Work under **the second component** is ongoing. As shown on the slide, by the end of the project, 8 communities (2 in each country) will have completed vulnerability assessments and exposure maps. In Kazakhstan, Kyrgyzstan, and Uzbekistan, these tasks have been fully completed. In Tajikistan, due to a change in the pilot area, only the vulnerability assessment has been completed so far, while the exposure map is yet to be finalized. Once the work is completed, the corresponding reports will be submitted.

The next indicator is that at least 8 communities will participate in the development of a risk reduction strategy. This process includes consultation activities and surveys aimed at raising awareness of hazards and identifying the local population's need for additional information. Based on this data, risk reduction strategies are being developed, so work in this area is ongoing. In Kazakhstan, Kyrgyzstan, and Uzbekistan, all necessary activities have already been completed. In Tajikistan, the system design still needs to be presented, and a risk reduction survey needs to be conducted.

Next, we have the indicator that at least 8 local or district development plans should include planning and response measures for flood risks from glacier lake outburst floods (GLOFs). Implementing this indicator within the limited timeframe of the project presents a challenging task. Therefore, as the first step, a Roadmap was developed in collaboration with the Tajik Hydromet, which includes the project's pilot areas. The presentation highlighted that while national plans and strategies are currently being developed in the participating countries

in this area, national coordinators must be informed to further advance this issue. The project team expressed

its readiness to support relevant initiatives. This concludes the review of the second component. For all items still in progress, national coordinators will submit the corresponding reports.

Work under **the third component** is also progressing actively. First point: 24 staff have received specialized training or participated actively in the development and implementation of the EWS. This number is expected to increase as work on the system continues, and additional training sessions for staff are planned.

In the future, national coordinators will send requests regarding the list of employees who were involved in developing the technical specifications and design of the EWS, as well as those who directly participated in the training sessions.

The next indicator has already been achieved: by the mid-point of the project, site-specific studies have been completed for each pilot community for the selected areas. This includes vulnerability assessments and risk analysis across all pilot territories of the project. Based on these studies, changes have been made to the list of pilot areas in some countries.

The situation under **the fourth component requires** improvement, as the EWS have not yet been installed. First indicator: At least 4 communities have an EWS in operation. Since one pilot area can cover several communities, we should be able to meet this indicator once all the EWS are installed.

Second indicator: This concerns complementary adaptation measures, which were previously discussed with all participants. These measures include engineering works such as the construction of dams, slope stabilization, creation of alternative roads, and other activities. Once these are implemented, the indicator will be met. Additionally, adaptation measures also include low-cost measures such as informational materials, banners, evacuation routes, and other actions. All of these measures must be developed for the pilot areas within the project. It is important to emphasize that complementary measures are not implemented in areas where the EWS are being installed. At present, discussions have been completed, and work is continuing in all countries.

The next indicator specifies that by the end of the project, at least 80% of people in the target communities will be aware of measures to adapt to climate change. During consultation meetings in the pilot areas, local residents have already been informed about the hazards, the project itself, and our plans. Once the EWS are installed, additional consultations and training EWS drills will be organized.

The final indicator concerns the development of a strategy for the maintenance and financing of the EWS systems for each participating country by the end of the project. These strategies will be prepared in collaboration with colleagues from the University of Zurich.

The fifth component refers to knowledge platform which is our website that hosts all materials and results of the project. The website is currently operational, and statistics show that over 100 people visit it annually. If you wish to share information about the project with your staff or expand the reach, we can provide QR codes and links to the website for distribution.

As shown, we have nearly completed everything under this component. The only remaining indicator is the development of at least 6 materials and quality products within the project. We have already developed a Best Practice Guide, visual materials about the EWS, as well as educational materials for schoolchildren and students.

Thus, this was an overview of the project indicators. As you can see, the most significant component is the fourth, which relates to the installation of the EWS. Once the installation is completed, many indicators will be automatically achieved.

2. Overview of the GLOFCA project work plan for 2025

The main task for this year is **the installation of the EWS for the pilot areas**. The design and technical specifications have been discussed with each country. For Kazakhstan, the final version of the design will be received in the coming days or next week, and the bid is planned to be launched in April. In Kyrgyzstan, the work is in its final stages, and discussions on the technical specifications are ongoing. Bids will be launched first for Kazakhstan and Uzbekistan, followed by tenders for Kyrgyzstan and Tajikistan. Separate tender procedures will be conducted for each country.

Additional information regarding timelines will be provided later. The procurement of equipment will begin immediately after the design and technical specifications are approved. The expected procurement timeline is 1-2 months, depending on equipment availability. The installation will be organized either by the supplier company or by national partners, according to the requests of the countries.

The next task is **the implementation of complementary and low-cost adaptation measures**, which will be carried out in parallel with the installation of the EWS. This includes the development of an action plan for pilot areas that are not covered by the EWS, as well as the completion of necessary engineering works. For example, in Kyrgyzstan, the construction of a dam is planned, and in Tajikistan, the construction of an alternative road. These activities must also be completed this year.

Additionally, after the installation of the EWS, it will be necessary to organize awareness-raising activities for local communities, conduct gender-sensitive training, and allow time for system testing.

Regarding timelines, based on discussions with partners, the following is planned:

- Design and detailed installation plans for the EWS: April-May
- Procurement of equipment (parallel to the design process): April-August
- EWS installation: 2-3 months, completion by September-October
- During this period, all complementary adaptation measures will also be implemented.
- After the installation is completed, awareness-raising activities for local communities and staff training will be conducted.

3. Discussion on a no-cost extension of the GLOFCA project

Ms Aripkhanova highlighted that all risks and potential delays must be taken into account, and a no-cost extension should be requested. In some countries, discussions and development of the design and technical specifications are still ongoing, including the change of the pilot area in Tajikistan. If this process takes an additional 2-3 months, all timelines, starting from equipment procurement and installation, will be delayed, which will affect the use of the field period. Moreover, risks related to the bid launch in collaboration with the headquarters must also be considered. Since the project is supposed to end in April 2026, there is only one remaining field season for procurement and installation of equipment. Therefore, it is proposed to extend the project by 12 months to account for possible delays and shortcomings in the system and complete all activities in 2026. Additionally, time will be required for the proper organization of activities after the installation of equipment. Furthermore, the budget for 2025 has not yet been received, which is another reason for requesting the extension.

In conclusion, readiness for questions and further discussion was expressed.

Questions and comments from participants:

Mr Daurbek Sakyev, Director of the Hazards Monitoring and Forecasting Department of the Ministry of Emergency Situations of the Kyrgyz Republic, pointed out that there is a risk of delays in the equipment procurement procedures in Kyrgyzstan. He also mentioned that active work is being done on the implementation of complementary measures. He clarified that the issues are related to the procurement of equipment and installation on-site.

Ms Aripkhanova clarified the bid procedure, which is launched in collaboration with the headquarters in Paris. Typically, this process takes more than a month to select a company. Therefore, for the selection of a company, 1-2 months are included in the plan. Based on preliminary discussions, companies have stated that the work will take from 30 to 60 days, depending on the availability of all necessary equipment. Additionally, the installation will vary by country depending on the selected contractors, so for all countries, a time frame of up to 60 days is expected.

Mr Sakyev confirmed the receipt of the latest concept for the EWS and mentioned that comments, including those related to financial plans and further alignment of the concept, would be sent soon. *He also confirmed support for the project extension.*

Ms Natalia Agaltseva, Head of the Climate Monitoring and International Projects Department, Uzbekistan Hydrometeorological Service Center (Uzhydromet) of the Republic of Uzbekistan, thanked for the provided information. Drawing on the existing experience with procurement and comprehensive integration into existing systems, she emphasized the importance of extending the project to ensure the sustainability of the system's operation. "*Previously, we thought that procurement was the key, but now we understand that it is much more important to ensure the ongoing stable operation of the system. Therefore, we fully support the proposal for an extension*," she noted. She also requested to consider the issue of training, which had already been forwarded.

Uzbekistan is showing great interest and has already begun work in the pilot areas, with the intention to expand it to younger staff, in line with previous discussions. She asked for these proposals to be taken into account.

Ms Aripkhanova, in turn, emphasized the importance of integrating the operational system into the existing systems and mentioned that within this project, there would be discussions about providing specialists from the organization to support this process. A request from the national coordinators will also be submitted. Further discussions on the training will take place in the near future.

Ms Aizhan Mamedaliyeva, Chief Specialist of Climate Policy Department, Ministry of Ecology and Natural Resources of the Republic of Kazakhstan, thanked for the opportunity to participate and expressed appreciation for the provided 2024 report. She highlighted the importance of the GLOFCA project for Kazakhstan and supported the work plan for the current year, which focuses on completing the installation of the system. *She also backed the proposal for an extension of the project to finalize all ongoing measures and ensure a more sustainable impact from their implementation*. Ms Mamedaliyeva expressed readiness for further cooperation.

Mr Nursultan Kairbekov, Chief Specialist of Emergency Prevention Department, Ministry of Emergency Situations of the Republic of Kazakhstan (MES RK), fully supported his colleagues and added that in mountainous areas, the situation can be unpredictable, making it crucial to properly install the system and conduct timely checks to ensure that data is transmitted accurately. *In this regard, MES RK also supported the proposal to extend the project to ensure the stable operation of the system*.

Ms Aripkhanova thanked the participants and emphasized the importance of providing the countries with a well-planned and high-quality system.

From Tajikistan, Mr Kamolidini Nazirzoda, Deputy of the Center for Glaciology, Agency for Hydrometeorology, Committee of Environmental Protection under the Government of the Republic of Tajikistan, expressed gratitude for the provided report and future plans. *He also supported the proposal to extend the project, considering possible risks and the need to fully accomplish a number of tasks in the current year.*

Representatives from all project countries supported the proposal for no-cost extension of the GLOFCA project for an additional 12 months.

Ms Aripkhanova thanked all the PSC members for their participation and concluded the meeting.

Chair _____ **Ms Elena Osipova,**
UNESCO Regional Office in Almaty

Annex 1. Agenda

Time (Almaty time)	Session
15:00-15:15	**Opening session** ***Chair:*** *Ms Elena Osipova, UNESCO Regional Office in Almaty*
	• **Welcoming remarks from the Chair** *(5 min)* • **Introduction of the participants** *(5 min)* • **Adoption of the meeting agenda** *(5 min)*
15:15-16:25	**Plenary discussions**
	• **Presentation of the project results for 2024** *(25 min)* • **Presentation of the project work plan for 2025** *(25 min)* • **Discussion of no-cost extension of the GLOFCA project** *(10 min)* • **AOB** (next PSC meeting, etc.) *(10 min)*
16:25-16:30	**Closing remarks from the Chair**

Reducing vulnerabilities of populations in the Central Asia region from glacier lake outburst floods in a changing climate (GLOFCA)

UNESCO-Adaptation Fund GLOFCA Project Steering Committee Meeting (Ad-hoc)

18 February 2025, 15:00 – 16:00 Almaty time, Online, Zoom platform

Minutes

Participants:

1. Ms Elena Osipova, Chair, Programme Specialist/Head of Natural Sciences Unit, UNESCO Regional Office in Almaty
2. Mr Nursultan Kairbekov, Chief Specialist of Emergency Prevention Department, Ministry of Emergency Situations of the Republic of Kazakhstan
3. Ms Gulnara Zhunushova, Chief of the Expert Works Department, the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic
4. Mr Daurbek Sakyev, Director of the Hazards Monitoring and Forecasting Department of the Ministry of Emergency Situations of the Kyrgyz Republic
5. Mr Orozbek Argynbay uulu, Chief Specialist, International Relations Department, the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic
6. Mr Kamolidini Nazirzoda, Deputy of the Center for Glaciology, Agency for Hydrometeorology, Committee of Environmental Protection under the Government of the Republic of Tajikistan
7. Mr Jamshed Kamolzoda, Head of Population and Territories Protection Main Department, Committee for Emergency Situations and Civil Defense (CoES) under the Government of the Republic of Tajikistan
8. Ms Natalia Agaltseva, Head of the Climate Monitoring and International Projects Department, Uzbekistan Hydrometeorological Service Center (Uzhydromet) of the Republic of Uzbekistan
9. Mr Simon Allen, Senior Research Associate, University of Zurich
10. Ms Diana Aripkhanova, Manager of the project on Reducing vulnerabilities of populations in the Central Asia region from glacier lake outburst floods in a changing climate (GLOFCA), UNESCO Regional Office in Almaty
11. Ms Dana Zhunissova, AF Project Finance and Administrative Assistant, UNESCO Regional Office in Almaty
12. Ms Khursheda Aknazarova, AF-GEF Project Coordinator for Tajikistan, UNESCO Regional Office in Almaty (note taker)

Agenda of the Meeting:

1. Presentation of the community consultation results and proposed new pilot area in Tajikistan
2. Plenary discussion
3. AOB (possible no-cost extension of the project, next PSC meeting, etc.)

Opening Session:

Ms Elena Osipova, UNESCO Regional Office in Almaty, delivered the welcome speech and opened the meeting, after which the attending members of the Project Steering Committee (PSC) introduced themselves. The agenda was approved.

Presentation:

According to the agenda the presentation was delivered by Mr Kamolidini Nazirzoda, Deputy of the Center for Glaciology, Agency for Hydrometeorology, Committee of Environmental Protection under the Government of the Republic of Tajikistan. To explain the possible replacement of the pilot area in Tajikistan, Mr. Kamoliddin Nazirzoda began his presentation with an overview of the expedition and assessment conducted by the Agency of Hydrometeorology jointly with the Aga Khan Agency for Habitat (AKAH) and the University of Zurich in the initial pilot area of Gund River Basin in Gorno Badakhshan Autonomous Oblast (GBAO) in 2023. During the fieldwork, bathymetric activities were conducted at the lower Varshez glacial lake. On the upper side of the lake, sensors were installed to assess the condition of the lake dam and measure the water level, however, for some reason, they did not function properly. The observation and assessment revealed that the dam has a stable rock foundation, and the water flows only from one side of the lake, potentially threatening one village. The analysis showed that the lake is considered moderately stable and can persist for a long time unless major impact factors occur, such as the collapse of large chunks of ice into the lake or significant damage to the dam during a large-scale earthquake. Mr Nazirzoda also pointed out that in the current valley of these glacial lakes, an early warning system, including water level sensors, has already been installed. For it to function fully, only the sensors and data transfer system need to be fixed.

Taking all these factors into account, and in consultation with specialists from the Committee for Emergency Situations and Civil Defense of Tajikistan (CoES) and the Academy of Sciences of Tajikistan, it was decided change the pilot site to a newly proposed site, which is located in the Surkhob River Basin in Lakhsh district, and the glacier is called Saidoi Nasafi, which used to be known as Baralmos Glacier.

The main reason for selecting this glacier is its instability, as more than 10 glacial lake breaches have occurred annually over the past five years. As a result of massive mudflows and debris, power lines have been destroyed, roads have been blocked, and large numbers of people from twenty villages have been cut off from the city.

Mr Nazirzoda informed that a team of four specialists from the Agency for Hydrometeorology was deployed to Lakhsh district to assess the condition of the lake, as well as the needs and priorities in this area. During a meeting with the Deputy Head of Lakhsh district and the Head of Lakhsh Emergency Department, it was found

out that the cases of glacier lake outbursts and other related disasters are becoming more frequent in the

district. Three villages are at direct risk, while approximately 20 villages in the upper zone are also exposed to potential danger.

During the field mission, the community consultations were conducted in two villages of Lakhsh district that are more vulnerable to the glacial lake outburst floods (GLOFs). Initially, consultation meetings were planned in three villages; however, due to weather conditions, they were held in only two: Dashti Murghon and Duaghba. Heavy rains made it impossible to reach the village of Obshoron. Focus group discussions in these two villages were organized separately for women and men, allowing for the collection of comprehensive information on potential risks, community knowledge about climate change and GLOFs, and the adaptation measures needed in their villages. In total, 74 residents participated in the consultations, including 68 in the focus group discussions and 6 representatives of the local authorities of Lakhsh district.

Three villages are located very close to the glacial lakes. However, during the last floods, all villages were isolated from the center for a considerable time because the road was destroyed. Based on the consultations, the total population vulnerable to the risk of glacial lake outburst floods is 20,090, with a total of 3,508 houses.

Mr Nazirzoda pointed out that since this glacier is a pulsating glacier and the occurrence of glacier-related events has become more frequent, specialists from the Glaciology Center of the Agency for Hydrometeorology conducted fieldwork in the Baralmos River Archakapa proglacial gorge, which separates two large villages and agricultural lands. Their goal was to identify erosion patterns and determine the rate at which sediment enters the channel during mudflow events.

According to RAMMS modeling, the main factor influencing debris flow is the channel through which it passes. To understand why the debris flow is so large and destructive, detailed studies were conducted in the transit zone.

During the mission, the team also focused on specific sections of the riverbed where active erosion processes were occurring. These sections were monitored using a drone, with imagery specifically capturing areas most susceptible to erosion caused by debris flows.

The observations revealed that the rocks of the area consist of gray limestones alternating with marls, gray clays, fine- and medium-grained cherry-red sandstones and siltstones. These rocks, which are not resistant to denudation (destruction), water, wind and frost erosion processes, which makes them the main reason for the passage of such a large volume of mudstone debris flows.

Additionally, aerial visual surveys using drones identified fracture furrows on both the left and right banks of the Archakapa watercourse. This indicates the potential collapse of significant rock volumes—ranging from hundreds to even thousands of square meters—due to the formation of cracks. Such collapses could drastically alter the river basin's topography, leading to the deposition of large rock masses into the riverbed, potentially filling almost the entire river valley. This, in turn, could create conditions for the formation of powerful debris flows, particularly during periods of heavy precipitation.

During the works, the flooded area of the Surkhob River valley near the 250 km mark of the Dushanbe - Lakhsh - Sarytosh road, which connects Tajikistan and Kyrgyzstan, was also examined. The survey showed that as a result of a mudflow into the Surkhob River valley in July 2023, a temporary dam was formed, which led to an 11 m rise in the water level in the area of the temporary bridge. This resulted in the formation of a temporary reservoir with an area of about 420-430 m^2. After some time, the dam began to erode and the water level in the reservoir dropped to the river's edge.

All these facts have once again convinced all national experts of the correctness of choosing this site for the new territory within the GLOFCA project.

In conclusion of his presentation, Mr Nazirzoda shared several key recommendations from the local community and authorities of Lakhsh district proposed during the meetings and consultations. The first proposal was to develop hazard maps for the population and install road signs in the mudflow activity zone and on the highway near the bridge. The second proposal was to include both theoretical and practical first aid training for the local community, enabling them to provide effective support during emergencies. The third proposal, which aligned with the ideas of specialists from the Hydromet Agency and University of Zurich, was to improve the alternative sustainable local road network or construct a tunnel. This may be economically costly for the project, however developing and preparing an appropriate document to propose to the Ministry of Transportation for them to study would be very important.

After the presentation, Ms Osipova thanked Mr Nazirzoda and his colleagues for their efforts in conducting consultations and preparing the proposal for the new pilot area. She then gave the floor to the PSC members for questions and feedback.

Discussion:

Mr Jamshed Kamolzoda, Head of Population and Territories Protection Main Department, Committee for Emergency Situations and Civil Defence under the Government of the Republic of Tajikistan complemented the presentation and emphasized the importance of considering a new pilot area and proposed to install an early warning system in it, which is linked to the information and telecommunication system. As an example, he mentioned a similar system installed at Sarez Lake, which primarily focuses on monitoring the condition of the glacier. However, a glacier alert system for the community also requires the relevant information.

Ms Natalia Agaltseva, Head of the Climate Monitoring and International Projects Department, Uzbekistan Hydrometeorological Service Center (Uzhydromet) of the Republic of Uzbekistan thanked for detailed presentation and pointed out that the data and justifications are well prepared and presented, which lays a good basis and evidence for selection of a new pilot area. The addition from the colleague on early warning system with the specific focus on floods and mudslides is very essential since every year these natural disasters cause a very high damage both in Uzbekistan and in Tajikistan. In addition, Ms Agaltseva asked, given that the

project is set to be completed next year, what activities could realistically be carried out in the new pilot area within the remaining implementation period.

Ms Diana Aripkhanova, Manager of the project on Reducing vulnerabilities of populations in the Central Asia region from glacier lake outburst floods in a changing climate (GLOFCA), UNESCO Regional Office in Almaty, stated that Tajikistan has provided sufficient evidence to justify the selection of the new pilot area. After a joint analysis, it was agreed that a large number of local residents would be at risk if the project does not address this specific area. She emphasized that the project prioritizes local communities, as they are the primary beneficiaries. Therefore, the team will continue developing this initiative in collaboration with national partners in Tajikistan, ensuring that all necessary measures for the population are planned accordingly. Additionally, the project team is committed to completing all activities on time while simultaneously testing and monitoring their impact, including the functionality of the early warning system and community engagement efforts. Given this, the project is also considering requesting a no-cost extension to allow for continued implementation and assessment.

Mr Nursultan Kairbekov, Chief Specialist of Emergency Prevention Department, Ministry of Emergency Situations of the Republic of Kazakhstan, requested clarification on whether any preliminary work is currently being carried out or planned at this site to mitigate the risk.

Mr Kamolidini Nazirzoda informed that, in collaboration with the University of Zurich, a proposal was made to redirect the river channel to another basin, where only pastures exist and no population is at risk. Another proposal from the community suggested working with local residents on the artificial release of water from the lake. With the use of heavy equipment, it would be possible to release water from smaller lakes during a specific season of the year. Regarding artificial release, since there is no prior experience with this method, consultations with CoES Tajikistan will be necessary to coordinate the issue. Additionally, the expertise of Kazselezashita could be highly beneficial. However, this matter is planned to be thoroughly discussed with the relevant state agencies to prepare the necessary documents for government approval and to explore potential support from GLOFCA or other projects.

Mr Daurbek Sakyev, Director of the Hazards Monitoring and Forecasting Department of the Ministry of Emergency Situations of the Kyrgyz Republic, stated that, based on the presentation and evidence provided by Tajikistan, they fully support the change of the pilot area. Kyrgyzstan faced a similar situation last year, and they now fully understand and endorse Tajikistan's proposal based on the justifications provided.

Mr Nursultan Kairbekov confirmed that Kazselezashita is ready to provide support and share experience on artificial release for successful implementation of this approach.

Ms Elena Osipova supported the idea of joint cooperation between the countries within the project and beyond. She invited participants to share any questions or suggestions regarding the new territory. She stated that if all PSC members agree to approve the new pilot zone during the PSC meeting, the request will be submitted to the

Donor for further consideration and approval. Ms Osipova also noted that the project team will keep PSC members informed of any updates from the Donor and requested to proceed to the next topic and questions.

Representatives of all project participant countries approved the change of pilot areas in Tajikistan.

For the possible no-cost extension Mr Daurbek Sakyev requested clarification on whether it applies to all countries or only to specific ones.

Ms Diana Aripkhanova emphasized that the project's no-cost extension is currently under discussion. She assured that all activities will be completed according to the agreed schedule, and the extension will only be requested to ensure the proper completion and quality assessment of all events and activities. If approved by the Donor, the extension will apply to all countries. However, she stressed that each country should not rely on the extension, as all activities and indicators must be completed as scheduled.

Mr Daurbek Sakyev expressed his concern on extension of the project, taking into account the inflation worldwide. For instance, in Kyrgyzstan, the agreement with national partners took a significant amount of time, and therefore, contracts and activities need to be initiated as soon as possible. The rising costs of certain equipment could impact the overall project budget. Given this, he emphasized the importance of transitioning to the implementation stage without delay.

Ms Elena Osipova agreed with the concern and stated that all activities are planned to start as scheduled. In principle, the project will aim to maximize the completion and installation of all planned tasks this year while ensuring that all project indicators are met. While some countries are expected to finalize all activities within the timeline, others may require additional time for final quality checks. Therefore, the project extension is considered a last resort. She also emphasized that the project is taking all risks into account, including inflation, to prevent any negative impact on the project budget and activities.

Mr Daurbek Sakyev requested to inform about the date of the next meeting where they can discuss and get the information about the overall project progress.

Ms Diana Aripkhanova informed that the next meeting of PSC members will be held in April, according to the schedule. The date will be specified closer to the date of the event.

Ms Gulnara Zhunushova, Chief of the Expert Works Department, the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic requested clarification on the agreement regarding the second topic on the no-cost extension, as the PSC members had not yet reached a final decision.

Ms Elena Osipova supported the concern raised and proposed preparing a protocol with two separate items: one for the new pilot area and another for the possible project no-cost extension. She noted that the minutes would be shared with PSC members.

The PSC members were informed about the possible project no-cost extension. It will be discussed further at the formal PSC meeting.

Mr Kamolidini Nazirzoda invited all PSC members to participate in the upcoming two events dedicated for the International Conference on Glacier Preservation, scheduled to be held in Dushanbe on March 21 and May 29.

Ms Osipova thanked all the PSC members for the active participation and concluded the meeting.

Chair _____ **Ms Elena Osipova,**
UNESCO Regional Office in Almaty

Annex 1. Agenda

Time	Session
15:00-15:15	**Opening session** ***Chair:*** *Ms Elena Osipova, UNESCO Regional Office in Almaty*
	• **Welcoming remarks from the Chair** *(5 min)* • **Introduction of the participants** *(5 min)* • **Adoption of the meeting agenda** *(5 min)*
15:15-15:55	**New pilot area in Tajikistan**
	• **Presentation of the community consultation results and proposed new pilot area in Tajikistan** *(30 min)* • **Plenary discussion** (10 min) • **AOB** (next PSC meeting, etc.) *(10 min)*
15:55-16:00	**Closing remarks from the Chair**