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Regional co-operation strategy on climate change and security in Central Asia's high mountain areas

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REGIONAL CO-OPERATION STRATEGY

on climate change and security

in Central Asia's high mountain areas

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1. Introduction

Across Central Asia, climate change will cause temperatures to rise and future precipitation patterns to shift, reflecting a trend that has been underway for the past half century. The impacts of these developments are likely to mean more heatwaves and droughts, particularly in arid and semi-arid areas (IPCC 2022). Droughts, which normally occur at a rate of once in 100 years, are projected to become 4-10 times more frequent across the region. Furthermore, these shifts will lead to a decrease in both snow-covered areas and snow volume, adding to the already shrinking glacier mass and thawing permafrost (IPCC 2022).

Climate change impacts are likely to occur simultaneously and converge, overlapping with other drivers of instability, including social, political, economic, demographic, and security risks. For Central Asia, several climate-related security risks have been identified through a regional consultation process within the OSCE extra-budgetary project Strengthening responses to risks stemming from climate change in South-Eastern Europe, Eastern Europe, Central Asia and the South Caucasus. These include:

- Impacts on agriculture, a key economic sector supporting rural livelihoods, due to higher temperatures and less water;
- Impacts on energy supply systems from reduced or altered river flows, affecting hydropower;
- Health impacts from heat waves and droughts;
- Impacts on human mobility trends, with possible implications for host and departure communities;
- Increased demand for physical safety measures against landslides, mudflows, glacial lake outburst floods (GLOFs), and avalanches due to higher temperatures in the region; and
- Increased competition for natural resources.

Because of their diverse ecosystems, Central Asia's high mountains are critical to the well-being of communities throughout the region and beyond. High mountain areas hold important water resources for the entire region. Mountain areas in Kyrgyzstan and Tajikistan contribute about 30% and 40% of the region's water resources respectively. In other countries, such as Uzbekistan and Turkmenistan, water resources come almost exclusively from outside their territory, making them vulnerable to shortages, especially for downstream communities (University of Central Asia 2012). In addition, mountain areas

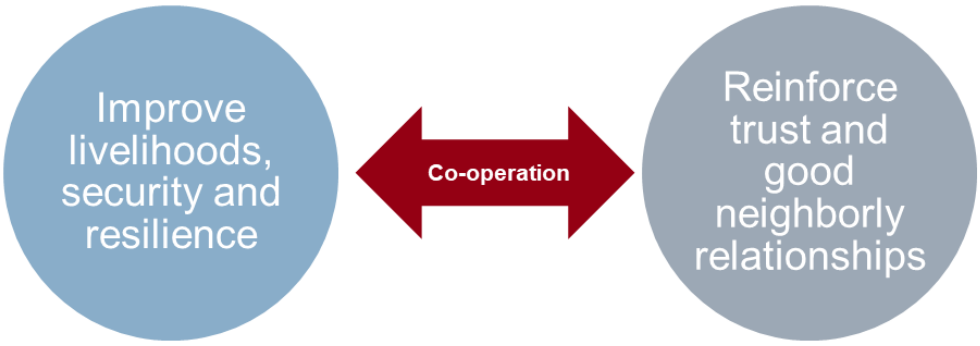
cover a significant proportion of the land area of some Central Asian countries - for example, about 90% of Kyrgyzstan and 93% of Tajikistan's land area is covered by mountains.

At the same time, Central Asia's high mountain regions already face significant climate-related security risks. This is due to a number of factors, including frequent disasters caused by natural hazards such as mudslides or earthquakes, visible effects of climate change (e.g., variability of rainfall and snowfall), high levels of poverty within mountain communities, and the presence of mining and waste disposal sites in some areas, as well as poor connectivity and scarce social infrastructure. These risks are compounded by projections of increased melting of glaciers and permafrost as a result of climate change, which could further disrupt hydrological cycles in mountain areas. This is likely to lead to increased water scarcity for both mountain and downstream communities, as well as an increased likelihood of natural hazards such as flooding (Mosello et al. 2023).

As a result, mountain communities face direct threats to their food, water and livelihood security, with knock-on effects on their health, wellbeing and safety. Many residents, including young people, have responded to these compounding threats by migrating away from mountain areas, mainly to cities or abroad (Novikov and Kelly 2017). Without sustainable planning and management, as well as investments to improve the absorptive capacity of urban areas and/or host communities, competition risks may increase.

Against this backdrop, countries in Central Asia have made significant efforts to address the challenges posed by climate change in mountainous areas by drawing attention to the issue on a global scale. For example, Tajikistan initiated a resolution to declare 2025 the "**International Year of Glacier Preservation**", which was adopted by the UN General Assembly (UNGA) in December 2022 and calls for raising awareness and improving international co-operation on glacier preservation; Kyrgyzstan led an initiative at the UNGA in 2022 to declare 2023-2027 the "**Five Year Action for the Development of Mountain Regions**". In addition, all countries in Central Asia are making efforts to improve climate resilience and minimize threats to human security. These unique initiatives can help foster co-operation in addressing these challenges and raise awareness of climate change impacts in the region. However, there is still room to strengthen and scale up regional and transboundary co-operation that considers the needs and priorities of high mountain communities and the most vulnerable groups within them, including women and youth. Co-operation activities should aim to improve livelihoods, security and resilience in the context of a changing climate. At the same time, such initiatives could also serve to strengthen trust and good neighborly relations in the region (see Figure 1).[1]

Figure 1: Purpose of co-operation addressing climate-related security risks.



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[1] For more information, see van Ackern et al. (2023).

1.1 Project background

This strategy presents a set of ideas for regional co-operation to jointly address climate-related security U L V N V L Q & H Q W U D O $ V L D ¶ V K L J K P R X Q W D L Q R X W S X responses to security risks from climate change in South-Eastern Europe, Eastern Europe, the South Caucasus and Central Asia ´, implemented by the Organization for Security and Co-operation in Europe (OSCE), in partnership with the Berlin-based think-tank adelphi.[2]

The project aims to:

1. Enhance the understanding of how climate-related security risks impact in South-Eastern Europe, South Caucasus, Central Asia, and Eastern Europe.
2. Increase co-operation among regional stakeholders to jointly address climate-related security risks.
3. Increase awareness and capacities for an integrated approach on climate change and security among main stakeholders.

1.2 Strategy and methodology

This strategy is the result of a regional consultation process on climate change and security in Central Asia involving government, academic and civil society representatives from Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. The regional consultation process, carried out under the above project, included the following activities:

1. The regional consultation process was launched by the regional workshop ´Regional Consultation Workshop on Climate Change and Security in Central Asia´ Z K L F K W R R N S O D F H I 13-14 July 2022 in Almaty, Kazakhstan. The workshop allowed participants to discuss and prioritize hotspots and co-operation topics, identified in the 2017 OSCE-led Environment and Security Initiative (1 9 6 (& V Climate Change and Security in Central Asia´ V H H) L J X U H 2). As a result, four climate and security hotspots for regional co-operation were prioritized: (1) high mountain areas, (2) densely populated areas (Ferghana valley), (3) Amu Darya River Basin, and (4) Central Asia breadbasket.
2. % D V H G R Q I X U W K H U F R Q V X O W D W L R Q V ³K L J K P R X Q W D L Q D U H D V operation for the next steps of the project.
3. The results R I W K H U H J L R Q D O F R Q V X O W D W L R Q S U R F H V V ´Regional Consultation on Climate Change and Security in Central Asia´ which was published in June 2023 (Mosello et al. 2023).
4. As a next step, the **workshop** ³Towards enhanced co-operation for addressing climate-related security risks in Central Asia´ was organized by the OSCE in partnership with adelphi from 20-21 June 2023 in Tashkent, Uzbekistan. The workshop brought together 71 representatives of government, academia, and civil society groups from Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, as well as representatives of the OSCE Field Operations in Central Asia and other regional and international organizations. During the workshop, the participants **prioritized topics for co-operation**, **identified and developed project concepts** for joint risk reduction measures in synergy with other local, regional and international initiatives, and **explored how to strengthen co-operation** among countries in Central Asia.[3]
5. The workshop identified four thematic areas as priorities for co-operation in high mountain areas, namely:

[2] For more information on the project, see: https://www.osce.org/node/521965.

[3] From this collection of ideas, the most promising were selected and further developed as possible pilot project concepts, outlined in this strategy.

a. Livelihoods in agriculture, livestock and forestry, including sustainable use of mountain resources;

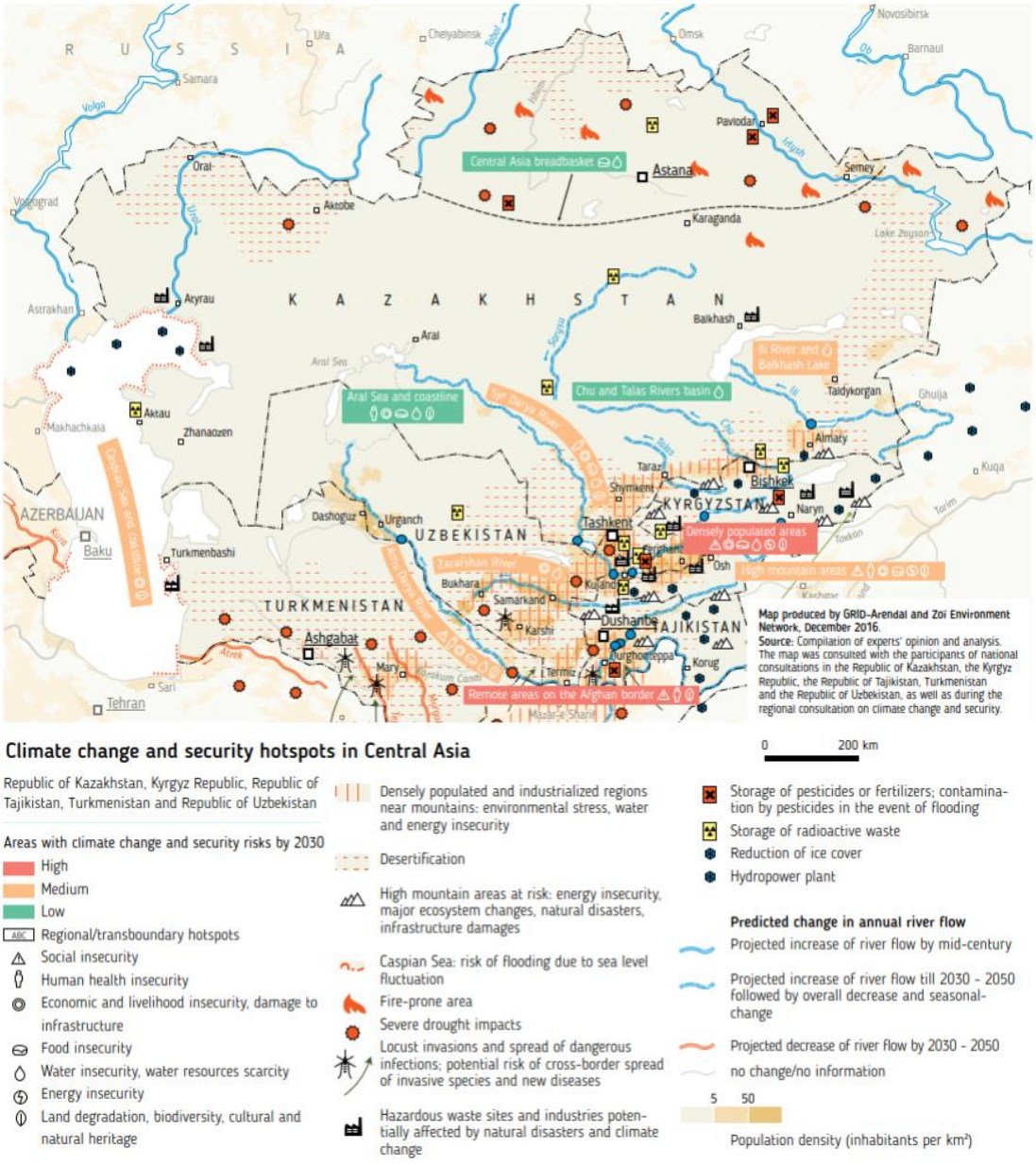
b. Migration: risks and opportunities;

c. Impact of glacial melting on natural resource management in highlands and lowlands;

d. Early warning and disaster risk management, including to address hazards arising from glacial melting.

6. In addition to the above-mentioned activities, the Strategy was also informed by a series of meetings and consultations with the National Project Focal Points for the above-mentioned project and OSCE Field Operations in Central Asia, as well as with thematic and regional experts, who were consulted to fill technical gaps that remained after the consultation process. These discussions took place throughout 2022 and 2023, and collectively played a key role in the formulation of the strategy and its validation. Further desk research was carried out to identify key actors, initiatives and activities taking place in the region.

Figure 2: Climate change and security hotspots in Central Asia identified in the 2017 OSCE-led ENVSEC study "Climate change and security in Central Asia".



1.3 Aim and content

The main objective of this regional co-operation strategy is to strengthen co-operation among the countries in Central Asia to address climate-related security risks in shared high mountain areas. The strategy has six main parts:

First, it presents possible **geographical areas for engagement** D F U R V V W K H U H J L R Q V ¶ P R X Q W D

Second, it outlines **priorities for co-operation** in the following areas:

- Livelihood insecurity in the agriculture, livestock and forestry sectors;
- Climate-induced mobility;
- Glacial melt and its impact on natural resource management;
- Early warning and disaster risk management.

Thirdly, it outlines ways to **strengthen co-operation between countries and other relevant stakeholders in high mountain areas of Central Asia**.

Fourth, it provides an **implementation plan** in the form of six initial joint project concepts involving stakeholders from all the high mountain areas of Central Asia. These will serve as a starting point for the development of more specific concrete actions and for the implementation of pilot activities.

Fifth, it presents **a list of key stakeholders** with a mandate and a role to play in fostering co-operative initiatives on climate security in high mountain areas of Central Asia.

Finally, it **provides an overview of recent and ongoing initiatives on high mountain areas** that could have synergies with the projects proposed in this strategy (Annex 1).

It is important to note that the project ideas presented in this strategy are intended as a collaborative blueprint, inviting the engagement and consideration of a wide range of organizations and partners, including those outside the OSCE. This approach underscores the importance of co-operative efforts and the pooling of resources and expertise to effectively address complex challenges. By setting out a framework that is inclusive and adaptable, these projects encourage other entities to participate, contribute and possibly lead initiatives that are in line with their own objectives and capacities. This strategy aims to facilitate co-operation between different stakeholders to share responsibilities and increase their impact through joint efforts.

2. Selection of geographical areas for engagement

In the regional consultation process on climate change and security in Central Asia undertaken to implement this strategy, high mountain areas were identified as a priority hotspot for co-operation (see Section 1.2). This project also considers challenges that arise outside high mountain areas but are related to them, such as water management, human mobility and disasters.

High mountain areas, as discussed here, include all mountain regions where glaciers, snow or permafrost are prominent features of the landscape, without a strict and quantitative demarcation, but with a focus on distinct regions (Hock et al. 2019). Table 1 provides a list of possible geographical areas of co-operation in the high mountains of Central Asia, including information on geographical location, areas of engagement and climate-related challenges.

Table 1: Possible geographical areas of engagement in Central Asia's high mountains, as identified by regional stakeholders at the OSCE workshop "Towards enhanced co-operation for addressing climate-related security risks in Central Asia", Tashkent, Uzbekistan, 20-21 June 2023.

Possible geographical areas of engagement	Location	Key challenges
Inner Tian Shan (southern part of Issyk Kul)	Kyrgyzstan	x GLOFs from Kumtor gold mine / reservoir tailing ponds; other forms of pollution affecting glaciers, such as excessive dust contamination; x Petrov Lake: poses outburst flood risk in Kyrgyzstan (as accelerated glacier retreat, in particular of the Petrov glacier, has increased the enlargement rate of the lake).
Chatkal and Kurama Mountains and Fergana Mountains bordering the Fergana Valley	Tajikistan, Kyrgyzstan, and Uzbekistan	x Mining / uranium waste in the mountains; x Overpopulation, low economic activity leading to high levels of migration; x Mudflow risks (due to high precipitation levels and glacier melting); x Earthquake-prone area (in particular the Jalalabad region in Kyrgyzstan); x Mining activities on Chatkal river leading to health and environmental impacts from mining waste.
Ala-Archa and Ak-Sai glaciers	Kyrgyzstan	x Glacial melting; x Mudflow risks (due to high precipitation levels and glacier melting); x Deforestation.
Zhetysu Alatau	Kazakhstan	x South-Eastern mountain ranges from which seven rivers emanate in different directions; x Increased rates of runoff formation during winter period between December and March and reduced rates in the summer period between July and September (due to significant and ongoing glacial reduction and retreat, and increased temperatures);

		x High risk of GLOF (due to high temperatures and glacier melting) which risk developed areas, particularly those in the valleys of Korgas, Osek, Aksu, and Sarkan rivers; x Elevated risk of GLOF-induced mudflows which can lead to damages in communities and infrastructure in impact area.
Ile Alatau	Kazakhstan	x Southern mountain range that is well-developed and densely populated; x Glacier reduction and retreat affects river flows which can lead to irrigation problems in valley areas; x GLOF-induced mudflows risk from increasing temperatures, rainfall precipitation at higher elevation, and increased glacial melting can lead to significant damage to communities and infrastructure, especially in the valleys of the Kaskelen, Big Almaty, Little Almaty, Talgar, and Yesik rivers.
Pakhtakor glacier	Uzbekistan	x Belongs to the Pskem River Basin, one of the main sources of water in Uzbekistan (Pskem river takes its water from the glacier, feeding Chirchik river, which is a major tributary of the Syr Darya).
Shovurkul (Shabyrkul) Lake	Uzbekistan (close to border with Kyrgyzstan)	x Highest mountain lake in Uzbekistan, created as a result of a stone collapse, which periodically floods nearby areas; there are mudflow risks from the lake outburst; x Considered at risk of dam failure.
Sarez Lake in Rushon and Bartan Districts of Gorno-Badakhshan Autonomous Oblast, Tajikistan	Tajikistan	x An earthquake in the past blocked the river; in 1911-1924 a dam was built. Another earthquake would pose a risk for the dam and nearby settlements.
Naryn River Basin	Kyrgyzstan, Uzbekistan, and Tajikistan	x The Naryn comes from the mountains and flows through several cities. Climate change will reduce water resources, impacting the availability of water resources for irrigation. This may lead to different perspectives on use of water resources in the Naryn River Basin; x Waste issues stemming from mining regions established during Soviet times should be addressed.
Amu Darya River Basin, including W K H . \ ] \ O V X ¶ 5 L Y H U 9 River Basin in Kyrgyzstan and Tajikistan, and the Panj River Basin in Uzbekistan	Tajikistan, Kyrgyzstan, Turkmenistan, and Uzbekistan	x Melting of Fedchenko glacier (and other glaciers in Tajikistan) contributing to mudflows / increased risks of flood; x Degradation of water quality; x Deforestation; x Floods, soil erosion; x Pamir River Basin; x Pamir glacier melting; x Lack of water leading to droughts and diminished food supplies and other economic losses.
Medvezhiy glacier (Western Pamir)	Tajikistan	x Glacier movement and related consequences;

Zarafshan Range	Tajikistan and Uzbekistan	x Glacial melting; x Overexploitation of natural resources.
Chatkal Range (in the Western Tian Shan, bordering the Ferghana Valley from northwest)	Uzbekistan, Tajikistan, and Kyrgyzstan	x Increased precipitation; x Rising temperatures, especially during the first half of the year; x Frequent and intense mudflows, landslide, floods, snow avalanches; x High population density; x Poverty; x High mortality rates.
Northern margins of the Turkestan range (part of the Pamir-Alay mountain system)	Kyrgyzstan, Tajikistan, and Uzbekistan	x Precipitation increases; x Rising temperature, especially during the first half of the year; x Frequent and intense mudflows, landslide, floods, snow avalanche; x High population density; x Overpopulation; x Poverty; x High mortality rates; x Rising temperatures and variability in precipitation; x Melting of glaciers; x Low level of economic activity having an impact on human mobility.

3. Priorities for co-operation

As a result of climate change, accelerated glacial melt is reducing the capacity of glaciers to store water, while also posing a range of hazard risks, namely floods, debris flows, landslides and GLOFs (IPCC 2022). Climate change is also affecting the livelihoods of many rural mountain communities that depend on agriculture, grazing, and forests, as these sectors are highly sensitive to climate change impacts (Novikov and Kelly 2017). Livelihood risks are increasing pressure, particularly on young and middle-aged men from traditional mountain communities, to migrate within or outside the region in search of alternative sources of income (Novikov and Kelly 2017; Reyer et al. 2017). In particular, the high level of out-migration of young and middle-aged men has affected family structures and placed additional burdens on women, who are increasingly taking the lead in supporting their households, while village elders are taking on the roles usually performed by younger men. Mountain areas also suffer from limited availability of climatic and scientific data, which can have a negative impact on the effectiveness of early warning systems and the development of evidence-based policies.

Stakeholders consulted during the development of this strategy (see above) identified the following issues as priorities for co-operation in addressing climate-related security risks in Central Asia's high mountains.

3.1 Livelihood security in the agriculture, livestock, and forestry sectors through the sustainable use of mountain resources



Climate change is already having a severe impact on agriculture, pastures and forests in the high mountain regions of Central Asia, affecting local communities who disproportionately depend on them for their livelihoods. Shifting rainfall patterns, heat waves, flood risks and other extreme events are already making it difficult to sustain these livelihoods across the region. In the mountainous areas of Tajikistan, for example, local communities have reportedly faced irrigation problems (lack of irrigation in some places) and threats to crops, particularly potatoes and wheat. Furthermore, despite some conservation efforts, forests and other areas, such as pastures, are critically overexploited, with negative impacts on biodiversity, ecological services and rural livelihoods. Given the importance of agriculture, grazing and forestry activities in high mountain areas, measures to improve and secure livelihoods are urgently needed. Women are often the main actors in agriculture, livestock and other small-scale economic activities, as well as the custodians of traditional knowledge, medicine and local culture in mountain communities. However, their roles and voices are often not adequately reflected in policies and programs to address climate-related risks, including security risks, across the region.

Opportunities for co-operation to jointly address these challenges include:

- Context-specific assessments of the vulnerabilities of high mountain communities across the region and their coping capacities, including the socio-political context e.g., gender, age and other relevant socio-economic factors, with a view to identifying priority beneficiaries and targeted activities to improve sustainable livelihood opportunities;
- Joint tailor-made activities to raise awareness of the specific risks posed by climate change among mountain communities, with a focus on those dependent on agriculture and other nature-based livelihoods, including women, youth and the most vulnerable groups;
- Specific capacity building and training opportunities for women- and youth-led business start-ups in agriculture and forestry to support their development and access to markets (these should not only focus on helping them to adapt to the risks posed by climate change, but should also provide them with practical information technology (IT), management and other skills needed to start and sustain a successful business);
- The establishment of joint financing schemes at regional level to support adaptation in mountain areas, for example through the procurement of new technologies, new climate-resilient seed varieties or preferential loans for women, youth and the most vulnerable groups, e.g., women and youth;

- Investment in energy- and water-efficient technologies, e.g., more efficient cooking stoves (and thus less wood cutting), drip irrigation, recycling, etc. in mountain areas;
- Interventions to improve crop and livestock productivity and sustainable pasture use in high mountain areas, e.g., by promoting the use of adapted and drought-resistant seed varieties, and keeping fewer but higher quality livestock to reduce damage to pastures, or promoting the planting of wild fruit species as a source of income and for pasture restoration, in line with other projects in the region;
- Interventions to support livelihood diversification in high mountain areas, e.g., by promoting the production and marketing of non-timber resources (e.g., berries, mushrooms, apricots, nuts) and/or investing in handicrafts and other artisanal products that can be sold and promoted regionally/internationally and/or linked to the development of sustainable mountain tourism;
- In line with existing initiatives in the region, promote agroforestry activities in high mountain areas throughout the region, e.g., by planting orchards, which can combine job creation with soil and environmental protection, as well as afforestation projects.

A Find the corresponding project concept ³Mountain roots: sustainable farming and forestry for resilient communities ´in Section 4.

3.2 Climate-related mobility

The impacts of climate change - both sudden, in the form of extreme weather events, and slow, such as changes in rainfall patterns - are increasing human mobility, which in turn can affect the well-being of individuals and communities in Central Asia's high mountain regions. Stress on livelihoods and resources can lead people to move in search of better work or a more secure life, while others may move to escape repeated natural hazard events. However, not everyone moves; men are more likely to move in search of work, while women remain behind and are more vulnerable to the impacts of climate change. At the same time, migration can be a form of adaptation; those who move, to urban areas and internationally, send remittances back to their families and communities. To ensure that the benefits outweigh the costs, measures should be taken to provide those who wish to move with the capacity and opportunity to do so, while at the same time supporting sending communities to build resilience and receiving communities to integrate them without straining already stretched resources. This will include activities similar to those outlined in Section 3.1 to provide viable options for those who remain.

Opportunities for co-operation to jointly address these challenges include:

- The systematic collection of gender- and age-disaggregated data on internal and cross-border movements from and to mountain areas, which should allow for an in-depth assessment of migration trends in specific high mountain areas as well as in lowland regions of Central Asia, in order to better understand the drivers of migration, the patterns of migration (e.g., taking into account cultural links, family ties, ties to place of origin, etc.), as well as the challenges and opportunities for different individuals and communities;
- Investing in the development of climate-resilient infrastructure and services in mountain communities, including by creating employment opportunities through the development of small and medium-sized enterprises (SMEs) in climate-resilient sectors, such as small-scale nature-based production or ecotourism, with a focus on women and youth;
- Specific capacity-building and training opportunities for women- and youth-led start-ups in the agriculture and forestry sector to support their development and access to markets (these should not only focus on helping them adapt to the risks posed by climate change, but should also provide them with practical IT, management and other skills needed to set up and run a successful business);

- Support for activities that promote co-operation and exchanges between different mountain communities and municipalities in the region, with a focus on highlighting and valuing the experiences of women, young people and other marginalized and vulnerable groups, in order to better understand their priorities and needs and enable them to identify relevant priority projects and solutions. The systematic collection of gender- and age-disaggregated data on internal and cross-border movements from and to mountain areas; these should inform an in-depth assessment of migratory trends in specific high mountain areas as well as lowland regions in Central Asia to better understand driving factors of migration, patterns of migration (e.g., taking into account cultural connections, family bonds, associations to the place of origin, etc.) as well as the challenges and opportunities for different individuals and communities;
- Investments into the development of climate-resilient infrastructure and services in mountain communities, including by creating opportunities for employment though the development of SMEs in climate-resilient sectors, such as small-scale, nature-based production, or eco-tourism, with a focus on women and youth;
- Specific capacity-building and training opportunities for women and youth-led start-ups in the agriculture and forestry sectors to support their development and access to markets (these should not just focus on supporting them to adapt to the risks posed by climate change, but also provide them with practical IT, administrative and other skills needed to launch and sustain a successful business enterprise);
- Support to activities promoting co-operation and exchange between different mountain communities and municipalities across the region, with a focus on highlighting and valuing the experience of women, young people and other marginalized and vulnerable groups, in order to better understand their priorities and needs and allow them to identify relevant priority projects and solutions;
- Joint projects and investments to provide health support, including mental health support, to families and communities in rural mountain areas to help them cope with the consequences of the migration of family members and the additional stress that may result from increased caring responsibilities, economic issues, domestic violence, etc.;
- A review of the relevant legal frameworks on migration with a view to introducing harmonized measures across the region to support migrants, e.g., to facilitate their access to education, training and employment opportunities; this could be done within existing regional frameworks and programs addressing migration, such as The Almaty Process[4] and International Migration and the Central Asia Regional Migration Programme. [5]

A Find the corresponding project concept ~~1~~Human mobility and climate adaptation: building a regional approach ´ E H.O R Z

[4] The Almaty Process (Almaty Process 2023) is a mechanism for engagement on migration in Central Asia. There are annual Senior Officials' Meeting as well as regular National Consultative Meetings.

[5] The Central Asia Regional Migration Programme addresses labour migration in the region, particularly from the Kyrgyz Republic and Tajikistan as sending countries and Kazakhstan and Russia as receiving countries.

3.3 Early warning and disaster risk governance

Central Asia's high mountains are subject to a range of climate-related natural hazards, including floods, mudflows, landslides and GLOFs. Their intensity and frequency are projected to increase as a result of climate change. Projections indicate that mountain communities and infrastructure are likely to face increased damage and disruption from GLOFs. An additional concern is the risk that landslides and permafrost degradation pose to mining waste facilities and hazardous waste storage sites. Access to climate data and reliable early warning systems are essential to anticipate and prepare for climate-related hazards such as GLOFs. However, since the collapse of the Soviet Union, these have been limited by disrupted data systems, reduced funding, loss of technical expertise and inconsistent data collection methods across new national borders.

While national-level climate data and early warning systems are important, the interconnected nature of mountain systems throughout the region also requires a regional approach to data sharing and use. The incentives are clear: robust climate data and early warning systems within one country can better protect neighboring states and communities, and similar challenges provide ample opportunity for information sharing, knowledge exchange and efficient use of resources. This can only improve early warning systems in the future.

Opportunities for co-operation to jointly address these challenges include:

- Support ongoing initiatives to establish a centralized regional framework for disaster management, including standardized protocols for early warning systems. This would ensure consistent and coordinated responses across borders and encourage countries to share meteorological, geological and hydrological data for joint monitoring and analysis, which can be used for more accurate and timely warnings. This should be complemented by joint training programs and workshops to build local capacity to respond to disasters and manage early warning systems;
- Investments aimed at improving disaster risk management at the regional level, e.g., by building and/or upgrading existing infrastructure to mitigate landslides and floods, improving the modulation and automation of monitoring systems, and increasing the preparedness of schools and other public buildings; these should build on existing efforts by regional and international organizations to strengthen hydro-meteorological and glacier data collection, monitoring and exchange, such as those under the Green Central Asia initiative;
- Develop regulatory frameworks for insurance and insurance systems so that they are available to affected populations in the event of disasters, with a particular focus on the most vulnerable groups, including women and youth[6];
- Development of a common methodology for assessing risks and vulnerability to climate-related natural hazards, e.g., by mapping the vulnerability of specific communities/villages in high mountain areas;
- Awareness-raising activities on disaster risk reduction in high mountain areas for the public and decision-makers, with the involvement of the governmental agencies responsible for dealing with emergency situations in all Central Asian countries, based on international best practices and standards;
- Investing in the further development and accessibility of common early warning systems for communities living in/adjacent to high mountain areas;
- Introduction of disaster preparedness modules in youth education, e.g., through inclusion in school curricula at different levels, or through tailor-made trainings involving young people in

[6] According to a 2019 Asian Development Bank study, only Kazakhstan has a micro-scale disaster insurance scheme (ADB 2019). Kazakhstan was also piloted for a World Bank initiative, The Southeast Europe and Central Asia Catastrophe Risk Insurance Facility (GEF 2015), which saw the development of an insurance scheme for farmers in the country. The project is meant to be replicable across the region but as of September 2023, no other countries have adopted the scheme or developed their own.

mountain areas across Central Asia, also to promote mutual learning and exchange of experiences;

- Joint research projects focusing on regional disaster risks and effective early warning practices tailored to the specific needs of the region.

A Find the corresponding project concept ³Inclusive early warning and disaster preparedness to save lives in high mountain areas´ below.

3.4 Implications of glacial melting for natural resource management in highlands and lowlands



As a result of climate change, glaciers in Central Asia are experiencing significant and accelerating surface loss, reducing their capacity to store water. The melting of glaciers is also associated with a number of hazards and natural disasters, namely floods, mudflows, landslides and GLOFs. High mountain areas in Central Asia are particularly exposed and vulnerable to GLOFs, which can cause damage and disruption to communities and infrastructure. Glacial melt also threatens the stability of other types of lakes, including those formed by landslide debris, such as Lake Sarez in the Pamir Mountains. In addition, landslides and permafrost degradation pose a major threat to mining waste facilities and hazardous waste storage sites in mountainous areas. Taken together, the risks to natural resources and other types of assets require targeted and tailored programming to anticipate how, when and where glacial melt will have severe impacts and the means to mitigate them.

Opportunities for co-operation to jointly address these challenges include:

- Joint monitoring and research on climate-related risks to glaciers, to be carried out by hydro-meteorological services and other relevant ministries/authorities of all Central Asian countries; protocols to facilitate data and information sharing between and within countries should also be developed and implemented, building on and complementing the work of the Green Central Asia Initiative;
- Training of specialists (especially young professionals) in glacier monitoring across the region, which could also provide opportunities for sharing methodologies and best practices;
- The establishment of a regional center to coordinate monitoring and other activities related to glaciers in Central Asia, including the development of a common monitoring system and methodology to ensure the consistency and reliability of the data and information generated;
- Ensure that monitoring and research programs are structured to attract more women and young people into the profession (e.g., develop an innovation program to engage young women in remote monitoring); ensure adequate salaries to ensure retention;
- Incorporate elements of Disaster Risk Governance (DRG), particularly with regard to landslides, avalanches, mudflows, floods and GLOFs, into policies and activities on glaciers in high mountain areas. Special attention should also be given to mining waste dumps, including uranium mining legacy sites, as landslides in these areas pose a major threat to health and safety.

A Find the corresponding project concept ³Central Asian Glacier Forum: Navigating Challenges and Fostering Co-operation´ below.

4. Improving co-operation formats between stakeholder groups

In addition to the priority issues identified above, the stakeholders who participated in the consultation process leading to this joint strategy document have identified a number of ways to improve co-operation in Central Asia's high mountain regions to address climate-related security risks, with a focus on communication, exchange and institutional mechanisms. These are general suggestions that emerged from the consultation process and are intended to guide the development of more concrete co-operative actions, as outlined in Section 5.

Ministries

- Establish an intergovernmental, inter-ministerial body or platform dedicated to mountain areas in Central Asia. Such a body could bring together ministries and national agencies for agriculture, emergency services, foreign affairs, forestry and water, as well as representatives of the private sector, academia and civil society. Its main function should be to facilitate the exchange of information (e.g., through regular meetings and a dedicated website) between different sectors and stakeholders in mountain areas in order to identify common challenges and plan joint solutions;
- Organize bi-annual meetings and peer-to-peer site visits to establish regular contacts between relevant government agencies and other stakeholders to improve mutual understanding of climate-related security challenges in high mountain and lowland areas and dialogue to identify opportunities for cross-sectoral co-operation to address them;
- Appoint focal points to coordinate regular exchanges between relevant government agencies responsible for the protection, management and promotion of high mountain areas;
- Establish a common inventory of relevant activities addressing climate-related security issues in high mountain areas - his could be managed, for example, by the intergovernmental body described above;
- Encourage co-operation between relevant government agencies to facilitate regional applications to climate finance mechanisms to address common challenges and risks.

Local communities and local governments in high mountain areas

- Organize regular meetings and gatherings between villages and communities in high mountain areas, including for example:
    - Ad-hoc and regular thematic meetings to discuss common challenges and identify joint solutions; these could involve experts, e.g., from academia, to discuss specific scientific/technical aspects and provide different perspectives and solutions to climate-related challenges;
    - Joint cultural activities, such as fairs and festivals, which would help boost local economies by attracting tourism and providing additional economic opportunities for climate-sensitive livelihoods;
- Establish direct communication channels between communities/villages/municipalities to easily share and discuss common challenges as they arise, as well as potential solutions.

Civil Society Organizations (CSOs) and academia

- Encourage joint academic initiatives to understand and address climate-related security challenges in the region, e.g., through the Kazakh-German University, the Central Asian University of Environmental and Climate Change Studies (Green University) in Uzbekistan, the Tien Shan Mountain Research Centre and the OSCE Academy in Bishkek, among others. Joint research projects and exchanges should be encouraged to build good links between stakeholders from different countries and organizations;

- Create networking opportunities in the context of workshops or trainings focusing on climate-related challenges as well as other issues relevant to high mountain areas in order to promote confidence building and knowledge sharing;
- Establish mentoring programs for larger and more experienced CSOs to work with smaller CSOs on issues such as project management, project language and financial and narrative reporting to donors;
- Support networks of women's and youth organizations across the region, for example through capacity building and training on relevant issues, project management and donor relations, and promoting the exchange of experiences between organizations across countries and, where appropriate, internationally;
- Organize joint applications by CSOs for international funding to address the above-mentioned climate-related security challenges in high mountain areas, with the aim of creating synergies between the different activities of CSOs at an early stage and maximizing the impact of funded interventions.

Private sector actors

- Facilitate links between government and the private sector to ensure alignment on investment priorities, for example in climate change adaptation and mitigation, including renewable energy projects such as solar and wind farms, clean transport systems and sustainable tourism facilities. These investments would have the co-benefits of not only providing clean energy or meeting mitigation targets, but also boosting local economies and creating employment opportunities;
- Foster links between private companies and research institutions to facilitate research and development of innovative solutions tailored to the specific challenges of high mountain areas. This could include the development of new agricultural techniques suitable for mountain areas, or the creation of more resilient construction materials and methods;
- Establish a regional platform to bring together private sector actors to discuss challenges, investment opportunities and share knowledge on engagement in high mountain areas, and encourage the development of national or local chapters to promote bottom-up co-operation and activities.

International and regional organizations

- The region is already receiving funding for key adaptation and mitigation initiatives, with just under USD 2 billion in climate finance accessed in 2018. However, according to the United Nations Framework Convention on Climate Change (UNFCCC), this is well below the projected USD 5 billion needed (UNFCCC 2022). There is therefore scope for international and regional actors to do more to support countries in accessing finance for high mountain areas, in order to stimulate investment and resources for climate change adaptation and mitigation. For example, international donors could convene meetings specifically tailored for national decision-makers to learn about and jointly apply for available funding, or to help identify priority areas for investment (UNFCCC 2023);
- Sharing experiences among mountain communities in accessing financial support to address the adverse impacts of climate change under the UNFCCC Loss and Damage Fund. Meanwhile, regional and international actors, such as the FAO's Mountain Partnership, are well placed to continue advocating for funding that prioritizes high-risk mountain areas and the most marginalized communities, focuses on early warning systems and improved disaster risk reduction (DRR), and supports rural development, for example through investment in green infrastructure or the development of alternative livelihoods;
- Encourage the establishment of platforms (e.g., international/regional conferences, workshops, joint websites and social media products, etc.) to share experiences, lessons learned and resources (e.g., training materials) from past and ongoing projects and initiatives in the region addressing climate change impacts on security in mountain areas with relevant international, regional, national and local stakeholders, e.g., international organizations, government agencies, research centers/universities, non-governmental organizations (NGOs) and CSOs. It would also be important to reach out to those working on similar issues outside Central Asia, such as the International Centre for Integrated Mountain Development, among others;

- Increase the international visibility and recognition of regional and national efforts to address climate-related security risks in Central Asia's high mountains, in order to attract further investment, but also to share lessons learned from the region that could be useful in other contexts;
- Strengthen engagement and dialogue with local actors (including local civil society actors, especially those working with women, youth and other vulnerable and marginalized groups) and establish equitable partnerships in project design, implementation and follow-up; in some cases, this will require complementary capacity-building measures (e.g., in project management or computer skills), as well as the provision of equipment and appropriate follow-up mechanisms to ensure that funds are used effectively;
- Promote direct contact between implementing organizations and women's and youth organizations and networks, and ensure that they are included in working groups and other fora where activities and initiatives to address climate-related security risks in mountain areas are discussed and planned.

5. Implementation plan

The main objective of this strategy is to strengthen regional co-operation to address climate-related security risks in Central Asia's high mountain regions. Contributing to this objective is the strategy's implementation plan, which includes **six initial joint project concepts involving stakeholders from high mountain areas**. As impacts on mountain areas have spill-over effects in other geographical zones, these activities may also extend to adjacent lowland areas.

The project concepts presented below are the result of the regional workshop held in Tashkent in June 20-23, 2023, during which participants used the identified priorities for co-operation (see Section 3) to define initial project outlines for joint risk reduction activities.

In this section, each project idea is structured as follows: (1) a working title, (2) expected outcomes, (3) key activities, (4) target audiences, (5) envisaged benefits of co-operation, including how such co-operation could contribute to addressing climate-related security risks, (6) gender considerations, and (7) synergies with other projects. The descriptions are kept at a general level as they are intended to serve as a **starting point for more detailed project concept notes** to be developed for bilateral, regional and international donors and organizations for their funding and implementation. In addition, each project concept includes a rough estimate of timeframes, costs and key sectors to be included, the details of which could be further refined and adapted according to donor interest and resource availability.

In addition to the activities specified in each project, there are several elements that need to be considered across all projects. First, targeted assessments should be conducted to identify regional hotspots and prioritize beneficiaries, focusing on those most vulnerable to climate-related security risks, particularly women and youth. Second, regular project reviews are needed to capture lessons learned and disseminate these across governments and relevant agencies. Finally, the involvement of local and national government authorities in project activities is crucial. Ensuring that project results are effectively communicated to these authorities can open up opportunities for national-level funding or long-term support once pilot projects have been completed. Their involvement can also help integrate project activities into broader national plans and strategies, such as promoting sustainable mountain crafts within tourism strategies, thereby also ensuring their sustainability.

There has been a proliferation of initiatives, investments and innovations in Central Asia's mountain regions, so donors and implementers of the projects proposed below will need to identify where and how their efforts can synergize with and add value to previous initiatives. It is also important to ensure coordination among donors and implementing agencies in Central Asia in order to avoid duplication, redundancy and waste of resources, and instead strive for more sustainable and efficient results.

Overview of project concepts:

1. Climate-smart villages: Sustainable Livelihoods for Mountain Communities in Central Asia.
2. +DQGLFUDIWV IRU VXVWDLQDEOH WRXULVP. LQ &HQWUDO $VLD¶V
3. Mountain roots: sustainable farming and forestry for resilient communities.
4. Human mobility and climate adaptation: building a regional approach.
5. Inclusive early warning and disaster preparedness in high mountain areas.
6. Central Asian Glacier Forum: navigating challenges and fostering co-operation.

5.1 Project: Climate-smart villages: Sustainable livelihoods for mountain communities in Central Asia (off-farm sector)

Local livelihoods | Migration | Cultural heritage | Sustainable tourism | Inter-generational exchange

Expected results:

1. Improved livelihood security and resilience of mountain communities through the promotion of diverse, sustainable and climate-resilient off-farm livelihoods.
2. Economic empowerment of women and youth in high mountain areas through the promotion of climate-resilient practices in traditional and new sectors in high mountain areas.
3. Strengthened co-operation between communities across Central Asia through dialogue and exchange of best practices to promote sustainable development in high mountain areas.

Main activities:



- Conduct market assessments to identify viable off-farm livelihoods, focusing on the demand-supply dynamics of the local labor market and economically viable sectors in mountain communities (low cost);
- Pilot the establishment of 'climate-smart villages' in selected mountain areas, including organizational structures (e.g., a secretariat) to support business development and foster collaboration between different professionals. Focus on areas at risk from climate hazards or with high poverty indicators, with opportunities for sustainable livelihoods, especially for marginalized groups (medium -high cost);
- Establish resource centers for job seekers to facilitate peer-to-peer knowledge exchange and organize regional fairs to connect developers with investors. These centers can also provide tailored training and capacity building to support business development for those unemployed or employed in sectors most vulnerable to climate change impacts. Include skills development for small projects (medium cost);
- Improve digital literacy of small business owners, focusing on the use and development of social media, websites and online marketplaces to share stories, showcase processes and sell products globally (low cost);
- Provide incentives and access to finance for small businesses in climate-resilient sectors, including employment support, loans for equipment, and engagement with banks and private funders for micro-credit projects (medium -high cost);
- Explore opportunities to establish cross-border tourism routes linking mountain villages across countries, such as trekking and cycling trails, networks of guesthouses, tourist information points and regional fairs to showcase tourism potential (medium -high cost).

Target group:

Efforts should target those most likely to leave mountain communities, especially young people, based on nuanced vulnerability assessments. Special attention should also be given to rural women, enabling them to start their own businesses and pass on their expertise to the younger generation within and outside their communities. Involvement of the tourism sector, such as guesthouse owners and tour guides, is essential to explore marketing opportunities for these businesses.

Co-operation:

The project aims to strengthen co-operation between women, young people and sectors such as tourism in high mountain areas to improve the economy and livelihoods. It includes coordination with communities and local governments to promote dialogue on climate-resilient livelihoods. It also promotes co-operation and good neighborly relations between climate-smart villages through the exchange of ideas, technologies and best practices, which can influence broader dialogue and investment in climate resilience at regional and international levels. Exploring cross-border activities, such as transboundary tourism routes, will enhance regional co-operation by linking mountain villages across countries, promoting mutual interests and shared benefits.

Gender:

Women and girls will be a central focus, both in the provision of training and capacity building, and as actors in the implementation of potential business ideas. All project activities will be relevant to women and girls, in addition to young men that may be considering migrating away from mountain areas, to promote their economic empowerment as an important condition for encouraging people and families to stay in mountain areas.

Project synergies:

The project can build on ongoing initiatives to promote alternative livelihoods in the face of climate pressures on mountain communities and their traditional economic activities. Of note is the EU-funded Switch Asia project (2020-2022), which aimed to promote sustainable tourism in Uzbekistan, Kazakhstan and Tajikistan through the implementation of ISO standards on green procurement and eco-labelling. It worked with tourism businesses and regional and local authorities to plan and implement policies to support the development of sustainable tourism (Switch Asia 2020).

The project could also develop synergies with the work of the International Organization for Migration (IOM) through its Central Asia Regional Migration Program (CARM), which focuses on improving the skills and knowledge of migrant families in sending countries to improve their livelihoods in Kyrgyzstan and Tajikistan (IOM 2023). Women Engage for a Common Future International is working with micro-credit agencies and UNEP to support ecotourism in villages around Lake Issyk-Kul in Kyrgyzstan (WECF 2023). FAO's Mountain Partnership also runs several projects to help local communities expand their businesses.

5.2 Project: Handicrafts for sustainable livelihoods in Central Asia's high mountain areas

Local livelihoods | Cultural heritage | Sustainable tourism | Inter-generational exchange

Expected results:

1. Improved livelihood security and resilience of mountain communities by promoting more diverse, sustainable and climate-resilient off-farm livelihoods.
2. Economic empowerment of women and youth in high mountain areas by promoting climate-resilient practices in traditional and new sectors in high mountain areas.
3. Strengthened co-operation between communities across Central Asia through dialogue and exchange of best practices to promote sustainable development in high mountain areas.

Main activities:

short-term

- Conduct an assessment/market analysis to identify viable craft activities and links to sustainable tourism opportunities. In addition, the analysis can identify and target a customer base that is looking for unique, handmade and culturally rich items. This helps to avoid the urge to compete on volume and price with mass producers in urban centers. Consider including cross-border market analysis to explore potential in neighboring regions and countries, and to identify international demand for local crafts (low cost);
- Focus on skills development for artisans, such as training in product development, marketing strategies and business management, which are essential to compete effectively in urban centers and/or with sophisticated manufacturers (low -medium cost);
- Improve digital literacy of artisans in the use and development of social media, websites and online marketplaces to tell their stories, showcase their processes, reach a wider audience and sell their products directly to consumers worldwide (low cost); Consider supporting the development of marketing campaigns that help to highlight the quality and craftsmanship of artisanal products (low -medium cost);

mid-term

- Establish artisan centers in targeted villages/communities, bringing together artisans and those interested in marketing their products (particularly local market actors), with a view to using artisan products as a means of promoting sustainable tourism in mountain areas. Consider establishing them in both rural and urban centers to bring artisans together with designers and brands, as this can encourage collaborations leading to innovative products that combine traditional craftsmanship with contemporary design. Ensure that hubs are linked across borders to facilitate the exchange of cultural crafts, promote regional tourism and create joint exhibitions and events that showcase the diversity of regional crafts (medium cost);
- Provide incentives and access to finance for small businesses in climate-resilient sectors. This could include employment support, loans for equipment and working with banks and private funders for micro-credit projects (medium cost);

long-term

- Provide a forum to facilitate links between start-ups / artisan centers and potential investors, e.g., by organizing regional fairs in border areas where ideas and artisan products from mountain areas can be showcased and developers can be matched with investors. Ensure this forum includes cross-border participation to attract investors and stakeholders from neighboring countries, promotes regional co-operation and extends market reach (medium cost).

Target group:

Primarily women and young people living in rural mountain areas. Rural women with knowledge and skills in the production of traditional handicrafts will be involved, both to enable them to set up their own businesses and to transfer their knowledge to the younger generation in the villages and to interested young people from other parts of the region (e.g., young design and fashion students). The tourism sector (e.g., owners of guesthouses, tour/mountain guides, sellers of handicraft products, etc.) will also be involved to explore how they can contribute to the marketing of the products, while at the same time benefiting from the additional visibility provided by the artisan centers created.

Co-operation:

The project will strengthen co-operation between and among communities, including women and young people in the targeted high mountain areas, and promote cross-sectoral linkages (e.g., between handicraft production and the tourism sector) to boost the economy and livelihoods of people in high mountain areas. It will involve and coordinate activities between municipalities and local government bodies to promote dialogue and co-operation on promoting climate-resilient livelihoods in high mountain areas across the region. Cross-border co-operation will be strengthened through international market analysis to identify regional demand for handicrafts, cross-border training programs to promote shared expertise, digital literacy initiatives for joint online marketing efforts, and linked handicraft centers to promote cultural exchange and joint exhibitions. This approach promotes regional unity and shared economic growth by capitalizing on the unique strengths and resources of each participating area.

Gender:

Women and girls are at the heart of both the training and capacity building activities, as well as those supporting the implementation of potential business ideas.

Project synergies:

This project can build on several ongoing initiatives to promote sustainable livelihoods in response to climate pressures on mountain communities and their traditional economic activities. Similar to project concept 5.1, two notable initiatives are the EU-funded Switch Asia project (2020-2022), which aims to promote sustainable tourism in Uzbekistan, Kazakhstan and Tajikistan through the implementation of ISO standards related to green procurement and eco-labelling. It works with tourism businesses and regional and local authorities to plan and implement policies that support the development of sustainable tourism (Switch Asia 2020); and projects implemented through The FAO Mountain Partnership, which focuses on promoting products made by mountain communities to local and foreign audiences.

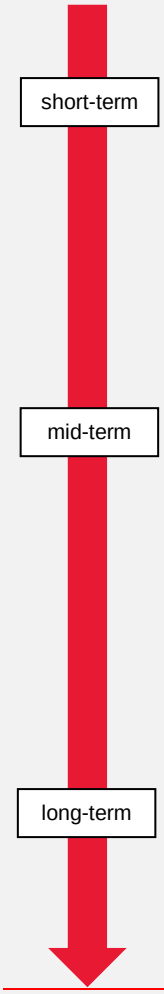
5.3 Project: Mountain Roots: Sustainable farming and forestry for resilient communities

Local livelihoods | Biodiversity | Rural development | Sustainable forestry | Organic farming | Agro-ecology

Expected results:

1. Improved livelihood security and resilience of mountain communities by promoting more sustainable agricultural, pastoral and forestry practices.
2. Improved food security for rural mountain communities.
3. Economic empowerment of women in high mountain areas.
4. Strengthened co-operation among Central Asian countries through dialogue and exchange of best practices to promote sustainable development in high mountain areas.

Main activities:



- Promote knowledge exchange on sustainable and climate-resilient farming practices; this could be done through the establishment of a technical center that acts as a regional hub for farmers to access training and other support to develop and implement technical adaptations e.g., new technologies/ seed varieties, the potential for indigenous knowledge and practices, water harvesting, terracing for flood protection, etc. (medium -high cost);
- Establish regional hubs or centers for training/education on climate-resilient new practices in mountain economic sectors, including both new technologies for irrigation or seed varieties, etc. and the potential of indigenous knowledge and practices; regional hubs or centers should ensure that young people in particular are involved, e.g., by setting up youth working groups (medium -high cost);
- Ensure that technical support and extension services are provided to ensure that farmers can implement these solutions, e.g., in terms of equipment, inputs, etc. to make products more marketable. Support can be facilitated through farmers' and rural associations (medium cost);
- Provision of micro-credits to support the upgrading of equipment and the improvement of production through sustainable practices (e.g., through investment in irrigation); these should be designed and allocated in a way that ensures equal access to different groups in society, in particular women and youth, who often face greater barriers to access finance (medium -high cost)[7];
- Carry out study tours between countries, organized E\ I D U P H U V ¶ S D V W R U associations, to promote the exchange of knowledge (low -medium cost);
- Include the concept of agro-biodiversity in school curricula to expose children and young people in mountain areas to agro-ecological practices and to promote environmental protection and conservation at an early stage of their life/career (medium cost);
- Facilitate market access for mountain farmers; this could be done by supporting regional and international for a, developing better infrastructure, both physical (transport networks) and digital to support e-commerce, working closely with other sectors such as tourism. In addition, the capacity of local processing facilities for agricultural products could be improved to extend shelf-life and increase the marketability of products in urban areas (high cost).

Target group:

The focus should be on women and youth, given the gendered impact of climate-related security challenges on mountain communities. In addition, existing farmers', pastoralists' and foresters' associations should be key recipients of support, given their role in managing the environment and raising awareness of best practices and dispute resolution.

[7] For example, there have been protests against microfinance actually increasing instead of decreasing inequality in the region. De-regulation of the financial sector and resulting lack of oversight has allowed some banks and microfinance institutions to set unreasonable interest rates and penalties, and these have disproportionately affected women (Mamo 2021).

Co-operation:

The project will strengthen co-operation between farmers and related communities (with a focus on women and youth) in the targeted high mountain areas, and promote good neighborly relations by facilitating the exchange of ideas, technologies and best practices. By involving national authorities in the countries concerned (e.g., in the framework of the promotion of small-scale irrigation schemes), it also aims to promote higher-level dialogue and co-operation on how to promote climate-resilient livelihoods in high mountain areas throughout the region. Cross-border co-operation will be strengthened by establishing regional training centers, organizing study tours and supporting forums where farmers can network and share knowledge.

Gender:

Women and girls are a key target group for training and capacity building activities, as well as for financial support (e.g., in the form of micro-credits or seed capital), which would contribute to the overall improvement of agricultural, pastoral and forestry practices in the targeted mountain areas.

Project synergies:

Numerous projects are underway in different parts of Central Asia with a focus on promoting sustainable nature-based livelihoods, including Germany's Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) work on ecosystem-based adaptation to climate change in pilot villages in the Naryn region of Kyrgyzstan and the Gorno-Badakhshan Autonomous Oblast of Tajikistan; Critical Ecosystem Partnership Fund (CEPF) projects on biodiversity conservation in mountain areas; and several GEF projects on sustainable management of forests L Q 8] E H N L V W D Q ¶ V P R X Q W D L Q V D Q projects on sustainable management of mountain and valley forests in Uzbekistan, support for integrated land management and agricultural diversification in Kazakhstan, climate-resilient livelihoods in agricultural communities in Turkmenistan, and sustaining agricultural biodiversity in Tajikistan. The proposed project should seek to build synergies with these projects, including through dialogue and exchange of experiences on their approaches.

Although not specifically focused on mountain areas, the World Bank's five-year Climate and Environment (CLIENT) program also supports countries in Central Asia with shared borders and ecosystems to facilitate transboundary co-operation and catalyze joint action to increase resilience to climate change impacts, including through resilient landscape restoration (World Bank 2021). In addition, the Better Cotton Initiative aims to improve the sustainability and environmental protection of cotton communities, focusing on climate change mitigation, pesticide management, improving smallholder livelihoods and women's empowerment. Supporting knowledge and technology transfer and meeting standards to access other markets is a key component of the initiative.

5.4 Project: Human mobility and climate adaptation: Building a regional approach

Legal and policy frameworks | Mobility | Urbanisation

Expected results:

1. Governments cooperate at regional and sub-regional levels to manage climate-related risks to human mobility.
2. Governments develop and implement national policies to address climate-related human mobility challenges and promote opportunities.
3. National and civil society actors and communities actively engage in national and regional processes to address climate-related human mobility challenges and opportunities.
4. Different modalities of human mobility are feasible as adaptation strategies for people living in high mountain areas in Central Asia.

Main activities:



- Establish a joint working group to develop a work program with the aim of building a coherent regional framework climate-related human mobility. This working group should include national governments, regional and international organizations, technical experts and municipal/local actors, including from mountain communities. If and where possible, existing coordination and consultation mechanisms need to be used to avoid duplication/overlap/ resource inefficiency (low cost);
- Undertake research to better understand climate-induced mobility patterns in the region, with a focus on pathways within and outside mountain areas, including labor mobility, displacement or permanent migration, and based on disaggregated information that captures the experiences of different people and groups, including women, young and elderly people, people with disabilities, etc. Specific analysis of the gender impact of human mobility should be prioritized (low -medium cost);
- Review existing policy and legal frameworks at both national and regional levels to identify gaps on climate-induced human mobility in order to inform priority areas for legislative and policy action. The study and policy/legislative gap analysis should be informed by consultations with governments, institutions, civil society, academic organizations, NGOs and communities to gather information on different mobility modalities, their challenges and opportunities, and to define hot spots, priorities for action (around livelihoods, policy, communication) and develop a risk-based framework followed by an implementation plan (low -medium cost);
- Conduct awareness-raising and advocacy activities to ensure broad societal awareness and support for the co-operation framework and its resources and implementation plan. Ensure the use of a variety of communication strategies, adapted to specific target groups, including the use of social media as well as more traditional forms of communication, e.g., radio, leaflets, etc. (medium cost).

Target group:

A range of actors need to be involved and empowered to ensure that any framework addresses the risks and opportunities of climate-related mobility, starting with those who are more likely to migrate from high mountain areas. Secondly, it would be important to involve community organizations, such as trade unions and employment services, as well as national institutions working on climate and human mobility issues. In addition, the involvement of national research centers could provide data to inform policies and strategies on climate-related human mobility. Given the institutional nature of any regional human mobility framework, it is also important to involve relevant national and local stakeholders to ensure the development and implementation of a regional approach. Finally, regional and international actors working on climate-related human mobility in the region should be involved to provide valuable expertise and access to resources for implementation.

Co-operation:

The project will strengthen co-operation between countries in Central Asia on climate-related human mobility. This will initially be done through a systematic dialogue on key issues in the context of a joint working group tasked with developing a co-operation framework. The co-operation framework will identify potential cross-border activities to better understand the dynamics of climate-induced human mobility in the region, with a focus on mountain areas, and identify investments that would ensure that it is used as a positive adaptation and livelihood measure. Cross-regional partnerships established within this framework would also provide opportunities to share resources and information on climate-induced human mobility and related issues, as well as to strengthen diplomatic engagement, especially in areas of high tension, and towards technical/policy harmonization. Local authorities, CSOs/NGOs, universities and research centers working on climate-induced human mobility and related issues will be involved throughout the process to ensure that the co-operation framework and its implementation reflect their perspectives and needs.

Gender:

Activities related to the development and implementation of the co-operation framework will ensure equal gender representation. This could be done through a dedicated working group to ensure that patterns of human mobility are understood and addressed through a gender perspective.

Project synergies:

IOM Kazakhstan is undertaking a research initiative to help the government understand the relationship between climate change and human mobility, and how migration can be part of climate change adaptation strategies. This effort aims to shape policy-making and promote global advocacy among countries with mountainous regions by providing evidence-based insights into the dynamics of human mobility in the face of climate change. A key focus is on how such mobility affects community life and vulnerability in mountain areas. With initial support from the IOM Development Fund, the project is expanding to Kyrgyzstan, Tajikistan and Uzbekistan, highlighting the importance of supporting vulnerable mountain communities against climate threats. IOM also launched a project in Tajikistan in 2023 to mainstream the migration, environment and climate change (MECC) nexus into the first national climate change adaptation strategy for 2030 and the fifth national communication to the UNFCCC. In Turkmenistan, IOM implemented a project aimed at building the capacity of national ministries and agencies of Turkmenistan in modern methods of migration data collection and analysis, national planning and reporting on global agreements/instruments.

Through the joint efforts of IOM, UN Women and the World Bank, with funding from the UK Government, CARMP addresses labor migration in the region, particularly from Kyrgyzstan and Tajikistan as sending countries and Kazakhstan and the Russian Federation as receiving countries. To reduce poverty, the program improves social and economic opportunities and protects the rights of migrant populations. In this way, it seeks to reinforce the positive effects of migration. Other projects related to improving employment (conditions) in Tajikistan can be found here.

5.5 Project: Inclusive early warning and disaster preparedness in high mountain areas

Disaster risk governance | Early warning | Inclusion

Expected results:

1. Improved and harmonized data to inform policy planning and risk management for particularly vulnerable communities in high mountain areas of Central Asia.
2. Improved DRR capacities in local communities/villages in mountain areas, with a focus on people living in remote areas (and therefore more difficult to reach by existing early warning and DRR systems).
3. Increased focus on social inclusion in DRR, for example through the work of the Centre for Emergency Situations and Disaster Risk Reduction (CESDRR, see Annex 1).

Main activities:

short-term

- Establish a cross-border knowledge and technical platform (ideally at ministerial level) to promote information exchange on climate change and trends. This should focus on building links across borders and facilitate platforms/ regular meetings to promote information sharing and technical expertise, as well as ensuring/supporting harmonization of processes and approaches, e.g., for cross-border early warning systems (medium cost);
- Establishing new or engaging with Carry out a mapping/assessment to identify regional hotspots and beneficiaries to be prioritized in high mountain areas (i.e. where disaster risks are higher/projected to increase, who are the most vulnerable individuals and groups and why). In addition, specifically assess the situation (risks, challenges) of disabled people and implement a targeted early warning and response measure (low cost);
- Invest in research (e.g., by universities, research centers) to better understand climate-related risks in mining areas in mountain regions and ensure that results are communicated to policy makers at national and regional level (medi um cost);
- Develop/harmonize methodology for data collection (modelling and mapping) on hazards in high mountain areas (with a view to establishing a database), including a focus on translating data into information on risks and vulnerabilities, disaggregated by gender, age and other relevant socio-economic criteria (low -medium cost);

mid-term

- Establish a working group in the relevant communities/villages/municipalities to develop context-specific and inclusive preventive measures and responses; working groups should include local authorities, CSOs/NGOs (including those working specifically with women and youth) and ensure that they understand and respond to the needs of the most marginalized and vulnerable people and groups within the targeted mountain communities (low cost);
- Establish platforms to facilitate the exchange of experience and knowledge on DRG approaches between countries in Central Asia and internationally, with a focus on strengthening the safety of mining operations (low cost);
- Establish a program of training and other relevant capacity-building activities for CESDRR Parties on social inclusion to ensure that their programs and activities are gender- and age-sensitive and reach vulnerable people and communities living in remote mountain areas across the region (medium cost);
- Improve early warning systems and ensure that they can reach the population, including those living in the most remote areas (e.g., by using SMS and/or organising groups of volunteers who can relay messages to people without access to the telephone network/Internet) (medium -high cost);

long-term

- Develop targeted communication methods to ensure that people living in high mountain areas (and especially those in remote areas), including women and youth, are aware of disaster risks; this could be done, for example, by including DRR in school/training curricula, as well as by developing specific websites and platforms that would also allow people to connect and share their own experiences of dealing with/responding to disasters in their villages/communities (low -medium cost).

Target group:

Local authorities and governments are a key target group for this initiative, as they are ultimately responsible for putting in place effective early warning systems and ensuring that the right investments, protocols and regulations are in place to support them. In addition, civil society organizations, NGOs, research and training centers and universities should be involved to ensure that best practices and equipment are appropriately used to achieve the best possible results. It will also be essential to involve the user groups that will benefit from DRG, including youth, women and people with disabilities (especially in remote areas), to ensure that the systems I deploy are fit for purpose and responsive to their needs and demands.

Co-operation:

The project strengthens co-operation between local authorities, civil society organizations, NGOs and research and training centers on DRG and early warning systems by promoting dialogue on these issues. It also promotes greater collaboration between government agencies on DRR and early warning, focusing on data sharing and social inclusion. Cross-border co-operation will be strengthened by establishing a knowledge and technical platform for sharing information on climate impacts, facilitating regular meetings to harmonize processes, and establishing regional early warning systems.

Gender:

The project will ensure that project activities and outcomes are gender balanced and will promote women's participation in capacity building and training components.

Project Synergies:

There are already many DRG projects and initiatives in Central Asia; what this project adds to existing DRG efforts in the region is a focus on social inclusion and the introduction of methodologies, approaches and capacities for DRG and early warning mechanisms to reach the most vulnerable and marginalized people and communities. It will be important to build synergies between existing DRG initiatives in the region and to take advantage of opportunities for exchange and dialogue, also with a view to avoiding duplication and dispersion of resources. For example, the following projects include a training component, through which useful material may already be available: the Swiss Development Cooperation (SDC) ¶ Blue Peace project focuses specifically on strengthening curricula on DRGs for young people in schools; the Adaptation Fund is also funding a project focusing on reducing risks and vulnerabilities associated with GLOFs, including through gender-sensitive training and awareness raising. At the national level, the EU is also funding a project to support the efforts of all five countries in Central Asia to strengthen regional coordination and capacity on DRR at the local, urban, regional and national levels, with a particular focus on strengthening the role of the CESDRR. Similarly, the GIZ regional project "Climate Risk Management in Central Asia" aims to improve cross-border climate and disaster risk management in Central Asia in co-operation with the CESDDR.

In addition, the Green Central Asia Program and the CLIMWATER Project (Climate Impact Assessment on Water Resources in Uzbekistan: Impact on Agriculture and Hydropower Sectors), an automatic weather station and a discharge station have been installed to assess the impact of climatic factors on the melting process of the Pakhtakor Glacier, illustrating the type of infrastructure that could be developed under this pilot project.

UNECE has also invested in a number of assistance projects in the field of industrial accident prevention, for example, with a focus on strengthening mine tailings safety in Kazakhstan (2018-2019), Tajikistan (2019-2020), Central Asia (2020-2023) and Uzbekistan (2021-2023), funded by the Swiss Federal Office for the Environment.

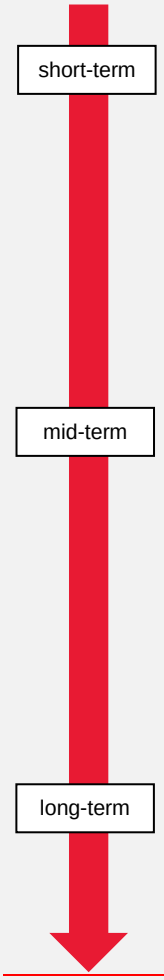
5.6 Project: Central Asian Glacier Forum: Navigating challenges and fostering co-operation

Disaster risk governance | Co-operation | Glaciers

Expected results:

1. To enable a consistent exchange of information between different sectors and actors in order to identify common challenges and to plan and implement joint solutions to climate-related safety risks in high mountain areas, with a focus on glaciers.
2. To develop a repository of tried and tested activities to address climate-related security risks on glaciers, including lessons learned, to be taken up and implemented in the future.

Main activities:



- x Establish a joint body to assess and co-ordinate action on climate-related security risks and their impacts on glaciers, comprising relevant national stakeholders (low cost). Establish terms of reference, e.g., through a Memorandum of Understanding setting out a framework for co-operation (low cost);
- x Develop an action plan for the body to initiate potential areas of work, including risk management activities, but also other areas of importance such as capacity building to apply for climate finance (low cost). Activities could include:
  - o Working towards harmonizing scientific research and data on mountain-related issues, such as temperature projections, weather forecasting and food security impacts on mountain communities, in close collaboration with universities/ research centers;
  - o Processing of hydro-meteorological data; development of models using the data received; updating of data catalogues;
  - o Specific activities to promote the involvement / training of young people, especially young women, e.g., specialized training courses on GIS, summer camps and summer expeditions;
  - o Specific communication activities to ensure that research findings on climate-related security risks to glaciers are shared with the public and policy makers; this should include exploring alternative forms of communication, e.g., through art and music (building on previous experiences such as youth-focused inter-regional summer camps and mountain expeditions);
- x Identify focal points within ministries, municipalities, international partners and civil society organizations/associations to follow up on proposed actions; to fund these, joint applications to climate and other funding mechanisms should be incentivized (low cost);
- x Organize bi-annual meetings and peer-to-peer site visits to establish regular contacts between relevant actors and facilitate dialogues to foster productive information exchange, in particular targeting young and female researchers and experts (low -medium cost);
- x Develop a platform/website that could serve as a repository of relevant activities already undertaken, to be scaled up or replicated, and to promote communication (medium cost).

Target group:

National and local governments, including departments of agriculture, emergency services, foreign affairs, forestry and water, as well as international and regional organizations, civil society organizations, NGOs and young and female researchers working on glaciers.

Co-operation:

The project fosters international co-operation by promoting dialogue on climate-related glacier risks, strengthening collaboration between government agencies, civil society organizations, research institutions and universities, and engaging youth through NGOs and CSOs with activities such as summer camps and expeditions.

Gender:

The project will ensure that project activities and outcomes are gender balanced and will promote women's participation in capacity building and training components.

Project synergies:

Efforts to establish an intergovernmental body or platform could build on and complement ongoing activities under the Green Central Asia initiative to promote regional coordination and co-operation on glacier monitoring through the establishment of a Working Group on Mountains and Glaciers and a Memorandum of Co-operation between Central Asian Glaciological Centers. Other projects include the WMO Regional Subprogram on Severe Weather Forecasting in Central Asia (SWFP-Central Asia), which aims to strengthen the capacity of the National Meteorological and Hydrological Services of Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan, and the Central Asian Regional Glaciological Centre.[8]

In addition, the United Nations Educational, Scientific and Cultural Organization (UNESCO) is implementing a project aimed at reducing vulnerabilities of populations in the Central Asia region from glacier lake outburst floods in a changing climate (GLOFCA).

[8] Hosted by UNESCO, the Central Asian Regional Glaciological Centre conducts research on glaciology, coordinates research, and exchanges information between different organisations working in the region. See more: https://cargc.org/en/.

6. Engaging stakeholders for co-operative outcomes

In order to develop and implement activities successfully and in an inclusive manner, it is necessary to involve stakeholders at different levels of government, as well as local and regional civil society organizations, the private sector and international donors and partners.

6.1 Governmental stakeholders

National governmental institutions

State level government actors, ranging from ministries to specialized committees/agencies, should be involved in planning, resourcing and implementing the project approaches outlined above. These actors are also critical in ensuring a policy environment conducive to the implementation of this strategy. Technical capacity should be a particular focus of the proposed activities, not least to ensure that state-level government actors are able to access funding from major multilateral climate funds.

As the strategy covers a wide range of objectives, from managing GLOFs and other disaster risks to promoting alternative livelihoods and managing mobility, a wide range of actors will need to be involved. For example, government agencies responsible for rural, mountain and/or economic development, such as those dealing with labor and social protection, employment and poverty reduction, economic development and trade, will be key to ensuring the appropriate policy and budgetary framework for the implementation of the proposed activities. National government institutions that manage natural resources that are key to the livelihoods of mountain communities, such as the Ministry of Natural Resources, Ecology and Technical Supervision (Kyrgyzstan), the Ministry of Agriculture and the Ministry of Environmental Protection (Turkmenistan), and the Ministry of Labor, Migration and Population Employment, and the Committee for Environmental Protection (Tajikistan), as well as those responsible for risk management, particularly early warning, such as the State Service for Monitoring Hazardous Geological Processes (Uzbekistan) and the Ministry of Ecology and Natural Resources (Kazakhstan), and the various regional hydrological bodies.

Sub-national and local government

There is also a need to involve **sub-national administrative actors** with responsibility for mountain or mountain-adjacent areas. These actors play a key role in developing plans and initiatives specific to their mountain context and in ensuring that national legislation and policies are implemented locally. They also have close working relationships with research centers and NGOs/CSOs, which are critical for implementation at the local level. Critical sub-national actors include direct administrative authorities, such as regional administrations and/or municipalities, as well as national parks and protected areas, and informal community and village councils (see below).

6.2 Non-governmental stakeholders

NGOs and CSOs

NGOs and CSOs also have a key role to play in the development and implementation of this strategy. Given their proximity to the affected communities, the involvement of NGOs and CSOs in project planning is crucial, not only to support community buy-in and ownership, but also to ensure the sustainability and relevance of interventions.

Again, many different actors will need to be involved, depending on the specific activities proposed in this strategy. For example, it will be crucial to involve: research centers or universities, especially in activities focused on improving the database on GLOFs; farmers' associations, to identify needs, given

their extensive knowledge of agriculture and mountain areas; informal community organizations, such as mountain or village councils, to bring their expertise on local issues to decision-making processes, especially on rural/economic development; and women's and youth groups, who need to be consulted and involved as direct beneficiaries of interventions.

Private sector

Private sector stakeholders should also be key partners in designing, implementing and resourcing this strategy. Their importance, however, goes beyond the financial resources they can bring: many are already working in target alternative livelihood sectors, such as tourism, and need incentives and guidance to scale up. In addition, private sector actors offer cross-border linkages and financing opportunities that can stimulate investment and facilitate access to markets. Key private sector stakeholders to engage include businesses in target industries and business associations, such as tourism or renewable energy, as well as chambers of commerce or special interest business groups.

6.3 Regional and international stakeholders

Regional stakeholders

Central Asia has a well-established regional network to address climate and environmental challenges in mountain areas, the result of decades of engagement on the issue. These include the Central Asian Regional Environmental Centre (CAREC)[9], the Central Asian Regional Glaciological Centre (CARGC)[10], the Mountain Societies Research Institute of the University of Central Asia, the CAMP Alatoo Public Foundation[11] and the Central Asia Mountain Hub. They all work in one way or another on issues related to this strategy. They will remain key actors as regional conveners and bridges between Central Asian countries and international donors.

International stakeholders

The continued engagement of international organizations and donors will also be critical to this strategy, as they can facilitate access to resources and technical capacity. Historically, international partners have played a critical role in supporting the development of sectoral strategies for agriculture, water and energy, as well as national and regional strategies for sustainable mountain development (University of Central Asia 2012). Key actors include the United Nations Economic Commission for Europe (UNECE), the World Bank, the Mountain Partnership and the Aga Khan Foundation, all of which are helping Central Asia to advance its ambitions in support of mountain communities. Bilateral partners with a history of engagement in Central Asia and mountain regions include Switzerland, Japan and Germany. There is also a wider community of international donors and implementing agencies that fund and/or implement various projects in the region; they should also be involved in the development and implementation of activities to ensure coordination of all activities in the region and to achieve synergies where appropriate.

[9] CAREC is an independent, non-political and non-profit international organisation with a regional mandate to assist Central Asian governments, regional and international stakeholders in addressing environmental and sustainability challenges in the Central Asian region and Afghanistan.

[10] CARGC promotes scientific coordination and information exchange among different organisations involved in monitoring glaciers, snow and permafrost conditions in Central Asia's drainage basins.

[11] CAMP Alatoo actively promotes the improvement of living standards of Central Asian communities through integrated natural resource management by developing, adapting and implementing global and local practices. It aims to develop and implement practical approaches and tools for the sustainable management of natural resources.

7. Complementing ongoing projects and initiatives in Central Asia

This strategy will complement and fit into a robust ecosystem of projects and initiatives already underway at the community, sub-national, national, regional and international levels to address climate and security in Central Asia's mountain regions. To ensure synergies and reduce overlap, several initiatives and projects are presented below (a full list of relevant projects is provided in Annex 1). This is not an exhaustive list, but rather a selection of key transboundary activities currently being undertaken by various stakeholders in the region.

7.1 Nationally- and regionally-led projects and initiatives

Countries in Central Asia have been at the forefront of efforts to mobilize cross-regional support and resources to address the specific challenges that mountain areas and communities face in the context of climate change impacts. For example, several initiatives are already underway at the regional level, with international support, to promote regional dialogue, coordination and co-operation on mountain issues and/or other issues related to the themes of this Strategy and climate security more broadly. Some of these include:

- The **Conference on Cryosphere and Hazards in High Mountain Areas**, organized by UNESCO and partners in Kazakhstan, provides a platform for networking and partnerships among stakeholders working on climate, cryosphere, and disaster risk reduction;
- The **Almaty Process Inter-State Consultation Mechanism on Refugees**, a platform for dialogue on migration and refugee protection in Central Asia;
- **The Regional Strategy for Adaptation to Climate Change in Central Asia**, which aims to positively address national and international security issues in the face of climate change challenges;
- The **Regional Program "Green Agenda" for Central Asia** was adopted in 2022, and aims to enhance co-operation on green economic growth and sustainable development through the implementation of joint projects, technology transfer, and knowledge exchange.

Countries in Central Asia have also led initiatives at the international level to support mountain areas and communities. Of particular note are the:

- **International Year of Glaciers' Preservation**, initiated by Tajikistan and adopted by the UNGA; it aims to improve international co-operation on the preservation of glacier conservation;
- **Five Years of Action for the Development of Mountain Regions**, initiated by Kyrgyzstan and adopted by the UNGA in 2022; it encourages international participation in sustainable mountain development and addresses the challenges faced by mountain countries.

In addition to initiatives and projects led by the region's governments, several other national and regional organizations are implementing projects, programs and initiatives to promote co-operation in support of mountain communities affected by climate change. These include:

- 7 K H**Central Asia Nexus Dialogue Project: Fostering Water, Energy and Food Security Nexus and Multi-Sector Investment** ´, led by CAREC, which aims to institutionalize the water-energy-food nexus approach in national and regional governance structures and in investment decisions with important implications for mountain communities;
- The **Youth Group on Protection of the Environment**, which has several projects promoting regional co-operation in support of environmental action in the Ferghana Valley (involving Uzbekistan, Kyrgyzstan and Tajikistan);

- The **Local Conference of Youth on Climate Change in Turkmenistan** (2021-2023), supported by the Government of Turkmenistan together with the Embassies of United Kingdom and United Arab Emirates and the UN Mission in Turkmenistan.

7.2 Internationally-funded regional projects and initiatives

To support regional approaches to the challenges of the climate crisis in mountain communities in the region, there have been a number of initiatives led by international actors in co-operation with national governments, as well as regional organizations and institutions. Key initiatives include:

- The **Mountain Partnership and the Aspen Declaration** which focus on co-operation among mountain countries to address environmental and sustainable development issues;
- The **OSCE Ministerial Event on Climate Change in Mountain Regions**, a side event of the OSCE Ministerial Council in Lodz, Poland in 2022, which brought together ministers to discuss the impacts of climate change on mountain regions and ways to ensure sustainable, climate-resilient development;
- The **Regional Constructive Dialogue on Climate Change in Central Asia**, an EU-funded dialogue in 2022 led by International Alert, which aimed to reduce intra- and intercommunal tensions related to natural resource management at the local and transboundary levels, promote better understanding of and resilience to climate change impacts, and foster stronger, self-sustaining co-operation, mutual trust and dialogue on peace-promoting climate change adaptation.

In addition to facilitating dialogue on key issues, international actors are also implementing several initiatives and projects focused on mountain areas that advance some of the themes outlined in this strategy, including

- The **Green Central Asia Initiative** (2020-2024), led by GIZ, focuses on climate dialogue and access to information in five Central Asian countries. The project provides several opportunities for regional engagement on issues explicitly or implicitly related to mountain areas. The initiative is currently implementing a "Transboundary Dialogue on Climate, Environment and Security in Central Asia and Afghanistan" (2020-2024) to strengthen conflict prevention and cross-border co-operation on climate-related impacts in Central Asia, and has convened the first official meeting of the Glacier Monitoring, Modelling - Coordination and Co-operation Working Group in 2023;
- **UNESCO's GLOFCA project** (2021-2025) addresses glacier lake outburst floods by strengthening disaster risk reduction and early warning systems;
- The World Bank's **CLIENT program** (2021-2025) promotes landscape restoration, pollution management and green growth across the region;
- The EU and the European Bank for Reconstruction and Development's **Environmental Remediation Account for Central Asia** supports the remediation of uranium sites across the region; similar activities are being undertaken by the United Nations Economic Commission for Europe, which is launching Phase III of its regional project **"Stakeholder engagement in remediation of Uranium Legacy Sites in Central Asia"**;
- The **Blue Peace Initiative**, launched by the Swiss Agency for Development and Cooperation, promotes water diplomacy and transboundary water management;
- The **Team Europe Initiative on Water, Energy and Climate Change** is an EU-led project focusing on assisting all five countries in Central Asia to develop an integrated regional electricity market, improve transboundary water management and integrate climate change into regional policy dialogues on water, energy and the environment;

- The **Model for Sustainable Tourism in Central Asia (MOST)** is an EU-Asia project that works with tourism businesses and regional and local authorities to plan and implement policies that support the development of sustainable tourism;
- The **Central Asia Regional Migration Programme (CARMP)** addresses labor migration in the region and aims to improve social and economic opportunities for migrant populations;
- **Strengthening disaster resilience and accelerating the implementation of the Sendai Framework for Disaster Risk Reduction in Central Asia**, an EU-funded project led by the United Nations Office for Disaster Risk Reduction (UNDRR) from 2019 to 2022, aimed to strengthen regional coordination and capacity on disaster risk reduction at the local, urban, regional and national levels;
- The UNDP's **Climate Change and Resilience project** (2021-2024), funded by the EU and focused on the Ferghana Valley, is working on knowledge sharing, policy development and risk reduction. These initiatives represent a concerted effort to address climate challenges in Central Asia.

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Annex 1: List of projects and initiatives on climate and security in Central Asia

The Mountain Partnership
The Mountain Partnership, a UN alliance focusing on mountains, endorsed the Aspen Declaration. The declaration encourages co-operation among mountain nations for sustainable development and environmental conservation.
International Year of Glaciers' Preservation
7 D M L N L V W D Q L Q L W L D W H G U H V R O X W L R Q W R G H F O D U H D was adopted by the UN General Assembly (UNGA) in December 2022, and calls for raising awareness and improving international co- R S H U D W L R Q R Q J O D F L H U V ¶ S U H V H
Five Years of Action for the Development of Mountain Regions
In December 2022, at the initiative of Kyrgyzstan, the UN General Assembly declared 2023-2027 as the "Five Year Action for the Development of Mountain Regions" to support sustainable mountain development and highlight the challenges facing mountain regions. The initiative, supported by a roadmap led by Kyrgyzstan, focuses on improving glacier research, infrastructure and disaster risk reduction strategies, while addressing climate change and improving services for mountain communities.
The Almaty Process
The Almaty Process, launched in 2013 between Central Asian countries and Turkey, is a platform to enhance dialogue and co-operation on migration and refugee protection, with Uzbekistan's accession pending. It aims to develop comprehensive migration policies, address irregular migration and strengthen national migration management capacities through annual and regular meetings.
Central Asia Green University
The Central Asia Green University aims to become a globally recognized, research-driven educational institution in Central Asia and beyond, dedicated exclusively to environmental studies, climate change and sustainable development. Specifically, it aims to produce highly qualified scientists, professionals, managers and entrepreneurs equipped with the necessary knowledge and skills to effectively address environmental challenges, contribute to solving pressing environmental problems, promote sustainable development and foster innovation in these critical areas, and become a unified platform for Central Asian countries to promote regional co-operation, innovation, scientific research and formulation of novel approaches to critical and common environmental issues.
Central Asia Hydrometeorology Modernization Project
Funded by the World Bank, the project aims to "improve the accuracy and timeliness of hydrometeorological services in Central Asia", with a focus on Kyrgyzstan and Tajikistan. The project also aims to help the countries improve climate archives and data services, enhance early warning capabilities, and improve the accuracy of forecasts using modern numerical methods.
OSCE Academy
Founded in 2002, the OSCE Academy in Bishkek is a beacon of knowledge in Central Asia, focusing on the nuanced challenges of regional security, particularly in the region's mountainous terrain. As a center for higher education, research and dialogue, it aims to communicate the values and principles of the OSCE to a wide range of stakeholders, from scholars to policymakers. With programs ranging from politics to sustainability, it seeks to develop a cadre of professionals who can advance the

region's development. In particular, its co-operation with international bodies such as GIZ under the Green Central Asia Initiative underscores its commitment to environmental and developmental sustainability in Central Asia's unique landscape.

Central Asia Nexus Dialogue Project: Fostering Water, Energy and Food Security Nexus and Multi-Sector Investment

The overall objective of the EU-funded project is to "create a multi-sectoral enabling environment to facilitate sustainable and climate-resilient investments for enhanced water, energy, food security and ecosystems" in all five countries of Central Asia. In its second phase, the project aims to institutionalize the water-energy-food nexus approach in national and regional governance structures and investment decisions.

Climate Adaptation and Mitigation Program for the Aral Sea Basin

Funded by the World Bank, the project aims to improve access to climate change knowledge and services in participating countries, and to increase investment and capacity building to address common climate change challenges. Specifically, Kazhydromet has benefited from technical assistance and training to improve remote sensing capabilities, which are critical for monitoring snow cover and predicting river flows in mountainous regions, thereby assisting Kazakhstan's ministries and agencies with disaster risk reduction and early warning systems, particularly for avalanches.

Climate and Environment Program

The World Bank-supported CLIENT Program aims to promote sustainable and resilient economic growth in Central Asia, with a focus on climate resilience, landscape restoration, urban air quality, circular economy and green recovery from COVID-19. Specifically, its Resilient Landscapes Pillar (RESILAND CA+) supports projects that provide technical assistance for landscape management and restoration in mountain regions, including the promotion of agroforestry practices that integrate drought-resistant vegetation and fruit trees with pastures (World Bank 2023).

Critical Ecosystem Partnership Fund projects

The Critical Ecosystem Partnership Fund (CEPF) is actively involved in conserving biodiversity in the mountain regions of Central Asia, recognized as a biodiversity hotspot. CEPF focuses on building the capacity of civil society for conservation efforts, facilitating transboundary co-operation among biodiversity NGOs, and providing grants for conservation projects in the region.

Blue Peace Initiative

The Blue Peace Initiative, launched by the Swiss Agency for Development and Cooperation in 2014, focuses on strengthening water diplomacy and transboundary water management through dialogue platforms, sustainable practices and the development of technical expertise. A key project of the Blue Peace Initiative, called Cryospheric Climate Services for Improved Adaptation (CICADA) by the University of Fribourg and partners, aims to generate and apply high-quality cryospheric data for improved water management and disaster risk reduction in Central Asia, with an emphasis on capacity building and improved education in water management and DRR.

Ecosystem-based Adaptation to Climate Change in High Mountainous Regions of Central Asia

The project aimed to support national and local efforts to integrate ecosystem-based adaptation approaches into climate change adaptation strategies. Funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the project worked with partner organizations in pilot villages in the Naryn region of Kyrgyzstan and the Gorno-Badakhshan Autonomous Oblast of Tajikistan.

European Union – Central Asia Water, Environment and Climate Change Cooperation
The project aims to improve environmental, climate and water policies in Central Asia by bringing them closer to EU standards, with a focus on promoting green investments in key sectors. The ultimate goal is to achieve significant reductions in pollution, including CO_2 emissions, with a particular focus on strengthening environmental governance, climate change adaptation and mitigation, and water resource management.
Green Central Asia Initiative
Launched by the Federal Foreign Office in 2019, the initiative aims to improve access to information and risk analysis on the impacts of climate change and promote preventive measures in Central Asia and Afghanistan. A key project, Transboundary Dialogue on Climate, Environment and Security, focuses on preventing conflict and promoting cross-border co-operation on climate-related issues. From September to December 2022, GIZ facilitated meetings to strengthen co-operation on glacier monitoring and modelling among Central Asian countries, culminating in a joint memorandum on a unified approach to glacier monitoring in March 2023. In addition, the initiative is drafting a regional climate adaptation strategy and has developed a regional action plan to guide political dialogue and address key environmental and resource management issues, including the Aral Sea crisis.
Japan International Development Agency projects
In co-operation with international organizations, the Government of Japan and Japan International Development Agency (JICA) are funding a number of projects that address aspects of disaster risk reduction in mountainous areas of Kyrgyzstan. For example, JICA has implemented projects to improve the protection of road infrastructure between Bishkek and Osh from snowstorms and avalanches.
Reducing vulnerabilities of populations in the Central Asia region from glacier lake outburst floods in a changing climate
The project, funded by the Adaptation Fund and implemented by UNESCO, aims to reduce societal risks and vulnerabilities associated with GLOFs. It will do this by conducting risk and vulnerability assessments, strengthening early warning systems and DRR capacities, and providing community and gender-sensitive training and awareness-raising.
Strengthening disaster resilience and accelerating the implementation of Sendai Framework for Disaster Risk Reduction in Central Asia
The EU-funded project, implemented by UNDRR, strengthened DRR coordination and capacity in all Central Asian countries at multiple levels. It strengthened the role of the Almaty-based CESDRR as a regional DRR hub for coordination, expertise and training. A key outcome was the development of the 'Strategy for the Development of Cooperation of the Countries of Central Asia in Disaster Risk Reduction for 2022-2030', accompanied by annual action plans for its implementation.
Global Network of Civil Society Organizations for Disaster Reduction
The Global Network of Civil Society Organizations for Disaster Reduction (GNDR) promotes risk-informed development and strengthens civil society capacity through regional advisory groups and gender-balanced national focal points in each country. It provides tools such as a guide to risk-informed development, a climate projections toolkit and a local leadership academy. GNDR's methodologies could be of significant benefit to Central Asia, particularly in improving co-operation on glacier monitoring and sharing lessons from diverse global experiences.

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

The project, funded by the Global Environment Facility (GEF) and implemented by UNDP and UNESCO, aims to strengthen the resilience of Central Asian countries to the impacts of climate change on glacio-nival systems and permafrost. It focuses on knowledge consolidation, regional co-operation, capacity building, demonstration projects and awareness-raising to effectively address these environmental challenges.

Sustainable Management of Forests in Mountain and Valley Areas

The GEF-FAO project aims to introduce sustainable forest management in Uzbekistan to improve both livelihoods and environmental outcomes such as carbon sequestration. Among its activities, the project is developing an operational forest inventory and monitoring system and operationalizing sustainable forest management in four demonstration sites in Uzbekistan. Afforestation is a particular focus of the project and is being supported through technical knowledge transfer and community forestry or lease agreements.

Team Europe Initiative on Water, Energy and Climate Change

The EU has a number of initiatives and joint programming processes with countries in Central Asia that focus on climate change and sustainable development issues. In November 2017, the EU launched the 'Team Europe Initiative on Water, Energy and Climate Change', which focuses on supporting all five countries in Central Asia to develop an integrated regional electricity market, improve transboundary water management and integrate climate change into regional policy dialogues on water, energy and the environment.

Climate Change and Resilience in Central Asia (Ferghana Valley)

The EU-UNDP project supports joint climate action for stability and climate-resilient development in the Ferghana Valley. Through regional knowledge sharing, community-based early warning systems and mainstreaming of climate risks into national policies, the project aims to increase the capacity of local communities and regional actors in the cross-border area of Kyrgyzstan, Uzbekistan and Tajikistan to address climate security risks. Project activities range from disaster risk reduction measures through technical capacity building to strengthening social cohesion through mediation training.

Regional Constructive Dialogue on Climate Change in Central Asia

Funded by the Swedish International Development Cooperation Agency and building on previous research and recommendations on the regional security implications of climate change in the transboundary river basins of Kazakhstan, Kyrgyzstan and Tajikistan, the project aims to strengthen transboundary water co-operation in a changing climate. The project, implemented by International Alert and local partners, brings together civil society, climate and conflict experts and government representatives to address the challenges identified in a constructive dialogue.

Labor Migration Program – Central Asia

The project, implemented by IOM with financial support from SDC, aims to improve the management of labor migration and human mobility in order to promote sustainable development in both countries of origin and destination, including Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan. Bringing together a wide range of stakeholders from the public and private sectors, the project's activities aim to contribute to the development of regional coordination mechanisms and migration policies to create better employment and remittance opportunities for workers.

Central Asia Regional Migration Program
Through the joint efforts of IOM, UN Women and the World Bank, with funding from the UK Government, CARMP addresses labor migration in the region, particularly from Kyrgyzstan and Tajikistan as sending countries and Kazakhstan and the Russian Federation as receiving countries. To reduce poverty, the program improves social and economic opportunities and protects the rights of migrant populations. In this way, it seeks to reinforce the positive effects of migration.
Bai-Alai: Small Business and Income Creation Program
With financial support from Switzerland, the Aga Khan Foundation and Helvetas Swiss Inter co-operation are implementing the Bai-Alai project, which promotes sustainable livestock breeding in the Alai and Chon-Alai regions of Kyrgyzstan, for example by improving the quality rather than the quantity of livestock in order to increase local income opportunities and reduce overgrazing.
Southeast Europe and Central Asia Catastrophe Risk Insurance Facility
Working with the Government of Kazakhstan, this GEF-funded project developed an insurance scheme for farmers in the country, including coverage for extreme weather events. The project was intended to be replicable across the region, but no other countries have adopted the scheme to date.
Green Climate Fund projects
The Green Climate Fund is supporting several projects in Central Asia, such as the Carbon Sequestration through Climate Investment in Forests and Rangelands project in Kyrgyzstan (FAO 2019).
Climate Investment Funds projects
The Climate Investment Funds (CIF) accelerate transformative climate action, including through investments in clean energy, resilience and nature-based solutions. It also includes projects in the UHJLRQ ZLWK ¼ PLOOLRQ RI &,) IXQGLQJ LQ (XURSH D supporting climate-smart water infrastructure and sustainable land management to boost local income opportunities in Tajikistan (Climate Investment Funds 2023).
A Model for Sustainable Tourism in Central Asia
The EU-Switch Asia project promotes sustainable tourism in Uzbekistan, Kazakhstan and Tajikistan through the implementation of ISO standards on green procurement and eco-labelling. It works with tourism businesses and regional and local authorities to plan and implement policies that support the development of sustainable tourism.
Green Villages Central Asia
The Women in Europe for a Common Future (WECF) program supports local organizations in the agriculture, water, renewable energy and ecotourism sectors in Kyrgyzstan and Tajikistan, with a focus on strengthening women's economic empowerment and rights. For example, WECF works with micro-credit agencies and UNEP to support ecotourism in villages near Lake Issyk-Kul in Kyrgyzstan, in collaboration with several local partners.
Severe Forecasting Regional Sub-Program in Central Asia
Through the Severe Forecasting Regional Sub-Program in Central Asia program, the WMO aimed to strengthen the capacity of the National Meteorological and Hydrological Services of Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan.

GEF-UNDP projects focusing on climate-sensitive agriculture

In Kazakhstan, the GEF-UNDP project aimed to ensure environmental protection, food security and sustainable livelihoods by promoting integrated land management approaches and agricultural diversification. In Turkmenistan, the GEF and UNDP supported climate-resilient livelihoods in agricultural communities in the drought-prone Lebap and Dashoguz regions by strengthening community-based adaptation solutions, mainstreaming adaptation into relevant policies, and enhancing national adaptation planning capacities. In Tajikistan, the mainstreaming of agro-biodiversity conservation and climate adaptation into national and local policies was promoted to conserve agricultural biodiversity in the face of climate change.

Environmental Remediation Account for Central Asia

Through the Environmental Remediation Account for Central Asia (ERA) funding instrument, the EU and the European Bank for Reconstruction and Development have provided grants to help clean up uranium sites across the region. Work has already begun in Kyrgyzstan and Uzbekistan, providing an interesting pool of technology and resources from which similar projects can build and borrow.

Central Asian Leadership Program on Environment for Sustainable Development

The Central Asian Leadership Program on Environment for Sustainable Development is a unique leadership program run by the Regional Environmental Centre for Central Asia (CAREC) since 2010. It is designed to enhance the leadership capacity of junior and mid-level managers from various environmental agencies, and focuses on a wide range of sustainable development challenges in the region. It is organized annually and involves representatives from government, academia, the private sector and NGOs.