Funding Proposal

FP283: Glaciers to Farms (G2F) Regional Program: Advancing Climate Resilience & Sustainable Development in Central and West Asia

Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan, Uzbekistan | Asian Development Bank (ADB) | Decision B.43/03

18 November 2025

GREEN CLIMATE FUND

Acronyms

ADB	Asian Development Bank
AR6	Sixth Assessment Report
CAREC	Central Asia Regional Economic Cooperation Program
CCA	Climate Change Assessment
CGA	Country Gender Assessment
CPS	Country Partnership Strategy
CRA	Climate Risk Assessment
CWA	Central & West Asia
DAE	Direct Access Entities
DMF	Design Management Framework
DRR	Disaster Risk Reduction
EE	Executing Entities
EFA	Economic and Financial Analysis
EIRR	Economic Internal Rate of Return
ESF	Environmental and Social Framework
ESG	Environmental, Social, and Governance
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Safeguards
EWS	Early Warning Systems
FAA	Funded Activity Agreement
FAO	Food and Agriculture Organization of the United Nations
FIL	Financial Intermediation Lending
G2F	Glaciers-to-Farms
GAP	Gender Action Plan
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Fund
GHG	Greenhouse gas
GLOF	Glacial Lake Outburst Flood
GMIS	G2F Information Management System
GRM	Grievance Redress Mechanism
IPCC	Intergovernmental Panel on Climate Change
IPP	Indigenous Peoples Plan
IPPF	Indigenous Peoples Policy Framework
IWRM	Integrated Water Resources Management
KBA	Key Biodiversity Areas

MDBs	Multilateral Development Banks
MEL	Monitoring, Evaluation, and Learning
MGFF	Mountain and Glacier Finance Facility
MSME	Micro, Small and Medium Enterprises
M&E	Monitoring and Evaluation
NAP	National Adaptation Plan
NbS	Nature-based Solutions
NDA	National Designated Authorities
NDC	Nationally Determined Contribution
NMHS	National Meteorological and Hydrometeorological Agencies
NPV	Net Present Value
OCR	Ordinary Capital Resources
PAI	Project Administration Instructions
PAM	Project Administration Manual
PES	Payment for Ecosystem Services
PMU	Project Management Unit
PPF	Project Preparation Facility
PPP	Public-Private Partnership
RGCOP	Regional Glacier Community of Practice
RRP	Report and Recommendation of the President
SAP	Sectoral Adaptation Plan
SDG	Sustainable Development Goal
SME	Small and Medium-sized Enterprises
TA	Technical Assistance
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
WASH	Water, Sanitation and Hygiene

Contents

Note to Accredited Entities on the use of the funding proposal template

- Accredited Entities should provide summary information in the proposal with cross-reference to annexes such as feasibility studies, gender action plan, term sheet, etc.
- Accredited Entities should ensure that annexes provided are consistent with the details provided in the funding proposal. Updates to the funding proposal and/or annexes must be reflected in all relevant documents.
- The total number of pages for the funding proposal (excluding annexes) **should not exceed 60**. Proposals exceeding the prescribed length will not be assessed within the usual service standard time.
- The recommended font is Arial, size 11.
- Under the GCF Information Disclosure Policy, project and programme funding proposals will be disclosed on the GCF website, simultaneous with the submission to the Board, subject to the redaction of any information that may not be disclosed pursuant to the IDP. Accredited Entities are asked to fill out information on disclosure in section G.4.

Please submit the completed proposal to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:

"FP-[Accredited Entity Short Name]-[Country/Region]-[YYYY/MM/DD]"

A. PROJECT/PROGRAMME SUMMARY

A.1. Project or programme	Programme	**A.2. Public or private sector**	Public

A.3. Request for Proposals (RFP)

If the funding proposal is being submitted in response to a specific GCF Request for Proposals, indicate which RFP it is targeted for. Please note that there is a separate template for the Simplified Approval Process and REDD+.

Not applicable

A.4. Result area(s)

*Check the applicable GCF result area(s) that the overall proposed project/programme targets below. For each checked result area(s), indicate the estimated percentage of **GCF and Co-financers' contribution** devoted to it. The total of the percentages when summed should be 100% for GCF and Co-financers' contribution respectively.*

	GCF contribution	Co-financers' contribution[1]
Mitigation total	0 %	0 %
☐ Energy generation and access	0 %	0 %
☐ Low-emission transport	0 %	0 %
☐ Buildings, cities, industries and appliances	0 %	0 %
☐ Forestry and land use	0 %	0 %
Adaptation total	**100%**	**100 %**
☒ Most vulnerable people and communities	25 %	30 %
☒ Health and well-being, and food and water security	50 %	35 %
☒ Infrastructure and built environment	0 %	30 %
☒ Ecosystems and ecosystem services	25 %	5 %

A.5. Expected mitigation outcome *(Core indicator 1: GHG emissions reduced, avoided or removed / sequestered)*	*Indicate greenhouse gas (GHG) emission reductions or removals in tCO2eq over total lifespan of the project/ programme[2]*	**A.6. Expected adaptation outcome** *(Core indicator 2: direct and indirect beneficiaries reached)*	*Indicate total number of direct and indirect beneficiaries*	
			Direct: 13,613,365	Indirect: 31,486,090
			3.94% *% of direct beneficiaries vis-à-vis total population of 345 million* ***40% Female***	**9.12%** *% of indirect beneficiaries vis-à-vis total population of 345 million* ***40% Female***

A.7. Total financing (GCF + co-finance[3])	3,500,000,000 USD	**A.9. Project size**	Large (Over USD 250 million)
A.8. Total GCF funding requested	250,000,000 USD *For multi-country proposals, please fill out annex 17.*		

A.10. Financial instrument(s) requested for the GCF funding

Mark all that apply and provide total amounts. The sum of all total amounts should be consistent with A.8.

☒ Grant 208,200,000	☐ Equity Enter number
☒ Loan 41,800,000	☐ Results-based payment Enter number
☐ Guarantee Enter number	

[1] Co-financer's contribution means the financial resources required, whether Public Finance or Private Finance, in addition to the GCF contribution (i.e., GCF financial resources requested by the Accredited Entity) to implement the project or programme described in the funding proposal.
[2] The total lifespan of the project/programme is defined as the maximum number of years over which the outcomes of the investment are expected to be effective. This is different from the project/programme implementation period.
[3] Refer to the Policy of Co-financing of the GCF.

A.11. Implementation period	10 years	**A.12. Total lifespan**	15 years
A.13. Expected date of AE internal approval	6/18/2025	**A.14. ESS category**	A
A.15. Has this FP been submitted as a CN before?	Yes ☒ No ☐	**A.16. Has Readiness or PPF support been used to prepare this FP?**	Yes ☒ No ☐
A.17. Is this FP included in the entity work programme?	Yes ☒ No ☐	**A.18. Is this FP included in the country programme?**	Yes ☒ No ☐
A.19. Complementarity and coherence	*Does the project/programme complement other climate finance funding (e.g. GEF, AF, CIF, etc.)? If yes, please elaborate in section B.1.* [4,5] Yes ☒ No ☐		

[4] G2F complements existing GEF programs, in particular the Food Systems, Land Use, and Restoration (FOLUR) Impact Program, however, complementarities will be explored during implementation level. ADB are also in process of developing a regional GEF program to complement G2F objectives on nature-based solutions, landscape management and biodiversity.

[5] The program is expected to demonstrate strong complementarity with existing GEF-funded initiatives in the region, particularly those focused on water management and agriculture systems. These synergies will be further explored and refined during the implementation stage; linkages will be explored especially regards knowledge management platform.

A.20. Executing Entity information	The Executing Entities (EE) for the Glaciers to Farms (G2F) include the Asian Development Bank (ADB) and the relevant host country ministry responsible for sovereign grant agreements in accordance with ADB's country agreements. ADB will serve as the EE for Components 1, 3, and 4, in line with its accredited entity policies and procedures. These components primarily involve technical assistance and will be implemented in collaboration with participating countries, following ADB's established country and regional management frameworks. In line with ADB's policies, which define implementation responsibilities under **country-executed modalities**, the host countries will serve as sovereign EE for **Component 2** of the Program. Component 2 comprises investment activities aligned with what the GCF refers to as "subprojects." Under the country-executed modality, the government of each host country, acting through its designated ministry or department, will be responsible for the implementation of its respective 'subproject'. In this capacity, and to the extent that GCF proceeds are received, utilized, or managed by the Host Country for the purposes of the Funded Activity, the relevant ministry or department will act as the **EE**, as further described in this Funding Proposal. These entities will be responsible for executing or implementing the relevant Funded Activities in accordance with both GCF and ADB policies and procedures governing project execution and fiduciary responsibilities. They will be responsible for utilizing or channeling GCF Proceeds for the implementation of the Funded Activity. In this role, the Executing Entity will oversee the execution, coordination, and delivery of the relevant activities, and will also be responsible for the selection, engagement, and oversight of implementation partners, in accordance with national systems and relevant ADB and GCF policies. The selection of the EE was undertaken by ADB in accordance with its legal and operational policies governing collaboration with host governments. All selected entities have prior experience in managing ADB-administered funds and proceeds and have demonstrated compliance with applicable fiduciary and safeguard requirements. For the G2F Program, where capacity-building needs are identified—particularly in relation to operational frameworks or policies specific to the management of GCF funds—targeted capacity support will be provided. In addition, ongoing engagement with EE will be maintained throughout the implementation period. As part of ADB's established agreements with host countries, regular adaptive monitoring will be conducted to assess progress, address implementation challenges, and ensure alignment with both ADB and GCF requirements.

A.21. Executive summary (max. 750 words, approximately 1.5 pages)

Regional Climate Challenges
Central and West Asia (CWA) is experiencing some of the most rapid warming globally, with temperatures rising by 0.2–0.4°C per decade. Climate models project that summer temperatures could rise by more than 5°C by 2100, posing serious threats to glacier systems in the Pamir and Tien Shan ranges. Over half of the region's glacier volume could be lost, endangering water, food, and energy security. The melting of glaciers, snowpack, and permafrost is already shifting seasonal water availability, heightening the risk of glacial lake outburst floods (GLOFs), and placing added stress on already fragile agricultural systems. Earlier snowmelt is moving peak water flows to times of low agricultural demand, reducing the reliability of water resources. Downstream nations such as Kazakhstan, Turkmenistan, and Uzbekistan, which depend heavily on transboundary water flows—up to 95% in Turkmenistan—are particularly vulnerable. In response, the Glaciers to Farms (G2F) Program targets Central Asia, Pakistan, and the South Caucasus to strengthen climate resilience where glacier-fed systems are most critical. In Kyrgyzstan and Tajikistan, G2F links mountain science to basin-wide planning, enhancing adaptation strategies for women and smallholder farmers. In Pakistan, where the Indus River system relies on over 7,000 glaciers, G2F supports glacier monitoring, promotes inter-provincial water governance, and builds resilience from mountain headwaters to delta communities. In the South Caucasus, where the Kura and Aras rivers sustain Armenia, Azerbaijan, and Georgia, the Program advances risk-informed planning, nature-based solutions (NbS), and regional cooperation to safeguard water security and reduce climate-related hazards.

Women, smallholder farmers, and micro, small, and medium enterprises (MSMEs) in agriculture face disproportionate risks due to limited access to finance, infrastructure, and limited decision-making processes. Rising heatwaves, floods, and landslides threaten livelihoods, particularly in mountain and rural communities and water-stressed regions.

Overview and Rationale
The G2F Program is a comprehensive, multi-sectoral climate adaptation program designed to address the urgent challenges facing over 340 million people in CWA. These communities, living in the Indus, Amu Darya, Syr Darya, and other river basins, are highly dependent on cryosphere-fed water systems. Rapid climate change is causing glaciers to retreat by as much as 1% annually, leading to increasingly erratic water flows, heightened food insecurity, and intensifying disaster and health risks.

Why GCF Funding Is Needed
The Program is designed to address the climate change impacts highlighted in national and regional climate change priorities. The Program aims to mobilize up to USD 3.5 billion in public and private finance, including USD 250 million in GCF concessional support. G2F employs a full-cycle adaptation approach that links glacier monitoring with downstream actions in agriculture, water management, and disaster risk reduction. Built-in learning and feedback loops ensure continuous adjustment, guided by science-policy-finance coordination. Addressing the urgent and complex climate risks facing cryosphere-dependent communities requires catalytic and concessional finance to sustain this adaptive system. The scale, complexity, and urgency of the climate challenges faced by cryosphere-dependent communities require catalytic and concessional finance. GCF funding is essential to de-risk early investments, support innovation, and attract large-scale public and private co-financing. Many countries in CWA lack the financial and institutional capacity to respond adequately to glacial retreat and its cascading impacts.

Without concessional finance from the GCF, high-impact but high-risk interventions, particularly those targeting the most climate vulnerable sectors and populations, would remain unfunded, leaving communities further exposed to climate-driven poverty and instability. GCF support ensures that G2F not only builds infrastructure and systems, but also lays the foundation for inclusive, equitable, and sustainable adaptation.

Program Components
Component 1: Science-Based Climate Risk Planning and Investment Mechanisms. This component strengthens national planning by integrating glacier and climate risk assessments to inform investments on planning investments for infrastructure, agricultural systems, and river basin strategies and identify and protect vulnerable communities. It promotes better understanding of innovative financial tools such as sustainability-linked or outcome bonds and payments for ecosystem services (PES) to enable adaptation investment.

Component 2: G2F Investment Solutions. This component finances the implementation of scalable, locally adapted solutions that strengthen resilience in glacier-fed regions. ADB will support investments in climate-smart agriculture, efficient and climate-resilient irrigation systems, adaptation-related infrastructure (such as water storage, conveyance, and flood protection), multi-hazard early warning systems (EWS), adaptive social protection and health systems, and NbS for disaster risk reduction. These interventions are tailored to the specific vulnerabilities of communities dependent on cryosphere-fed water systems, with a focus on high-risk and underserved areas.

Component 3: Capacity Building for Climate Finance Access. The feasibility assessment highlighted that the enabling environment needs to be strengthened prior to concessional loan finance to the agricultural enterprise sector being provided. This component supports agri-MSMEs and rural enterprises with technical assistance and capacity building. It aims to strengthen local financial institutions and catalyze public-private partnerships (PPP) for long-term adaptation investments; further scaling will be mobilized in the future through ADB's investment programs.

Component 4: Regional Knowledge Platform for Adaptive Learning and Climate Action. To foster cross-border collaboration, G2F will establish a G2F Monitoring Information System (GMIS) and a harmonized regional knowledge platform. This will facilitate data sharing, planning, and coordinated climate governance.

Linking the Components
The four G2F components function as an integrated, mutually reinforcing system designed to ensure full cycle adaptation:

- Component 1 provides the scientific and financial foundation by incorporating glacier and climate data into national planning and investment readiness. This component develops the evidence base for action.
- Component 2 transforms these plans into tangible projects by funding practical adaptation measures in priority sectors like agriculture, water, and social (e.g., health and social protection).
- Component 3 sustains and scales these interventions by enhancing the capacity of local financial institutions and empowering agri-MSMEs to access and deploy climate finance.
- Component 4 connects all components through a regional platform that institutionalizes learning, harmonizes data and standards, and ensures collaboration across borders.

From Glaciers to Cooperation: Advancing Climate Resilience Across Borders
The G2F Program offers a science-based, programmatic approach to managing climate risks at both national and transboundary levels. At the national level, G2F supports country-specific adaptation projects while addressing fragmented climate governance; by improving data integration, inter-agency coordination, and EWS, the Program enhances climate resilience from glacier headwaters to farmlands and creates scalable models for broader use. At the regional level, G2F prioritizes trust-building over formal agreements, focusing on joint diagnostics, glacier monitoring, and data harmonization. It invests within national borders in ways that have the potential to yield clear cross-border benefits and strengthen knowledge-sharing platforms to promote long-term cooperation. ADB's platforms (e.g., Central Asia Regional Economic Cooperation – [CAREC] Working Groups on Water Pillar and Climate Change) provide the credibility and continuity needed to foster gradual collaboration. As countries gain confidence through successful implementation, G2F enables progression from information sharing to deeper partnerships—such as joint project planning and investment—with shared climate goals. G2F's flexible design allows countries to engage at their own pace, while contributing to a shared regional vision. Over time, this inclusive and adaptive approach lays the groundwork for sustained, climate-informed cooperation.

Strategic Value of the Programmatic Approach
G2F delivers high-impact, paradigm-shifting outcomes by addressing glacial retreat and water insecurity through a unified, regionally integrated adaptation framework that combines science, climate information, innovative and transformative investments, innovative financing mechanisms and regional platforms to deliver adaptation and resilience solutions and mobilize climate financing in CWA. Its programmatic approach reduces implementation costs by streamlining planning, finance, and monitoring systems across countries, avoiding duplication and enabling economies of scale.

B. PROJECT/PROGRAMME INFORMATION

B.1. Climate context (max. 1000 words, approximately 2 pages)

The Global Threat of Climate Change on Glaciers in Asia

Glaciers around the world have been retreating since the 20th century, with the pace of loss accelerating significantly in recent decades.[6,7] Most mountain glaciers are now thinning rapidly and are no longer in equilibrium with the current climate,[8] meaning they will continue to shrink even if greenhouse gas (GHG) emissions are reduced. Continued atmospheric warming will further intensify this imbalance. Projections indicate that with global warming between 1.5°C and 4°C, mountain glaciers could lose between 26% and 41% of their total mass by 2100 compared to 2015 levels, with many glaciers disappearing entirely, leaving once-glaciated mountain headwaters ice-free with dramatically reduced water storage capacity throughout the year.[9]

Glaciers across Asia's high mountain regions—including the Hindu Kush, Himalaya, Pamir, Tien Shan, and Karakoram ranges—are retreating at an unprecedented rate due to climate change. Collectively these glaciers feed major river systems such as the Amu Darya, Syr Darya, Indus which are under the scope of G2F Program, and Ganges, Brahmaputra, Irrawaddy, and Mekong, which combined are critical lifelines for over 1.9 billion people, supporting water, food, and energy security across Central, South, and Southeast Asia.

The rapid degradation of these glacier systems across the Central Asia, Pakistan and South Caucasus poses a serious threat to regional stability, agriculture systems, and livelihoods. This G2F Program specifically addresses the climate impacts of glacial melt in these regions and forms a key component of ADB's broader glacial resilience program, which also includes complementary initiatives in the Hindu Kush Himalayas and glacier-fed river basins across Southeast Asia.

Box 1. Asia's Vanishing Glaciers: A Global Climate Emergency

Glaciers in the Himalayas, Tien Shan, and Pamirs are melting rapidly, threatening the water security of over 2 billion people who depend on glacier-fed rivers for agriculture, hydropower, and drinking water. These "water towers of Asia" are essential for seasonal flows that sustain ecosystems and livelihoods across 10 major basins.

The IPCC warns that over 50% of glacier volume in Central Asia could be lost by 2100, even under moderate warming. UNESCO and UNCCD highlight that glacial retreat will disrupt water cycles, worsen droughts and floods, and contribute to food insecurity, displacement, and cross-border tensions.

The IPCC Special Report on the Ocean and Cryosphere (SROCC, 2019) emphasizes that mountain communities face disproportionate risks—reduced freshwater, rising disaster threats like GLOFs, and declining agricultural viability.

"High mountain communities are increasingly exposed to risks from cryosphere changes, with limited capacity to adapt." — IPCC SROCC (2019)

This is more than a regional issue, it is a global climate emergency. The loss of glaciers undermines progress on SDGs 2, 6, 13, 15, and 16, threatening food and water security, climate adaptation, and peace.

The G2F Program provides a strategic, multi-country solution. It translates science into action—scaling nature-based restoration, climate-smart agriculture, early warning systems, and climate finance. The G2F Program offers a coordinated, regional pathway to resilience and sustainable development.

Addressing this challenge requires urgent, integrated action. In response to the needs of national governments in the region, the G2F Program directly responds to climate threats by promoting climate-resilient agriculture, adaptive water management, nature-positive investments and climate adaptive health and social protection systems in glacier-fed basins. The Program complements the IPCC and UNESCO recommendations by emphasizing national and regional cooperation, locally led solutions, and the scaling of innovative financial mechanisms to protect both highland and downstream communities.

1. Glaciers – The Cryosphere

The cryosphere, defined herewith as ice, permafrost, snow and glaciers, is a vital freshwater source for over 340 million people across Central Asia, Pakistan, and the South Caucasus, underpinning downstream water availability for agriculture, drinking water, hydropower, and ecosystems. These high-altitude ice reserves function as natural reservoirs, storing and regulating seasonal flows by releasing meltwater during dry summer months—precisely when irrigation demand peaks. However, glacial retreat due to climate change is disrupting this balance, intensifying risks for food security, water access, and livelihoods, particularly for women, smallholder farmers, and rural communities who depend on predictable water cycles.

G2F focuses on three areas within ADB's CWA region, united by the shared challenge of glacial melt and its cascading climate impacts. The Program addresses complex challenges ranging from inter-provincial dynamics within countries like Pakistan, the most glaciated country in the world, to upstream-downstream tensions between neighboring nations (e.g., Afghanistan that connects to

Central Asia). It is impactful and cohesive, brought together by science-based investment planning, on-the-ground demonstration projects, and a robust knowledge platform that supports evidence-based decision-making.

- ***Central Asia:*** *Over 70% of irrigation water used in the region originates from glacier-fed rivers. Key crops like cotton, wheat, and fruits rely on predictable summer flows. More than 22 million rural people, including youth and indigenous pastoralist communities are directly affected by reduced water availability and increasing competition for resources.*

- ***Pakistan:*** *Glacial melt accounts for 60% to 80% of Indus River flows during the critical summer growing season. Over 90% of Pakistan's agricultural production—including wheat, rice, and cotton—depends on this meltwater. 70% of the rural population relies on glacier-fed irrigation for livelihoods. Changes in meltwater timing and volume are already impacting women-headed households and low-income farmers with limited access to irrigation infrastructure and climate resilient agriculture techniques.*

- ***South Caucasus:*** *Glacier and snow fed rivers support irrigation, drinking water, and hydropower in arid and semi-arid zones. Agriculture in lowland areas—where most poor rural communities and ethnic minorities reside—is highly dependent on these regulated mountain flows. Glacier retreat undermines seasonal water reliability and resilience of rural economies, contributing to increased outmigration, loss of cultural heritage, and heightened gender disparities in access to resources.*

Vital studies were conducted with GCF Project Preparation Facility (PPF) support, investigating the impacts of cryosphere change across four key watersheds, selected as representative models for broader application across the Asia region. These studies offer critical evidence to guide program design and long-term planning. They also complement regional assessments that supported the formulation of ADB's Climate Action Road Map for Central and West Asia[10], and Climate Change Action Plan,[11] as well as downstream watershed studies that examine climate risks, water allocation, and infrastructure resilience.

The PPF supported a comprehensive glacial assessment that examined several key components in detail, including hydrology (Annex 2; Part 2), Regional Cryosphere Impacts analysis including socioeconomic implications for sectors such as agriculture, energy and settlements (Annex 2, Part 2, Annex A and bespoke climate projections and risk assessments for the glaciated areas of the Kura, Pyanj and Naryn showing projected temperature and precipitation increases by 2085 (Annex 2; Part 2, Annex B).

Annex 2 shows projections, climate baseline and projection analysis were carried out based on modelling targeted on glacierized areas in the four watersheds mentioned above. The assessment found that climate change across the CWA region has accelerated since the early 1980s. While warming from 1900 to 1980 was minimal (~0.1°C per decade), rates increased to 0.2°C–0.4°C per decade from 1981 to 2020, with the Caucasus warming fastest. For more information on climate projections, please see Annex 2 Part 2.

- **Temperature:** Across CWA, by the 2050s under a high emissions scenario, annual daily mean temperatures increase from around 2.2 to 2.6 °C. By the 2090s the projections indicate a significant warming of 5 to 6 °C across CWA.
- **Precipitation:** In all watersheds there is an increase in winter precipitation of between 10 and 30% by 2085 while in one watershed (the Naryn) there is also an increase in spring precipitation of 30%. When coupled with temperature increases this implies significant flood risk caused by increased melting of larger snowpacks.

The G2F Program is a flagship regional climate adaptation and resilience initiative that focuses on the cascading impacts of glacial retreat, snowpack changes, and permafrost thaw across CWA. The Program responds to the urgent need for investment to enhance climate resilience across agriculture, water, and community protection systems. The summaries below distill key findings from the climate and cryosphere assessments (see Appendix 2, Part 2, Annex A and B), highlighting climate hazards, sectoral impact pathways and risks, as well as targeted mitigation recommendations across the G2F region.

[6] Intergovernmental Panel on Climate Change (IPCC). (2023). *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (Core Writing Team, H. Lee & J. Romero, Eds.). IPCC. https://doi.org/10.59327/IPCC/AR6-9789291691647

[7] DeBeer, C. M., Sharp, M. J., & Wallace, C. (2020). Glaciers and ice sheets. In *Reference Module in Earth Systems and Environmental Sciences*. Elsevier. https://doi.org/10.1016/B978-0-12-409548-9.12441-8

[8] Hugonnet, R., McNabb, R., Berthier, E., Menounos, B., Nuth, C., Girod, L., Farinotti, D., Huss, M., Dussaillant, I., Brun, F., & Kääb, A. (2021). Accelerated global glacier mass loss in the early twenty-first century. *Nature*, 592(7856), 726–731. https://doi.org/10.1038/s41586-021-03436-z

[9] Rounce, D. R., Hock, R., Maussion, F., Hugonnet, R., Kochtitzky, W., Huss, M., Kääb, A., Fiddes, J., Fischer, M., Brinkerhoff, D. J., Malz, P., Bolch, T., Bliss, A. K., McNabb, R., & Zemp, M. (2023). Global glacier change in the 21st century: Every increase in temperature matters. *Science, 379*(6627), 78–83. https://doi.org/10.1126/science.abo1324

[10] The *Climate Action Road Map for Central and West Asia, 2025–2030* aims to operationalize ADB's Climate Change Action Plan at the regional level, setting out areas of focus for ADB operations across key themes and sectors. https://www.adb.org/documents/climate-action-road-map-cwa-2025-2030

[11] ADB.2025. CAREC Climate Change Action Plan. Manila, Philippines.

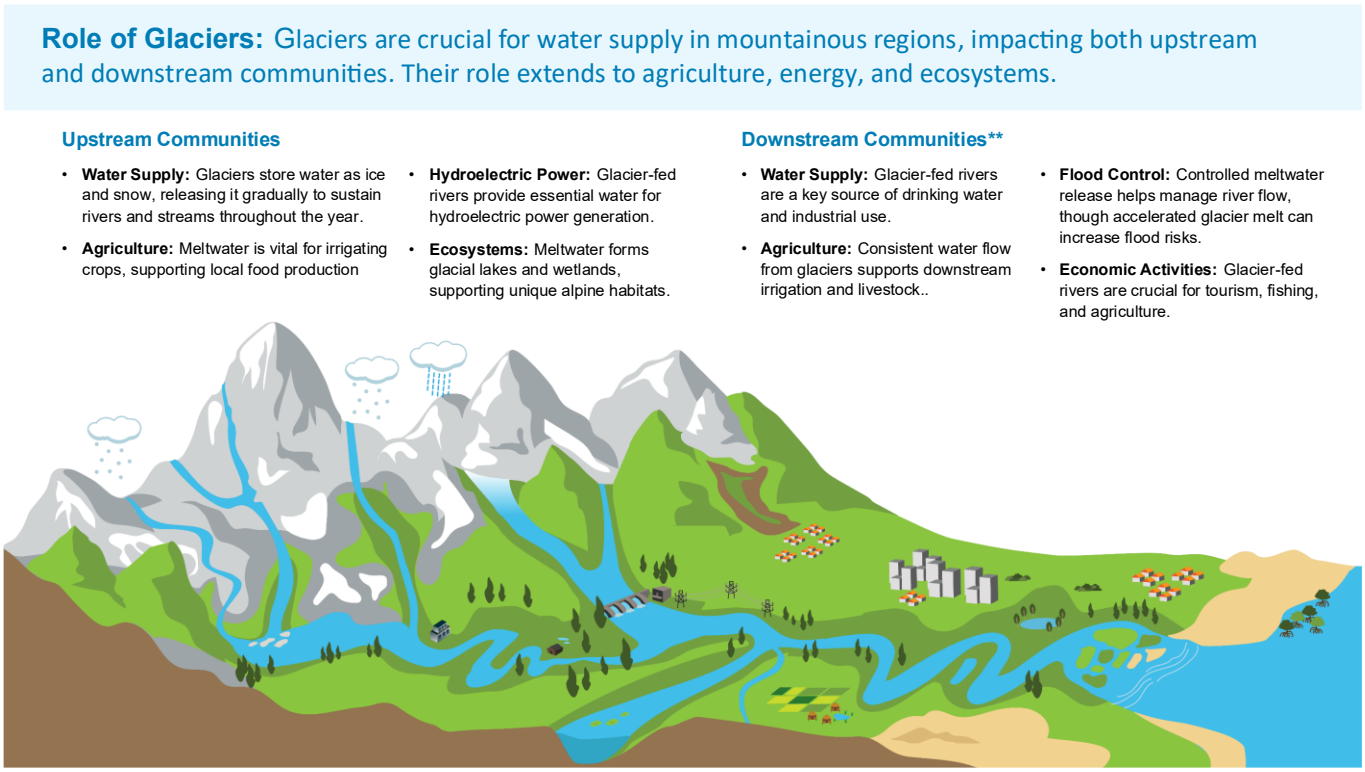

Figure 1. Role of Glaciers for Mountain and Downstream Communities

2. River Basins and Country Linkages

The G2F Program, aligned with Annex 2, targets four strategically selected glaciated river basins: the Naryn, Pyanj, Kura-Aras, and Swat. These basins serve as critical lifelines by linking vulnerable mountain ecosystems with agriculturally dependent lowlands and sustaining millions of people. Each represents distinct cryospheric dynamics, climate risks, and development pressures, making them ideal demonstration catchments. The selection was guided by four key criteria: representativeness, climate and glacier sensitivity, regional or sub-national relevance, and scalability. Together, the chosen basins reflect a diverse range of elevation gradients, hydrological regimes, socio-economic contexts, and risk profiles—ensuring that adaptation strategies piloted here will be widely applicable and replicable across the broader G2F region and in other contexts. In Pakistan, the Swat basin is a notable example. Though it does not cross international borders, it originates in a highly glaciated zone and flows through multiple provinces, affecting millions of climate-vulnerable people. The Indus basin's glacial melt impacts regional atmospheric and ecological systems, influencing agriculture and water availability. Its inclusion underscores the importance of coordinated sub-national water governance, even within national boundaries. By capturing the geographic and climatic diversity of glacier-fed systems, these basins serve as scalable models for transformative adaptation. This strategic selection enhances learning, facilitates replication, and maximizes the long-term return on concessional climate investment.

Table 1. Major River Basins included in the G2F Program Feasibility Assessment[12]

River Basin (Upstream and Downstream Countries)	Hydrological and Socioeconomic Importance	Status of Cryosphere	Impact of Melting on Basin Hydrology
Naryn Upstream Country: **Kyrgyz Republic**	Forms Syr Darya; critical for irrigation, energy, and rural livelihoods in Central Asia	• ~926–1,129 km^2 glacier cover[13] • 17-23% area loss since mid-20th century[14]	• Temp increases of over 5^{0}C by 2085 and winter and spring precipitation increase of up to 30%, leading to:

[12] The river basins referenced were included in the Feasibility Assessment; however, G2F activities are not limited to these basins and may also be implemented in other priority areas identified by participating countries.

[13] Kriegel, D; Mayer, C; Hagg, W; Vorogushyn, S; Duethmann, D; Gafurov, A; Farinotti, D. Changes in glacierisation, climate and runoff in the second half of the 20th century in the Naryn basin, Central Asia. Global and Planetary Change (2013)

[14] Kriegel, D; Mayer, C; Hagg, W; Vorogushyn, S; Duethmann, D; Gafurov, A; Farinotti, D. Changes in glacierisation, climate and runoff in the second half of the 20th century in the Naryn basin, Central Asia. Global and Planetary Change (2013)

Downstream Country: **Uzbekistan, Kazakhstan**		• Permafrost presents above 3,300 m but declining[15]	• Increased runoff variability and flash floods • Increased risk of GLOFs • Reduced long-term water supply
Pyanj Upstream Country: **Tajikistan** Downstream Country: **Afghanistan, Turkmenistan (via Amu Darya)**	High glacier density; vital for disaster risk reduction, food, and water security	• ~4,650 km^2 glacier cover (2002-3)[16] • Negative mass balance in western and southern areas[17] • Stable mass balance in Karakoram glaciers[18] • Permafrost widespread but understudied, over 80% of eastern Tajikistan[19] [20]	• Temp increases up to 5^{0}C by 2085 and winter precipitation by 30%, leading to: • Surging glaciers like Medvezhiy pose severe GLOF and flash flood risk • Water security under threat • Vulnerable communities at substantial risk of glacial hazards
Kura-Aras Upstream Country: **Georgia, Armenia** Downstream Country: **Azerbaijan**	Primary water source for Azerbaijan; important for agriculture, urban water supply, and hydropower	• 13 km^2 glacierized[21] • 75% glacier loss in Azerbaijan since 2000[22]	• Temp increases of up to 5^{0}C. Winter precipitation increases by 10% and a 20% decrease in summer, leading to: • Glaciers small but important for streamflow in dry periods • Seasonal snowmelt important water source, sensitive to higher temperatures and earlier melting
Swat Upstream Country: **Pakistan (upper and lower reaches)** Downstream Country: **Pakistan (Indus Basin)**	Subject to monsoon-snow-glacier interactions; key for early warning and water supply to downstream Punjab/Sindh	• Glaciers are present but not extensively documented. • Approximately 512 Glaciers in the Swat Basin, at 2.54% glaciation[23]	• Temp increases over 5^{0}C by 2085. Reduced precipitation in winter and increases in the monsoon, leading to: • Seasonal snowmelt dominates hydrology • Known GLOF and landslide risks, exacerbated by rising temperatures and heavy rains

Source: ADB 2025

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[21] RGI Consortium. Randolph Glacier Inventory - A Dataset of Global Glacier Outlines. (2023)
[22] Tielidze, LG; Nosenko, GA; Khromova, TE; Paul, F. Strong acceleration of glacier area loss in the Greater Caucasus between 2000 and 2020. The Cryosphere. (2022)
[23] RGI. Randolph Glacier Inventory. (2017)

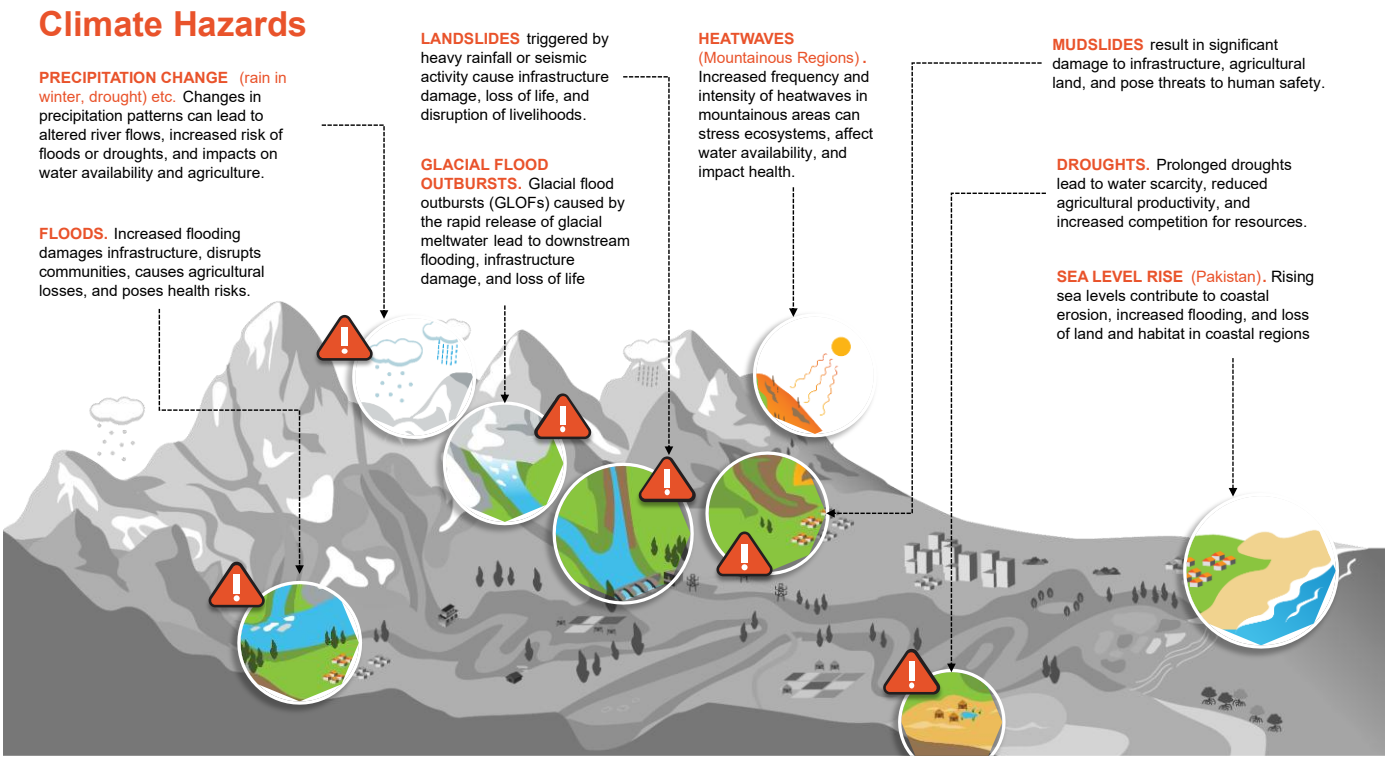

Figure 2. Climate Hazards in Glacier and Mountain Communities

3. Key Climate Changes

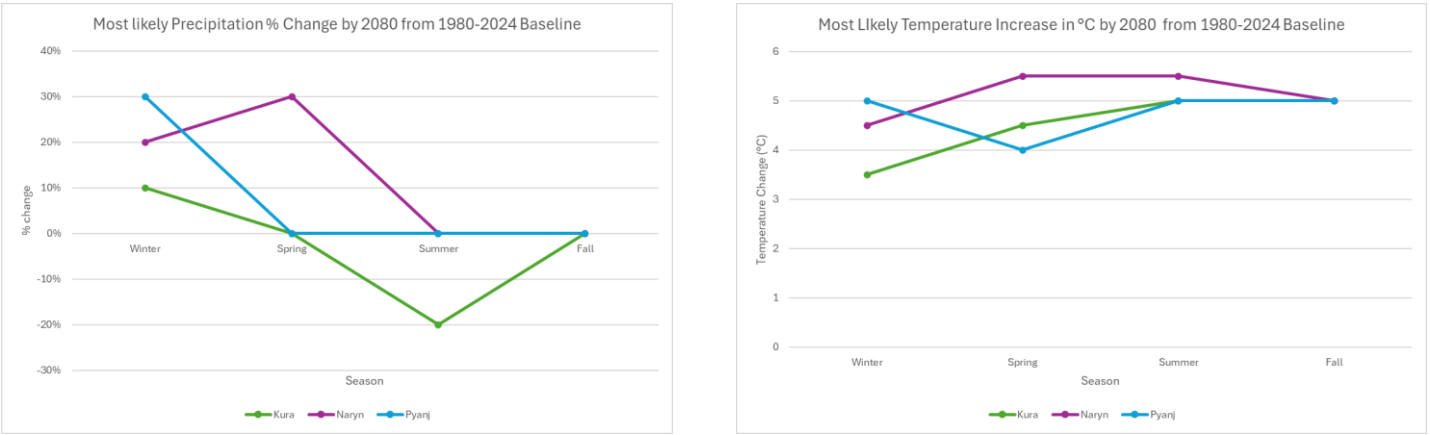

Figure 3. Projected End-of-Century Changes in Temperature and Precipitation in the Upper Naryn, Pyanj, and Kura Watersheds

Figure 3 above shows the projected changes in temperature and precipitation by the end of the century. The projections are based on the Shared Socioeconomic Pathway (SSP) 5-8.5 and are focused solely on the cryosphere sections of the upper Naryn, Pyanj and Kura watersheds. There are alarming increases in average temperatures of between 4-5.5^{0}C across the four seasons and increases in winter precipitation of between 10 and 30% in all basins with either a decrease or no change in summer precipitation despite the high growing heat stress. Downscaled data from the largest snow and ice field in the upper Pyanj Valley (4,575M average elevation) suggests the number of melt days will increase in spring and autumn towards the end of century by between 20 and 45 days from a 1980-2024 baseline of about 6 days. There is also evidence of more intense rainfall from 2076 onwards.

This level of change will significantly accelerate glacier mass loss, disrupt seasonal water availability, and increase the frequency and intensity of extreme events.

- **Glacier retreat:** Ranges from 17%–42%[24] in glacial area loss since mid-20th century (Naryn, Pyanj)
- **Earlier snowmelt and peak runoff:** Disrupts agricultural calendars and water regulation systems. Increased winter precipitation coupled with much higher spring temperatures will lead to larger spring floods.
- Increased sediment load in rivers and declining water quality leading to siltation of reservoirs and damage to irrigation and water treatment infrastructure
- **Permafrost thaw:** Impacts slope stability, infrastructure, and ground hydrology, especially in Akshiirak and the eastern Pamirs
- **Increased GLOFs:** Notable risk from surging glaciers such as Medvezhiy in Pyanj;[25] GLOFs pose hazard to rural settlements and energy assets
- **Precipitation shifts:** Winter wetting (+30%–60%) in Naryn and Pyanj; summer drying in Kura-Aras (–30% to –40%)[26]
- **Compounded monsoon effects:** In Swat, rain-on-snow, and unseasonal melt, more intense rainfall will increase and compound flood risks soil erosion and deteriorating water quality.

These impacts threaten water reliability and quality, energy production, food security, public health, and cross-border cooperation. For more information on climate changes, please see Annex 2 Part 2 – Glaciers Assessment.

Sectoral Climate Impacts and Glacial Melting

Over the past few decades, countries have faced a wide range of climate hazards, with substantial impacts across multiple sectors:

- **Agriculture and Livelihoods:** Recurring droughts and heatwaves have led to severe crop failures, livestock deaths, and food insecurity. Notably, the 2022 Pakistan floods destroyed 88% of national cotton output and caused $2.3 billion in food crop losses, and drought in 2000 across the CWA region caused a 30% drop in wheat production.

- **Water and River Basin Management:** Glacial lake outburst floods (GLOFs), dam failures, and reduced river flows have undermined water security, irrigation capacity, and hydropower reliability, affecting both rural livelihoods and national infrastructure (e.g. floods in Armenia in 2024 damaged over 3km of irrigation pipelines and 162 hectares of farmland).

- **Ecosystems and Landscapes:** Wildfires, floods, and landslides have caused deforestation, soil degradation, and loss of biodiversity, eroding critical ecosystem services, particularly in water-scarce regions (e.g. wildfires in Kazakhstan in 2023 destroyed 60,000 hectares of forest, damaging ecosystem services.

- **Social Protection and Infrastructure:** Many events resulted in fatalities, mass displacement, and destruction of homes, roads, and essential services. Several disasters (e.g., 1998 GLOF in Uzbekistan and Kyrgyz Republic which killed 100 and damaged over 5000 houses, 2023 floods in Tajikistan) disrupted access to remote communities, hindering emergency response.

These documented impacts underscore the urgent need for climate adaptation

For further context on how these climate impact pathways inform program design and prioritization, please refer to the table in **Annex 2.0 Section 1.0.2**. The table brings together credible data and case-specific references to illustrate how increasing climate events have impacted sectors over time. It is intended to strengthen the rationale for proposed interventions by linking past impacts to present adaptation needs.

4. Climate Impact Pathways

Table 2 below outlines the cascading climate impact pathways that emerge due to climate change impacts on the cryosphere.

Table 2. Cascading Climate Impact Pathways

Sector	Climate Hazard	Impact Pathway
Agriculture	Glacier retreat, erratic rainfall; increased droughts, low river discharge' heatwaves, declining water quality	Reduced irrigation water, increased summer plant stress changing precipitation patterns and water availability, disrupted planting cycles, increased soil erosion and sediment in reservoirs and damage to irrigation pumps; leading to lower yields and food insecurity
Hydropower	Snowmelt timing, GLOFs, heatwaves, changing precipitation patterns, soil erosion, river sedimentation and dam siltation	Decreased generation during peak demand, reservoir shortages, infrastructure damage, deteriorating water quality downstream from sediment flushing, increased flood risk from increased emergency releases
Settlements	Flash floods, heatwaves, permafrost thaw, soil erosion and sedimentation	Disruption to infrastructure and services, migration, health risks,
Water and River Basin Management	Flow variability, drought, GLOFs	Water disputes, food, and energy system shocks, weakened regional cooperation, lack or inadequate early warning

The impacts of climate change are already being felt by local communities. The role of vulnerable groups, especially women, farmers, and those directly affected by these changes, is critically important to the success of G2F. To ensure that G2F investments in countries are inclusive and responsive, participatory methods will be integrated into project design. This will help ensure that support reaches women and other vulnerable populations, and that interventions are tailored to strengthen their long-term climate resilience. This approach is fully aligned with ADB's policies on gender equity, social inclusion, and climate adaptation, promoting development that is both inclusive and sustainable.

Box 2. Voices from the Mountains: Vulnerability and Adaptation in Central Asia's Highland Communities

Mountain communities in Central Asia—particularly in the Pamir and Tien Shan ranges—are facing a growing climate crisis marked by environmental fragility, socio-economic challenges, and limited adaptive capacity. According to the University of Central Asia's Mountain Societies Research Institute (MSRI), these populations are especially vulnerable due to decaying infrastructure, limited access to resources, poor connectivity, and dependence on subsistence agriculture and forest products. Although rich in natural resources such as glaciers, hydropower, and minerals, mountain regions are often economically marginalized and viewed primarily as resource extraction zones. A study comparing Human Development Index (HDI) and Gross National Income (GNI) found significantly lower outcomes for mountain areas in low-income countries—exposing stark disparities in well-being and opportunity[27] (Rasul & Sharma, 2014; cited in UCA, 2021).

"In the Pamirs, we live with drought and flood in the same year. The weather no longer follows the seasons. We try to adapt, but the changes are too fast."
— Community member, Gorno-Badakhshan, Tajikistan (MSRI interviews)

Mountain societies are not only exposed to climate-driven hazards—such as GLOFs, droughts, and erosion—but also experience social vulnerabilities, including outmigration of youth, economic dependence on remittances, and limited government support.
UCA emphasizes that climate adaptation in mountain regions must be context-specific, addressing local exposure and sensitivities; flexible and inclusive, involving traditional knowledge and community agency; backed by investment in infrastructure, data, and local institutions to build resilience over time.

The G2F Program directly reflects these findings by supporting adaptive solutions tailored to high-altitude environments—bridging scientific knowledge with local voices and needs. Component 4 on Knowledge and Communication seeks to close this gap by strengthening regional data systems, documenting local innovations, and promoting inclusive, evidence-based climate dialogue across borders.

Linking Climate Risk Assessments to Project Design and Delivery in G2F

The hazards outlined above, glacier retreat, earlier snowmelt and peak runoff, increased sedimentation to valley floors and river corridors, permafrost thaw, increased GLOFs, precipitation shifts, and compound weather effects, pose significant risks to critical sectors including agriculture, hydropower, urban settlements, and health. In response to these challenges, a set of priority project types has been identified. Investment in EWS and hydrometeorological services will enable communities to better anticipate and respond to heightened risks of disasters and flooding. There is also a clear need for improved water storage and irrigation infrastructure, which can compensate for the

[24] Kriegel, D; Mayer, C; Hagg, W; Vorogushyn, S; Duethmann, D; Gafurov, A; Farinotti, D. Changes in glacierisation, climate and runoff in the second half of the 20th century in the Naryn basin, Central Asia. Global and Planetary Change (2013)
[25] Harrison, W.D., Osipova, G.B., Nosenko G.A., Espizua, L., Kääb, A., Fischer, L., Huggel, C., Craw Burns, P.A., Truffer, M, and A.W. Lai. Glacier Surges. In: Haeberli, W. and Whiteman, C. Snow and ice-related hazards, risks and disasters. Elsevier. (2015)
[26] See Annex 2 Part 2. Section 2.2. Basin Analysis
[27] University of Central Asia (2021). *Vulnerability and Adaptive Capacities of Mountain Societies in Central Asia*. Mountain Societies Research Institute (MSRI). https://ucentralasia.org/media/wygpwq22/web-no3-msri-research-paper.pdf

anticipated decline in snow and ice water storage and the shift towards earlier spring melting that reduces summer river flows; ensuring water availability for irrigation during key crop growth periods.

Projects should also target enhanced river basin management in both rural and urban settings, particularly through NbS such as reforestation and 'slow the flow' interventions. These approaches will help mitigate flood risks associated with rapid snow and ice melt, support groundwater recharge, and restore overall watershed health. Wastewater treatment is another priority area; without intervention, reduced environmental flows are expected to concentrate pollution levels in rivers. Enhanced wastewater management will reduce pollution loads, helping to keep contaminant levels within the buffering capacity of lakes that are ecologically or economically important.

The health sector also requires targeted investment, both in infrastructure and information systems. Improved data collection and analysis will support health system resilience amid rising patient needs. In parallel, expanding health infrastructure and professional training will strengthen emergency response capacity and improve long-term responses to climate-induced health trends, such as the spread of vector-borne diseases.

These key intervention types are exemplified in Table 3, which provides a list of initial demonstration projects, designed to directly address the increased exposure of the region to climate change and its declining resilience through adverse changes to its cryosphere. These projects have been identified through initial discussion with countries and informed by the findings of the Project Preparation Facility's (PPF's) glacier risk assessment. This emerging pipeline of projects has been screened using the G2F climate criteria (set out below and in Annex 2) to ensure they will address climate risk and reduce vulnerability (Component 1). On completing the climate screening and stakeholder engagement, the pipeline of projects has moved into Component 2 of the Program. All projects in Component 2 will undergo full feasibility assessment according to ADB procedures which will include full climate change risk assessments that will draw on quantitative climate data using the latest modelling and identify appropriate adaptation and resilience measures to avoid maladaptation.

Demonstration projects are presented as initial concept notes that have been aligned with national planning processes and priorities. They are specifically targeted to deliver climate additionality and are informed by preliminary climate risk assessments conducted during the PPF phase. These concepts serve as early examples of how G2F investments will integrate climate science into project design and ensure consistency with both national adaptation strategies and the overarching goals of the G2F program. All demonstration projects will subsequently undergo full technical, environmental and social safeguards (ESS) due diligence, as well as comprehensive climate assessments prior to implementation. Examples are provided in Table 3 to illustrate how these early concepts align with programmatic objectives and country priorities.

Table 3. Demonstration Project Responses to Climate Analysis in the Kura, Naryn, Pyanj, and Swat Watersheds.

G2F Component	Project	Basin Climate Hazards, Vulnerability, and Risks (see Annex 2 for more details)	How the Project Addresses the Climate Hazards, Vulnerability, and Risks
2.1	**Tajikistan** – Hydrometeorological Services and Disaster Risk Reduction Early Warning for All (Phase 2)	**Pyanj (RCP 8.5 - SSP5-8.5 by 2080)** - Virtually certain that temperature increases will exceed 4ºC in all seasons. Increases of **5ºC** are most likely in December-January-February (DJF) and September-October-November (SON), but there is a reasonable likelihood in all other seasons. SON has the highest likelihood of an increase but tied in with a reasonable likelihood of a decrease. Otherwise, there is no strong signal of direction of change in any of the other three seasons. For example, in June-July-August (JJA), the upper boundary and lower boundary of change is 40%+ and 40%- respectively**. Annex 2 risk assessment** shows that there are extreme risks GLOFs, avalanches and slope instability in Pyanj from glacial retreat and permafrost melting. More frequent rain-on-snow events, leading to flash flooding. Tajikistan is **highly vulnerable** to natural hazards, including earthquakes, floods, droughts, avalanches, landslides, and mudslides, particularly in glacier-dependent river basins and fragile mountain ecosystems. The country is estimated to have experienced over 4,000 natural disaster events in the last two decades, causing an estimated USD 500 million in damages across the country, with specific hotspots in areas such as the Zeravshan Valley	Early warning is essential to help communities prepare for and cope with the extreme risk of disasters and floods. Better hydro-met data which will be made available in time for communities to act on will enhance climate resilience. Additionality: there is a need to act now as risk is already extreme and to do nothing is not an option.
2.2	**Armenia** – Armenia Reservoir and	**Kura (RCP 8.5 - SSP5-8.5 by 2080)** - Virtually certain that temperature increases will reach or exceed 3ºC in all seasons. Reasonable likelihoods of temperature	Increased storage in the Kura watershed will help compensate for the reduced storage through reduced snow accumulation and faster seasonal melting rates,

	Irrigation Sector (ARISE) Project	increases reaching 4ºC or more, especially in SON. **5ºC** or more changes are most likely in JJA and SON. Precipitation: DJF has the highest likelihood of an increase (80% chance of a greater than 10% increase). JJA has highest likelihood of a decrease. A shorter snow season, reduced accumulation and melting permafrost are an extreme risk, reducing water supply in the growing season. Rapid melting reduces storage for summer flows. Water availability in Armenia is expected to decrease dramatically due to reduced river flows. Agriculture is a significant consumer of water resources (76%). Armenia has recognized the need for increasing water storage to manage water availability, climate change and increased competition for water demand.	leading to less availability in the summer. This will enable the irrigation of crops during the summer season. Additionality: the existence of the reservoir to address less water storage and availability in the growing season and its right-sizing during feasibility.
2.2	**Kyrgyz Republic** – Integrated River Enhancement and Climate Resilient River Basin Management	**Naryn (RCP 8.5 - SSP5-8.5 by 2080) -** Virtually certain temperature increases will exceed 3ºC in all seasons and 4ºC in all except March-April-May (MAM). Increases of **5ºC** are most likely in SON. Precipitation: DJF has highest likelihood of an increase (65% chance it will be greater than a 10% increase), followed by MAM. JJA has the highest likelihood of a decrease. Extreme risk of shorter snow season, rapid melting and retreat of glaciers, reduced water storage in the watershed and rain on snow events, increasing spring flash floods. Kyrgyz Republic and its agriculture and energy sectors are **vulnerable** to flooding of glacial, river and precipitation kinds, droughts, and landslides. Ecosystems in the Kyrgyz Republic have been negatively impacted by climate change. Reduced water resources means that much of the arable land in the Kyrgyz Republic will be vulnerable to desertification in the future.	Restoring ecosystem integrity, protecting riverbanks, using NbS to 'slow the flow' and take the top off the flood as well as enhancing groundwater recharge, will help both reduce enhanced flood risk and increase groundwater storage as the influence of the cryosphere declines. Additionality: doing nothing will not address the growing flood and drought risk due to climate change. Feasibility will take climate change into account when determining extent and location of NbS.
2.2	**Pakistan** – Swat Basin Management Project (Khyber Pakhtunkhwa)	**Swat (RCP 8.5 - SSP5-8.5 by 2080)** - October-June is expected to exceed **5ºC.** 4-5ºC is expected in July-September. Precipitation is expected to increase (13-35%) in the warm period (May- Sept). Small increase is expected in winter period. Extreme risk from increasing precipitation during the warm period, more rain than snow events and glacial melting leading to more flash floods. In Pakistan national levels of water stress are high at 162% with significant seasonal variability in water availability. Agriculture is the greatest consumer of national water resources at 94%. Pakistan is reliant on groundwater (40% of water used for irrigation), and the country ranks fourth in the world for groundwater use.	NbS will restore watershed integrity, enhance groundwater recharge, slow the flow, and take the top off the flooding, helping to reduce the increasing flood risk (judged extreme). Additionality: do nothing is not tenable with the extreme and growing risk of flooding due to the degrading cryosphere, due to climate change.
2.2	**Armenia** – Secondary City Improvement Project (Sevan Wastewater and Gyumri/Vanadzor Solid Waste)	**Kura (RCP 8.5 - SSP5-8.5 by 2080)** – see rows above for climate metrics. Risk assessment shows that there is an extreme risk of declining precipitation, less snow accumulation in the winter and rapid melting in the spring, leading to less water availability in the summer.	Enhanced water treatment will reduce pollution loads in the rivers to take account of the reduction in environmental flows and thus the reduced buffering capacity of the lake to cope with pollution. Lake Sevan is a biodiversity 'flyway' and needs to maintain a minimum level of environmental standards to maintain its status. Additionality: the current level of pollution buffering in rivers is declining due to climate change and treatment works need to address this growing need. The feasibility stage will use modelling to right-size treatment to cope with the level of reduced environmental flows and ensure pollution isn't worse due to climate change. Without action the biodiversity status will be threatened. Additionally, investments in wastewater networks and solid waste will help to reduce risks from surface water flooding (e.g. as solid waste frequently blocks drains).
2.2	**Georgia** – Climate-Resilient Drainage and Water Resources Management Project	**Kura (RCP 8.5 - SSP5-8.5 by 2080)** - see rows above for climate metrics. Risk assessment shows there is extreme risk of more frequent rain on snow events, rapid spring snow melt leading to flash flooding. Georgia is **vulnerable** to climate hazards, particularly in the sectors agriculture, forestry, water resources and	NbS in urban areas, grey infrastructure flood protection, is needed to cope with extreme and growing flood risk. Additionality: doing nothing will not address growing flood risk; the feasibility study will right-size the flood solutions according to climate change to cope with growth in and acceptable levels of future flood risk.

		energy. Despite large quantities of freshwater in Georgia, it is unevenly distributed with the western part of the country receiving the majority, while the eastern regions face water shortages. Surface water accounts for most of the country's water resources.	
2.2	**Uzbekistan** – Resilient Amu Darya River Basin Sector Development Program	**Pyanj (RCP 8.5 - SSP5-8.5 by 2080) -** see rows above for climate metrics. Risk assessment shows the risk of reduced snow accumulation, Glacier mass balance decline and rapid snow melt in the summer, leading to less water availability in the summer, which presents an extreme risk to agriculture. In Uzbekistan there is high levels of seasonal variability in water resources and high levels of water stress (122%) at the national level. Agriculture is the greatest consumer of national water resources at 91%. Uzbekistan is vulnerable to water and river regulations in other countries, as 90% of the water supply originates from beyond its borders.	Using dams to provide additional storage in the system to help compensate for the reduced Cryosphere storage is vital for enhancing the climate resilience of the agriculture sector. Additionality: Reduced storage in the cryosphere needs to be addressed. The feasibility study will determine the right size of the dam using modelling to cope with future climate change.
2.3	**Kyrgyz Republic** – Conservation and Afforestation for Resilient Ecosystems (CARE) Project	**Naryn (RCP 8.5 - SSP5-8.5 by 2080)** - see rows above for climate metrics. The risk assessment shows that the risk of glacier retreat, less winter snow accumulation and more frequent rain on snow events will result in extreme risk of both less storage in the system and more flash flooding. Additionally, temperature rise poses risks relating to heatwaves, and climate change is increasing risks from landslides. Ecosystems in the Kyrgyz Republic have been negatively impacted by climate change. Approximately 70% of the Kyrgyz Republic's pastures are now degraded to varying degrees, and land affected by soil erosion amounts to 6.43 million hectares, with significant portions of both arable land and pastures vulnerable to further degradation.	Reforestation and better watershed management will enhance the resilience of the watershed, enhance groundwater recharge, store more water and slow the flow into the rivers reducing flood risk. Afforestation will also help to reduce risks from landslides/mudslides in some locations. The project will also capture carbon and enhance biodiversity. Additionality: climate-induced changes to water resources in the watershed, requiring greater management, which the nature-based solutions will help with. Feasibility study will determine the location and extent of planting to cope with these changes and modelling will be used to address the climate change growth component of the flood risk.
2.4	**Tajikistan** – Integrated Regional Health Security and Primary Health Care Services Project	**Pyanj (RCP 8.5 - SSP5-8.5 by 2080)** - see rows above for climate metrics. The risk assessment shows that increased average heat and heat waves will increase risks due to heat stress, such as cardiovascular and respiratory illnesses and mental health conditions, as well as increase vector-borne diseases and strain healthcare capacity. Climate change is likely to impact the poorest groups in Tajikistan disproportionately. The poorest groups are more than twice as likely to be exposed to droughts than other groups, more likely to experience heat stress in manual labor jobs and less able to afford passive cooling technologies or air conditioning, reducing productivity. Climate change may also increase the prevalence of certain diseases. Malaria is likely to become more difficult to eradicate as changing climatic conditions favor mosquito survival.	Greater data and use of analytics will help triage growing numbers of patients with a changing profile of disease more effectively. The project will also enhance the capacity of the healthcare system to support increased climate-induced casualties. Additionality: enhancing resilience to climate-induced changes to the profile of health risks in mountain communities.
2.4	**Uzbekistan** – Health System Strengthening Project	**Pyanj and Naryn (RCP 8.5 - SSP5-8.5 by 2080)** - see rows above for climate metrics. The risk assessment shows that the increased temperatures and decreasing water storage and availability in the summer will lead to greater health challenges, such as heatwaves (impacting the elderly, unwell, infants, and disabled people the hardest), new and or more intense exposure to disease vectors and exposure to disasters such as floods and slope instability. The poorest groups in Uzbekistan are likely to be disproportionately impacted by climate change as they typically work in jobs more at risk of heat stress and are less able to afford passive cooling technologies or air conditioning. Women and children are also impacted more by climate change than men.	Strengthening health infrastructure and training of professionals will help cope with emergency response and the increased risks from heatwaves (e.g. respiratory and mental health conditions), and risks from disease vectors, including waterborne diseases. The facilities themselves will need to cope with more heatwaves, greater flood risk, as well as other risks such as slope instability. Additionally, without climate change, the facilities would not need to be upgraded to cope with changing and growing climate-related risks or collect and triangulate data on these growing and changing health risks. The facilities themselves need to adapt to growing flood, heat and landslide risks

Table 3 shows how the demonstration projects are responding to the climate analysis undertaken in each of the four watersheds (i.e., Kura, Naryn, Pyanj and Swat, and at a regional level. It provides evidence that these projects shift away from a business-as-usual approach to project development and directly respond to the detailed climate hazards and vulnerabilities set out above in each of the watersheds and fulfil the G2F selection criteria set out in Table 9.

ADB's Project Preparation and Due Diligence Framework for Subprojects under the G2F Program

The G2F Program is a multi-country initiative supporting climate-resilient development across glacier-fed basins in CWA. All G2F subprojects are aligned with ADB's Country Partnership Strategies (CPSs) and national climate priorities, as well as ADB's strategic directions under Strategy 2030 and the Climate Change Operational Framework 2017–2030. Design and selection of G2F projects will place particular emphasis on cryosphere-linked climate impacts, including snowmelt shifts, GLOFs, and seasonal water variability. Projects (subprojects) will also promote the long-term management of glacier-fed water resources, incorporating storage, allocation, and coordinated watershed governance. These elements are essential to building resilience over multi-decadal timeframes. A landscape-level approach will be applied across all investments. Projects will consider how upstream activities (e.g. catchment restoration) affect downstream systems (e.g. irrigation, infrastructure, livelihoods), ensuring that interventions support integrated water resource management, ecological health, and equitable access.

Project preparation (or subproject in GCF terminology) under G2F is embedded within the program's integrated results framework and contributes directly to delivery of its core components. Specifically, due diligence processes support Component 1, which establishes data-driven climate risk assessment and planning systems; Component 3, which strengthens enabling environments for agriculture, finance, and climate-smart value chains; and Component 4, which facilitates knowledge sharing, investment convening, and regional coordination. Projects are selected based on their alignment with the G2F Eligibility Criteria, outlined in the proposal and further detailed in Annex 2.0, to ensure strategic relevance, climate focus, and national endorsement. After screening, selected subprojects advance through ADB's structured preparation and appraisal process, following relevant Project Administration Instructions (PAIs) and operational policies.

- **Innovation, Additionality, and Climate Risk Assessment**

A core feature of G2F's approach is its emphasis on innovation and catalytic use of climate finance. G2F embodies the transformational vision of the GCF by using concessional climate finance to unlock systemic change—accelerating government ambition, enabling institutional readiness, and scaling adaptation investments that would otherwise not proceed. Climate finance under G2F is deployed as strategic, risk-tolerant capital, designed to de-risk early-stage adaptation investments and attract additional financing. This reflects the GCF's catalytic mandate to support projects that "would not happen without GCF involvement" (GCF website). Projects are designed to demonstrate innovation in planning, financing, and delivery—including the integration of cryosphere data into climate risk assessments (Component 1), building capacity for blended finance and ecosystem service models (Component 3), and basin-scale coordination to reduce upstream-downstream risks (Component 4). Additionally, G2F plays a convening role, bringing together public agencies, private financial institutions, research bodies, and community organizations to co-develop solutions that are scalable and finance-ready. Climate finance is thus not only a funding source—it is a tool to unlock ambition, institutional reform, and long-term transformation.

- **Project Preparation and Appraisal Process**

The project preparation and appraisal process under G2F follows ADB's sovereign operations cycle, drawing from PAI 5.01 (Preparing Loan and Grant-Financed Projects), PAI 5.06 (Economic and Financial Evaluation), PAI 6.07 (Safeguards), and PAI 5.08 (Project Readiness and Design). Each project begins with the development of a Project Concept Paper (PCP), which defines the project's rationale, alignment with the G2F program and the host country's CPS, initial safeguard and climate classifications, proposed financing modalities, and executing arrangements. Following internal review and approval, the project advances to full technical, environmental, financial, and institutional due diligence. A feasibility study is then conducted to assess technical design options, engineering viability, and institutional readiness. During this phase, the project team evaluates operational risks, procurement timelines, and readiness requirements for implementation. G2F projects will explicitly integrate climate resilience considerations into technical and engineering design, with special emphasis on cryosphere risks such as snowmelt shifts, GLOFs, sedimentation, and runoff variability. The feasibility study adopts a landscape-level approach, considering upstream–downstream dynamics, ecological integrity, and long-term water resource governance.

A full Climate Risk Assessment (CRA) is performed for all medium- and high-risk projects. Using ADB's climate risk screening framework, the CRA includes climate hazard mapping, vulnerability assessment, and adaptation options analysis; which also ensures maladaptation is avoided and promotes flexible, nature-based, or ecosystem-aligned solutions. CRA results are incorporated into project design, budgeting, and safeguards, and documented in a Climate Change Assessment (CCA) report which also reports on mitigation aspects including GHG reduction potential of projects. These inputs will inform GCF adaptation finance tagging and regional results monitoring under GMIS (Output 4.1.3).

Environmental and social safeguard assessments are conducted in accordance with ADB's Safeguard Policy Statement (2009) and PAI 6.07; and compliant with GCF's policy on Indigenous People. This includes Environmental Impact Assessments (EIA or IEE), Resettlement Plans (RP), and Indigenous Peoples Plans (IPP), depending on the categorization. Meaningful stakeholder consultations are held with communities, civil society, women, and marginalized groups, and a Grievance Redress Mechanism (GRM) is established. In parallel, economic and financial analysis is conducted using ADB's standard methodologies (PAI 5.06). This includes cost-benefit analysis, EIRR, NPV, sensitivity testing, and valuation of adaptation co-benefits such as avoided losses and ecosystem services. Financial sustainability and institutional cost recovery are also reviewed. Counterpart financing commitments from national governments are confirmed and documented, along with any expected co-financing from development partners or the private sector. This step is key to demonstrate government ownership and ensure compliance with ADB and GCF co-financing principles (PAI 5.02 and 5.04). Following due diligence, final documentation is prepared for Board approval. These tasks are carried out by ADB staff in close coordination with government stakeholders, supported by consultants, and informed through consultations with local communities. This includes the Report and Recommendation of the President (RRP), Project Administration Manual (PAM), CCA, safeguard plans, the Gender Action Plan (GAP), the economic and financial analysis report, signed Loan/Grant Agreements, and relevant GCF documentation.

Each project includes a formal G2F Eligibility Screening Confirmation, verifying that it meets the program's strategic objectives and selection criteria. Upon approval by the ADB Board, financing agreements are executed with the designated implementing agencies (as outlined in Table 9.1), enabling the project to move forward into the implementation phase.

- **Implementation, Monitoring, Knowledge**

During implementation, each G2F project is monitored using both ADB's Project Performance Monitoring System (PPMS) and the dedicated GMIS established under Output 4.1.3. GMIS enables real-time tracking of adaptation indicators, safeguards, and gender results, and supports national and regional reporting—including to GCF. Data, tools, and insights from each subproject will be shared through the G2F Knowledge Hub (Output 4.1.1) and peer-reviewed through the Regional Glacier Community of Practice (RGCOP, Output 4.1.2). Together, these mechanisms support scaling, regional replication, and long-term policy alignment.

B.2 (a). Theory of change narrative and diagram (max. 1500 words, approximately 3 pages plus diagram)

Vision Statement: The G2F Program envisions a climate-resilient, food- and water-secure CWA, where mountain and downstream communities not only survive but thrive amidst the growing threats of glacial melt, water stress, and climate extremes. The G2F Program considers and harnesses the power of science-based, inclusive, and adaptation solutions—rooted in glacier-informed hydrology, resilient agriculture, coordinated river basin governance, and climate-smart social protection. By mobilizing finance, scaling investment, and fostering regional knowledge-sharing, the G2F Program empowers institutions and communities to sustainably manage shared resources, protect ecosystems, and promote equity. The Program aims to transition from fragmented efforts to a unified, long-term adaptation pathway that enables people and nature to flourish in a changing climate.

Goal Statement: To transform agriculture systems across CWA into resilient, adaptive, and inclusive foundations of climate security—empowering vulnerable mountain and downstream communities through glacier-informed science, integrated climate planning, innovative finance, adaptive social protection and health systems, and regional cooperation.

Box 3. Theory of Change Statement

IF integrated, inclusive, and appropriate adaptation solutions are implemented to address the escalating impacts of glacial melt, extreme heat, and changing river systems across CWA,

THEN vulnerable mountain and downstream communities will experience enhanced climate resilience and improved food and water security,

BECAUSE these solutions will address shared climate risks, foster regional cooperation, and strengthen adaptive capacities across sectors—leveraging glacier-informed hydrology, robust climate information systems, and inclusive social protection to ensure long-term resilience and sustainability**.**

Figure 4. Theory of Change Statement

Barrier Landscape: Challenges to Climate-Resilient Development in Central and West Asia

The G2F Program is designed to overcome a complex set of systemic barriers that prevent vulnerable mountain and downstream communities in CWA from building climate resilience and achieving sustainable water–food security. These barriers are deeply interconnected—spanning institutional, technical, financial, and political domains—and require integrated and cross-sectoral solutions within a regional context. Climate-resilient development in glacier-fed river basins faces multiple interconnected challenges that hinder effective adaptation and resource management. These barriers—summarized in Table 4—span institutional, technical, financial, and political dimensions, limiting coordinated action and long-term resilience.

Strategic Implication

Addressing this multidimensional barrier landscape requires the G2F Program to pursue a coordinated, inclusive, and science-informed programmatic approach. This includes strengthening institutions, building technical capacity, unlocking climate finance, and enabling regional cooperation to drive long-term resilience across food, water, and social systems. To address these multidimensional barriers, G2F will adopt a phased, collaborative, and regionally integrated approach. This includes:

- Strengthening institutional and technical capacities across borders and sectors;
- Unlocking climate and blended finance through pipeline development and risk-sharing mechanisms;
- Fostering inclusive participation of vulnerable and underrepresented groups in decision-making; and

Building regional learning systems to accelerate knowledge exchange and scale-up effective interventions.

Table 4. Barriers and Proposed Solutions for Advancing Climate-Resilient Development under the G2F Program

Barrier	Description	Proposed Solution
Institutional Barriers		
1.1 Outdated and Fragmented Governance Frameworks	River basin governance remains fragmented, with outdated legal and policy frameworks that fail to integrate climate risks. This limits cooperation across borders and sectors, especially between upstream glacier-dependent regions and downstream agricultural users.	Modernize and harmonize legal and institutional frameworks for climate-resilient river basin governance, promoting cross-border integration and coordination.
1.2 Limited Institutional Capacity for Climate Finance Access and Delivery	Governments and financial institutions lack the systems, tools, and trained personnel to access and manage climate finance. ESG principles and green investment taxonomies are largely absent.	Strengthen institutional capacity through training, tools, and systems for climate finance access and delivery, including ESG and green investment frameworks.
1.3 Exclusion of Marginalized and Vulnerable Groups	Women, youth, Indigenous Peoples, and remote communities are underrepresented in decision-making, benefit-sharing, and financial access.	Ensure inclusive governance and participation of marginalized groups in climate planning, finance, and benefit-sharing mechanisms.
1.4 Fragmented Adaptation Planning and Governance	Adaptation responses are short-term, project-based, and fragmented across sectors and borders, with limited platforms for learning or replication.	Establish coordinated, cross-sectoral, and cross-country adaptation strategies supported by regional learning and monitoring platforms.
Technical Barriers		
2.1 Weak Integration of Climate Data and Risk Information	Hydrological, glaciological, and meteorological data are not systematically integrated into planning. Cross-border glacier monitoring and early warning is minimal.	Develop and integrate glacier-informed climate data systems into national planning and strengthen regional cooperation on data and early warnings.
2.2 Inadequate Climate Information Services and Early Warning Systems	Mountainous regions face persistent data gaps, and climate services are poorly localized and underutilized.	Expand and localize early warning systems and climate information services, ensuring accessibility and community-level use.

2.3 Underdeveloped Agricultural Extension and Land Use Planning Systems	Extension services are weak and climate-smart agricultural practices are not widely adopted or integrated into national programs. Watersheds continue to degrade.	Strengthen extension systems and embed climate-smart agriculture and risk-informed land use planning of nature-based solutions in public programs.
2.4 Limited Technical Capacity for Climate-Smart Practices	Enabling policies and technical guidance are missing, limiting adoption of adaptive technologies like integrated water and soil management.	Develop technical capacity and policy support to scale climate-smart technologies across water, soil, and agriculture sectors.
Financial Barriers		
3.1 Misaligned Investment Pipelines	Investment planning fails to reflect climate priorities, especially for glacier-fed sectors. Integrated and transboundary projects are rare.	Align national and regional investment pipelines with climate resilience goals and develop multisectoral, transboundary project portfolios.
3.2 Financial Exclusion of Vulnerable Stakeholders	Smallholder farmers and vulnerable groups face limited access to finance due to collateral, ID, and literacy barriers.	Promote inclusive financial access through targeted instruments, capacity-building, and digital financial inclusion initiatives.
3.3 Underdeveloped Green Financial Products and Services	Financial institutions lack adaptive products such as seasonal loans, long-term credit, and local currency financing.	Develop and scale green financial products tailored to agricultural cycles and climate adaptation needs.
3.4 Weak Risk-Sharing and Blended Finance Mechanisms	Limited use of risk mitigation tools and poor coordination hinder blended finance approaches.	Institutionalize blended finance strategies and expand risk-sharing instruments.
3.5 Persistent Underfunding of Adaptation Initiatives	Adaptation projects struggle to attract finance due to long return periods and intangible benefits.	Design financing models that recognize long-term returns and co-benefits of adaptation investments.
3.6 Lack of Bankable Project Pipelines	Public and private institutions lack the skills and resources to structure and scale viable adaptation projects.	Support project preparation facilities and capacity development to build a robust pipeline of bankable adaptation projects.
Political and Governance Barriers		
4.1 Weak Regional Coordination and Integration	Limited cooperation on shared climate and water issues reduces regional resilience and infrastructure effectiveness.	Establish and strengthen cross-border frameworks for coordinated water and climate action.
4.2 Short-Term Political Horizons and Policy Fragmentation	Frequent shifts in political priorities undermine long-term adaptation continuity.	Institutionalize adaptation strategies and policies to ensure continuity across political cycles.
4.3 Absence of Regional Monitoring and Knowledge Platforms	Lack of platforms for learning, assessment, and policy scaling limits the uptake of effective practices.	Create regional platforms for knowledge exchange, joint impact assessment, and adaptive learning.

Key Assumptions: The successful implementation of the G2F Program relies on a set of underlying assumptions that must hold true to achieve the intended outcomes and long-term impact; these assumptions relate to political commitment, institutional engagement, climatic conditions, financial flows, and stakeholder participation.

- Governments maintain commitment to climate-resilient development, regional cooperation, and the implementation of Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs).
- Data-sharing and collaboration agreements across borders remain active, and political support for regional basin governance continues to grow through platforms such as CAREC.
- Local institutions and communities demonstrate willingness to adopt climate-resilient technologies, practices, and governance reforms.
- Climate hazards (e.g., floods, droughts, GLOFs) do not overwhelm infrastructure or service delivery systems.
- Co-financing and counterpart funding commitments from governments, development partners, and financial institutions are fulfilled promptly.
- Private sector and financial institutions engage actively in adaptation finance and are open to de-risking instruments and concessional capital to support agri-MSMEs and farmers.
- No major conflict, instability, or displacement occurs that could significantly disrupt implementation in participating countries or river basins.

Strategic Imperative

This comprehensive approach will enable the transformation of glacier-dependent and downstream communities toward long-term water–food–climate resilience.

Expected Outcomes: The G2F Program will deliver a set of transformative, interconnected outcomes that strengthen climate resilience across mountain and downstream communities in CWA. By addressing systemic barriers and scaling integrated adaptation measures, G2F will enhance water governance, climate-informed planning, sustainable agriculture, adaptive social protection and health system,

and regional coordination. The Program's outcomes are designed to enable vulnerable populations to adapt to the accelerating impacts of glacial melt, extreme heat, and hydrological change—while catalyzing long-term investments in resilient agriculture and water systems. These outcomes will be achieved through coordinated action across sectors and borders, ensuring a just and inclusive approach to adaptation and sustainable development.

Table 5. GCF-Aligned Outcome Framework for Climate-Resilient Development under the G2F Program

Component	Outcome	Description
1	Outcome 1.1: Climate risk integrated into planning and governance	Governments and institutions systematically incorporate climate, glaciers, and hydrological risk data into national development plans, sectoral strategies, and public investment frameworks.
1	Outcome 1.2: Public and private investment in adaptation scaled	Climate finance flows are increased through better understanding of de-risking instruments, blended finance mechanisms, and investment-ready project pipelines aligned with national priorities.
2	Outcome 2.1: Early warning systems and climate services expanded	Multi-hazard early warning systems and localized climate information services are enhanced to protect lives, livelihoods, and infrastructure from extreme weather and glacial risks.
2	Outcome 2.2: Efficient and sustainable water resource management	Integrated water resource management (IWRM) practices and climate-resilient infrastructure are adopted, improving water storage, allocation, use efficiency, and resilience of ecosystems and agriculture in glacier-fed basins.
2	Outcome 2.3: Resilience of farmers to climate shocks enhanced	Smallholders and agri-based communities adopt climate-smart agricultural practices and resilient watershed management benefit from strengthened extension services and land-use planning that incorporate gender-differentiated approaches to ensure equitable benefits to women farmers
2	Outcome 2.4: Inclusive adaptation and social protection systems	Marginalized groups-including women, youth, and Indigenous Peoples-are included in adaptation planning and benefit from responsive social protection and health systems.
3	Outcome 3.1: Increased access to finance for agricultural MSMEs	Financial institutions expand their capacity to deliver green financial products, including those that do not rely solely on land collaterals, thereby improving access to affordable climate finance for agri-SMEs and smallholders, and for women farmers whose landholdings are in their husbands' names.
4	Outcome 4.1: Regional coordination and knowledge sharing strengthened	Countries collaborate through regional platforms to align climate action, conduct joint assessments, and scale proven adaptation solutions across borders.

Expected Co-Benefits: The G2F Program delivers strong co-benefits aligned with the GCF's core result areas, contributing to both adaptation and sustainable development objectives across CWA. By investing in integrated, inclusive, and appropriate adaptation solutions, the Program generates transformational co-benefits that extend beyond direct climate resilience outcomes:

Environmental Co-Benefits

- Adoption of NbS—such as reforestation, agroforestry, and riparian buffer zones—will improve ecosystem integrity, and reduce erosion.
- Strengthening ecosystem services in fragile mountain and downstream landscapes will contribute to improved air and water quality, habitat conservation, and disaster risk reduction.

Mitigation Co-Benefits

- Promotion of climate-resilient and low-emission agricultural practices will contribute to the reduction of GHG emissions from farming activities.
- Investments in climate-smart agri value chains will reduce food losses and enhance energy and water efficiency, reducing GHG emissions.
- Implementation of afforestation, rangeland regeneration, and wetland restoration will contribute to carbon sequestration.

Economic Co-Benefits

- Climate-resilient infrastructure, agriculture, and water management will support rural productivity, stabilize agriculture supply chains, and reduce disaster-related economic losses.
- Expansion of climate-resilient value chains, SME support, and local financing mechanisms will generate green jobs, improve livelihoods, especially of those unpaid family workers whose labor earnings are subsumed under the named landowner, and thereby foster inclusive economic growth.

Together, these co-benefits position G2F as a paradigm-shifting program that delivers measurable, long-term contributions to the SDGs, while advancing the GCF's mandate to support low-emission, climate-resilient development. The Program's multidimensional benefits will be tracked through specific indicators across gender equality, ecosystem health, livelihoods, and institutional capacity as outlined in the Results Framework (Section E).

Risk Management: Risks identified in Section F are further elaborated here, including technical, political, environmental, financial, operational, and institutional risks that may affect the successful delivery of the G2F Program. These risks are inherent to the complex regional, ecological, and governance context of CWA and are addressed through targeted mitigation strategies embedded in program design, as well as flexible implementation and adaptive learning mechanisms.

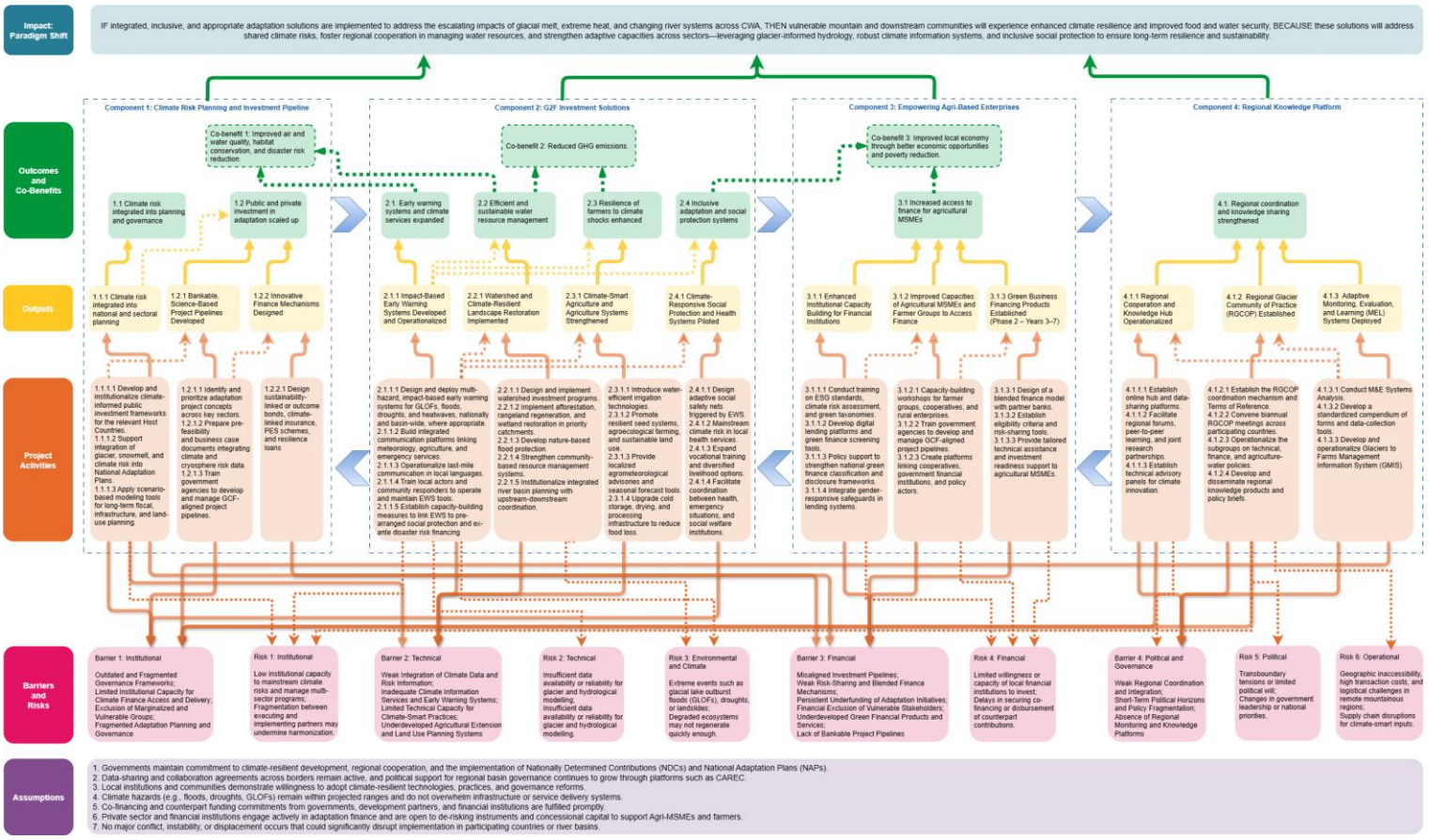

Figure 5. G2F Theory of Change (*see Annex 23*)

B.2 (b). Outcome mapping to GCF results areas and co-benefit categorization

The G2F Program will deliver eight transformative outcomes that directly address the systemic barriers to climate resilience and food-water security across CWA:

Outcome number	**GCF Mitigation Results Area (MRA 1-4)**				**GCF Adaptation Results Area (ARA 1-4)**			
	MRA 1 Energy generation and access	**MRA 2** Low-emission transport	**MRA 3** Building, cities, industries, appliances	**MRA 4** Forestry and land use	**ARA 1** Most vulnerable people and communities	**ARA 2** Health, well-being, food, and water security	**ARA 3** Infrastructure and built environment	**ARA 4** Ecosystems and ecosystem services
Outcome 1.1:	☐	☐	☐	☐	☒	☒	☐	☐
Outcome 1.2:	☐	☐	☐	☐	☒	☐	☐	☐
Outcome 2.1:	☐	☐	☐	☐	☒	☒	☒	☒
Outcome 2.2:	☐	☐	☐	☐	☒	☒	☒	☒
Outcome 2.3:	☐	☐	☐	☐	☒	☒	☐	☐
Outcome 2.4:	☐	☐	☐	☐	☒	☒	☐	
Outcome 3.1:	☐	☐	☐	☐	☐	☐	☐	☐

Outcome 4.1:	☐	☐	☐	☐	☐	☐	☐	☐

Co-benefit number	**Co-benefit**					
	Environmental	**Social**	**Economic**	**Gender**	**Adaptation**	**Mitigation**
Co-benefit 1: Improvement of air and water quality, habitat conservation, and disaster risk reduction.	☒	☐	☐	☐	☐	☐
Co-benefit 2: Reduction of GHG emissions	☐	☐	☐	☐	☐	☒
Co-benefit 3: Improvement of local economy through better economic opportunities and poverty reduction	☐	☐	☒	☐	☐	☐

B.3. Project/programme description (max. 2500 words, approximately 5 pages)

G2F: A Programmatic Approach

The G2F Program provides an integrated, science-led solution to the escalating climate threats facing one of the world's most water-stressed regions. By linking upstream glacier systems with downstream agriculture, ecosystems, and communities, G2F delivers climate-resilient agriculture, robust EWS, and innovative green finance to protect lives, livelihoods, and economies across CWA.

(a) Transformational Impact Through Regional Design

G2F transcends national boundaries, operating as a regionally unified platform to address the interlinked challenges of glacial retreat, water scarcity, and climate risks. Recognizing the complexities of shared river basins and cryosphere-influenced systems, G2F adopts a science-first approach, grounded in robust data, glacier-informed planning, and stakeholder inclusion. It builds coalitions of technical institutions, policy leaders, and local communities, delivering change that is locally led, nationally owned, and regionally coherent.

By directly connecting upstream cryosphere change with downstream water and food insecurity, the program drives systemic adaptation across multiple levels—supporting basin-wide coordination, integrated governance, and long-term resilience building.

(b) Cost-Effectiveness and Implementation Efficiencies

G2F is designed for maximum impact and operational efficiency. Its programmatic structure enables:

- A 1:>10 co-financing ratio, leveraging significant contributions from national governments and international partners;
- Seamless integration with ADB's Climate Change Action Plan and Central and West Asia Regional Program, aligning G2F activities with national priorities and existing development pipelines;
- Streamlined implementation mechanisms, avoiding duplication and enhancing collaboration among participating countries to reduce transaction costs and speed up delivery.

(c) Enhanced Cross-Country Learning and Knowledge Sharing

At its core, G2F functions as a regional learning platform, facilitating real-time collaboration, joint planning, and evidence-based adaptation. Through Component 4, the Program:

- Supports real-time climate and hydrological data sharing, including across borders and between subnational agencies, via glacier and EWS monitoring systems;
- Enables joint risk assessments and upstream–downstream scenario analysis to inform cross-border water governance and infrastructure planning;
- Fosters structured knowledge exchange through regional dialogues, technical working groups, and institutional partnerships.

What sets G2F apart is its programmatic coherence, a strategic framework that unites national projects within a cohesive regional system.

Key features include:

- A robust MIS for tracking results, measuring adaptation progress, and enabling cross-country replication;

- Transparent annual reporting on shared outcomes and co-benefits across countries;
- A growing portfolio of high-impact national investments, designed for scaling and replication, ensuring that proven models can be adopted and adapted across the region.

Together, these elements make G2F a transformational platform for building climate resilience in glacier-dependent regions—anchored in science, driven by finance, and sustained through collaboration.

Interlocking Pillars for Climate-Resilient Development in CWA

The G2F Program is structured around four interdependent components that collectively address the institutional, technical, financial, and regional coordination barriers to climate-resilient agriculture and water systems in glacier-fed basins. Each component builds on the others, creating a cohesive and scalable model for transformative adaptation and investment in CWA.

Component 1: Science-based Climate Risk Planning and Investment Mechanisms

Linked Outcomes:

- Outcome 1.1: Climate risk integrated into planning and governance
- Outcome 1.2: Public and private investment in adaptation scaled

Description:
This component creates an enabling environment for climate finance by supporting governments to systematically identify, prioritize, and integrate adaptation needs into national development planning and public investment systems. It facilitates the use of glacier, hydrological, and climate risk data in shaping policies, budgets, and infrastructure strategies and river basin management plans. Through targeted technical assistance and/or project (grants), the component supports the design of robust, science-based interventions, and creates enabling mechanisms to develop bankable project pipelines aligned with GCF investment criteria and national priorities. The activities under this component will support studies and capacity building activities to develop and deploy innovative financial instruments, such as sustainability-linked or outcome bonds, green credit lines, blended finance structures, governance mechanisms such as Watershed Investment Programs[28] and other forms of PES[29] to unlock and scale adaptation investments.

→ **Key Function:** Embeds climate adaptation into national planning and financing systems while generating scalable, investment-ready project pipelines and piloting innovative finance mechanisms, including outcome-based bonds, PES schemes, and nature-linked financing.

Component 2: G2F Investment Solutions

Linked Outcomes:

- Outcome 2.1: EWS and climate services expanded
- Outcome 2.2: Efficient and sustainable water resource management
- Outcome 2.3: Resilience of farmers to climate shocks enhanced
- Outcome 2.4: Inclusive adaptation and social protection systems

Description:
Organized into four subcomponents, this component will support the selection and financing of innovative projects including multi-hazard EWS, climate-smart agriculture infrastructure and systems, NbS, and adaptive health and social protection models to pilot, demonstrate and scale integrated climate adaptation solutions in glacier-fed and downstream areas. These projects are designed to respond to local climate vulnerabilities while generating scalable models and institutional approaches that can be embedded in national systems. The component builds on a robust evidence base for what works, laying the groundwork for wider policy integration and replication.

→ **Key Function**: Pilots and scales climate resilience interventions—generating tested, adaptable models for national and regional replication.

Component 3: Capacity Building for Climate Finance Access

Linked Outcome:

- Outcome 3.1: Increased access to finance for agricultural MSMEs

Description:
This component establishes the enabling mechanisms and strengthens the financial infrastructure required to scale climate-resilient investments in the agricultural sector. A feasibility study highlighted substantial gaps in enabling conditions and institutional capacity that must be addressed before concessional finance can be deployed effectively. The focus during the first 2 years of implementation period

[28] An initial rapid assessment has been undertaken to investigate the feasibility of a Watershed Investment Programme as a payment mechanism, including how regional or transboundary governance mechanisms could be designed and operationalised during implementation (see Annex 2.0)
[29] https://www.adb.org/publications/payments-ecological-services-and-eco-compensation-practices-and-innovations-peoples

will be on capacity building for national financial institutions and supporting agricultural MSME development through technical assistance, investment readiness, and market access. Subject to the outcome of capacity building, GCF Proceeds may support enabling mechanisms and approaches to expanding inclusive green financial products. Over time, the component will support relevant Host Countries in leveraging ADB's FIL modality to channel concessional finance through local financial institutions (outside of the scope of this Program).

→ **Key Function**: Developing mechanisms and approaches to mobilize diverse sources of climate finance, strengthening financial institutions, and supporting enterprise development for resilient agriculture.

Component 4: Regional Knowledge Platform for Adaptive Learning and Climate Action

Linked Outcome:

- Outcome 4.1: Regional coordination and knowledge sharing strengthened

Description:
This component will establish a regional platform for adaptive learning, policy alignment, and cross-country collaboration. It will draw on lessons learnt from components 1 to 3 to support harmonized climate data systems, joint monitoring frameworks, and evidence-based impact assessments. By engaging with existing regional mechanisms such as CAREC, it fosters a culture of continuous learning, innovation, and the replication of successful climate adaptation practices. The platform ensures that climate action is not only localized but also coordinated across borders for greater regional resilience.

→ **Key Function**: Institutionalizes regional cooperation, learning, and knowledge exchange to align policies and scale effective climate solutions.

How the Components Work Together

The four G2F components are purposefully designed to function as an integrated system—each reinforcing and enabling the others to deliver climate resilience at scale:

- Component 1 builds the foundation by supporting governments of Host Countries integrate climate and glacier risk data into investment planning, water governance, and budgeting. It also prepares the Host Countries to apply innovative financial instruments and facilitates access to diverse financing modalities.
- Component 2 operationalizes these plans by demonstrating, piloting, and scaling climate adaptation solutions—such as resilient agriculture, EWS, nature-based infrastructure, and adaptive social protection and health system—tailored to local and regional needs.
- Component 3 creates financial architecture to sustain these solutions and deploy mechanisms that will help unlock capital for agri-MSMEs and rural enterprises.
- Component 4 ensures knowledge flows across borders by institutionalizing learning, harmonizing regional data systems, and aligning policies through a shared platform for cooperation.

Together, these components form a cohesive ecosystem that transforms fragmented, project-based responses into a coordinated, long-term strategy for climate resilience, food and water security, and sustainable development across glacier-dependent regions of CWA.

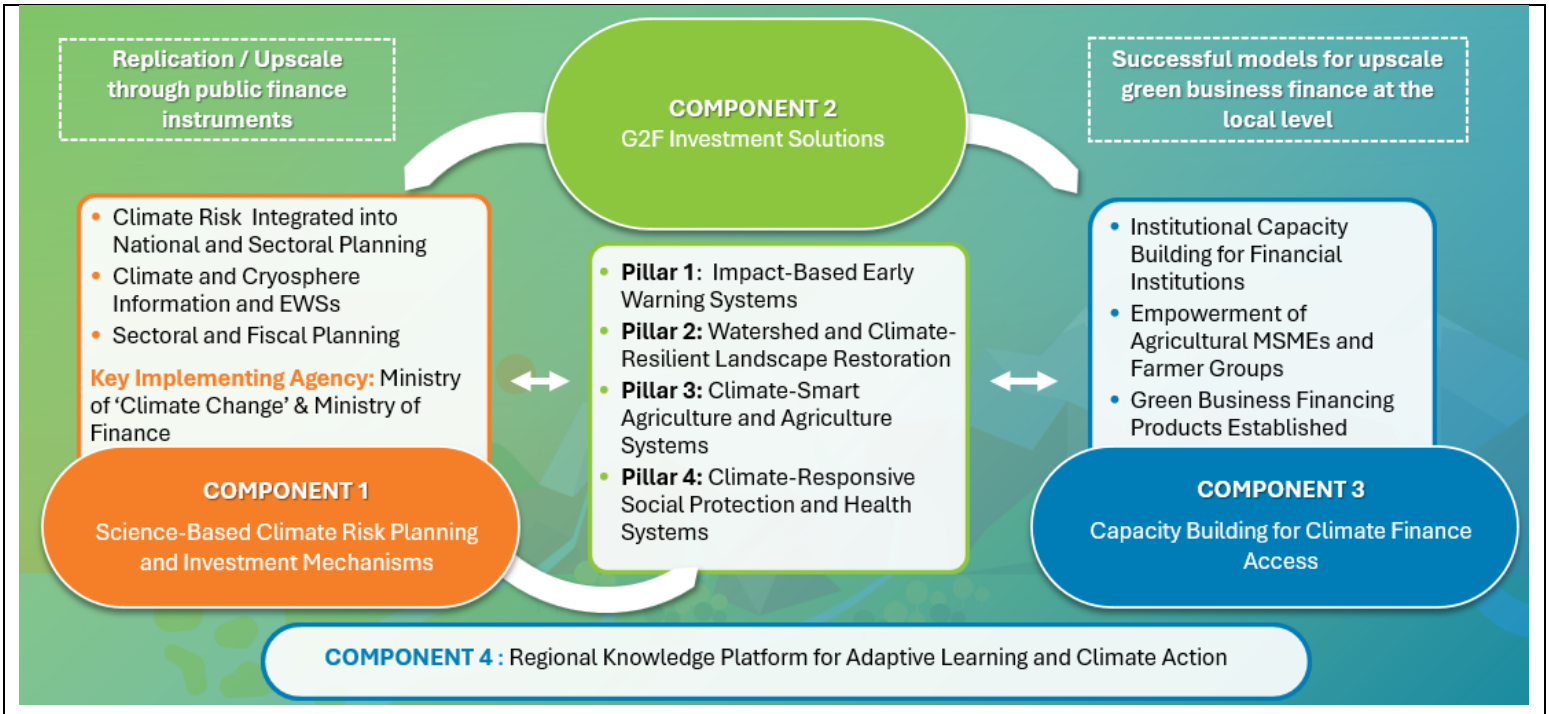

Figure 6. Overview of Interlinked Components

Adaptation Framework for Glacier to Farms: Structuring Solution Pathways for Climate Resilience

The G2F Program is classified as 100% adaptation because it is designed exclusively to address the adverse impacts of climate change, particularly in glacier-dependent and climate-vulnerable regions. The core focus of G2F is to reduce vulnerability and build resilience in communities and ecosystems facing increasing risks due to glacier retreat, declining snowpack, unpredictable precipitation patterns, resulting water scarcity, and wider climate impacts (e.g. heatwaves). These climate-induced changes directly affect food systems, water access, and livelihoods, especially in high-altitude and downstream agricultural areas. G2F addresses these issues as specific consequences of climate change that require targeted adaptation interventions. All activities proposed under G2F are conceived and implemented with adaptation as their primary and exclusive objective. These include the promotion of climate-resilient agriculture, improved water resource management, climate-informed planning, and the deployment of nature-based solutions to buffer against the impacts of climate variability and extremes. The design of each intervention is grounded in climate rationale and intended to build adaptive capacity.

While some interventions may generate incidental mitigation co-benefits—such as through improved land use practices or ecosystem restoration—these are not a focus of the program. G2F does not seek any mitigation finance and does not include mitigation results in its core funding rationale. In line with GCF guidelines, any mitigation co-benefits that arise are reported solely through annual performance reports, in accordance with GCF's monitoring and reporting requirements. These co-benefits are not part of the financing logic or design and do not detract from the program's exclusive focus on adaptation. Finally, G2F takes a flexible, programmatic approach that enables country-driven, context-specific adaptation interventions. Each sub-project must demonstrate a clear climate rationale and alignment with national adaptation priorities. This adaptive design ensures that the program remains focused on addressing the dynamic and localized impacts of climate change. In all respects—intent, objectives, financing, and implementation—G2F qualifies as a 100% adaptation program, fully aligned with GCF investment criteria.

Based on the findings of the feasibility study, the four components of the G2F Program have been organized into distinct solution pathways. These pathways serve as a strategic framework for guiding implementation, enhancing support and monitoring, and maximizing the impact of adaptation efforts across the program, and are directly correlated to the four project components. The G2F solution pathways are structured into interconnected categories that reflect the program's systems-based approach—linking upstream glacial monitoring and watershed governance with downstream agricultural resilience, social protection, and capacity building for climate-smart financing. Each solution pathway incorporates innovative, context-specific measures aligned with GCF sectoral guidance in areas such as water security, climate-resilient agriculture, ecosystem management, and sustainable livelihoods. This approach enables harmonized implementation across countries while allowing for localized adaptation. It also strengthens cross-sector coordination,

facilitates systematic categorization of interventions and impacts, and supports continuous learning and replication of transformational outcomes.

Without the implementation of these solution pathways and an integrated approach to climate adaptation, countries in the region will face intensifying risks to their economies, public finances, and food security. If left unaddressed, these challenges will reverse development gains, erode improvements in living standards, and significantly impede progress toward achieving the Sustainable Development Goals (SDGs) and the Paris Agreement adaptation goals. By embedding these solution pathways within the G2F Adaptation Framework, the program provides a coherent, scalable, and results-oriented strategy to confront the complex and interconnected climate risks facing glacier-dependent regions. GCF resources play a catalytic role—enabling countries to drive systemic change, spark innovation, stimulate demand for climate-resilient solutions, and lay the foundation for scaling successful models across sectors and geographies.

Embedding clearly defined adaptation pathways into the G2F project design brings significant strategic and operational benefits. These pathways—closely aligned with sectoral guidance from the GCF and Multilateral Development Banks (MDBs)—enhance the project's eligibility for GCF funding by ensuring consistency with globally recognized adaptation approaches. They also improve impact tracking by establishing direct links between project outputs and the GCF's core result areas, allowing for more robust monitoring and accountability. The modular nature of these pathways supports scalability and replication, enabling seamless adaptation and expansion across regions and contexts. Furthermore, the use of standardized adaptation pathways simplifies the integration of monitoring and evaluation (M&E) systems by aligning with established indicators and evaluation templates. Importantly, they also help build a stronger case for co-financing, as development partners and the private sector can more easily identify investable models/approaches. Overall, adaptation pathways serve as the foundation for designing targeted, trackable, and transformational interventions under G2F.

These solution pathways have been systematically integrated into the program's components and activities, drawing on key lessons outlined in Annex 2. They are also embedded within the Economic and Financial Analysis (Annex 3) and the Environmental and Social Management Framework (ESMF) (Annex 6), ensuring coherence across the project's design, financing, and safeguards. Solution Pathways are also linked to GCF Sector Guides. Furthermore, the Feasibility Study reinforces the programmatic nature of the G2F Program. It emphasizes that early-stage documentation—such as Annex 2—is intended to provide illustrative adaptation measures, rather than fixed or prescriptive project blueprints. These examples serve to demonstrate potential approaches, while G2F remains open to exploring a broader range of innovative and context-specific solutions as they emerge and as appropriate for specific projects and country contexts. This flexible, adaptive approach aligns with the Green Climate Fund's guidance for programmatic funding proposals, which encourages responsiveness to evolving needs and priorities throughout implementation.

Table 6. Illustrative Adaptation Pathways for G2F Components

G2F Program Component	Solution Pathways: Illustrative Adaptation Measures to be Delivered	Intended Adaptation Benefits	G2F M&E Framework Linkage
Component 1: Science-Based Climate Risk Planning and Investment Mechanisms	Expansion of real-time glacier and river monitoring networks.	Improved forecasting and timely risk response in headwater communities, leading to reduced harm/losses to communities	Linked to M&E Indicator 1.1: Deployment of risk monitoring infrastructure
	Climate-informed EWS for GLOFs, droughts, landslides, and floods.	Enhanced preparedness and early action for extreme climate events, leading to reduced harm/losses to communities	Linked to M&E Indicator 1.3: Functioning early warning systems and response protocols
	Development of seasonal climate services tailored to agriculture and water planning.	Better planning for agriculture and water management based on anticipated climate trends, leading to improved water and food security	Linked to M&E Indicator 2.2: Uptake of climate information in planning and agriculture
	Partnerships for glaciological and hydrological research, sediment modeling, and long-term scenario analysis.	Supports informed decision-making and reduces vulnerability to climate hazards, leading to reduced harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Real time data sharing and cooperation in information exchange.	Improved regional coordination and decision-making for disaster risk reduction, leading to reduced harm/losses to communities	Linked to M&E Indicator 3.2: Data exchange protocols operationalized across countries

	Hydrological data for river basin management plans	Supports informed decision-making and reduces vulnerability to climate hazards, leading to reduced harm/losses to communities and improved water security	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Capacity building for development of Sustainability-linked or outcome bonds, resilience-linked loans, and payment for ecosystem service (PES) models.	Enhances capacity to remove barriers and promote adoption of innovative financing mechanisms, aiming to enhance adaptation outcomes for communities / businesses	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
Subcomponent 2.1: Early Warning System Implementation	Installation of Early Warning Systems (EWS)	Supports informed decision-making and reduces vulnerability to climate hazards, leading to reduced harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Development of Climate Services Information Systems (CSIS)	Supports informed decision-making and reduces vulnerability to climate hazards, leading to reduced harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Integrated Cryosphere Monitoring and Forecasting Systems	Supports informed decision-making and reduces vulnerability to climate hazards, leading to reduced harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Forecast-based Financing (FbF) triggers linked to EWS	Deploys resources to enable pre-emptive actions or response/recovery actions, reducing the impact of climate events and reducing harm/losses to communities.	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Digitization of historical climate and glacial data	Supports informed decision-making and reduces vulnerability to climate hazards, leading to reduced harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
Subcomponent 2.2 Climate Resilient Landscapes and Water Resource Management	Watershed-scale Nature-Based Solutions (NbS)	Enhanced ecosystem services, improved water retention, reduced flood risk, sustained productivity for downstream users, reduced climate risks and harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Integrated Water Resource Management (IWRM)	Improved water security, reduced flood risk, sustained productivity for downstream users, reduced climate risks and harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Ecosystem Restoration (riparian zones, forests)	Enhanced ecosystem services, improved water retention, reduced flood risk, sustained productivity for downstream users, reduced climate risks and harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Hybrid Infrastructure (green-grey combinations)	Improved water security, reduced flood risk, sustained productivity for downstream users, reduced climate risks and harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management

	Demand-side water efficiency (smart irrigation, solar pumping)	Improved water security, sustained productivity for downstream users, reduced climate risks and harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
Subcomponent 2.3 Sustainable Agriculture and Livelihood Security	Climate-Smart Agriculture (CSA)	Enhanced food security, reduced water intensity, strengthening rural livelihoods, reduced climate risks and harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Agroecological and Agroforestry Systems	Enhanced ecosystem services, enhanced food security, strengthening rural livelihoods, reduced water intensity, reduced climate risks and harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Value Chain Resilience & Cold Storage	Enhanced food security, strengthening rural livelihoods, reduced climate risks and harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Drought-/Heat-tolerant crops, livestock management	Enhanced food security, reduced water intensity, strengthening rural livelihoods, reduced climate risks and harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Community-led Rangeland & Grazing Management	Enhanced food security, reduced water intensity, strengthening rural livelihoods, reduced climate risks and harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Crop diversification & water-efficient rotations	Enhanced food security, reduced water intensity, strengthening rural livelihoods, reduced climate risks and harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
Subcomponent 2.4 Climate Responsive Social Protection and Health Systems	Capacity building to support climate-linked Shock-Responsive Social Protection	Reduces impact of climate hazards by deploying resources to provide safety nets/economic resilience to affected communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Climate-Health related Early Warning Systems	Supports informed decision-making and reduces vulnerability to climate hazards, enhances preparedness of health systems leading to improved outcomes for patients	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Mobile Health and Risk Communication Units	Reduces vulnerability to climate hazards by improving access to health facilities for affected people, enhancing health outcomes	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Heat Action Plans & Climate-Resilient Clinics	Supports informed decision-making and reduces vulnerability to climate hazards, enhances resilience of critical services improving health outcomes	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Digitized Social Registries (gender-sensitive)	Supports informed decision-making and reduces vulnerability to climate hazards, enables deployment of resources to provide targeted support to climate affected communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management

Component 3: Capacity Building for Climate Finance Access	TA for climate budget tagging, sovereign investment planning, and cost-benefit analysis.	Supports informed decision-making and effective fiscal management of climate risks, reduces vulnerability to climate hazards through delivery of adaptation pipelines	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	TA for capacity building for financial institutions to enhance green financing to agri-value chains	Identifies and removes barriers to financing agrivalue chains, helping to deploy resources tailored to reduce climate risks	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Support to agri-MSMEs to build capacity for green financing	Enhance financial and climate risk literacy of MSMEs, supporting adaptation financing to address climate risks in agri-value chains	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
Component 4: Regional Knowledge Platform for Adaptive Learning and Climate Action	Regional Data-Sharing Protocols and Forecast Platforms	Supports informed decision-making and reduces vulnerability to climate hazards, leading to reduced harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	South-South Learning Exchanges and Innovation Labs	Supports learning from good practice, helps to mainstream adaptation, reducing harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Research and Academic Partnerships on Glacier-Dependent Systems	Fills critical data gaps on climate risks and adaptation, supports informed decision-making and reduces vulnerability to climate hazards	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management
	Regional Policy Dialogues and Peer-to-Peer Governance Forums	Supports regional collaboration to reduce climate hazards and support improved water and energy security, reducing harm/losses to communities	Linked to cross-cutting M&E Indicator 4.1: Institutional capacity for climate risk management

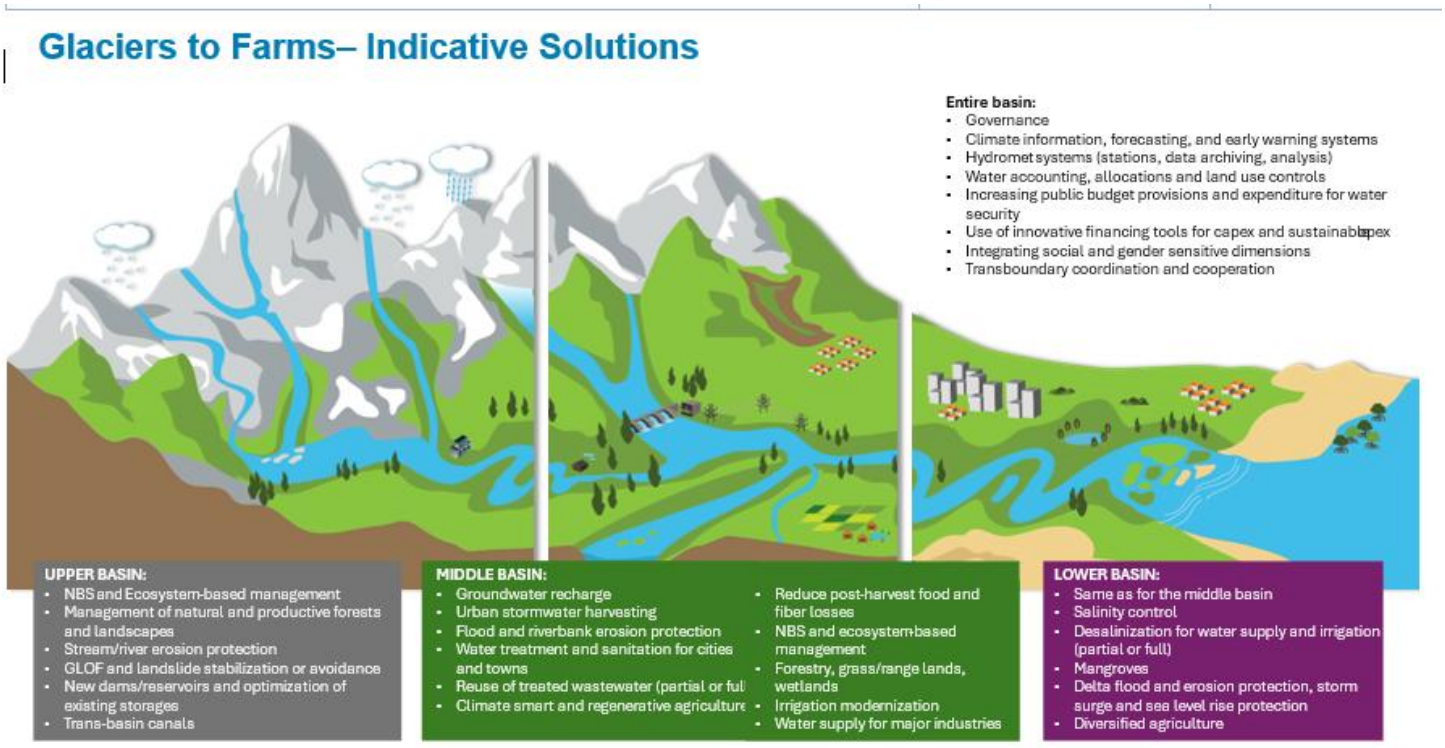

Figure 7. Diagrammatic Representation of River Basin Typologies and Interventions

By linking high mountain source regions with downstream farming, finance, and governance systems, G2F offers a replicable, scalable, and country-owned approach to managing the accelerating impacts of glacial melt – empowering vulnerable communities, enhancing water and food security, and positioning CWA as a regional leader in climate-resilient development.

From Glaciers to Cooperation: Building Climate Resilience Across Borders

The G2F Program is designed to address the intricate and shared climate risks facing CWA, where the retreat of glaciers and snowpack is destabilizing river basins, agricultural productivity, and regional cooperation. By uniting countries impacted by similar cryospheric changes, G2F provides a programmatic, science-based approach to managing climate risks.

The Program's approach is twofold:

At the national and subnational levels, G2F supports the development of adaptation projects tailored to country-specific needs while confronting a persistent challenge: institutional fragmentation. Within countries, the sharing of climate and cryosphere data is often hampered by siloed systems across meteorological, water, agriculture, and disaster agencies. Coordination between subnational jurisdictions—such as provinces or autonomous regions—is frequently limited, slowing response times and undermining coherent planning. G2F addresses these barriers by promoting integrated data systems, inter-agency coordination, and locally grounded early warning services. These projects serve as operational models for replication within and across countries, building institutional capacity and improving risk management from glacier headwaters to farmlands.

At the transboundary level, G2F emphasizes trust-building and scientific cooperation as foundational entry points. Component 1 fosters collaboration through joint climate diagnostics, glacier monitoring, and data harmonization, while Components 2 and 3 implement paradigm-shifting investments within national boundaries with mutual benefits to neighboring countries. Component 4 strengthens knowledge-sharing platforms to support region-wide learning, policy alignment, and long-term cooperation.

ADB's long-standing partnerships and platforms (e.g., CAREC Water Pillar) provide the credibility and continuity needed to facilitate this gradual trust-building. Through successful implementation of country-level projects and sustained technical engagement, G2F creates space for progressive regional cooperation for managing climate risks. Over time, and with demonstrated results, participating countries can move from initial information sharing to deeper forms of collaboration—including joint project preparation and implementation—designed to generate shared benefits and strengthen climate resilience across borders.

This approach reinforces G2F's core principle of flexibility—ensuring that all participating countries can engage at a pace and scope that aligns with their national circumstances, while remaining part of a broader, inclusive regional vision. By allowing for differentiated participation, G2F cultivates a trusted environment where scientific cooperation can flourish, and future collaboration can emerge. Ultimately, G2F is not just about managing climate risks—it is about building the foundation for long-term, climate-informed cooperation in one of the world's most climate-vulnerable, yet geopolitically complex, regions.

Gender and Vulnerable Group Action and Alignment

Gender equality and social inclusion are not only foundational principles of the G2F Program but also critical criteria for project success, directly aligned with the ADB's Strategy 2030 and Guidelines on Gender Mainstreaming Categories (2021). ADB's policy commits to promoting gender equality through mainstreaming gender into operations, addressing gender disparities, and empowering women across all sectors and regions. In glacier-dependent regions of CWA, women, girls, persons with disabilities, ethnic minorities, and other marginalized populations face heightened climate vulnerability due to structural barriers in access to resources, representation, and resilience services. These inequalities are compounded by geographic isolation, socioeconomic marginalization, and limited access to climate information, finance, and institutional support. G2F aims to address these disparities through inclusive planning, gender-responsive investments, equitable access to climate finance, and representation in regional learning systems. The G2F Program takes a rights-based, inclusive approach that places women and vulnerable groups at the heart of climate resilience planning. It recognizes them not merely as beneficiaries, but as leaders, innovators, and critical agents of change in building sustainable, adaptive communities.

All G2F subprojects must deliver on gender and social inclusion through:

- Conduct of gender and social analysis during project concept and design stages;
- Ensuring inclusive participation and benefit-sharing, particularly for women, youth, Indigenous Peoples, and vulnerable households;
- Integrating sex-, age-, and vulnerability-disaggregated indicators into results frameworks and MEL systems;
- Preparing and implementing subproject-specific Gender Action Plans (GAPs)
- Monitoring GAP implementation and reporting on GAP progress using sex-disaggregated data

Component-Specific Gender Actions

Component 1: Science-Based Climate Risk Planning and Investment Mechanisms

Objective: Ensure climate risk planning and public investment frameworks incorporate gender-differentiated risks and foster women's leadership in national planning systems.

Gender Actions:

- Conduct gender-sensitive and socially inclusive vulnerability assessments using sex-disaggregated data in all climate diagnostics.
- Ensure at least 40% participation by women in NAP/NDC consultations and investment planning workshops.
- Train women professionals in ministries on glacier science, public investment analysis, and climate budgeting tools.
- Mainstream gender indicators in decision-support tools and climate screening processes.
- Integrate gender-responsive measures into updated NAPs, NDCs, and sectoral policies.
- Train all relevant ministries and local government on the gender-responsive implementation of NAPs, NDCs and other sector policies.

Component 2: G2F Investment Solutions

Objective: Deliver inclusive climate-resilient infrastructure and services that enhance women's adaptive capacity and address gendered barriers in water, agriculture, and disaster risk management.

Gender Actions by Subcomponent:

- **Early Warning Systems (EWS):**
  - Ensure 40% women's participation in community orientations on EWS
  - Train local actors and community responders – at least 35% women – in EWS operation and maintenance.
- **Climate-Resilient Landscapes and Water Management:**
  - Engage at least 30% women in afforestation, rangeland rehabilitation, wetland restoration, and in other community-based watershed resource management systems
  - Ensure women's engagement in the management of river basin organizations and other resource management bodies
  - Design and rehabilitate small-scale irrigation and water infrastructure to reach women-headed farms, women-owned farms, as well as kitchen gardens
- **Sustainable Agriculture and Livelihoods:**
  - At least 40% women farmers beneficiaries of climate-smart agriculture technologies, irrigation, and extension services.
  - Prioritize women's farms and kitchen gardens, most of which are barely reached by irrigation schemes, in accessing water-efficient irrigation technologies (e.g., drip irrigation, solar pumps, micro-irrigation)

- Support women-led cooperatives and women-owned micro and small agricultural enterprises, through trainings in storage, drying, processing, and in various stages of the value chain, as well as in business development, financial literacy, packaging, marketing, and the like
- **Social Protection and Health Systems:**
  - Embed gender-sensitive design in health and social protection schemes (e.g., cash transfers, nutrition programs, maternal and child health services).
  - Design and pilot special social safety nets schemes that strengthen women's resilience to climate-related shocks

Component 3: Capacity Building for Climate Finance Access
Objective: Enable equitable access to climate finance for women entrepreneurs, MSMEs, and cooperatives.
Gender Actions:

- Embed gender-inclusive ESG standards into financial institution operations.
- Deliver training for women and youth on financial literacy, green entrepreneurship, digital finance, and investment readiness.

Component 4: Regional Knowledge Platform for Adaptive Learning and Climate Action
Objective: Ensure women's leadership and gender-equitable participation in regional science-policy platforms and knowledge systems.
Gender Actions:

- Ensure 30–40% female representation in the Regional Glaciers Community of Practice (RGCOP), regional dialogues, and learning events.
- Document and disseminate case studies on women-led adaptation and climate-smart innovations.
- Establish peer-learning networks for women practitioners in water, agriculture, and climate science.
- Integrate gender metrics into the G2F MIS for tracking participation, benefits, and learning.
- Develop regional training modules and policy briefs that address gender-differentiated climate risks and solutions.

Monitoring and Reporting

- All GAP actions will be reflected in Component-specific implementation plans and tracked through the G2F MIS and MEL system.
- Annual reporting will include:
  - Sex-disaggregated data on participation and benefits,
  - Progress on gender indicators,
  - Case studies demonstrate gender-responsive impact.

The G2F Program commits to ensuring that *40% or more of all beneficiaries are women, with total program benefits prioritizing vulnerable individuals and families, including persons with disabilities, ethnic minorities, and those in remote or marginalized areas.

Component 1: Science-Based Climate Risk Planning and Investment Mechanisms

Linked Outcomes:

- **Outcome 1.1: Climate risk integrated into planning and governance**
- **Outcome 1.2: Public and private investment in adaptation scaled**

Rationale:
The accelerating impacts of climate change—particularly glacial retreat, extreme weather events, and hydrological volatility—are intensifying risks to water, agriculture, infrastructure, and livelihoods across glacier-fed river basins. Yet, most countries in the region lack technical architecture, institutional readiness, and financial pathways to convert climate risk into informed planning or investment action. This component addresses the upstream barriers to adaptation by strengthening the science-policy-finance interface. It builds the technical foundation for governments to translate cryosphere and hydrological data into investment-ready project pipelines and to deploy innovative, climate-resilient finance mechanisms.

Justification from Feasibility Assessment:

- Inadequate integration of the cryosphere and hydrological data into fiscal, infrastructure, and sectoral planning.
- Disjointed EWS and monitoring networks, especially for GLOFs and seasonal water availability.
- Strong national demand for science-based investment planning tools, particularly in agriculture, water, and energy.
- Untapped potential for climate finance innovation, including sustainability-linked or outcome bonds, ecosystem services markets, and resilience-linked instruments.
- Low institutional and digital readiness of national meteorological and hydrological services.
- Insufficient regional coordination in climate services and river basin governance.

Component Objective:

To strengthen national and regional capacities to design, finance, and implement science-based, climate-resilient investments by upgrading data systems, institutional frameworks, and financial mechanisms that bridge cryosphere science with planning and capital mobilization.

Key Outputs and Activities:

Output 1.1.1: Climate Risk Integrated into National and Sectoral Planning

Description:
This output strengthens institutional and technical systems to embed climate risk—particularly cryosphere-related impacts such as glacier retreat, snowmelt variability, and GLOFs—into national and sectoral planning processes. As outlined in Annex 2.0, these impacts are already disrupting water availability, seasonal flows, and infrastructure resilience in key mountain-fed basins across CWA. A central focus of this output is the application of planning tools and approaches to four priority glacier-dependent river basins, where upstream–downstream hydrology linkages are critical to managing climate risk. This basin-level lens enables countries to align planning with actual hydrological dynamics and cross-sectoral dependencies, providing a tangible entry point for both national and transboundary coordination.

By integrating climate risk into investment planning, this output lays the groundwork for climate investment plans that directly inform the selection, design, and financing of adaptation projects developed under Output 1.2.1. The resulting risk-informed priorities also provide a foundation for testing innovative financing mechanisms under Output 1.2.2, ensuring financial instruments are aligned with identified adaptation needs. Moreover, by embedding resilience metrics and climate-informed baselines, Output 1.1.1 provides the analytical basis for monitoring and evaluation systems under Output 4.1.3, enabling tracking of adaptation progress over time and space. Finally, this output contributes to the regional integration agenda of Component 4 by generating harmonized data, risk scenarios, and institutional frameworks that underpin regional knowledge sharing, cross-border planning, and cooperative governance. The enabling environment and institutional capacities required to sustain this approach are further developed under Output 4.1.2 (RGCOP coordination) and Output 4.1.1 (data-sharing platforms and tools).

Activities:

- **Activity 1.1.1.1: Develop and institutionalize climate-informed public investment frameworks for the relevant Host Countries**
  This activity supports ministries of finance, planning, and line agencies to incorporate climate and hydrological risk into public investment systems. Based on the climate hazards outlined in Annex 2.0, the frameworks will apply risk-screening tools and appraisal criteria tailored to the characteristics of each country's priority basins, helping to prioritize resilient infrastructure and services.
- **Activity 1.1.1.2: Support integration of glacier, snowmelt, and climate risk into NAPs**
  This activity ensures that national adaptation priorities fully reflect risks associated with upstream cryosphere systems and downstream vulnerability. Drawing from detailed assessments in Annex 2.0, countries will integrate glacier-related risks and wider regional climate risks into NAPs and associated sector plans, facilitating policy alignment with financing frameworks and basin-level implementation.
- **Activity 1.1.1.3: Apply scenario-based modeling tools for long-term fiscal, infrastructure, and land-use planning**
  Scenario-based modeling will assess future cryosphere and hydrological conditions, enabling countries to anticipate their fiscal and infrastructure needs under different climate futures. These tools will be applied in the four pilot basins to identify no-regret investments and to generate climate-smart planning inputs for national and regional strategies.

Contribution to G2F Objectives:

- Provides the strategic and analytical foundation for the entire G2F Program by embedding cryosphere-related climate risks—such as glacier retreat, snowmelt variability, and hydrological extremes—into national plans, sector strategies, and public investment systems;
- Enables the development of science-based climate investment plans, which guide the identification and prioritization of adaptation projects under Component 2 and ensure alignment with national and regional adaptation goals;
- Supports the mainstreaming of climate risk data—generated through glacier and hydrological modeling—into fiscal planning, infrastructure design, and land use, fostering risk-informed decision-making at multiple levels;
- Facilitates the mobilization of finance by linking upstream planning with eligibility frameworks for international climate funds (e.g. GCF), directly informing the project pipelines (Output 1.1.2) and innovative financing tools (Output 1.1.3);
- Strengthens the enabling environment for regional coordination, by producing harmonized climate risk baselines and tools that underpin cross-border cooperation and knowledge sharing under Component 4;

- Contributes to G2F's overarching goal of transforming fragmented and reactive planning systems into forward-looking, climate-informed governance structures that can manage long-term cryosphere risks at basin and national scales.

Expected Results:
Governments adopt science-based planning and budgeting processes that are responsive to climate, cryosphere, and water risks.

Output 1.2.1: Bankable, Science-Based Project Pipelines Developed
Description:
This output delivers targeted technical assistance to help participating countries transform climate vulnerability and adaptation needs into well-structured, science-based investment pipelines. These pipelines integrate cryosphere and climate risk data—such as glacier retreat, altered snowmelt patterns, and downstream hydrological stress—into project design, ensuring a robust climate rationale and alignment with international funding standards (e.g., GCF, ADB, CIF).

Informed by the **climate risk assessments and baseline diagnostics presented in Annex 2**, Output 1.2.1 builds on planning frameworks developed under **Output 1.1.1** to generate adaptation projects across multiple sectors, such as EWS, agriculture, water resources, health and social protection. The resulting pipelines feed directly into national and regional climate investment strategies and are designed to accelerate GCF and ADB programming by reducing lead time between concept identification and financing.

These pipelines also support the strategic objectives of **Component 2**, bridging upstream assessments with tangible on-the-ground interventions in glacier-fed catchments. As detailed in **Section 3.2** of the Feasibility Study, the G2F pipeline development process includes rigorous processes for eligibility screening, technical feasibility, climate additionality, and gender and safeguard assessments.

Projects developed under this output serve as:

- Demonstration cases for replication and upscaling under Outcomes 2.2–2.4;
- Design and implement financing mechanisms designed in **Output 1.2.2** (e.g., sustainability-linked or outcome bonds, PES);
- Input into regional coordination and policy dialogue under **Component 4**.

Activities:

- **1.2.1.1: Identify and prioritize adaptation project concepts across key sectors**.
  This activity involves convening national stakeholders and sector ministries to identify high-priority climate adaptation concepts based on hazard exposure, vulnerability mapping (as per Annex 2), and alignment with NAPs and NDCs. Concepts are assessed against GCF eligibility criteria and G2F's climate investment framework.
- **1.2.1.2: Prepare pre-feasibility and business case documents integrating climate and cryosphere risk data.** Support includes data integration from glacier monitoring and hydrological modeling (Output 1.1.1), development of design and monitoring frameworks, cost-benefit analysis, and safeguards screening. Project concepts are tailored to demonstrate climate additionality and transformational impact, following GCF's investment criteria.
- **1.2.1.3: Train government agencies to develop and manage GCF-aligned project pipelines and project proposals**. National agencies receive technical support and training on developing full funding proposals, managing dynamic pipelines, and tracking pipeline performance through results-based monitoring frameworks consistent with Output 4.1.3. This aligns with capacity-building goals under **Output 3.1.1** and ensures institutional readiness for future scaling.

Contribution to G2F Objectives:

- Translates climate risk analysis and national planning priorities (developed under Output 1.1.1) into a pipeline of investment-ready adaptation projects, ensuring that projects are scientifically justified, financially sound, and aligned with GCF and ADB standards;
- Addresses critical gaps identified in Annex 2.0 related to limited technical capacity for project design, weak integration of cryosphere risk data, and low readiness for climate finance access in participating countries;
- Provides the institutional and technical basis for mobilizing public and private climate finance by producing pre-feasibility studies, business cases, and proposal documents that meet the requirements of funding partners;
- Supports G2F's goal of accelerating implementation by reducing lead times between project identification and execution, particularly for projects in climate-sensitive sectors such as water, agriculture, and ecosystems;
- Enables a systematic and scalable approach to project preparation across participating countries, feeding into national climate investment plans and country programming with ADB and other accredited entities;
- Lays the groundwork for the deployment of innovative finance mechanisms under Output 1.2.2, by ensuring that selected projects meet risk, performance, and eligibility criteria for blended finance and results-based funding.

Expected Results:
A portfolio of investment-ready, science-driven adaptation projects, aligned with national priorities and global funding criteria.

Output 1.2.2: Innovative Finance Mechanisms Designed

Description:
This output designs a suite of financing instruments tailored to address climate and cryosphere risk in glacier-dependent regions. These include sustainability-linked or outcome bonds (e.g. tied to targets such as irrigation efficiency or reforestation), climate-linked insurance (e.g. parametric insurance, contingent disaster financing etc. building on ADB's experience in Pakistan), PES (e.g. where upstream communities are compensated for activities like watershed protection and flood buffering—based on pilots in China and Southeast Asia), and debt-for-climate swaps, among others. As detailed in Annex 2, these tools are increasingly recognized for their potential to de-risk adaptation projects, attract blended finance, and channel public and private capital toward nature-based solutions and resilient infrastructure. The design of these instruments is grounded in the science-based investment planning frameworks of Output 1.1.1 and the pipeline development process under Output 1.2.1. Output 1.2.2 provides the financial innovation and structuring capacity needed to translate climate priorities into bankable investments that can secure funding from climate funds, institutional investors, and domestic financing institutions. These mechanisms respond directly to the challenges identified in Component 1 regarding underdeveloped markets and limited access to climate finance across CWA. They also reinforce regional financial innovation and cooperation under Component 4, contributing to a broader enabling architecture for cross-border climate investment through knowledge sharing, institutional harmonization, and demonstration of replicable financial models.

Activities

- **1.2.2.1: Design sustainability-linked or outcome bonds, climate-linked insurance, PES schemes, and resilience loans**
  This activity involves working with key stakeholders in selected countries (e.g. ministries of finance, central banks, local banks, credit unions, agricultural cooperatives etc.) to develop the enabling environment (e.g. remove barriers, enhance systems and processes etc.) and design mechanisms to finance climate resilience, including tailoring financial solutions (e.g. loans, leases, insurance, PES etc.) and structures to be fit for purpose within each country's policy and financial system context (e.g. avoiding market distortions, crowding in private sector investment where possible etc.) as described in Annex 2.

Expected Results

- Feasible models/schemes and institutional pathways for PES, resilience loans/bonds, and other innovative finance mechanisms.
- Regional capacity and coordination platforms to replicate and scale financial innovation models/schemes through Component 4.

Contribution to G2F Objectives:

- Responds to G2F's objective of overcoming barriers to climate finance access in underdeveloped markets, as identified in Annex 2, by building capacity for concessional and performance-based capital to de-risk and scale investments;
- Anchors financial innovation in scientific risk data and sectoral modeling from Output 1.1.1, ensuring alignment between climate rationale and investment design;
- Enables the mainstreaming of NbS and climate-smart infrastructure into national pipelines by creating replicable financing structures;
- Contributes to G2F's goal of establishing a regional climate finance architecture, laying the groundwork for coordinated funding mechanisms and shared tools across participating countries (linked to Component 4).

Science-Based Investment and Financial Innovation Highlights:

- Integration of glacier mass balance, hydrology, and climate modeling into adaptation project pipeline development.
- Promotion of blended finance instruments that link climate data with adaptation outcomes.

Exit Strategy:

- Technical tools and decision-support systems (e.g., glacier-informed planning models, climate investment frameworks) will be **formally transferred to national institutions**, such as ministries of finance, planning, environment, and water.
- The capacity-building of government staff will enable countries to independently carry out **climate risk analysis**, investment planning, and integration of climate science into public budgeting and infrastructure standards.

Sustainability Measures:

- Alignment with NAPs, NDCs, and Public Investment Management (PIM) systems ensures lasting institutional relevance.
- Data and modelling tools will be institutionalized within national meteorological and hydrological agencies (e.g., NMHSs), with technical staff responsible for ongoing operation.

- Policy reforms enabled under this component—such as climate-informed infrastructure codes or river basin strategies—will be codified into law or regulation, ensuring continuity beyond GCF support

Component 2: G2F Investment Solutions

Component 2 functions as the implementation engine of the G2F Program, translating the upstream climate data, planning tools, and institutional frameworks developed under Component 1 into tangible, climate-resilient investments. It builds directly on the science-based risk assessments and cryosphere data provided in the feasibility study (Annex 2)—including projections of glacial retreat, altered snowmelt timing, and downstream water stress—to drive actionable solutions on the ground. This component delivers integrated, cross-sectoral investment models that are both scalable and locally grounded, combining:

- NbS for watershed and rangeland restoration (linked to Output 2.2.1),
- Climate-smart agriculture and efficient water systems (connected to Output 2.3.1),
- Impact-based EWS (from Output 2.1.1),
- And adaptive social protection and health systems (co-developed under Output 2.4.1).

Component 2 bridges ecosystems and livelihoods by linking upstream restoration efforts to downstream food and water security, helping vulnerable communities shift from reactive crisis management to anticipatory, risk-informed adaptation. These investments are grounded in risk modeling, investment prioritization, and scenario planning tools from Output 1.1.1, ensuring they reflect actual climate exposure and adaptation needs.

The pipeline of subprojects implemented under Component 2 also serves to activate the financial instruments developed in Output 1.2.2—including sustainability-linked or outcome bonds, PES schemes, and green credit lines—and will be aligned with ADB country pipeline development processes, supporting national climate finance strategies and enabling long-term scale-up.

Through its focus on four priority glacier-fed river basins, Component 2 operationalizes upstream–downstream integration at the watershed level, creating a platform for basin-wide coordination and replication through Component 4's regional knowledge framework.

Linked Outcomes:

- **Outcome 2.1: EWS and climate services expanded**
  Delivered through localized deployment of early warning systems and climate risk data applications (via Outputs 1.1.1 and 2.1.1).
- **Outcome 2.2: Efficient and sustainable water resource management**
  Achieved through NbS, irrigation rehabilitation, and integrated watershed investments (linked to Outputs 2.3.1 and 2.2.1).
- **Outcome 2.3**: **Resilience of farmers to climate shocks enhanced**
  Strengthened through adoption of CSA practices, adaptive finance tools, and capacity-building (in coordination with Outputs 2.3.1, 3.1.2, and 3.1.3).
- **Outcome 2.4: Inclusive adaptation and social protection systems**
  Supported through the integration of climate triggers into safety nets and health service delivery (aligned with Outputs 2.1.1 and 2.4.1).

Rationale:
The region's glacier-fed basins are increasingly affected by climate-driven extremes—floods, droughts, and heatwaves—while land degradation, outdated irrigation, and fragile safety nets amplify risks to food security, livelihoods, and public health. There is a need for integrated investment models that do not treat water, agriculture, and social systems in isolation but restore their interdependence through NbS, climate-smart agriculture, integrated water resources management, anticipatory social protection, adaptive health systems, and impact-based EWS. Component 2 responds directly to this need, unlocking cross-sectoral resilience and climate-responsive development at a scale.

Justification from Feasibility Assessment:

- Upper catchment degradation reduces water retention and increases flood and sedimentation risks.
- Outdated irrigation and farming practices undermine productivity and water efficiency.
- Social protection systems are fragmented and reactive, lacking climate triggers.
- EWSs are hazard-focused, uncoordinated, and not linked to actionable response.
- Pilots show strong results from bundling NbS, agriculture, and safety nets, yet remain under-scaled.
- Inter-agency coordination is vital for resilience outcomes, requiring structured support.

Component Objective:

To demonstrate and scale up integrated climate-resilient investment packages that restore natural ecosystems, modernize agriculture, strengthen climate-responsive social services, and operationalize EWSs to enable anticipatory action.

Lessons Learned Integrated into Design

- Grey infrastructure may be necessary as an adaptation measure to support downstream farmers and agriculture, especially with regards to dwindling water supplies and early season snowpack / glacier melt.
- Nature-based solutions are essential for upstream water security and downstream resilience, especially when managed locally.
- Agrometeorological services and resilient seeds improve yield stability and farmer decision-making under uncertain climates.
- Post-harvest investments (cold storage, processing) are critical to food security yet often neglected.
- Anticipatory social protection systems, activated by early warnings, dramatically reduce recovery costs and social disruption.
- Community-based and interoperable EWS improve trust, response time, and institutional coordination across sectors.
- Multi-functionality and cross-sector bundling offer better value, sustainability, and scalability.

Key Outputs and Activities:

Output 2.1.1: Impact-Based EWS Developed and Operationalized

Description:
This output establishes community-centered, interoperable, and multi-hazard early warning systems (EWS) designed to shift vulnerable populations from reactive crisis response to proactive, anticipatory action. These systems will support early warnings for GLOFs, floods, droughts, and heatwaves, with coverage expanding nationally and within the four-priority glacier-fed river basins. EWS will be tailored to predict not just the hazard but its likely impact, enabling early, risk-informed decisions across sectors including agriculture, social protection, emergency response, and health.

According to Annex 2, while technical meteorological infrastructure exists in many participating countries, major capacity gaps persist in impact modeling, local-level system maintenance, cross-sectoral coordination, and last-mile communication. Output 2.1.1 directly responds to these gaps through a comprehensive package of technical system development and targeted capacity building for government agencies, local authorities, and community responders.

This output builds on the cryosphere and climate data modeling under Output 1.1.1, feeding real-time and predictive data into operational warning systems. It also connects directly with Output 2.4.1, which links EWS to pre-agreed social protection and health actions, and Output 1.2.2, which uses EWS thresholds to activate climate risk finance tools such as insurance and contingency funds. EWS performance and learning will be monitored using systems developed under Output 4.1.3.

Activities:

- **2.1.1.1: Design and deploy multi-hazard, impact-based EWS for GLOFs, floods, droughts, and heatwaves nationally and basin-wide, where appropriate**
  Based on climate risk assessments in Annex 2, this activity addresses the need to expand current early warning efforts from hazard detection to predictive, impact-based systems. It also tackles limited technical capacity in glacier monitoring and multi-hazard modeling, particularly at sub-national levels.
- **2.1.1.2: Build integrated communication platforms linking meteorology, agriculture, and emergency services**
  Responding to findings in Annex 2.0 that institutional silos weaken the effectiveness of early warnings, this activity will strengthen coordination among agencies to enable a unified, cross-sectoral response to alerts.
- **2.1.1.3: Operationalize last-mile communication (SMS, sirens, radio, community networks) in local languages**
  Annex 2 highlights that warnings often fail to reach the most at-risk communities, especially in remote, glacier-fed valleys. This activity ensures delivery of localized, actionable alerts through accessible technologies and inclusive communication strategies.
- **2.1.1.4: Train local actors and community responders to operate and maintain EWS tools**
  Directly addressing capacity constraints identified in Annex 2, this activity builds the operational knowledge of community disaster committees, local governments, and frontline responders—ensuring local ownership, system sustainability, and gender-inclusive participation.
- **2.1.1.5: Establish financing protocols linking EWS to pre-arranged social protection and ex-ante disaster risk financing**
  Integrates EWS with adaptive finance mechanisms by coordinating with social welfare agencies and ministries of finance. This builds on early experience with anticipatory cash transfers and risk financing pilots, as referenced in Annex 2.

Contribution to G2F Objectives:

- Strengthens anticipatory climate risk management by enabling early, impact-based response to glacier-related hazards such as GLOFs, flash floods, droughts, and heatwaves—key climate risks identified in Annex 2;

- Enhances the adaptive capacity of communities and institutions by linking hazard forecasts to actionable alerts, early warnings, and pre-arranged financing, reducing reliance on post-disaster recovery;
- Establishes an end-to-end, multi-hazard early warning system architecture that is interoperable across sectors and scalable across the four priority glacier-fed river basins;
- Provides a foundational trigger mechanism for activating climate-responsive safety nets and health systems (Output 2.4.1) and climate risk finance instruments (Output 1.2.2), promoting integrated, cross-sectoral adaptation;
- Improves the accessibility and inclusivity of climate services, especially in remote and high-risk areas, by localizing communication channels and training frontline responders;
- Contributes to G2F's objective of embedding science and climate data into service delivery, bridging upstream monitoring (Output 1.1.1) with downstream implementation (Component 2) and adaptive learning (Output 4.1.3).

Expected Results:
Improved early warning coverage and timely, targeted action that reduces loss of life, economic damage, and disaster recovery costs.

Output 2.2.1: Watershed and Climate-Resilient Landscape Restoration Implemented

Description:
This output delivers an integrated package of nature-based and infrastructure solutions to restore degraded glacier-fed watersheds, reduce physical climate risks, and enhance ecosystem services that support resilient agriculture, water systems, and rural livelihoods. It combines grey infrastructure—such as small-scale efficient irrigation systems, retention basins, and erosion control structures—with nature-based interventions like afforestation, rangeland regeneration, and wetland restoration.

The design of all activities is informed by the climate hazard and ecosystem vulnerability assessments in Annex 2, which identify catchments with high exposure to GLOFs, sedimentation, erosion, drought, and early snowmelt. These assessments draw on glacier monitoring, land-use analysis, and hydrological modeling to ensure that interventions are risk-informed, strategically located, and technically sound.

By addressing both upstream and downstream vulnerabilities, Output 2.2.1 contributes to flood mitigation, water regulation, soil stabilization, and food and water security across four priority river basins. It underpins the success of Component 2 investments, reduces disaster exposure in areas served by Output 2.1.1 (EWS), supports climate-adaptive agriculture under Output 2.3.1, and provides the ecological foundation for financing mechanisms under Output 1.2.2, such as PES and adaptation bonds. It also feeds into the knowledge-sharing and planning tools developed under Component 4 for basin-scale replication.

Activities:

- **2.2.1.1: Design and implement watershed investment programs, including institutional structure and funding arrangements**
  Based on spatial vulnerability mapping and institutional diagnostics in Annex 2, this activity creates investment-ready watershed plans, aligned with public investment frameworks (Output 1.1.1) and scalable through financing models in Output 1.2.2.
- **2.2.1.2: Implement afforestation, rangeland regeneration, and wetland restoration in priority catchments**
  Target areas identified in Annex 2 as degraded and hydrologically sensitive to restore vegetation cover, improve infiltration, reduce sediment transport, and enhance ecosystem services.
- **2.2.1.3: Develop nature-based flood protection**
  Provides hybrid flood management infrastructure based on GLOF and flash flood risk assessments (Annex 2), integrated with EWS coverage areas (Output 2.1.1).
- **2.2.1.4: Strengthen community-based resource management systems**
  Supports inclusive, locally led watershed stewardship in line with governance capacity gaps identified in Annex 2. Empowers women and vulnerable groups through roles in planning and monitoring (linked to Output 3.1.2 and Output 2.4.1).
- **2.2.1.5: Institutionalize integrated river basin planning with upstream–downstream coordination**
  Builds coordination mechanisms across sectors and jurisdictions using basin-wide climate risk and water flow data (from Output 1.1.1), aligned with Component 4's regional knowledge platform.

Contribution to G2F Objectives:

- Enhances the climate resilience of critical watersheds by stabilizing erosion-prone slopes, reducing GLOF and flood risk, and restoring natural hydrological cycles in glacier-fed river basins;
- Provides the ecosystem foundation for downstream food, water, and energy security—linking natural systems with resilient livelihoods and infrastructure;
- Demonstrates an integrated approach to climate risk reduction, combining nature-based solutions with grey infrastructure, in line with GCF and ADB best practices;
- Supports the development of finance-ready investment models through bankable watershed plans and the ecological basis for instruments piloted under Output 1.3.1 (e.g., PES, climate bonds);
- Contributes to adaptive land and water governance, enabling upstream–downstream coordination across sectors and borders, and feeding into regional knowledge platforms under Component 4;
- Strengthens local institutional capacity for sustainable land management and inclusive natural resource governance, contributing to long-term transformational change in landscape stewardship.

Expected Results:
Enhanced ecosystem services, improved water retention, reduced flood risk, and sustained productivity for downstream users.

Output 2.3.1: Climate-Smart Agriculture and Agriculture Systems Strengthened

Description:
This output enhances the resilience, productivity, and profitability of farming systems in glacier-fed basins through the introduction of climate-smart technologies, localized climate services, sustainable land-use practices, and improved post-harvest infrastructure. It directly responds to the challenges identified in Annex 2, which highlights the growing exposure of agriculture to glacier retreat, early snowmelt, erratic precipitation, prolonged droughts and heatwaves, and increased climate shocks, all of which accelerate food insecurity in vulnerable mountain and downstream communities.

Annex 2 also notes substantial gaps in agricultural innovation, particularly in water management, seed systems, local extension services, and post-harvest capacity. Output 2.3.1 addresses these challenges through innovative practices, including solar-powered irrigation, agroecological farming, localized weather forecasts, and climate-proof storage systems.

This output is directly informed by spatial climate assessments and seasonal forecast modeling under Output 1.1.1 and is integrated into the investment projects under Component 2. It also strengthens the enabling environment for rural adaptation finance under Output 1.2.2 and reinforces food system safety nets supported by Output 2.4.1 (social protection). Cold chain improvements and advisory tools will feed into digital and institutional platforms promoted under Output 3.1.2 and Output 4.1.1.

Activities:

- **2.3.1.1: Introduce water-efficient irrigation technologies (e.g., drip, solar pumps, micro-irrigation)**
  Designed to improve water-use efficiency amid declining and variable meltwater availability, especially in high-altitude and drought-prone zones identified in Annex 2. These technologies are aligned with the infrastructure investments under Output 2.2.1 and support adaptive agriculture under Component 2.
- **2.3.1.2: Promote resilient seed systems, livestock systems, agroecological farming, and sustainable land use**
  Supports the transition from input-heavy to regenerative practices, such as crop rotation, organic amendments, and stress-tolerant seed varieties. These are particularly critical in zones projected (Annex 2) to experience temperature increases, soil degradation, and crop yield volatility. This activity complements land management initiatives in Output 2.2.1 and financial incentives under Output 1.2.2.
- **2.3.1.3: Provide localized agrometeorological advisories and seasonal forecast tools**[30]
  Uses the climate data infrastructure developed in Output 1.1.1 and the communication platforms under Output 2.1.1 to deliver actionable climate information to farmers, tailored by location, crop type, and growing season. This builds the foundation of knowledge for adaptive decision-making and supports early action in the face of climate stressors.
- **2.3.1.4: Upgrade cold storage, drying, and processing infrastructure to reduce food loss**
  Helps stabilize farmer incomes and reduce post-harvest losses in increasingly heat-stressed and remote environments (as noted in Annex 2), while also improving food safety and supply chain resilience. Supports productivity and value addition within investment zones under Component 2.

[30] Note linkages to other components were relevant will be made.

Contribution to G2F Objectives:

- Enhances adaptive capacity of farming systems in climate-vulnerable river basins;
- Supports a transition to low-emission, resource-efficient agriculture;
- Anchors G2F's broader livelihood resilience and food security strategy across upstream–downstream geographies;
- Promotes scalable, finance-ready models that can be integrated into ADB pipelines and supported through climate finance instruments in Output 1.2.2.

Expected Results:
Increased climate resilience in agriculture, enhanced food security, and higher rural incomes through reduced losses and better risk management.

Output 2.4.1: Climate-Responsive Social Protection and Health Systems Piloted

Description:
This output pilots adaptive social protection and climate-informed health interventions to buffer the most vulnerable communities in glacier-fed regions against intensifying climate shocks. It builds institutional and operational capacity to ensure that social safety nets and basic health services are responsive to early warnings and climate hazards, including GLOFs, flash floods, prolonged droughts, heatwaves, and shifting disease patterns.

According to Annex 2, communities in the upper and lower glacier-fed basins—particularly women, informal workers, and subsistence farmers—face increasing livelihood instability due to loss of arable land, declining water reliability, agricultural disruption (e.g. landslides, floods), and heat-related illness. Yet social protection systems across the region often lack targeting, flexibility, and risk triggers needed to respond quickly to climate-related shocks. Similarly, local health services are rarely equipped to anticipate or treat climate-sensitive conditions such as dehydration, malnutrition, and vector-borne disease outbreaks.

Output 2.4.1 addresses these gaps by linking early warnings (developed under Output 2.1.1) to pre-arranged financing protocols, enabling rapid deployment of cash transfers, food aid, or temporary employment in response to forecasted risks. It also supports the mainstreaming of climate risk into health systems, ensuring services are climate-resilient, especially in rural and mountainous areas. Alongside responsive social protection measures to ensure resilience following climate shocks, other components of G2F aim to build long term resilience to enable communities to resist and absorb shocks, through capacity building and investment in things like drought-tolerant crops, enhanced water infrastructure, climate-smart agricultural techniques, restoration of degraded lands, training for institutions and vulnerable communities on operation of EWS, proactive planning, and climate risk reduction measures etcBy expanding vocational training and livelihood diversification, this output builds the adaptive capacity of poor and climate-exposed households, complementing livelihood interventions under Output 2.3.1 and enabling participation in new climate-resilient value chains financed under Output 1.2.2.

The work under Output 2.4.1 is rooted in institutional coordination, strengthening linkages between health agencies, disaster risk management entities, and social welfare programs. It also supports the data and learning systems developed under Output 4.1.3, ensuring adaptive protection systems are continuously improved based on impact feedback and lessons learned.

Activities:

- **2.4.1.1: Design adaptive social safety nets triggered by EWS (e.g., cash transfers, food aid)**
  Design forecast-based financing protocols that automatically activate social support in anticipation of extreme weather, floods, or drought-using EWS thresholds from Output 2.1.1. Assess suitability and feasibility of these schemes in selected high-risk contexts.
- **2.4.1.2: Mainstream climate risk in local health services (e.g., for heatwaves, vector-borne disease)**
  Supports local clinics and public health officials to prepare for climate-related illness and disease outbreaks, as recommended in Annex 2.0, through revised protocols, training, and early-warning linkages.
- **2.4.1.3: Expand vocational training and diversified livelihood options**
  Provides alternative income sources to at-risk populations (particularly women, youth, and displaced agricultural workers) to reduce dependency on climate-sensitive jobs. These pathways can feed into the green jobs' ecosystem being supported under Outputs 2.3.1 and 3.1.2.
- **2.4.1.4: Facilitate coordination between health, emergency situations (including climate emergency situations), and social welfare institutions**
  Establishes joint protocols, information-sharing systems, and emergency response coordination mechanisms to align institutional mandates and enhance preparedness and resilience.

Contribution to G2F Objectives:

- Addresses the social and human dimensions of climate vulnerability, ensuring that the most exposed populations benefit from early action and post-shock recovery support;
- Translates climate data and early warnings into real-time, life-saving action for food security, income stability, and health;
- Builds a social safety net foundation to complement physical and financial resilience investments under other G2F components;
- Contributes to G2F's goal of transformational, people-centered adaptation, ensuring that no one is left behind in the transition to climate-resilient development;
- Creates institutional blueprints for anticipatory social protection and health system preparedness that can be scaled nationally or replicated regionally under Component 4.

Expected Results:
Reduced vulnerability to climate extremes, particularly for women, youth, elderly, and disabled populations, through improved safety nets and health resilience.

Exit Strategy:

- Infrastructure assets such as reservoirs, climate-resilient irrigation systems, and early warning networks will be transferred to local governments, utilities, and Water User Associations (WUAs) with clear O&M arrangements.
- Projects will be designed with comprehensive Operations & Maintenance (O&M) plans, supported through user fee models or national and municipal budgets.

Sustainability Measures:

- Investments will be mainstreamed into national climate investment plans and development strategies, enabling further scaling through sovereign finance (e.g., ADB country pipelines).
- Successful approaches will be documented and shared through the G2F Knowledge Platform, promoting replication of upstream–downstream adaptation models across the region.
- Local institutions such as water user associations or river basin management associations, and municipal governments will receive capacity-building to manage and maintain infrastructure, with a focus on gender-inclusive governance.
- GCF grant support is used to de-risk initial capital investments, enabling future replication through blended finance and public budgets.

Component 3: Capacity Building for Climate Finance Access

Linked Outcome:

- **Outcome 3.1: Increased access to finance for agricultural MSMEs**

Projects will be developed following extensive capacity building, support to the agribusiness sector and policy alignment.

Finance and Institutional Capacity in Climate-Resilient Agriculture: G2F's Strategic Role

Agriculture remains a vital economic sector across CWA, accounting for over 20% of GDP in countries such as Pakistan, Tajikistan, and Uzbekistan, and employing more than 50% of the workforce in Armenia and Tajikistan. However, this sector is under acute threat from climate change. As highlighted in Annex 2, rapid glacier melt, disrupted hydrological cycles, and intensifying climate extremes—floods, droughts, and heatwaves—are already eroding productivity, degrading soil health, and driving deeper rural poverty across glacier-dependent areas.

Despite these escalating risks, agriculture remains one of the most underfunded sectors for climate adaptation. Private finance accounts for just 0.2% of adaptation funding in the region, and fewer than 20% of financial institutions report green lending portfolios above that same threshold. Agri-MSMEs, which dominate rural economies, are particularly underserved due to inflexible financial products, low financial literacy, and an absence of enabling institutions or targeted policies.

Findings from the Feasibility Assessment (Annex 2)

The G2F Feasibility Study confirmed that climate finance for agriculture in CWA is fragmented, institutionally constrained, and poorly targeted toward the most vulnerable populations. Key barriers identified include:

- Limited capacity of financial institutions to identify, assess, and manage climate-aligned lending;
- Lack of internal systems, regulatory clarity, or performance incentives to integrate climate risk;

- Absence of technical assistance or advisory services for agri-MSMEs, especially in glacier-fed and remote areas;
- Overreliance on concessional finance models, which do not address the root capacity gaps in financial intermediation.

These findings highlight that concessional finance alone is insufficient. A holistic, phased approach—focused on institutional strengthening, policy reform, and demonstration of scalable products/approaches—is needed to lay the groundwork for inclusive, climate-resilient financial systems.

G2F's Contribution and Strategic Positioning

In response to these systemic challenges, G2F's contribution under Outputs 3.1.1, 3.1.2, and 3.1.3 is focused explicitly on capacity building and enabling environment development, rather than the direct provision of concessional finance to financial institutions. Key pillars of this approach include:

- Technical training, ESG integration, and green finance tool development for financial institutions (Output 3.1.1);
- Financial literacy, investment readiness, and borrower capacity strengthening for agri-MSMEs and cooperatives (Output 3.1.2);
- Design green financing products (e.g., risk-sharing instruments, layered blended financing, climate-aligned agri loans etc.), to be deployed in collaboration with banks beyond the scope of G2F's concessional finance envelope (Output 3.1.3).

Exit and Sustainability Strategy

As part of its exit and sustainability strategy, G2F will select partner financial institutions based on their willingness to co-finance activities, develop climate-smart lending pipelines, and commit counterpart resources (e.g., staffing, systems, or parallel financing). These institutions will be supported through G2F's technical assistance package to build durable internal capacity and pilot climate-aligned financial products for agri MSMEs / value chains.

Importantly, G2F concessional finance will not be used for on-lending through financial intermediaries. Any follow-on investments—such as Financial Intermediary Loans to public or private sector banks—would be structured and approved separately, outside the scope of the FAA. However, G2F will include reporting on such follow-up investments and their climate relevance through the Annual Performance Report, ensuring continuity, transparency, and alignment with the program's long-term objectives.

Future ADB-supported public and private sector financial operations—drawing from G2F-prepared pipelines and institutional partners—will represent the next phase of scaling, anchoring G2F's upstream work in sustainable investment architecture.

Component Objective:
To strengthen institutional capacity, expand inclusive green financial products, and empower agri-MSMEs and smallholders to access climate finance—creating the foundation for scaled, climate-resilient investment across the region.

Key Outputs and Activities:

Output 3.1.1: Enhanced Institutional Capacity Building for Financial Institutions

Description:
This output strengthens the technical, operational, and regulatory capacities of national and local financial institutions to deliver climate-aligned finance—particularly in agriculture, natural resource management, and nature-based solutions. According to Annex 2, most participating countries lack climate risk assessment capacity, green lending tools, and ESG integration in their financial systems. This limits the flow of capital to glacier-dependent and climate-sensitive sectors. G2F addresses these constraints by embedding international climate finance standards into institutions' operations and enabling long-term systemic transformation.

Activities:

- **3.1.1.1: Conduct training on ESG standards, climate risk assessment, and green taxonomies**
  Trainings will be delivered to staff from commercial banks, development finance institutions, and regulators to build awareness and technical skills in climate risk assessment, environmental and social governance, and green loan classification. Customized training modules—developed with Annex 2 insights—will focus on glacier-specific and regional climate hazards and the credit implications of climate vulnerability.
- **3.1.1.2: Develop digital lending platforms and green finance screening tools**
  G2F will support the creation of automated digital tools that help banks evaluate loan applications based on climate eligibility, ESG risk, and green finance compatibility. These platforms will integrate real-time data from Output 1.1.1 (risk maps, modeling tools) and improve efficiency and transparency in lending decisions.
- **3.1.1.3: Policy support to strengthen national green finance classification and disclosure frameworks**
  Technical assistance will be provided to finance ministries and central banks to refine or establish national green taxonomies.

Drawing on examples referenced in Annex 2 (Kazakhstan, Pakistan, Uzbekistan), G2F will facilitate inter-agency collaboration to define green finance indicators, build data systems, and adopt global disclosure standards.

- **3.1.1.4: Integrate gender-responsive safeguards in lending systems**
  Gender audits will be conducted with financial institutions to identify barriers facing women-led businesses. Based on findings, G2F will help update credit policies, develop inclusive loan products, and embed gender targets in climate finance portfolios.

Contribution to G2F Objectives:

- Strengthens the institutional foundations of national financial systems to scale climate finance.
- Enables long-term integration of climate and ESG standards across public and private banks.
- Supports the operationalization of financing mechanisms developed under Output 1.2.2 and deployed in Output 3.1.3.

Output 3.1.2: Improved Capacities of Agri-MSMEs and Farmer Groups to Access Finance

Description:
This output improves the financial literacy, investment readiness, and borrowing capacity of vulnerable farmer groups, cooperatives, and agri-MSMEs—especially in glacier-fed and climate-stressed areas. As noted in Annex 2, these actors are disproportionately excluded from formal finance due to low awareness, complex/strenuous application processes/requirements, and weak links to institutions. Output 3.1.2 provides the “last-mile” support needed to bridge this access gap.

Activities:

- **3.1.2.1: Capacity-building workshops for farmer groups, cooperatives, and rural enterprises**
  In-person and digital training sessions will be delivered in partnership with local extension agencies and NGOs. Topics will include financial literacy, loan application preparation, risk management, and using climate finance to adopt adaptive practices introduced in Output 2.3.1.
- **3.1.2.2: Train government agencies to develop and manage GCF-aligned project pipelines**
  G2F will produce localized, easy-to-understand materials (printed, digital, radio-based) explaining green finance concepts, loan terms, eligibility, and investment planning. Materials will reflect lessons from Annex 2.0, particularly on literacy and language barriers in remote regions.
- **3.1.2.3: Create platforms linking cooperatives, government financial institutions, and policy actors**
  Regional forums and brokering mechanisms to explore and enable finance over the medium and long term will be organized to connect MSMEs with banks, guarantee schemes, and support programs. These events will also facilitate policy dialogue on inclusive green finance and feedback from grassroots actors.

Contribution to G2F Objectives:

- Expands equitable access to climate finance for vulnerable and underserved populations.
- Design green financing mechanisms for agri-MSMEs and pilots them with selected MSMEs aligned with G2F investment goals.
- Strengthens the capacity of communities to participate in and benefit from Component 2 investments.

Output 3.1.3: Green Business Financing Products Established (Phase 2 – Years 3–7)

Description:
This output enables local and regional financial institutions to deploy green finance products tailored to climate-affected agricultural value chains. As detailed in Annex 2, a major barrier to financing climate-smart agriculture is the lack of risk-sharing mechanisms and affordable credit terms. Output 3.1.3 addresses this by co-developing layered blended finance models, concessional loans, and guarantee schemes that align with climate investment priorities under Component 2.

Activities:

- **3.1.3.1: Design of a blended finance model with partner banks**
  G2F will collaborate with selected banks to create investment structures combining concessional public finance (e.g., ADB funds) with commercial capital. These models will feature interest rate buydowns, layered capital to support appropriate risk sharing, and co-financing protocols.
- **3.1.3.2: Establish eligibility criteria and risk-sharing tools (e.g., guarantees, first-loss capital)**
  Building on project typologies defined in Output 1.2.1, this activity will define credit assessment tools and terms for eligible

borrowers. G2F will support technical assistance to design risk-mitigation tools such as partial credit guarantees, agricultural insurance, and first-loss protection to encourage lending to adaptation-aligned businesses.

- **3.1.3.3: Provide tailored technical assistance and investment readiness support to agri-MSMEs**
  High-potential agri-businesses and cooperatives will receive one-on-one support, including help preparing business plans, financial documentation, and ESG compliance strategies to access the new financial products.

Contribution to G2F Objectives:

- Demonstrate scalable financing models for climate-resilient agriculture in glacier-fed systems.
- Converts G2F's planning, institutional reform, and capacity-building efforts into actual capital flows.
- Anchors long-term public-private investment pathways to sustain and expand G2F impact.

Expected Results

- At least 5 financial institutions adopt green finance taxonomies and offer climate-resilient lending products.
- More than 100 financial professionals and agri-MSME clients trained in climate finance, ESG integration, and risk assessment.
- Gender-responsive lending models are institutionalized in at least 3 countries.

Exit Strategy:

- Green finance products, risk screening tools, and digital lending platforms will be embedded within national financial institutions (FIs) and agri-MSME support agencies.
- Capacity-building for financial institutions and agri-enterprises will establish a self-sustaining ecosystem for climate-resilient lending.
- Dedicated training for bank staff, cooperatives, and agri-MSMEs will ensure continued uptake and innovation in green financial services.

Sustainability Measures:

- G2F will help countries mobilize co-financing from climate funds, MDBs, and local investors, leveraging early success for broader system change.
- Institutionalization of green taxonomies, ESG frameworks, and financial disclosure practices will enable FIs to access global green capital markets.
- As a sustainability measure the enabling environment undertaken through G2F will lead to future ADB investment specially aimed at supporting the transition from GCF grants to fully market-based lending instruments, embedding climate finance in domestic systems *(This will be part of ADB's commitment to the region and mobilization objectives but not as part of G2F deliverables but parallel to G2F support. Any mobilized finance will be reported in the Annual Performance Reports*).

Component 4: Regional Knowledge Platform for Adaptive Learning and Climate Action

Linked Outcome:

- **Outcome 4.1: Regional coordination and knowledge sharing strengthened**

Expected Result:
Regional platforms established for long-term adaptation strategy, impact assessment, and replication of best practices

Description and Rationale:
Climate change in CWA, particularly from glacial retreat, snowmelt variability, and extreme hydrological shifts, poses urgent challenges that transcend national borders. Rivers fed by shared glaciers connect countries through water, ecosystems, economies, and risk. Yet, as highlighted in Annex 2, effective adaptation across the region remains constrained by institutional fragmentation, inconsistent data, and limited access to replicable, evidence-based solutions. Component 4 responds directly to this regional gap by establishing a sustained, technically grounded, and politically neutral platform for knowledge exchange, adaptive learning, and coordination on climate action. It will enable countries to align on risk assessments, share tools and methodologies, and scale successful models piloted under Components 1–3. These include climate-informed planning (1.1.1), adaptation finance innovation (1.2.2), early warning systems (2.1.1), and nature-based restoration (2.2.1).

Component 4 builds on ADB's leadership in regional programming (e.g., CAREC and Aral Sea Basin programs) and reflects strong national support mobilized during G2F's PPF and Funding Proposal development phases. Stakeholders across participating countries expressed a shared recognition that no country can adapt alone, and requested structured, inclusive platforms to help overcome national silos and move toward a shared adaptation architecture. Component 4 is also designed to initiate a regional response to politically sensitive issues—such as glacier-fed water allocation and climate-driven migration—through technically focused, trust-building dialogue, coordinated through Outputs 4.1.1–4.1.3. In line with diplomatic realities, Armenia will only participate in knowledge exchanges with countries with which it maintains formal diplomatic relations.

Justification from Feasibility Assessment (Annex 2):
The G2F Feasibility Study confirmed that many previous efforts to coordinate on climate and water challenges in CWA failed to scale due to:

- Fragmented or project-specific data systems
- Absence of long-term institutional platforms
- Lack of harmonized regional M&E frameworks
- Over-reliance on bilateral channels without neutral conveners

The study recommended the creation of a permanent, regionally owned coordination platform to support adaptive learning, M&E alignment, and strategy harmonization. Component 4 directly responds to that recommendation by embedding knowledge sharing, learning, and monitoring functions across Outputs 4.1.1 (knowledge hub), 4.1.2 (RGCOP), and 4.1.3 (MEL system).

Contribution to G2F Objectives:

- Enables a cohesive regional response to glacier-related climate risks and shared water variability
- Provides the institutional infrastructure for scaling adaptation tools and lessons from Components 1–3
- Promotes evidence-based policy alignment and impact tracking across national boundaries
- Builds momentum for future public and private climate investments across the region, using G2F as a demonstration and coordination platform
- Positions ADB and partner countries to lead climate cooperation in fragile glacier-dependent ecosystems, through practical, non-political collaboration

Component Objective:

To institutionalize regional coordination, learning, and adaptive management systems that enhance policy coherence, accelerate knowledge sharing, and strengthen resilience outcomes across all G2F countries.

Key Outputs and Activities:

Output 4.1.1: Regional Cooperation and Knowledge Hub Operationalized

Description:
This output establishes a regional platform for structured knowledge exchange, cross-border learning, and the replication of successful adaptation practices from G2F countries. Annex 2 identifies a lack of coordination and institutional continuity as key challenges limiting regional collaboration on climate adaptation, especially in glacier-fed basins where countries share hydrological risks and opportunities.

The Knowledge Hub will serve as a neutral, non-political space to explore complex topics like transboundary climate risks and glacier-fed river management, using a technical lens to support trust-building and collaboration. While the hub does not aim to mediate political issues, it provides a low-risk entry point for multi-country engagement. Participation by Armenia will be limited to exchanges with countries with which it has formal diplomatic relations.

Activities:

- **4.1.1.1: Establish online hub and data-sharing platforms**
  G2F will partner with a regional institution (e.g., CAREC Institute) to design, host, and manage a secure, multilingual online platform that will serve as the knowledge backbone for the G2F program. This platform will house climate vulnerability maps (from Output 1.1.1.), bankable project templates (Output 1.2.1), financing tools (Output 1.3.1), case studies (Output 2.3.1), MEL dashboards (Output 4.1.3), and more. It will support interactive features (e.g., webinars, resource libraries, discussion threads) and serve as a live portal for policy practitioners, researchers, and development partners.
- **4.1.1.2: Facilitate regional forums, peer-to-peer learning, and joint research partnerships**
  G2F will organize regular regional learning events—some virtual, others in-person—bringing together stakeholders from across all participating countries and sectors. Forums will be thematically structured (e.g., water security, gender-inclusive climate finance, adaptive safety nets) and will provide opportunities for both technical capacity development and informal diplomacy. These events are critical to breaking silos, building trust, and diffusing solutions from successful pilots under all components.
- **4.1.1.3: Establish technical advisory panels for climate innovation**
  Expert panels comprising leading researchers, regional specialists, and implementing partners will be convened to review

tools and innovations from across G2F—such as Output 1.1.3's blended finance instruments, Output 2.1.1's EWS designs, and Output 2.2.1's NbS models. These panels will publish recommendations for policy scaling and regional adaptation investment strategies.

Contribution to G2F Objectives:

- Promotes scaling, replication, and regional alignment of climate adaptation strategies
- Facilitates knowledge-driven cooperation on shared climate and hydrological risks
- Lays the foundation for future regional climate investments and coordination frameworks

Output 4.1.2: Regional Glacier Community of Practice (RGCOP) Established
Description:
This output creates the Regional Glacier Community of Practice (RGCOP), an institutional mechanism to support multi-country engagement on climate adaptation. As described in Annex 2, the region lacks an enduring, inclusive platform to coordinate technical and policy responses to cryosphere-related risks.

The RGCOP will function as a non-binding, practice-based forum for sustained collaboration on adaptation financing, glacier monitoring, climate-smart agriculture, and integrated water management. The Community will operate in full respect of national sensitivities. Armenia's participation will be limited to dialogue with countries it maintains diplomatic relations with.

Activities:

- **4.1.2.1: Establish the RGCOP coordination mechanism and Terms of Reference**
  G2F will work with national governments and regional institutions to design the governance structure, participation criteria, and standard operating procedures for the RGCOP. The ToR will ensure inclusivity, respect for national sovereignty, and clarity on the thematic focus areas (e.g., glacier monitoring, climate finance, food-water systems). It will also codify Armenia's selective participation approach.
- **4.1.2.2: Convene biannual RGCOP meetings across participating countries**
  G2F will organize RGCOP sessions twice per year. Meetings will feature technical panels, results-sharing sessions (drawing from Outputs 1.1.1–3.1.3), and side events. Locations will rotate, and where necessary, G2F will facilitate hybrid formats to ensure broad participation. Meetings will focus on lessons learned, tool co-development, and coordination opportunities in areas such as Output 2.3.1 (climate-smart agriculture) or Output 2.4.1 (adaptive social protection).
- **4.1.2.3: Operationalize subgroups on technical, finance, and agriculture-water policies**
  Technical working groups will address specific needs: e.g., data harmonization for glacier modeling (Output 1.1), scaling finance products (Output 1.1.3, 3.1.3), or coordination on shared irrigation systems (Output 2.2.1). Each subgroup will prepare technical briefs and regional action roadmaps for further discussion.
- **4.1.2.4: Develop and disseminate regional knowledge products and policy briefs**
  RGCOP will curate and distribute technical synthesis documents, practitioner guides, and regional policy briefs. These will compile insights from pilots, summarize MEL results (Output 4.1.3), and propose policy recommendations. All materials will be made available through Output 4.1.1's digital platform.

Contribution to G2F Objectives:

- Builds long-term institutional infrastructure for regional climate cooperation
- Supports peer-to-peer learning, technical harmonization, and informal diplomacy
- Provides a forum for the co-creation of practical tools and guidance across G2F themes

Output 4.1.3: Adaptive Monitoring, Evaluation, and Learning (MEL) Systems Deployed
Description:
This output implements a regionally harmonized Monitoring, Evaluation, and Learning (MEL) framework to ensure G2F implementation is adaptive, accountable, and evidence-based. As detailed in Annex 2, MEL systems across the region are often outdated, fragmented, or missing entirely—making it difficult to measure climate impact or inform investment decisions.

The MEL framework will enable performance tracking for all G2F components and countries. Importantly, it will also support ADB's broader regional investment portfolio by aligning indicators, reporting formats, and data flows with ADB's corporate results framework. This ensures that G2F not only delivers its own results but also enhances regional monitoring capacity for follow-on investments.

Activities:

- **4.1.3.1: Conduct M&E Systems Analysis**
  G2F will partner with national governments and regional institutions to assess current MEL practices, institutional roles, and data systems. The assessment will highlight linkages with existing ADB investment frameworks to ensure that G2F's MEL system complements and extends regional monitoring efforts.

- **4.1.3.2: Develop a standardized compendium of forms and data-collection tools**
  G2F will produce user-friendly templates and guidance documents for collecting, analyzing, and uploading indicator data. These tools will also be designed for potential adoption by future ADB-financed projects in the region, helping to harmonize M&E processes across the broader investment landscape.
- **4.1.3.3: Develop and operationalize the G2F Management Information System (GMIS)**
  GMIS will be a secure, cloud-based platform hosting all G2F monitoring data. It will be compatible with ADB's project monitoring platforms (e.g., eOps, DMF Builder) and structured to aggregate results at regional and national levels. Dashboards will track gender, geography, finance flows, and adaptation impacts. The system will also be linked to the knowledge platform (Output 4.1.1) for wider dissemination and use by RGCOP stakeholders (Output 4.1.2).

Contribution to G2F Objectives:

- Enables adaptive implementation and learning across all components and countries
- Provides a shared regional monitoring framework to inform future ADB public and private sector investments
- Enhances accountability, transparency, and evidence-based policymaking in climate adaptation

Expected Results:

- Operational regional knowledge platform hosted with active country participation
- Biannual knowledge exchange forums conducted across CWA
- At least three cross-country studies or regional assessments on glacier-related risks completed
- National governments regularly incorporate learning from RGCOP into NAP/NDC revision Adaptive MEL system integrated across G2F components with real-time learning loops
- Gender-responsive and inclusive planning practices mainstreamed in regional strategies GMIS operationalized in all G2F countries
- Real-time dashboards used by G2F Steering Committee and national ministries for adaptive management
- Glacier retreat and resilience impact data incorporated into regional reporting and GCF learning cycles

Exit Strategy:

- Management of the GMIS, and RGCOP will progressively transition to CAREC or another regional platform with a proven governance structure.
- Hosting and funding arrangements will be formalized in partnership with participating countries and regional institutions to ensure continuity.
- A formal Mid-Term Review will assess the institutional home and governance of the platform, recognizing that institutional landscapes may evolve significantly over the Program's 10-year lifetime.

Sustainability Measures:

- Knowledge outputs, including case studies, policy briefs, datasets, and decision-support tools—will be integrated into national research institutes, training academies, and technical ministries.
- The open-data design of the GMIS and MIS will ensure continued access by policymakers, researchers, and regional partners.
- CAREC and other networks will sustain the platform's function as a shared infrastructure for regional climate resilience, supporting learning, policy harmonization, and scientific collaboration. Cross-border partnerships, regional research initiatives, and climate financing mechanisms will use G2F systems to anchor long-term cooperation beyond the project cycle.

Tackling Financial Barriers through G2F: A Science-Based, Finance-Driven, and Inclusive Approach

Climate adaptation across glacier-fed systems in CWA is deeply constrained by entrenched financial barriers—ranging from misaligned investment planning to the financial exclusion of vulnerable communities. Recognizing these systemic challenges, the G2F Program adopts a strategic, science-based and regionally coordinated approach to unlock climate finance and accelerate adaptation.

At the core of G2F is the ADB's proven ability to integrate climate risk into planning and finance systems. Leveraging its science-policy-finance interface, ADB supports governments and institutions to generate bankable, glacier-informed project pipelines and create enabling approaches to develop and deploy innovative instruments (e.g., sustainability-linked or outcome bonds and PES).

Furthermore, ADB brings significant convening power, enabling regional cooperation across countries with shared cryosphere-linked water systems. Through its partnerships with governments, financial institutions, and local communities, G2F fosters inclusive, scalable financial ecosystems that empower smallholders, MSMEs, and marginalized groups.

The table below highlights how each key financial barrier is directly addressed through targeted G2F components and activities, ensuring that adaptation investments are not only technically sound and socially inclusive but also financially viable and institutionally sustainable.

Table 7: How Financial Barriers Will Be Tackled Through G2F Components and Activities

Barrier	G2F Component(s)	Key Activities
Misaligned Investment Pipelines	Component 1: Science-Based Climate Risk Planning and Investment Pipelines	Activity 1.1.1.1: Develop and institutionalize climate-informed public investment frameworks for the relevant Host Countries Activity 1.1.1.2: Support integration of glaciers, snowmelt, and climate risk into National Adaptation Plans (NAPs) Activity 1.2.1.2: Prepare pre-feasibility and business case documents integrating climate and cryosphere risk data.
Financial Exclusion of Vulnerable Stakeholders	Component 3: Capacity Building and Unlocking Financing and Empowering Agri-Based Enterprises Component 2: Climate-Responsive Social Protection and Health Systems	Activity 3.1.2.1: Capacity-building workshops for farmer groups, cooperatives, and rural enterprises Activity 3.1.2.2: Train government agencies to develop and manage GCF-aligned project pipelines Activity 3.1.2.3: Create platforms linking cooperatives, government financial institutions, and policy actors Activity 2.4.1.1: Design and pilot adaptive social safety nets triggered by EWS (e.g., cash transfers, food aid) Activity 2.4.1.3: Expand vocational training and diversified livelihood options
Underdeveloped Green Financial Products and Services	Component 3: Green Business Financing Products (Phase 2 - Years 3-7)	Activity 3.1.3.1: Design of a blended finance model with partner banks
Weak Risk-Sharing and Blended Finance Mechanisms	Component 3: Capacity Building for Financial Institutions	Activity 3.1.3.2: Establish eligibility criteria and risk-sharing tools (e.g., guarantees, first-loss capital) Activity 3.1.1.1: Conduct training on ESG standards, climate risk assessment, and green taxonomies
Persistent Underfunding of Adaptation Initiatives	Component 1: Innovative Finance Mechanisms Designed and Piloted	Activity 1.2.2.1: Design sustainability-linked or outcome bonds, climate-linked insurance, and resilience loans
Lack of Bankable Project Pipelines	Component 1: Bankable, Science-Based Project Pipelines Developed Component 3: Improved Capacities of Agri-MSMEs and Farmer Groups to Access Finance	Activity 1.2.1.1: Identify and prioritize adaptation project concepts across key sectors Activity 1.2.1.3: Train government agencies to develop and manage GCF-aligned project pipelines Activity 3.1.2.2: Develop green finance toolkits

G2F Implementation Approach: Component-Based, Country-Led, and Regionally Coordinated

The G2F Program is implemented through a modular, country-driven framework that is structured around four mutually reinforcing components. These components work in concert to bridge science, policy, and finance—ensuring that climate adaptation is both nationally owned and regionally coherent.

Each component plays a specific, complementary role:

- **Component 1** strengthens upstream–downstream planning by integrating glacier-informed climate science into investment decision-making and national development frameworks.
- **Component 2** delivers scalable adaptation investments on the ground—spanning water, agriculture, disaster risk reduction, and social protection systems.
- **Component 3** enhances the financial ecosystem to enable agri-MSMEs and local banks to scale green, climate-resilient enterprises.
- **Component 4** builds regional cooperation and adaptive learning by harmonizing climate data systems, facilitating coordination, and promoting knowledge sharing.

Operational Modality and Government Partnership

All G2F projects will be implemented under ADB's sovereign operational modalities, with each project governed by legal agreements signed between ADB and the respective national government. This ensures full alignment with national systems, policies, and development priorities.

G2F focuses on national investment projects with significant upstream–downstream benefits, particularly in river basins and highly glacier-dependent areas. These investments are selected for their potential to strengthen water, food, and climate security across scales—linking high mountain source regions with lowland communities and economic systems.

Enabling Shared Climate Understanding and Data Systems

A foundational principle of G2F is the shared use of climate and glacier data to build trust, reduce risk, and improve planning—both within and across countries:

- **Component 1: Science-Based Planning** will generate and apply upstream–downstream climate science, including glacier mass balance, hydrology modeling, and risk scenarios to inform infrastructure, agriculture, and budget planning.
- **Component 4: Regional Knowledge Platform** will support a shared regional understanding of cryosphere dynamics by enabling:
  - Data sharing across meteorological, hydrological, and disaster agencies;
  - Development of the Monitoring Information System (MIS) and adaptive learning mechanisms;
  - Collaboration between river basin authorities, ministries, and local actors to ensure evidence-based decision-making.

Together, these components create an integrated climate governance system that is not only national in execution but regional in logic and impact—ensuring that glacier-related risks are tackled holistically across hydrological and political boundaries.

Project Identification and Analysis: Design of Transformational Climate Projects
In alignment with country partnership strategies and country programming, the identification of projects has followed a structured, country-driven process rooted in national and regional climate priorities. Extensive consultations were conducted with governments, particularly ministries of climate change, finance, natural resources and environment and sectoral ministries in agriculture, water, and health. These discussions were complemented by engagement with development partners – including UN agencies, MDBs/IFIs and civil society organizations (CSOs) – to align with national climate action plans, regional frameworks, and the strategic directions of the GCF. The 2025 country programming missions have supported the initial development of a climate-resilient project pipeline for 2026-2028. The pipeline is informed by the priorities and endorsement of GCF's National Designated Authorities (NDAs) and has been refined through coordination with ongoing climate interventions and initiatives.

In the case of the G2F Program, a comprehensive indicative pipeline was prepared with commitment years between 2026 and 2028. This process was underpinned by regional climate assessments, glacial modeling across five river basins, and identification of priority locations with significant climate vulnerability and glacier-related risks. All projects will undergo detailed design phases incorporating:

- Environmental and Social Safeguards (ESS) Assessments;
- Climate change priorities (e.g., NDC, low carbon strategies, NAP, country Climate Change Action Plan, and CAREC Climate Change Action Plan);
- Climate Risk Assessments (CRA);
- Gender and development mainstreaming;
- Hydrological and economic feasibility studies; and
- Application of scientific evidence from glacier and cryosphere research.

GCF resources will be strategically allocated to projects that:

- Catalyze innovation in climate adaptation;
- Enable transformational planning and system-wide resilience;
- Mobilize scaled finance through blended instruments; and
- Strengthen regional knowledge systems and coalitions for replication and upscaling.

Eligibility and Design Criteria for G2F Projects:

A G2F Project is defined as a **climate-resilient initiative** that addresses vulnerabilities linked to the mountain cryosphere—glaciers, glacial lakes, snow, permafrost, or glacial valleys—through targeted adaptation, protection, or mitigation measures.

Note: A more detailed list of eligibility criteria is included in Annex 2.

General Criteria: G2F Projects

A project refers to any activity requiring a separate subsidiary agreement or project agreement which is included in the annual country programming of ADB DMCs from 2026 to 2030. It will also include (i) technologies and practices for upscaling and replication, and (ii) implementation and/or testing of innovative approaches. Item (ii) will support pilot projects that could potentially serve as proof-of-concept and demonstrations to national governments to leverage an ensuing loan.

Core Eligibility Criteria
All subprojects must clearly demonstrate climate additionality, meaning they go beyond standard development practices to deliver direct, measurable climate adaptation benefits. This will be assessed using ADB's climate finance tracking framework;[31]

[31] 2023-Joint-Report-on-Multilateral-Development-Banks-Climate-Finance.pdf

Climate Finance Classification under Multilateral Development Banks (MDB) Methodology and Implications for G2F
The MDBs classify adaptation finance using a standardized methodology that distinguishes between two key types of adaptation-related interventions:[32]

Type 1: Climate Proofing (supports development outcome)
Type 1 refers to projects where the **primary objective is development**, but the project includes measures to **climate-proof** certain components. In these cases, adaptation interventions are designed to protect the investment against potential climate risks to ensure that the primary development objective is not compromised.

- **Examples**: A general irrigation project where irrigation systems are upgraded to withstand future floods or landslides.
- **Climate finance attribution**: Only the incremental cost associated with the adaptation measure (e.g., drainage redesign, slope reinforcement) is counted.
- **Relevance to G2F**:
  → **Type 1 projects are *not* eligible for G2F finance.**
  G2F is specifically designed to support **investments** that were **conceived and designed to reduce vulnerability to climate risk** towards contributing to **resilience of a system (e.g., future water supply)**.

Type 2: Climate Adaptation (Adaptation as the Primary Objective)
Type 2 refers to projects that are designed **to address identified climate risks** and build resilience to climate variability and change. These projects are fully informed by a **climate rationale**, including data-supported vulnerability assessments and targeted adaptation measures.

- **Examples**:
  - Glacier-fed irrigation systems are redesigned to account for changing snowmelt patterns.
  - Climate-resilient crop systems introduced in drought-prone regions.
  - Ecosystem-based watershed management in areas impacted by GLOFs.

These projects can be divided into two subcategories[33]

- Type 2A. Development projects that explicitly aim to support climate outcomes over the long term and steer development in a resilient direction—thus including building climate resilience as one of their objectives; and
- Type 2B. Projects that are intentionally designed to enable climate adaptation of a high-risk country, sector, geographical area, asset network, and/or at-risk population and thus have building climate resilience as their primary objective.

G2F projects will only consist of Type 2A or Type 2B projects.

Each subproject must:

- Provide a clear climate rationale grounded in region-specific cryosphere risks;
- Demonstrate that the proposed adaptation measures are additional to business-as-usual development and respond directly to projected climate impacts;
- Align with national or regional adaptation priorities and show transformational potential.

Additional eligibility requirements include:

- Location within glacier-influenced watersheds or permafrost zones, covering both upstream and downstream areas in the following countries: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan, and Pakistan;
- Evidence of exposure to cryosphere-related hazards such as GLOFs, altered seasonal water flows, droughts, or downstream flooding;
- Direct benefits to populations dependent on glacier-fed agriculture or water supply systems;
- Clear demonstration of climate additionality, showing how the project goes beyond baseline development to address specific climate risks;
- Technical, financial, environmental, and social feasibility of implementation;
- A transformational approach with potential for upscaling, replication, and policy integration.

Due diligence: Must comply with ADB's policies and procedures related to sovereign operations due diligence.

[32] Note – the Joint Methodology for Tracking Climate Change Adaptation Finance identifies Type 1, 2 and 3. Drawing on this, ADB use slightly different terminology: Type 1 and Type 2a and 2b.
[33] ADB (2023). Final Adaptation Type 2 Guidance Note_version 7 July 2023. ADB.

Monitoring & Learning Requirements:

- Must incorporate MEL frameworks, with climate and glacier-specific indicators;
- Must align with outcome level indicators and theory of change;
- Must include sex- and age-disaggregated data;
- Must foster adaptive management and ensure compatibility with GCF learning and results tracking systems; and
- Must document and disseminate lessons learned to inform scaling and replication.

Specific Eligibility Criteria are outlined for each component in Annex 2.

Selection of Investment Projects:
Following comprehensive climate action consultations and regional and national climate planning processes—including the ADB Climate Action Road Map for CWA, CAREC Climate Change Action Plan, and country-level assessments of glacier-related impacts—a prioritized pipeline of climate-resilient investment projects has been developed. These projects are fully aligned with national adaptation goals and have been integrated into ADB's annual country programming cycle.

Importantly, the pipeline has been discussed in detail with national Ministries of Finance, providing the GCF with a clear line of sight into viable, strategically aligned project opportunities. This alignment reinforces country ownership and enables ADB to accelerate project preparation and streamline approval processes, ensuring the timely delivery of high-impact climate adaptation finance across the region.

The pipeline includes a range of projects, with further information provided in Annex 2, including a comprehensive long list of over 20 projects that are proposed for inclusion and consideration during implementation phase. The following are selected demonstration projects in the 2026 to 2028 pipelines are intended to illustrate the nature and strategic alignment of the proposed investments, these are subject to due diligence and alignment with ADB policies and procedures.

Component 2.1: Early Warning System Implementation

The following are indicative demonstration projects that have been identified. They are subject to further feasibility study and ADB due diligence protocols.

Tajikistan – Hydrometeorological Services and Disaster Risk Reduction Early Warning for All (Phase 2)
Component: 2.1
Outcome: Strengthened early warning systems and integrated river basin planning
Climate Impact: Flood, landslide, and drought risk reduction through improved data and forecasting
Climate Additionality: Introduces advanced forecasting systems and integrates climate risk into planning; supports long-term investment frameworks.
Summary: Enhances real-time hydromet systems, integrates climate risks into water planning, and strengthens community-level resilience.

Component 2.2: Climate Resilient Landscapes and Water Resource Management

The following are indicative demonstration projects that have been identified. They are subject to further feasibility study and ADB due diligence protocols.

Armenia – Armenia Reservoir and Irrigation Sector (ARISE) Project
Component: 2.2
Outcome: Increased adaptive capacity of rural communities through climate-resilient water storage and irrigation systems
Climate Impact: Stabilized seasonal water availability and reduced vulnerability to snowmelt variability and drought
Climate Additionality: GCF funding will enable climate-resilient dam design, watershed restoration, and inclusive community adaptation
Summary: Construction of three multipurpose reservoirs and modernization of irrigation infrastructure to ensure water and food security under climate change

Armenia – Secondary City Improvement Project (Sevan Wastewater and Gyumri/Vanadzor Solid Waste)
Component: 2.2
Outcome: Enhance the resilience and sustainability of Lake Sevan's water resources by addressing the impacts of climate change and inadequate sanitation infrastructure through integrated, climate-informed investments.
Climate Impact: Reduces water pollution exacerbated by climate-induced hydrological variability—such as reduced dilution capacity during droughts and higher pollutant loads from storm events—thus preserving the lake's ecological integrity and reducing public health risks for surrounding communities.
Climate Additionality: GCF funding will enable upgrading existing wastewater treatment plants to full biological systems with nutrient removal, expanding and decentralizing sanitation services to vulnerable areas, and strengthening water quality monitoring and early warning systems. These measures are directly informed by climate risk assessments and designed to withstand future variability in

precipitation, runoff, and temperature. The project draws on international experience (e.g., constructed wetlands and resilient wastewater systems in Italy, the US, and Singapore) where adaptation is embedded in sanitation planning to maintain performance under changing climate conditions. While the project's primary objective is to improve sanitation infrastructure, it mainstreams adaptation through design modifications that reduce climate-sensitive pollution risks. Wastewater systems are adapted to cope with climate-induced pressures on the lake's carrying capacity, and decentralized solutions increase coverage in areas most vulnerable to hydrological extremes. Nature-based elements, modular system designs, and adaptive monitoring frameworks ensure long-term functionality under projected climate scenarios—aligning with global best practices for Type 2 adaptation projects.
Summary: Supports the resilience of a critical freshwater ecosystem, mitigates climate-exacerbated pollution, and contributes to Armenia's climate adaptation and biodiversity targets through infrastructure that is both important for development and climate-resilient.

Georgia – Climate-Resilient Drainage and Water Resources Management Project
Component: 2.2
Outcome: Improved drainage infrastructure and flood management in urban and lowland areas vulnerable to climate impacts.
Climate Impact: Mitigates urban flood hazards and supports ecosystem health in flood-prone zones.
Climate Additionality: GCF funding will enable hybrid green-gray infrastructure and real-time flood monitoring.
Summary: Implements nature-based drainage, permeable surfaces, bioswales, and floodplain zoning to reduce flood risk and enhance water quality.

Kyrgyz Republic – Integrated River Enhancement and Climate Resilient River Basin Management
Component: 2.2
Outcome: Resilient River basin and agriculture systems
Climate Impact: Flood protection and improved water use for agriculture
Climate Additionality: GCF funding will pilot integrated river basin adaptation using green-grey infrastructure and community agriculture systems.
Summary: Green-grey infrastructure to support upstream-downstream integration and flood-resilient agriculture.

Pakistan – Swat Basin Management Project (Khyber Pakhtunkhwa)
Component: 2.2
Outcome: Improved watershed management and agricultural productivity
Climate Impact: Reduced flood risk, improved soil, and water retention
Climate Additionality: GCF support enables integration of green infrastructure and replication of basin-wide planning across mountainous terrain.
Summary: Combines ecosystem restoration and green infrastructure to enhance resilience in a 1.3-million-hectare river basin.

Uzbekistan – Resilient Amu Darya River Basin Sector Development Program
Component: 2.2
Outcome: Enhanced water resource management and irrigation services, improved water quality and reduced sedimentation
Climate Impact: Flood control, water conservation, and land restoration
Climate Additionality: GCF funding will enable ecosystem-based watershed interventions and climate-smart irrigation planning across transboundary basins.
Summary: Constructs multipurpose reservoir, modernizes irrigation, and strengthens watershed management with NbS.

Component 2.3: Sustainable Agriculture Value Chains & Livelihood Security

The following are indicative demonstration projects that have been identified. They are subject to further feasibility study and ADB due diligence protocols.

Kyrgyz Republic – Conservation and Afforestation for Resilient Ecosystems (CARE) Project
Component: 2.3
Outcome: Enhances protection and sustainable use of the Arstanbap-Ata forests to build ecosystem and community resilience, support climate-resilient livelihoods, and promote long-term forest stewardship.
Climate Impact: Reduces climate risks (fires, floods), supports water retention, and boosts carbon sinks through afforestation, enrichment planting, and reduced deforestation.
Climate Additionality: GCF funding will address climate-driven degradation of walnut forests through resilient restoration, early warning systems, pest control, and carbon finance readiness.
Summary: The project strengthens climate resilience and carbon storage in Kyrgyz Republic's Arstanbap-Ata forests through restoration, agroforestry, digital tools, and inclusive value chains that sustain biodiversity and local livelihoods.

Component 2.4: Climate-Responsive Social Protection and Health Systems

The following are indicative demonstration projects that have been identified. They are subject to further feasibility study and ADB due diligence protocols.

Tajikistan – Integrated Regional Health Security and Primary Health Care Services Project
Component: 2.4
Outcome: Strengthened community preparedness, prevention, and adaptation, reducing the burden of health emergencies
Climate Impact: Strengthens the country's ability to rapidly detect, analyze, and respond to public health emergencies, including climate-sensitive disease outbreaks
Climate Additionality: Strengthens laboratory systems for pandemic preparedness and health security; builds a digital One Health Ecosystem for integrated surveillance; transforms Healthy Lifestyle Centers into community hubs for risk communication including that on the health impacts of climate change.
Summary: Modernized primary healthcare institutions and emergency care, including digitalization and interoperability of key national databases, enhances the community's resilience and preparedness

Uzbekistan – Health System Strengthening Project
Component: 2.4
Outcome: Strengthened community preparedness and adaptation, improving proactive response and resilience to climate and health emergencies
Climate Impact: Integrating EWS into health infrastructure and capacity building of healthcare workforce would strengthen climate resilience, particularly in vulnerable regions, and support the country's climate adaptation efforts
Climate Additionality: Localized, timely, accessible, and relevant climate risk information will be effectively communicated to allow vulnerable populations to take proactive measures and enhance their preparedness.
Summary: Supports the development of the healthcare system and healthcare services, one of the key thematic areas of Uzbekistan's draft NAP for the health sector

B.4. Implementation arrangements (max. 1500 words, approximately 3 pages plus diagrams)

Summary: The G2F Program utilizes the GCF programmatic approach of multi-country, and multi-sectoral modality. ADB, as the Accredited Entity (AE), will be responsible for the overall implementation of the Program, particularly the approval of projects (grants and loans) under Component 2 in accordance with the eligibility criteria set out in the Funding Proposal and the Term Sheet. ADB will act as the Executing Entity (EE) for the technical assistance subcomponents and sovereign borrower/recipient of the Host Country as EE for the project. This section summarizes the legal arrangement, flow of funds, and governance/implementation structure of the G2F Program.

1. **Implementation Arrangements:**
   - **Accredited Entity:** ADB acts as AE, leveraging its extensive climate finance experience and existing GCF agreements.
   - **Executing Entities: Table 9.1**
   - **Structure:** Multi-country, multi-sectoral, covering 9 Central and West Asian countries (Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan).
   - **Legal arrangement:** ADB and GCF will enter into a Funded Activity Agreement (FAA); ADB will enter into a Subsidiary Agreement for each of the projects.[34]
2. **Operational Framework:**
   - **Fund Flow:** GCF funds → received in the ADB GCF Trust Fund → Projects (loans and grants) or technical assistance.
   - **Guidance Tools:** Program Implementation Guidelines, aligned with FAA and ADB policy, will detail project criteria and detailed process.
3. **Governance Bodies:**
   - **Steering Committee:** Strategic oversight, chaired by ADB Director General.
   - **Technical Working Group [G2F Investment Panel]:** Endorses projects for approval.
   - **Secretariat/Project Management Unit:** Manages day-to-day operations, M&E, recruitment of experts.
   - **External Advisory Committee:** Provides policy input, linked to CAREC.
   - **Regional Glaciers Community of Practice (COP):** Supports glacier-related scientific coordination and knowledge.
4. **Project Cycle:**
   - Concept notes screened early for eligibility.
   - TA and grant projects will build capacity and test innovations.
   - Projects (loan and grant) selected based on country alignment, technical soundness, and climate rationale as well as the eligibility criteria set out in this Funding Proposal and Term Sheet.

[34] Please note that for each project (or in GCF terminology subproject), ADB enters into a loan/grant agreement with the sovereign state represented by its Ministry of Finance. This agreement is the subsidiary agreement and therefore, under the current structure, it will not be a single subsidiary agreement for all, but one for each project.

- Implementation monitored via annual reports and semi-annual updates to GCF.

5. **Monitoring & Due Diligence:**
   - ADB conducts technical, environmental, social, financial, and procurement due diligence in accordance with its policies and procedures.
   - Compliance with GCF and ADB policies and procedures.
   - Regular reporting ensures transparency and learning.
6. **Resource Allocation:**
   - The G2F applications will be reviewed by the TWG [G2F Investment Panel] in accordance with the criteria for specific components of the program.

G2F Operational Arrangement

Following GCF Board approval, ADB and GCF will enter into a program-specific legal agreement (the "Funded Activity Agreement" or "FAA") in accordance with the Accreditation Master Agreement (AMA) dated 13 July 2023 (First amended and restated AMA) between ADB and GCF. In accordance with the FAA and the AMA, the GCF Proceeds for G2F Program will be received in a dedicated single donor ADB GCF Trust Fund and ADB's privileges and immunities will be considered applicable to the GCF Proceeds disbursed to and held by ADB, as the AE. These funds will be used to finance eligible projects that meet the program's climate rationale, fiduciary, and safeguards standards and other eligibility criteria agreed between the GCF and ADB as further set out in this Funding Proposal and the Term Sheet. The FAA will not fund activities or projects in countries other than Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan. Inclusion of a new country to the FAA will require GCF Board approval and notice of no objection from the other countries covered by the G2F FAA.

The dedicated Program Implementation Guidelines to be developed during inception will be used in the implementation of this Program and will include all relevant requirements, including the eligibility criteria. These guidelines will complement the Term Sheet and FAA, and include further guidance on implementation arrangements, project selection and prioritization, monitoring and evaluation, and reporting.

For each project, ADB will enter into separate legal agreements with borrowers/recipients for each financing source (i.e. one legal agreement for the GCF Proceeds and one legal agreement for ADB funding) with cross-references between the two or more as relevant.

G2F Legal Arrangements

1.2.1. Projects (Grants and Loans)

Under Component 2, ADB will offer concessional loans and grants from GCF Proceeds to selected borrowers/recipients (the Executing Entity(ies) or EE). For each project, ADB will enter into loan and/or grant agreements with the EE (the subsidiary agreement). For each source of financing, separate agreements will be entered into with the EE (i.e., ADB will enter into a separate loan and/or grant agreement with the EE for its own financing). Each project will be implemented in compliance with ADB policies and G2F requirements as agreed between the GCF and ADB. If additional financing from other partner financing institutions is also included, these will be provided as parallel financing to the ADB and GCF loans and grants.

The projects which will be identified and selected in accordance with the agreed eligibility criteria set out in this Funding Proposal and Term Sheet, during ADB's country programming process, prepared in accordance with ADB's internal policies and procedures. The projects will be fully administered by ADB and likewise benefit from ADB's project preparation, due diligence processes, project administration, and monitoring and evaluation systems. Each project will be presented for approval to the ADB Board (or approving authority) on a project-by-project basis, which approval shall include the provision of GCF Proceeds to be administered by ADB. Each project will be implemented in compliance with ADB policies and GCF requirements.

Table 8. Proposed lending terms for GCF funds under Component 2

	Currency	Interest Rate (%)	Commitment fee	Maturity (years)	Grace Period (years)	Service fee
High Concessionality	USD	0.00	Up to 0.50	40	10	0.250
Low Concessionality	USD	0.75	Up to 0.75	20	5	0.50

Note: GCF concessional support will be based on each country's ADB lending group classification, climate vulnerability, nature of interventions, and climate finance access barriers. GCF low concessional will cover the ADB Group C countries – Kazakhstan, Turkmenistan, Armenia, Azerbaijan, and Georgia. GCF high concessional will cover ADB Group B countries – Pakistan and Uzbekistan and ADB Group A country –Kyrgyz Republic. Tajikistan is currently a grant only country. However, depending on nature of intervention (e.g. in Components 2), the GCF low and high concessionality countries can receive grants only from GCF.

1.2.2. Technical Assistance (Grants Only)

For technical assistance (TA) under Components 1, 3 and 4, ADB will be the EE for these grant resources and will enter into relevant agreements with the TA beneficiaries in accordance with the AE's policies and procedures. ADB will be planning along with government and potential beneficiaries the detailed deployment of specific TA components and define on the basis of it the best execution option. The beneficiaries may also include (i) national and subnational institutions from developing member countries of the ADB; (ii) regional and subregional agencies established by the same countries; and (iii) not-for-profit institutions, including civil society associations. When acting as EE, ADB will apply its own policies and procedures for hiring individual consultants and/or procurement of consulting firms and other services, ensuring the fulfilment of applicable AMA and FAA requirements.

Table 9. Eligibility of Grants and Loans by Country and G2F Component 2 (GCF co-financing only)

Items	Projects)	
Financial Instrument	Loans	Grants
Environmental and Social Safeguards Category	A, B and C	A, B and C
Component	**Component 2: G2F Investment Solutions** *Component 2.2: Climate Resilient Landscapes and Water Resource Management*	**Component 2: G2F Investment Solutions** *Component 2.1: Early Warning System Implementation* *Component 2.2: Climate Resilient Landscapes and Water Resource Management* *Component 2.3: Sustainable Agriculture and Livelihood Security* *Component 2.4: Climate-Responsive Social Protection and Health Systems*
Executing Entity	Government of the relevant Host Country (or a ministry or department thereof, acting on behalf of the relevant government) EE of Host Countries	
Country Allocation	> 3 million to < 30-50 million depending on subscription of GCF proceeds	

Table 9.1 Executing Entities and Financial Instruments by Component and Activities

Component	Activities	Executing Entities	Financial Instruments
Component 1: Climate Risk Planning & Investment Mechanisms	1.1.1.1 Develop and institutionalize climate-informed public investment frameworks for the relevant Host Countries 1.1.1.2 Support integration of glaciers, snowmelt, and climate risk into National Adaptation Plans (NAPs) 1.1.1.3 Apply scenario-based modeling tools for long-term fiscal, infrastructure, and land-use planning 1.2.1.1 Identify and prioritize adaptation project concepts across key sectors 1.2.1.2 Prepare pre-feasibility and business case documents integrating climate and cryosphere risk data 1.2.1.3 Train government agencies to develop and manage GCF-aligned project pipelines	ADB	Grants (Technical Assistance)

	1.2.2.1 Design sustainability-linked or outcome bonds, climate-linked insurance, and resilience loans		
Component 2: G2F Investment Solutions	2.1.1.1 Design and deploy multi-hazard, impact-based early warning systems for GLOFs, floods, droughts, and heatwaves nationally and basin-wide, where appropriate 2.1.1.2 Build integrated communication platforms linking meteorology, agriculture, and emergency services 2.1.1.3 Operationalize last-mile communication (SMS, sirens, radio, community networks) in local languages 2.1.1.4 Train local actors and community responders to operate and maintain EWS tools 2.1.1.5 Establish financing protocols linking EWS to pre-arranged social protection and ex-ante disaster risk financing 2.2.1.1 Design and implement watershed investment programs,, including institutional structure and funding arrangements 2.2.1.2 Implement afforestation, rangeland regeneration, and wetland restoration in priority catchments 2.2.1.3 Develop nature-based flood protection 2.2.1.4 Strengthen community-based resource management systems 2.2.1.5 Institutionalize integrated river basin planning with upstream-downstream coordination 2.3.1.1 Introduce water-efficient irrigation technologies (e.g., drip, solar pumps, micro-irrigation) 2.3.1.2 Promote resilient seed systems, livestock systems, agroecological farming, and sustainable land use 2.3.1.3 Provide localized agrometeorological advisories and seasonal forecast tools 2.3.1.4 Upgrade cold storage, drying, and processing infrastructure to reduce food loss 2.4.1.1 Design and pilot adaptive social safety nets triggered by EWS 2.4.1.2 Mainstream climate risk into local health services (e.g., for heatwaves, vector-borne disease) 2.4.1.3 Expand vocational training and diversified livelihood options 2.4.1.4 Facilitate coordination between health, emergency situations (including climate emergency situations), and social welfare institutions	Under national sovereign project subsidiary loan / grant agreements, will consist of: Armenia: Ministry of Finance of the Republic of Armenia Azerbaijan: Ministry of Finance of the Republic of Azerbaijan Georgia: Ministry of Finance of Georgia Kazakhstan: Ministry of Finance of the Republic of Kazakhstan Kyrgyz Republic: Ministry of Economy and Finance of the Kyrgyz Republic Pakistan: Ministry of Finance (Finance Division), Government of Pakistan Tajikistan: Ministry of Finance of the Republic of Tajikistan Turkmenistan: Ministry of Finance and Economy of Turkmenistan Uzbekistan: Ministry of Finance of the Republic of Uzbekistan	Loans / Grants
Component 3: Capacity Building for Climate Finance Access	3.1.1.1 Conduct training on ESG standards, climate risk assessment,	ADB	Grants (Technical Assistance)

	and green taxonomies 3.1.1.2 Develop digital lending platforms and green finance screening tools 3.1.1.3 Policy support to strengthen national green finance classification and disclosure frameworks 3.1.1.4 Integrate gender-responsive safeguards in lending systems 3.1.2.1 Capacity-building workshops for farmer groups, cooperatives, and rural enterprises 3.1.2.2 Train government agencies to develop and manage GCF-aligned project pipelines. 3.1.2.3 Create platforms linking cooperatives, government financial institutions, and policy actors 3.1.3.1 Design a blended finance model with partner banks 3.1.3.2 Establish eligibility criteria and risk-sharing tools (e.g., guarantees, first-loss capital) 3.1.3.3 Provide tailored technical assistance and investment readiness support to agri-MSMEs		
Component 4: Regional Knowledge Platform	4.1.1.1 Establish online hub and data-sharing platforms 4.1.1.2 Facilitate regional forums, peer-to-peer learning, and joint research partnerships 4.1.1.3 Establish technical advisory panels for climate innovation 4.1.2.1 Establish the RGCOP coordination mechanism and Terms of Reference 4.1.2.2 Convene biannual RGCOP meetings across participating countries 4.1.2.3 Operationalize subgroups on technical, finance, and agriculture-water policies 4.1.2.4 Develop and disseminate regional knowledge products and policy briefs 4.1.3.1 Conduct M&E Systems Analysis 4.1.3.3 Develop a standardized compendium of forms and data-collection tools 4.1.3.4 Develop and operationalize the G2F Management Information System (GMIS)	ADB	Grants (Technical Assistance)

Note: The List of Executing Entities for Component 2 is indicative and subject to change.

1.3 G2F implementation period and flow of funds

The G2F program will be implemented over a 10-year period (tentatively from 2026 to 2035), with projects being selected and approved from 2026 and 2030, with all implementation activities to be completed by 2035. While the implementation phase ends in 2035, project outcomes and impacts may extend over a 15-year horizon (project lifetime), during which ADB will conduct annual monitoring and reporting.

ADB has undertaken this early due diligence to identify eligible projects to significantly accelerate project preparation, facilitate timely disbursement, and enable the early realization of development impacts.

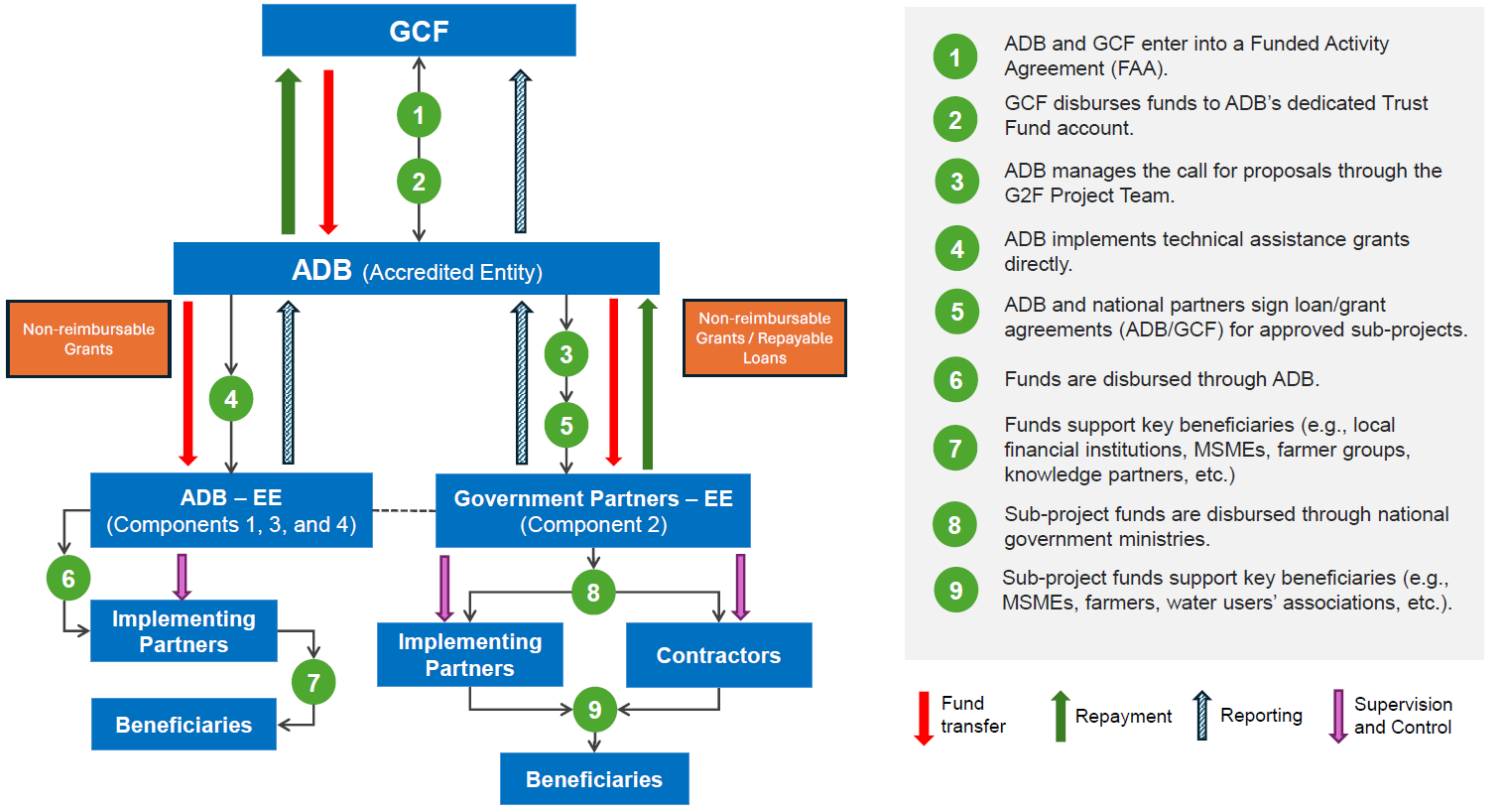

Figure 8. Proposed Financial Flow for the G2F Regional Program

1.3. Role of ADB: Accredited Entity

ADB has an established and recognized record of delivering climate finance at scale across Asia and the Pacific, making it well-positioned to act as the AE for the G2F Program. ADB has committed to delivering USD 100 billion in cumulative climate finance between 2019 and 2030 under its Strategy 2030, with at least 75% of operations supporting climate adaptation and mitigation objectives by 2030. In 2024 alone, ADB delivered over USD 11.1 billion in climate finance, including USD 4.4 billion for climate adaptation – demonstrating its strong implementation capacity and commitment to climate-resilient development. ADB has extensive experience with GCF-funded operations, acting as AE for 14 approved GCF projects as of 2024, totaling over USD 1.4 billion in GCF financing. These projects span multiple sectors, water security, climate-resilient agriculture, energy transition, and disaster risk reduction, and include both mitigation and adaptation objectives. ADB has successfully mobilized co-financing from bilateral, multilateral, and private sector partners, using a range of financial instruments such as grants, concessional loans, and blended finance structures.

In CWA, ADB has an extensive background in supporting climate change projects through its country program and regional cooperation activities. ADB committed about USD 7.0 billion in climate finance in the region between 2019 and 2024 from its own resources. The G2F Program will build on ADB's extensive climate operations in the region to implement and finance a new generation of transformative and innovative projects that will serve as demonstration projects and upscale and accelerate adaptation and resilience measures in glacier-fed and mountain regions in CWA.

ADB will administer loans, grants and technical assistance funds from GCF, as follows:

- Select projects for grants (including TA) and loans as per G2F/GCF terms and requirements and agreed eligibility criteria, alongside loans from ADB financing (ADB loans), as applicable;
- In accordance with the AMA and FAA, ADB will carry out such management and administration of the GCF Proceeds in accordance with its policies, procedures, and practices, and with at least the same degree of care as it uses in the administration of its own funds or other donor funds;
- Establish a governance structure for the G2F Program comprising of Steering Committee; Technical Working Group – TWG (G2F Investment Panel); and G2F Secretariat (or Project Management Unit [PMU]);
- Oversee and manage the dedicated G2F Secretariat (PMU), staffed by full-time and intermittent experts, including additional experts specifically engaged in the G2F, with the following responsibilities:

- originate projects and develop a pipeline for G2F;
- provide support to structure projects and identify financing partners;
- identify and screen potential projects, review project documentation and ensure the project meets the program's criteria;
- verify and monitor project and facility impacts and prepare annual performance reports to GCF; and
- manage and monitor procurement and contracts.

- Work closely and explore other potential partnerships to identify and mobilize additional parallel financing sources for projects.

GCF support will be complemented by the possible establishment of a dedicated Mountain and Glacier Finance Facility (MGFF) to be managed by ADB, aimed at mobilizing parallel financing to expand the scope of G2F interventions and enhance the impact of GCF support across the region and beyond. The creation of this facility (or its equivalent) will run parallel to the setting up of the G2F Program and is in accordance with the wider transformational impacts and paradigm shift of the G2F to utilize its role to convene and mobilize additional finance for the countries.

1.4. G2F Governance Structure

The G2F Program will be implemented under the oversight and guidance of the following governance bodies. Figure 9 shows the Program's governance structure, illustrating the roles and relationships among the different committees and units involved in program implementation.

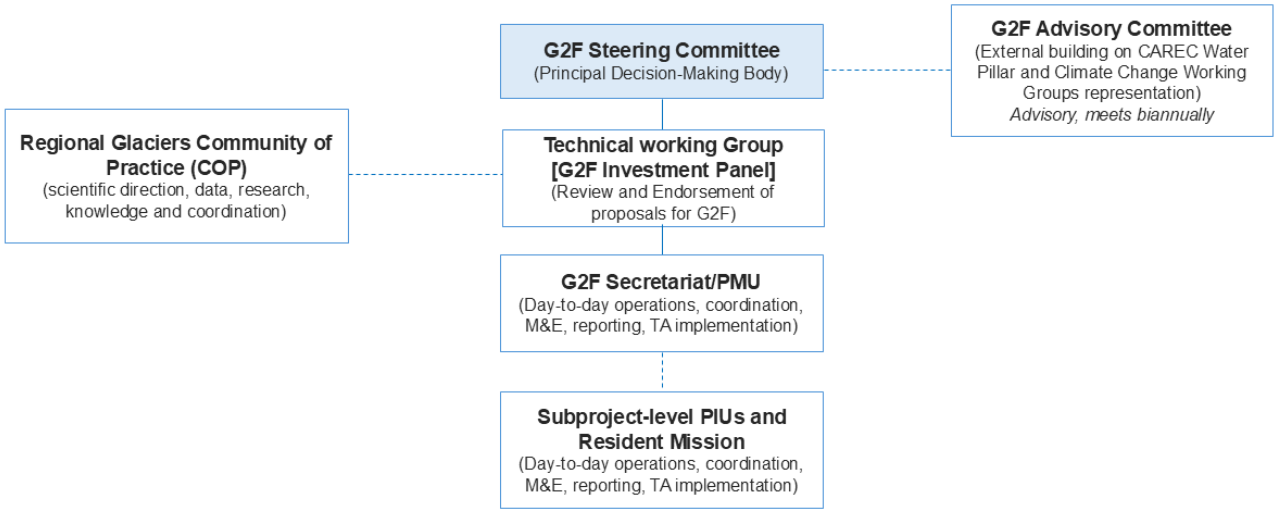

Figure 9. Proposed Governance Structure of the G2F Program

G2F Steering Committee: ADB will establish a **G2F Steering Committee** to provide strategic direction and oversight for the Program including (a) approval of the overall framework for the allocation of loans and grants (including TA funds), (b) adoption of project selection criteria, (c) approval of the Program implementation guidelines and any updates thereto, and (d) ensuring compliance of the Program's implementation with the FAA and applicable ADB policies. The Committee will be chaired by the Director General of ADB, and its members will include Director Generals of relevant departments or duly designated representatives with directors of the Climate Change Division, Country Resident Missions, and relevant Sector Groups. The Committee will create a **TWG [G2F Investment Panel]** to review and endorse the projects for approval of the head of the TWG [G2F Investment Panel]. The TWG [G2F Investment Panel] will be supported by full-time and intermittent climate change specialists with expertise in the G2F sectors who will be responsible in reviewing and endorsing projects to be financed under the G2F program based on its established eligibility criteria. The proposals will be processed in accordance with all relevant ADB policies and procedures for loans and grants approval (including TA), including review of consulting services and procurement, environmental and social safeguards, financial management and reporting, and anti-corruption (following ADB policies on anticorruption and due diligence[35]) and governance. The TWG [G2F Investment Panel] will also ensure gender considerations are suitably met by the projects. Where needed, the TWG [G2F Investment Panel] will engage suitable qualified climate risk consultants to review the climate rationale of the project proposals.

G2F Secretariat (or Program Management Unit [PMU]): The Secretariat or PMU will be established, with a dedicated G2F Program and/or Fund Manager, G2F Technical and Climate Finance Lead, and supported by staff (including a dedicated Monitoring and Evaluation (M&E) Specialist, Communication Specialist, and Finance and Administrative Officer) and consultants to help manage the

[35] Anticorruption Policy | Asian Development Bank

Program. The PMU will serve as the focal point for the Program's day-to-day operations, with the following activities: (i) preparing the annual work plan and annual report; (ii) supervising day-to-day implementation of the annual work plan; (iii) preparing documentation of project endorsement/approval; (iv) monitoring and evaluation and collating reports to be submitted to GCF; and (v) disseminating G2F accomplishments and lessons learned. The PMU will take its strategic direction from the head of the G2F Investment Panel and Steering Committee. It will guide the implementation of projects in close coordination with project implementation unit (PIUs) and resident missions. The program implementation guidelines will serve as the manual for implementing the Program, outlining processes to implement the Program in accordance with the provisions in the FAA. The PMU will also implement TA activities under G2F, including overseeing procurement of consulting services, design and delivery of TA activities, overseeing events and training, and developing knowledge products. The cost of staffing for the G2F Secretariat will be covered by the AE Fee received for this G2F Program in accordance with the GCF Policy on fees and the General Principles and indicative list of eligible costs covered under GCF fees and project management costs.

G2F (External) Advisory Committee (Partnership). This Committee aims to provide advice and recommendations to guide the G2F Program implementation. This Committee will include members of the participating G2F countries in the CAREC Climate Change Working Group and CAREC Water Pillar Working Group. The Committee will meet biannually on the sidelines of regular CAREC Ministerial or Senior Official's meetings. The meetings may include representatives from Armenia as a G2F participating country, or alternate arrangements such as side sessions and other suitable regional dialogues.

Regional Glaciers Community of Practice (RGCOP): To complement the core governance structure and enhance cross-border coordination on cryosphere-related climate risks, the G2F Program will establish a **RGCOP** under Component 4. This group will serve as a specialized technical platform to guide the program's scientific direction, particularly in relation to the impacts of climate change on the cryosphere, regional data exchange, and the design of collaborative research activities. The RGCOP will provide essential links to regional and international academic institutions, while also supporting capacity building and targeted glacier-related research. The RGCOP will meet biannually, with more frequent interactions at the subgroup level, and will function as a coordination mechanism to ensure national projects align with shared regional priorities. It will also play a pivotal role in informing scientific, policy, and investment decision-making across participating countries. Through its integrated structure, the RGCOP will directly contribute to Component 4 of the G2F Program.

Allocation of Resources

The GCF proceeds for the G2F Program will be ring-fenced within ADB GCF Trust Fund which was created pursuant to the AMA. The procedure for allocation of resources from G2F (which will blend ADB and GCF proceeds) will include the following steps:

- Project proposals for G2F can be initiated by ADB in discussion with relevant governments (Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan). Once the G2F Program is approved, the G2F Secretariat/PMU will initiate the call for proposals. The G2F Secretariat/PMU in close consultation with the TWG [G2F Investment Panel] will prepare the annual work plan which would include the list of prioritized project proposals.
- ADB will prepare project proposals using the application form (to be developed as part of Implementation Guidelines) and draft the relevant documents in accordance with ADB policies and procedures and will submit them to the G2F Secretariat for review of the TWG [G2F Investment Panel].
- The applications will be reviewed by the TWG [G2F Investment Panel] according to the criteria for specific components of the Program. If the application does not meet the agreed criteria set out in this Funding Proposal and the Term Sheet, the G2F Investment Panel will discuss the issues for further revision or withdrawal of the project.
- The TWG [G2F Investment Panel] defines the review and endorsement procedures in the Program implementation guidelines. Where needed, the TWG [Investment Panel] may engage technical climate change experts (consultants) to conduct the climate assessments of the projects.
- The proposals will be processed in accordance with all relevant policies and procedures for grant and loan approval, including without limitation, consulting services and procurement, environmental and social safeguards, financial management and reporting, and anticorruption and governance.
- The G2F Secretariat/PMU will provide semi-annual reporting to the GCF Secretariat to continuously assess the compliance of the approved projects with the eligibility criteria and, where appropriate, recommend remedial measures. Such reporting will be in addition to annual performance reports.

1.5. Due Diligence and Project Preparation (investment Projects: Grants/Loans – blended finance; ESS Category A to C)

Projects will be prepared and assessed by ADB based on requirements in the AMA, the FAA and in accordance with ADB's policies and procedures (Annex 6; Section G). The assessment of the institutional capacity and eligibility of projects will be undertaken as part of the preparation process and will follow ADB policies, procedures, and due diligence standards. During such project preparation, the GCF Proceeds to be allocated to each project, scope of the project, and ADB's co-financing amount will be determined.

In accordance with ADB's policies and procedures, due diligence will be conducted as part of preparation of each project. The scope of due diligence includes technical due diligence, economic and financial analyses, gender assessment, categorization, and sector

assessment. As part of technical due diligence, ADB will support feasibility studies and market assessments, as needed, under each project. Project design will also consider implementation, monitoring, and reporting arrangements. Safeguard screening will be done which will inform due diligence to prepare safeguards documents on environment, involuntary resettlement, and/or indigenous people (as relevant), summary poverty reduction and social strategy will be prepared. Furthermore, procurement risk assessment and financial management assessment will be conducted on the implementing agency. For each project to be supported under G2F, a Project Preparatory Report (PPR) will be submitted to the relevant department under each national Ministry of Finance. Upon completion of the due diligence process and the negotiation of ADB loans and grants, projects will be considered for approval by ADB.

1.6. Monitoring and Evaluation

The G2F Program places MEL at its core to address persistent challenges in climate adaptation across CWA, including project fragmentation and limited long-term learning. By embedding a regionally coordinated and multi-level MEL system from the outset, the program ensures both compliance with ADB and GCF requirements and the promotion of adaptive learning and continuous improvement. Aligned with ADB's evaluation and knowledge strategies and GCF's results frameworks, the MEL approach enables evidence-based decision-making, fosters regional collaboration, and strengthens resilience strategies. Structured across project, program, and independent oversight levels, the MEL system enhances accountability, transparency, and institutional learning throughout implementation. Section E.7 and Annex 11 will further outline details on the M&E arrangements in the Program.

B.5. Justification for GCF funding request (max. 1000 words, approximately 2 pages)

The G2F Program represents a high-impact, regionally coordinated climate adaptation program that directly aligns with the GCF's investment criteria. GCF support is both catalytic and essential to unlocking the Program's full transformational potential across a fragile and underserved region facing escalating climate risks.

1. Regional Impact

G2F is designed to address the shared and systemic threat of climate-induced cryosphere degradation—including glacial retreat, snowpack loss, and seasonal runoff shifts—across nine countries in CWA. These changes threaten water, food, energy, and health security for over 340 million people. GCF support enables a programmatic, cross-border response to climate risk that cannot be tackled by individual countries alone. The Program also enhances regional cooperation through common monitoring systems, a shared knowledge platform, and coordinated investment planning.

2. Cost-Effectiveness and High Leverage

G2F is highly cost-effective, with a projected co-financing ratio of 1:>10, one of the highest in the GCF portfolio. GCF funding will de-risk early-stage climate investments, crowd in sovereign loans, private sector capital, and domestic budgets, and support countries to transition from grant-based financing to scalable and self-sustaining solutions. This funding is critical to catalyze innovative financial mechanisms such as green credit lines, resilience bonds, blended finance facilities, and climate-responsive social protection schemes.

3. Transformational Potential

GCF investment will enable countries to shift from reactive crisis response to forward-looking climate resilience, building adaptive systems that integrate glacier science, early warning infrastructure, nature-based solutions (NbS), and climate-smart agriculture. G2F interventions directly support GCF Result Areas, particularly in enhancing the resilience of livelihoods, health, food, water systems, and the most vulnerable populations, notably women, youth, and Indigenous communities. G2F also supports transformational change in institutional systems by embedding climate risk into public investment planning, climate finance access, and multi-sectoral policy.

4. Science-Based and Data-Driven

At the heart of G2F is a commitment to science-informed decision-making. The Program uses glacier and snowpack modelling, climate diagnostics, and integrated climate–agriculture–water data to guide investments. These tools will be institutionalized within national planning systems and used to inform public finance and infrastructure decisions for decades to come.

5. Upscaling through Knowledge and Monitoring Systems

GCF financing will establish a Management Information System (MIS) to track climate impacts, inform decision-making, and promote transparency. This platform will enable:

- Real-time tracking of adaptation results and co-benefits;
- South–South learning and replication across countries;
- Convening of regional and global partners, including other donors and MDBs.

This monitoring system will become a shared infrastructure for the region, helping scale the best practices and anchor climate investments within domestic and international systems.

6. Gender Equality and Inclusion

G2F adopts a gender-positive approach by:

- Prioritizing women-led MSMEs, cooperatives, and smallholder farmers;
- Embedding gender equity into infrastructure design, finance, and governance;
- Supporting female leadership in planning, risk communication, and adaptation science;
- Tracking gender-specific outcomes through a dedicated MIS module.

7. Nature-Based and Resilient Solutions

GCF support enables G2F to scale up nature-based solutions (NbS) such as reforestation, soil retention, and watershed rehabilitation.

GCF's concessional finance plays a critical and catalytic role in enabling the G2F Program to deliver transformational adaptation outcomes on a scale. With GCF support, G2F is uniquely positioned to address the three key barriers that currently prevent countries in Central Asia, Pakistan, and South Caucasus from implementing integrated, science-based climate resilience strategies:

1. Institutional Gaps

Many participating countries lack the institutional capacity, policy frameworks, and project development support needed to mainstream climate adaptation into public investment systems. GCF funding will:

- Support the integration of glacier-informed climate risk into national planning and budgeting processes (e.g., NAPs, NDCs, and PIM systems);
- Enable the development of regulatory frameworks, technical standards, and safeguards for resilient infrastructure;
- Facilitate the creation or strengthening of Direct Access Entities (DAEs) and national adaptation finance mechanisms.

2. Market Failures

In glacier-dependent regions, adaptation investments, especially for smallholders, rural MSMEs, and ecosystem restoration, often face low financial returns, long payback periods, and high upfront costs. These barriers discourage private sector participation and limit public investment. GCF support is essential to:

- De-risk investment environments through blended finance instruments;
- Deploy catalytic grants, guarantees, and concessional lending to unlock co-financing from ADB, governments, and commercial partners;
- Pilot green financial products for agri-MSMEs and vulnerable communities with limited credit access.

3. Coordination Gaps

Cryosphere-related risks transcend national boundaries and sectors, yet climate action in the region remains fragmented and under-resourced. GCF funding enables:

- The design and delivery of a programmatic, multi-country approach that aligns national investment with regional climate risks;
- Support for regional data platforms, monitoring systems, and knowledge sharing through entities like CAREC and the Regional Glacier Community of Practice;
- Joint planning, learning, and action across sectors (agriculture, water, health) and countries, fostering long-term cooperation and policy coherence.

Catalyzing a Paradigm Shift

By investing in programs like G2F, GCF can catalyze a paradigm shift, transforming fragmented adaptation efforts into a coordinated, inclusive, and scalable regional response. GCF support helps bridge the divide between glacier science, policy, infrastructure, and finance, while ensuring that women, Indigenous communities, and the most vulnerable groups are central to the climate resilience agenda.

Financial Structure and Justification of Concessionality

The G2F Program employs a blended financing structure that strategically combines GCF grants, GCF concessional loans, and co-financing from ADB and participating governments. Each financial instrument is aligned with the risk–return profile of the targeted activities, ensuring coherence, catalytic impact, and adherence to the principle of minimum concessionality.

GCF concessionality will: (i) de-risk long-term adaptation investments in low-income and climate-sensitive areas; (ii) crowd-in ADB and national government co-financing by improving financial viability and affordability; (iii) support institutional development and pipeline readiness, particularly in countries with historically limited access to GCF and other climate funds; and (iv) enable inclusive and gender-responsive implementation, ensuring benefits reach the most vulnerable populations (*see Section C, Section D6 and Annex 3*).

Structure Rationale

The Program's financial architecture is designed to:

- **Ensure minimum concessionality**: GCF concessional resources are only deployed where commercial finance is not viable, particularly for early-stage or high-risk interventions.
- **Promote internal coherence**: Grant-funded enabling conditions (e.g., data, governance, institutional capacity) unlock loan-financed investments downstream.
- **Facilitate scaling**: Once de-risked and proven, models piloted under GCF support can be replicated and scaled through ADB and domestic financing.

Financing Terms and Risk Sharing Strategy

- **GCF concessional loans**: Proposed interest rates range between 0% and 0.75%, with long maturities to accommodate extended return horizons typical of climate adaptation investments.
- **ADB sovereign co-financing**: Aligned with ADB's standard terms (approx. 1.5%–2.5% depending on country eligibility and debt sustainability).

Risk is distributed across key actors:

- **Public sector**: Takes on systemic and institutional risk (e.g., regulatory reform, climate information systems).
- **Private sector**: Engaged in piloting and scaling green enterprise solutions.
- **National financial institutions**: Deliver affordable finance and channel funds on scale to agri-SMEs and farmers.

Alignment with GCF Investment Principles

This cofinancing approach upholds GCF's core principles of:

- **Minimum concessionality**: Only applying concessionality where essential to unlock action.
- **Sustainability**: Strengthening national systems to transition from reliance on concessional resources to long-term financial self-sufficiency.

B.6. Exit strategy (max. 500 words, approximately 1 page)

Sustainability and Exit Strategy: The G2F Program is designed to ensure longevity, scalability, and institutionalization of its outcomes beyond the program period. Its sustainability and exit strategy is embedded across all four components of the Program and is structured around three core pillars: institutional systems, financial ecosystems, and community resilience. The strategy ensures that the transformational benefits of G2F are sustained, expanded, and fully integrated into national and regional governance and financing mechanisms.

Sustainability Strategy: Enabling Long-Term Outcomes. The Program contributes to lasting transformation through the following sustainability measures:

1. Institutional Ownership and Capacity Building

G2F prioritizes the development of institutional capacities within Ministries of Finance, Planning Commissions, and sectoral line ministries.

- **Outcome Contribution**: *Outcome 1.1 (Climate-Informed Planning)* and *Outcome 1.2 (River Basin Governance)*.
- Activities include capacity building in climate risk integration, public investment planning, and the operationalization of early warning systems. Institutional ownership is further secured through the adoption of legal mandates and long-term budget allocations.

2. Strengthened Financing Ecosystem

The establishment of the Mountain and Glacier Finance Facility, paired with TA and concessional financing, equips national financial institutions to mobilize long-term finance for climate adaptation.

- **Outcome Contribution**: *Outcome 3.1 (Climate Finance Mobilized).*
- These institutions are being positioned to become future GCF DAEs, enabling them to independently access and channel climate finance post-program.

3. Private Sector and Market Development

Support for green MSMEs, agribusinesses, and nature-based enterprises contributes to diversified, climate-resilient value chains and strengthens rural economies.

- **Outcome Contribution**: *Outcome 2.3 (Sustainable Agriculture and Agriculture Systems)*.
- Market linkages, business incubation, and investment readiness support ensure enterprise viability and market-driven resilience.

4. Policy and Regulatory Reform

Sustainability is embedded through fiscal tagging, regulatory reform, and integration of climate resilience into public investment systems.

- These reforms institutionalize the program's approach and ensure continuity in budget planning and policy prioritization.

5. Adaptive Learning and Regional Replication

The regional knowledge and coordination platform enables long-term learning, scaling, and replication of successful models.

- **Outcome Contribution**: *Outcome 4.1 (Regional Learning and Coordination)*.
- CAREC and other regional platforms will sustain cross-border collaboration, foster peer learning, and guide future programming.

Exit Strategy: Transitioning to National and Regional Ownership

G2F has a clearly defined exit strategy to ensure a smooth handover to national governments, local financial institutions, and regional partners.

1. Transfer of Ownership

- Responsibilities for planning, implementation, and monitoring will be transitioned to national agencies and regional institutions.
- Climate-informed planning tools, MEL systems, and risk management protocols will be fully integrated into national processes and operational mandates.

2. Operations and Maintenance (O&M) of Infrastructure

- All infrastructure investments (e.g., hydromet networks, irrigation systems, EWS) will include detailed O&M strategies, budget commitments, and asset management plans.
- Line ministries will receive tailored technical assistance to manage these systems post-program.

3. Financial Sustainability and Exit from Grant Dependence

- The use of GCF grants and concessional loans is structured to crowd in public and private co-financing through blended finance models.
- Exit strategies include:
  - **Refinancing** through domestic climate bonds;
  - **Commercial uptake** of resilience-linked instruments (e.g., carbon credits, ecosystem payments);
  - **Market scaling** of green businesses and financial products incubated during the program.

Ongoing Engagement and Regional Commitment

- **Post-program Support**: ADB and development partners will continue engaging with Ministries of Finance and planning institutions to support ongoing NDC implementation, project pipeline development, and access to climate finance.
- **Regional Platforms**: CAREC and other regional platforms will be used to maintain political alignment, coordinate regional efforts, and mobilize future investment.
- **Community-Level Continuity**: Civil society and local communities will continue to be engaged in participatory monitoring, ecosystem management, and climate risk preparedness, ensuring bottom-up sustainability and social inclusion.

The G2F Program's sustainability and exit strategy is not an afterthought, it is embedded from design through implementation, ensuring that its eight transformative outcomes endure beyond the project life. By building resilient institutions, mobilizing sustainable finance, strengthening local economies, and anchoring regional collaboration, G2F paves the way for a self-sustaining, climate-resilient future across Central and West Asia.

C. FINANCING INFORMATION

C.1. Total financing[36]

(a) Requested GCF funding (i + ii + iii + iv + v + vi + vii)	**Total amount**	**Currency**
	250.0	million USD ($)

GCF financial instrument	**Amount**	**Tenor**	**Grace period**	**Pricing**
(i) Senior loans	USD 41,800	Enter years	Enter years	Enter %
(ii) Subordinated loans	Enter amount	Enter years	Enter years	Enter %
(iii) Equity	Enter amount			Enter % equity return
(iv) Guarantees	Enter amount	Enter years		
(v) Reimbursable grants	Enter amount			
(vi) Grants	USD 208,200,000			
(vii) Results-based payments	Enter amount			

(b) Co-financing information	**Total amount**	**Currency**
	3,250.0	million USD ($)

Name of institution	**Financial instrument**	**Amount**	**Currency**	**Tenor & grace**	**Pricing**	**Seniority**
Asian Development Bank	Senior Loans	3,079.51	million USD ($)	Enter years Enter years	Enter%	Options
Click here to enter text.	Grant	170.49	million USD ($)	Enter years Enter years	Enter%	Options
Click here to enter text.	In kind	Enter amount	Options	Enter years Enter years	Enter%	Options
Click here to enter text.	Options	Enter amount	Options	Enter years Enter years	Enter%	Options

(c) Total financing (c) = (a)+(b)	**Amount**	**Currency**
	3,500.0	million USD ($)

(d) Other financing arrangements and	GCF funds will support 20-30 projects over the lifetime of the Program. At a project level, GCF funds will be complemented by co-financing from ADB, with loan amounts and terms varying by project.

[36] Allocations are subject to applicable ADB policies and procedures including classification of ADB developing member countries.

contributions	

ADB classifies its developing member countries (DMCs) into different categories (A, B, C) for lending eligibility based on their income levels (i.e., gross national income per capita) and creditworthiness. These categories help determine the types of financial products ADB offers to each country, such as concessional and regular ordinary capital resources (OCR) lending, and grants.

Group A (Concessional assistance-only): Kyrgyz Republic, Tajikistan

Group B (OCR blend): Pakistan, Uzbekistan

Group C (Regular OCR-only): Armenia, Azerbaijan, Georgia, Kazakhstan, Turkmenistan

The G2F Program proposes differentiated GCF concessional support based on each country's ADB lending group classification, climate vulnerability, nature of interventions, and climate finance access barriers.

Tajikistan and Kyrgyz Republic. These countries face high debt distress, narrow economic base, and low institutional capacity. GCF grant-based and high concessionality is essential to enable transformational adaptation and unlock co-financing from the ADB and domestic budgets.

Pakistan and Uzbekistan. These countries face climate vulnerability alongside moderate fiscal and macroeconomic stress. A combination of GCF's grants and concessional loans is needed to maintain investment viability, ensure affordability, and de-risk innovative interventions that address both water stress and agricultural resilience.

Armenia, Azerbaijan, Georgia, Kazakhstan, and Turkmenistan. While upper-middle-income with access to capital markets, these countries face limited fiscal space and systematic barriers to accessing and mobilizing climate finance often leading to relatively low prioritization of climate adaptation investments compared to conventional infrastructure projects. Grant-only pilot investments of up to USD 3 million is proposed in selected Group C countries to (i) support piloting and testing of climate-smart agriculture models or assessments of river basin governance; (ii) build institutional readiness for climate finance access and project delivery; and (iii) upscale GCF support (grant and/or blended loan) in partnership with the ADB. To ensure long-term impact and government buy-in, additional eligibility criteria will be applied. Specifically, national governments must formally commit to scaling up successful pilots based on a strong pipeline of projects through a combination of concessional loans or other financing instruments. The Program will also support the design of innovative financial mechanisms, including instruments such as sustainability-linked or outcome bonds, to enhance the financial viability and attractiveness of climate adaptation investments in the region.

Category A: Concessional Assistance (CA)-Only Countries
Characteristics: Low-income and least developed countries, usually with limited creditworthiness.

- **Financing Terms**:
  - Eligible for grants and concessional OCR loan (low interest, long maturity).
  - Loans from the Asian Development Fund (ADF) or the concessional window of ADB.
  - Near-zero interest with long grace periods and maturities (e.g., 32 years with 8-year grace period).

Category B: OCR Blend Countries

- **Characteristics**: Countries eligible for both concessional and non-concessional financing (i.e., middle-income but still need development support).
- **Financing Terms**:
  - Access to both concessional and regular OCR financing.
  - May receive blended financing packages.
  - Terms depend on project type, debt sustainability, and economic context.

Category C: Regular OCR-Only Countries

- **Characteristics**: More creditworthy, typically upper middle-income or higher.
- **Financing Terms**:
  - Eligible for non-concessional financing only from ADB's OCR window.
  - Loans are market-based but may still be offered with favorable terms.
  - Not eligible for ADF or grant financing (except for technical assistance or under special circumstances).

Additional Notes:

- **Graduation policy**: Countries may "graduate" from concessional to OCR-only status based on income growth and creditworthiness.
- ADB's Classification of DMCs for Assistance is updated every few years (last major update: July 2025).

Note on ADB Loans Tenor & Grace:

- For Group A (Concessional-Assistance only countries) (Kyrgyz Republic, Tajikistan): 32 years tenor, 8 years grace period.
- For Group B (OCR Blend countries) (Pakistan, Uzbekistan): Concessional loan carries 25 years tenor, including 5 years grace period and equal amortization.
- For Group C (Regular OCR Countries) (Armenia, Azerbaijan, Georgia, Kazakhstan, Turkmenistan): Project loans consist of tenor and grace period that varies by projects, subject to maximum average loan maturity limit of 19 years. Average loan maturity is calculated based on loan term, grace period, and amortization type.
- See: https://www.adb.org/what-we-do/public-sector-financing/lending-policies-rates

Note on ADB Loans Pricing:

- For Group A Countries Concessional-Assistance only: 1% during grace period, 1.5% during amortization period.
- For Group B countries OCR Blend Country: Concessional OCR Loan 2% interest fixed for the life of the loan.
- For Group C Regular OCR Countries: under the Flexible Loan Product facility, interest is calculated based on outstanding balance and the applicable net interest rate is the sum of 6-month SOFR compounded in arrears + 50 bps lending spread, maturity premium of 0-75 bps (depending on the loan's average maturity) and (rebate)/surcharge. A commitment fee of 15 bps is also applicable, and this is levied on undisbursed balance.
- See: https://www.adb.org/sites/default/files/adb-flexible-loan-product-202307.pdf

C.2. Financing by component[37]

Table 10. Estimate of the Total Cost per Component and Output

Component	Output	Indicative cost Options	GCF financing		Co-financing		
			Amount Options	Financial Instrument	Amount Options	Financial Instrument	Name of Institutions
Component 1: Science-Based Climate Risk Planning and Investment Mechanisms	**Output 1.1.1:** Climate Risks Integrated into National and Sectoral Planning	8,864,140	8,864,140	Grants	0	N/A	ADB
	Output 1.2.1: Bankable, Science-Based Project Pipelines Developed	12,811,512	12,811,512	Grants	0	N/A	ADB
	Output 1.2.2: Innovative Finance Mechanisms Designed	3,324,350	3,324,350	Grants	0	N/A	ADB
Component 2: G2F Investment Solutions	**Output 2.1.1:** Impact-Based EWS Developed and Operationalized	135,000,000	11,880,000	Grants	4,560,000	Grants	ADB
			0	Senior loans	118,560,000	Senior loans	ADB

[37] Allocations are subject to applicable ADB policies and procedures including classification of ADB developing member countries.

	Output 2.2.1: Watershed and Climate-Resilient Landscape Restoration Implemented	1,998,000,000	98,824,000	Grants	57,456,000	Grants	ADB
			41,800,000	Senior loans	1,799,920,000	Senior loans	ADB
	Output 2.3.1: Climate-Smart Agriculture and Agriculture Systems Strengthened	569,996,000	14,956,000	Grants	41,040,000	Grants	ADB
			0	Senior loans	514,000,000	Senior loans	ADB
	Output 2.4.1: Climate-Responsive Social Protection and Health Systems Piloted	689,030,000	23,760,000	Grants	18,240,000	Grants	ADB
			0	Senior loans	647,030,000	Senior loans	ADB
Component 3: Capacity Building for Climate Finance Access	**Output 3.1.1:** Enhanced Institutional Capacity Building for Financial Institutions	16,447,000	7,197,000	Grants	9,250,000	Grants	ADB
	Output 3.1.2: Improved Capacities of Agri-MSMEs and Farmer Groups to Access Finance	16,535,000	6,125,000	Grants	10,410,000	Grants	ADB
	Output 3.1.3: Green Business Financing Products Established (Phase 2 – Years 3-7)	16,218,000	6,676,000	Grants	9,540,000	Grants	ADB
Component 4: Regional Knowledge Platform for Adaptive Learning and Climate Action	**Output 4.1.1:** Regional Cooperation and Knowledge Hub Operationalized	6,450,999	2,795,000	Grants	3,655,999	Grants	ADB
	Output 4.1.2: Regional Glacier Community of Practice	6,283,000	2,250,000	Grants	4,033,000	Grants	ADB

	(RGCOP) Established						
	Output 4.1.3: Adaptive Monitoring, Evaluation, and Learning (MEL) Systems Deployed	21,040,000	8,735,000	Grants	12,305,000	Grants	ADB
Enter amount		3,500,000,000	250,000,000		3,250,000,000		

C.3 Capacity building and technology development/transfer (max. 250 words, approximately 0.5 page)

C.3.1 Does GCF funding finance capacity building activities?	Yes ☒ No ☐
C.3.2. Does GCF funding finance technology development/transfer?	Yes ☒ No ☐

Capacity Building and Technology Transfer Activities: The project will support targeted capacity building and technology development/transfer to enable effective implementation, replication, and sustainability of climate adaptation solutions across glacier-dependent and downstream communities. Activities will include:

- **Institutional Capacity Building:** Training and technical assistance for national and local governments, especially Ministries of Finance, Agriculture, Water, and Environment, to integrate climate risk into planning, budgeting, and investment decision-making.
- **Community-Based Training:** Capacity support for local communities, particularly women, youth, and Indigenous Peoples, to implement climate-smart agriculture, EWS, and water-saving technologies.
- **Technology Transfer and Scaling:** Deployment of hydromet infrastructure, glacial monitoring systems, climate information services, and mobile-based EWS platforms to enhance climate forecasting and response.
- **Knowledge Exchange Platforms:** Regional learning events, toolkits, and digital platforms to support cross-country exchange, adaptation technology replication, and private sector engagement.

Estimated GCF Budget for Capacity Building and Technology Transfer: Approximately USD 10 million, representing an estimated 3% of the total GCF funding request, will be allocated to capacity building, technology deployment, and related technical assistance activities. The actual figure will be higher as capacity building will be incorporated into the investment projects in Component 2.

D. EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA

This section refers to the performance of the project/programme against the investment criteria as set out in the GCF's Initial Investment Framework.

D.1. Impact potential (max. 500 words, approximately 1 page)

The G2F Program is designed to generate large-scale, transformational adaptation outcomes across CWA, one of the most climate-vulnerable and water-stressed regions globally. The Program addresses cascading climate risks—including glacial retreat, shifting hydrological regimes, increasing temperatures, and intensified climate extremes—that threaten rural livelihoods, ecosystems, and critical public services. By integrating glacier resilience measures upstream with downstream investments in food, water, and health systems, the G2F Program enhances systemic adaptation across the climate–water–agriculture–livelihood nexus. This integrated approach directly supports GCF's adaptation result areas and contributes to achieving core adaptation indicators as outlined in the GCF Results Management Framework.

Specifically, this section demonstrates the program's potential to deliver substantial outcomes in two key areas:

- **GCF Core Adaptation Result Indicator**: The number of direct and indirect beneficiaries with increased climate resilience.
- **Strategic Plan Update Target**: Supporting developing countries in the conservation, restoration, or sustainable management of 120 to 190 million hectares of terrestrial and marine ecosystems.

Target estimations have been based on national-level data, with a primary emphasis on population statistics—particularly the proportion of people reliant on agriculture for their livelihoods. Additional focus has been placed on the four priority watersheds identified in the Feasibility Study, as these are the areas where direct interventions will be implemented. This geographic focus enables more accurate calculation of direct beneficiaries, and the extent of ecosystems expected to be brought under improved management.

Definitions: Direct Beneficiaries

Individuals, households, and institutions who directly receive services, infrastructure, or measurable benefits from GCF-financed interventions under the G2F Program. This includes:

- Farmers and rural households in targeted glacier-fed watersheds supported through climate-resilient agriculture, irrigation systems, and diversified livelihoods.
- People accessing and using EWS data to anticipate and respond to climate-related hazards such as floods, droughts, or GLOFs.
- Individuals benefiting from improved social protection and climate-adapted health services, including services that address climate-sensitive conditions.
- Communities benefiting from improved and more stable access to clean water, including through upgraded infrastructure that reduces stress and variability in water supply and flood risks
- Populations covered by resilient river basin management plans, who directly benefit from lower flood risks, better water governance, reduced resource conflicts, and enhanced ecosystem services.
- Local institutions and cooperatives directly engaged and strengthened through training, tools, or funding to implement localized adaptation actions.

Table 11. Estimation of Direct Beneficiaries

Country	Population	Direct Beneficiaries
Armenia	3,000,000	468,170
Azerbaijan	10,000,000	1,080,160
Georgia	3,700,000	444,160
Kazakhstan	20,300,000	791,860
Kyrgyzstan	7,100,000	511,495
Pakistan	247,500,000	4,714,305
Tajikistan	35,700,000	4,605,635
Turkmenistan	10,400,000	686,560
Uzbekistan	7,400,000	311,020
Total	**345,100,000**	**13,613,365**

Definitions: Indirect Beneficiaries

Populations who benefit indirectly from the broader impacts, enabling conditions, or infrastructure improvements generated by the G2F Program, without direct project interaction. This includes:

- People who benefit from improved infrastructure, including:
  - Broader farming communities using downstream irrigation systems enhanced by project interventions.
  - Urban and peri-urban populations gain more reliable access to clean water through upgraded water supply systems.
- Individuals indirectly access EWS information through public platforms, media, or informal dissemination.
- Populations benefiting from improved climate-related policies, integrated river basin governance, or cross-sectoral coordination that enhances long-term resilience at regional and national scales, lower risk from flooding downstream or from threats posed by glacial lake outflows or other hazards
- Ecosystem-dependent communities who benefit from restored or better-managed landscapes, even if not directly involved in project-supported activities.

Table 12. Estimation of Direct and Indirect Beneficiaries

Country	Population	Direct Beneficiaries	Indirect Beneficiaries	Total
Armenia	3,000,000	468,170	1,651,921	2,120,091
Azerbaijan	10,000,000	1,080,160	2,520,800	3,600,960
Georgia	3,700,000	444,160	1,036,800	1,480,960
Kazakhstan	20,300,000	791,860	1,848,100	2,639,960
Kyrgyzstan	7,100,000	511,495	1,193,870	1,705,365
Pakistan	247,500,000	4,714,305	10,106,250	14,820,555
Tajikistan	35,700,000	4,605,635	10,746,850	15,352,485
Turkmenistan	10,400,000	686,560	1,602,400	2,288,960
Uzbekistan	7,400,000	311,020	779,099	1,090,119
Subtotal	**345,100,000**	**13,613,365**	**31,486,090**	**45,099,454**

Beneficiary Total: A total of 45,099,454 beneficiaries are expected, comprising 13,613,365 direct beneficiaries and 31,486,090 indirect beneficiaries. Annex 24 provides the breakdown of country-level calculation methodologies and assumptions.

Definitions: Hectares of Ecosystem Conserved, Restored, or Managed

"Hectares of Ecosystem Conserved, Restored or Managed" refers to the total area (measured in hectares) of terrestrial or freshwater ecosystems where climate-resilient, sustainable, and/or low-emission management practices have been implemented. These actions contribute to climate adaptation, mitigation, and the long-term provision of ecosystem services. This indicator aligns with GCF Core Indicator 4. Activities must be climate-relevant, verifiable, and implemented with inclusive stakeholder engagement.

Disaggregation

Reporting should be disaggregated by:

- Type of natural resource area (e.g., forest, rangeland, wetland, river basin, mountain ecosystem)
- Type of intervention (e.g., conservation, restoration, or sustainable management)

Types of Eligible Interventions

Areas under legal or community-based protection to prevent degradation, maintain biodiversity, and preserve critical ecosystem functions.

- Examples: National parks, riparian buffer zones, protected forests, glacier source zones, community-conserved areas.

Restored Areas

Previously degraded ecosystems where interventions aimed to restore ecological integrity, improve carbon sequestration, and enhance resilience to climate stressors.

- Examples: Reforestation, slope re-vegetation, wetland or peatland rehabilitation, erosion control structures, restoration of alpine pastures.

Sustainably Managed Areas

Ecosystems undergoing use where management practices ensure long-term ecological health, water security, and community resilience. These may include:

- Integrated River Basin Management (IWRM): Establishment of water allocation plans, coordinated upstream–downstream governance, and cross-sector planning.
- Water Information Systems: Deployment of tools such as hydrological models, glacier melt monitoring, water accounting systems (e.g., Water Evaluation and Planning System).
- Nature-based Solutions (NbS): Watershed investment programs that apply interventions like agroforestry, contour bunding, vegetated riparian zones, and check dams to reduce erosion, enhance infiltration, and maintain hydrological function.
- Resilient Infrastructure: Support for climate-adaptive assets such as irrigation canals, percolation tanks, eco-engineered riverbanks, and early warning systems.
- Conflict Mitigation Mechanisms: Structures and platforms to prevent and resolve water-related disputes.
- Inclusive Governance: Multi-stakeholder platforms, and participatory basin management planning.
- Sustainable Land-Use Practices: Climate-smart agriculture, rotational grazing, forest co-management, and other practices balancing use with ecological regeneration.

Key Criteria for Inclusion

- Activities must clearly support climate adaptation and/or mitigation objectives.
- Areas must have documented plans or evidence of implementation, verified through project M&E systems, geospatial data, or institutional frameworks.
- Local community engagement, particularly with women and vulnerable groups, is strongly encouraged in planning and implementation.

River Basin Profiles

- **Kura River Basin (South Caucasus)**
  The Kura River Basin, shared by Türkiye, Georgia, and Azerbaijan, is a vital artery for agriculture, domestic water supply, and hydropower. It supports downstream irrigation networks and major urban centers, particularly in Azerbaijan. However, the basin is increasingly affected by climate change, with declining snowpack and erratic precipitation patterns reducing water availability and river flow. Vulnerable populations, especially rural communities and displaced people, face worsening water insecurity and agricultural decline. The basin's ecological significance is underscored by Key Biodiversity Areas (KBAs) such as the Kolkheti Lowlands and the Kura Delta, which are home to migratory birds and endangered sturgeon. These critical habitats are at risk from dam development, water overuse, and pollution.
- **Swat River Basin (Pakistan)**
  The Swat River originates in the Hindu Kush and is essential for agriculture, rural water access, and hydropower in northern Pakistan. It irrigates extensive farmland and sustains local livelihoods through water-intensive farming and hydropower generation. Climate change is accelerating glacial melting and causing erratic monsoonal patterns, resulting in unpredictable water flow, flash floods, and landslides. Vulnerable populations, including smallholder farmers and marginalized mountain communities, are especially at risk. The basin includes ecologically rich KBAs such as the Swat-Kohistan and Kalam Valleys, which host iconic species like the Western Tragopan and snow leopard. These natural areas are under mounting pressure from deforestation, overgrazing, and climate-related habitat loss.
- **Naryn River Basin (Kyrgyz Republic, Uzbekistan)**
  Originating in Kyrgyz Republic's Tien Shan mountains, the Naryn River is a key tributary of the Syr Darya (which flows through Kazakhstan) and supports irrigation in Uzbekistan and hydropower in Kyrgyz Republic—particularly through the Toktogul Reservoir, Central Asia's largest. Climate change is driving glacial retreat and reducing seasonal snowmelt, threatening the basin's role in supporting agriculture and energy. Rural communities reliant on livestock and subsistence farming are among the most vulnerable. KBAs such as the Chatkal Range and Sary-Chelek Reserve provide vital habitats for endemic mountain species, but these ecosystems face degradation from land-use pressures, climate warming, and limited management resources.
- **Pyanj River Basin (Afghanistan, Tajikistan)**
  Forming part of the Amu Darya headwaters, the Pyanj River Basin provides essential water for irrigation, drinking water, and small-scale hydropower in Afghanistan and Tajikistan. The basin is highly climate-sensitive, with glacial retreat and precipitation shifts increasing the frequency and severity of droughts and floods. Mountain communities, often isolated and underserved, face extreme vulnerability due to poverty, limited infrastructure, and ongoing political instability. The basin includes globally important KBAs such as the Pamir Mountains and Wakhan Corridor, which function as biodiversity hotspots and ecological corridors. These areas are at risk from climate change, weak conservation enforcement, and socio-political barriers.

Key Management Needs (Overall)
Forming part of the Amu Darya headwaters, the Pyanj River Basin provides essential water for irrigation, drinking water, and small-scale hydropower in Afghanistan and Tajikistan. The basin is highly climate-sensitive, with glacial retreat and precipitation shifts increasing the frequency and severity of droughts and floods. Mountain communities, often isolated and underserved, face extreme vulnerability due to poverty, limited infrastructure, and ongoing political instability. The basin includes globally important KBAs such as the Pamir Mountains and Wakhan Corridor, which function as biodiversity hotspots and ecological corridors. These areas are at risk from climate change, weak conservation enforcement, and socio-political barriers.

Key Management Needs (Overall)

- **Water Governance:**
  - Strengthen regional dialogue and agreements on shared water use, data exchange, and joint planning.
  - Promote integrated river basin management across borders.
- **Climate-Resilient Infrastructure and Adaptation:**
  - Upgrade irrigation systems for water efficiency and resilience to climate extremes.
  - Develop nature-based solutions for flood control and watershed stabilization.
- **Glacier and Water Monitoring:**
  - Expand glacier monitoring systems and early warning networks for floods and droughts.
  - Use climate data to inform water allocation and infrastructure planning.
- **Ecosystem Protection and Restoration:**
  - Enhance management of Key Biodiversity Areas and expand protected area coverage.
  - Support reforestation, anti-erosion, and habitat restoration initiatives.
- **Community-Based Risk Reduction:**
  - Empower local communities with tools and training to manage water and natural resources.
  - Prioritize vulnerable groups—such as women, smallholder farmers, and mountain dwellers—in adaptation strategies.
- **Policy Integration and Capacity Building:**
  - Mainstream climate, biodiversity, and disaster risk national and basin-level policies.
  - Invest in institutional capacity for basin governance and cross-sectoral coordination.

Target: 26,993,100 Hectares of Ecosystem Conserved, Restored, or Managed
This target represents the total area across participating countries and river basins where ecosystems will be brought under improved, climate-resilient, and/or low-emission management practices by the end of the program period. The figure reflects the ambition of the program to drive large-scale systemic change across vulnerable landscapes, particularly glacier-fed watersheds and associated ecosystems in Central and West Asia.

Table 13. River Basin Area (Target River Basins; Kura, Naryn, Pyanj and Swat)

River Basin	Country	Basin area (km^2)	Basin area (ha)	Target – Sustainably Managed
Kura	Armenia	29,667	2,966,700	2,966,700
Kura	Azerbaijan	59,406	5,940,600	5,940,600
Kura	Georgia	34,594	3,459,400	3,459,400
Naryn	Kyrgyz Republic	59,157	5,915,700	5,915,700
Naryn	Uzbekistan	1,697	169,700	169,700
Swat	Pakistan	14,656	1,465,600	1,465,600
Pyanj	Kyrgyz Republic	1	100	100
Pyanj	Pakistan	161	16,100	16,100
Pyanj	Tajikistan	70,592	7,059,200	7,059,200
Total Area				**26,993,100**

D.2. Paradigm shift potential (max. 500 words, approximately 1 page)

Paradigm Shift Potential: The G2F Program demonstrates strong potential for a paradigm shift by enabling transformational change in how climate adaptation is designed, financed, and implemented across glacier-dependent systems in Central and

West Asia. G2F goes beyond incremental solutions by reconfiguring institutional frameworks, embedding resilience in national systems, and catalyzing regional cooperation and climate finance innovation. It addresses the cascading risks of glacial melt and climate variability through integrated action in water, agriculture, ecosystems, and social protection sectors.

1. Degree of Transformational Change: G2F introduces systemic shifts in how countries assess and manage climate risks related to glacier retreat by transforming public policies, institutions, markets, and planning systems:

Institutional integration: G2F mainstreams climate and glacier risks into national investment plans and systems.

- **Governance reform**: It supports multi-sectoral planning across ministries of environment, water, agriculture, finance, and social protection, promoting integrated decision-making.
- **Behavioral change**: By embedding locally led, gender-responsive approaches and participatory planning, G2F shifts adaptation behavior from reactive to proactive across communities and governments.
- **Market transformation**: The introduction of innovative financial instruments—such as Sustainability-linked or outcome bonds and PES—stimulates markets aligned with long-term resilience.

GCF-aligned benchmark: G2F transforms fragmented governance and climate-blind agriculture into science-based, climate-resilient systems across multiple sectors.

2. Scalability and Replication

G2F is inherently designed for scale and replication within and beyond Central and West Asia, using modular approaches, common tools, and regional coordination mechanisms:

- **Regional platform (CAREC)**: Facilitates cross-border harmonization of tools, policies, and investment models that can be applied to other glacier-affected regions globally.
- **Demonstration models**: G2F will operationalize scalable models in climate-smart agriculture, water governance, and adaptive social protection.
- **Open access knowledge tools**: Toolkits, data platforms, and policy packages will be developed for adaptation practitioners, subnational governments, and private sector actors.

GCF-aligned benchmark: G2F provides a replicable model for other mountainous or cryosphere-affected regions facing similar regional climate risks (e.g., Himalayas, Andes).

3. Sustainability of Results Beyond GCF Support

G2F ensures that adaptation outcomes are institutionalized and financially sustained through robust national ownership and public-private investment frameworks:

- **Policy mainstreaming**: Results and reforms will be embedded in government policies and budgets, including hydromet, agricultural extension, and rural health programs.
- **Financial sustainability**: Through blended finance, PES schemes, and private sector pipelines, G2F establishes revenue and reinvestment mechanisms for long-term adaptation finance.
- **Capacity strengthening**: Institutions and communities will be equipped with the skills, data, and systems needed to manage climate risks independently.

GCF-aligned benchmark: Institutionalization and leveraged co-finance ensure that benefits are sustained long after GCF support concludes.

4. Innovation and Learning

G2F pioneers **innovative solutions** that disrupt business-as-usual models, using data, finance, and service delivery innovations to create new pathways for resilience:

- **Financial innovation**: G2F introduces Sustainability-linked or outcome bonds climate finance to ecosystem outcomes and resilience metrics.
- **Data innovation**: The program deploys glacier and hydrology data to enable climate risk-informed planning at national and basin levels.
- **Service delivery innovation**: Mobile health services, digital finance, and adaptive social protection will extend services to last-mile, climate-vulnerable populations.
- **Knowledge systems**: G2F embeds learning loops, continuous MEL, and South-South knowledge exchange.

GCF-aligned benchmark: G2F fosters new business models and evidence-based adaptation strategies that can be replicated and scaled globally.

Conclusion: The G2F Program embodies GCF's vision for paradigm shift by embedding climate resilience into the core systems that sustain over 42,858,000 million people across Central and West Asia's glacier-fed regions. By transforming

institutions, financing structures, and regional governance, G2F enables a systemic shift from reactive vulnerability management to proactive, climate-resilient development. Its innovations, tools, and regional platform position it as a flagship GCF program with global relevance for scaling transformational adaptation in fragile, high-risk ecosystems. The G2F Program forms an integral component of ADB's ambition towards tackling the complex challenge of regional integration, complex challenges, and the climate change challenge of glacial melting.

The G2F Program aligns with the ADB's expanded strategy to promote food security and sustainable development across Asia and the Pacific. ADB has increased its commitment to food and nutrition security to $40 billion by 2030, addressing critical challenges such as climate change, supply chain disruptions, and economic instability.

This program focuses on transforming agriculture systems to be inclusive, sustainable, and resilient, with priorities that include enhancing agricultural productivity, improving nutrition, and strengthening the food supply chain. ADB emphasizes the importance of coordinated efforts among governments, the private sector, and civil society to achieve these goals and ensure that vulnerable populations across the region have consistent access to safe and nutritious food. For more details, you can read the full announcement here: ADB Support for Food Security to Reach $40 Billion by 2030.

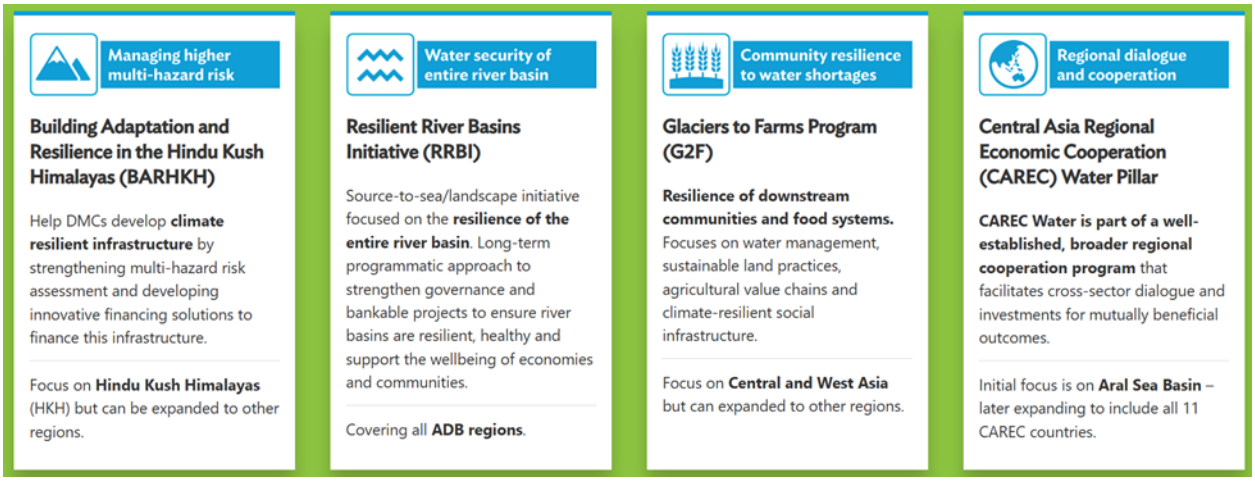

Figure 10. ADB's Regional Programs in Asia for Complex Challenges and Glacial Melting
(https://www.adb.org/what-we-do/glacial-melt)

D.3. Sustainable development (max. 500 words, approximately 1 page)

Glacier to Farms: Advancing the SDGs and Global Environmental Commitments in Central and West Asia

The G2F Program is a transformative regional program that directly advances progress toward the Sustainable Development Goals (SDGs) by targeting climate vulnerability across the glacier-fed basins of Central and West Asia, a region increasingly affected by glacial melt, drought, extreme heat, and water insecurity. The program delivers strong co-benefits across environmental, economic, and social dimensions. These include improved food and water security, strengthened livelihoods, increased gender and social inclusion, and the preservation of critical ecosystems. G2F directly supports the achievement of multiple Sustainable Development Goals (SDGs), notably SDG 2 (Zero Hunger), SDG 6 (Clean Water and Sanitation), SDG 13 (Climate Action), SDG 8 (Decent Work and Economic Growth), and SDG 17 (Partnerships for the Goals). Through its integrated, science-based, and equity-focused approach, G2F ensures that climate adaptation is not an isolated intervention, but a platform for long-term sustainable development and resilience across Central and West Asia.

Central and West Asia is home to some of the world's most water-stressed countries, and heavily reliant on glacier- and snow-fed rivers for agriculture, energy, and domestic use. [38] Glaciers in the region are retreating at an alarming rate, up to 1% annually

[38] According to global water stress rankings by institutions like the World Resources Institute (WRI) and UN agencies, the following countries in the G2F region rank among the highest in terms of water stress (measured as the ratio of total annual withdrawals to renewable supplies):
1. Turkmenistan
   - Among the top 5 globally for water stress.
   - Over 100% of renewable water resources are withdrawn annually—indicating severe overuse.
   - Heavy reliance on irrigation for cotton and wheat production.
2. Uzbekistan
   - Faces extreme water stress, especially in the Amu Darya basin.

in parts of the Pamirs, Tien Shan, and Hindu Kush, with many projected to lose more than 50% of their mass by 2100 if warming trends continue. These changes threaten the seasonal water availability for downstream communities and agriculture, which employs over 40% of the population in many rural areas.

G2F responds to this crisis by embedding glacier-informed hydrology into governance systems, strengthening the region's capacity to plan for a future of increased hydrological variability, glacial lake outburst floods (GLOFs), and prolonged droughts. The program aligns with UNESCO's Glacier Preservation Agenda, helping protect critical water towers of the region while recognizing their cultural and ecological significance.

The program also contributes to SDG 2 (Zero Hunger) and SDG 6 (Clean Water and Sanitation) by promoting climate-smart agriculture, sustainable irrigation, and integrated water resource management. These efforts directly support countries' goals under the United Nations Convention to Combat Desertification (UNCCD), especially regarding Land Degradation Neutrality (LDN). In Central Asia alone, over 60% of land is classified as degraded, impacting productivity, livelihoods, and food security.

With a focus on inclusive economic empowerment, G2F supports financial access for agricultural SMEs and smallholder farmers, aligning SDG 8 (Decent Work and Economic Growth) and SDG 10 (Reduced Inequalities). It introduces innovative financial mechanisms, such as green credit lines, guarantees, and blended finance tools, to bridge the gap between adaptation needs and capital flows.

Finally, G2F fosters cross-border cooperation, regional monitoring, and policy harmonization, critical in a region with 25 major rivers and shared glacier-fed watersheds through its Regional Climate Resilience Platform, it contributes to SDG 17 (Partnerships for the Goals) enabling knowledge exchange, joint adaptation strategies, and evidence-based action across Central and West Asia.

Table 14. Strategic Alignment of G2F Program Components with GCF Result Areas and SDGs

Component	GCF Result Areas	Relevant SDGs	Contribution to Climate Resilience and Development
1. Climate Investment Pipelines ***Component 1: Technical Facility - Climate Risk Planning and Investment Readiness***	- Increased resilience of livelihoods of people, communities, and regions- Strengthened institutional and regulatory systems	**SDG 13**: Climate Action **SDG 1**: No Poverty **SDG 17**: Partnerships for the Goals	Builds national capacity for climate-informed public investment, enabling long-term adaptation through institutional strengthening and bankable project pipelines.
2. Glacier-Resilient Investment Solutions ***Component 2: G2F Innovation and Upscaling Facility***	- Increased resilience of infrastructure and built environment- Improved health and well-being and food and water security	**SDG 2**: Zero Hunger **SDG 6**: Clean Water and Sanitation **SDG 3**: Good Health and Well-being **SDG 13**: Climate Action	Demonstrates and scales climate-resilient solutions in agriculture, water, early warning, and social protection, directly reducing community vulnerability.
3. Financial Foundation: Instruments and Enterprise Development ***Component 3: Inclusive Climate Finance and Agri-SME Platform***	- Improved access to climate finance- Strengthened institutional and regulatory systems	**SDG 8**: Decent Work and Economic Growth **SDG 9**: Industry, Innovation and Infrastructure **SDG 10**: Reduced Inequalities	Unlocks climate finance for SMEs through innovative instruments, enabling inclusive and resilient rural economic development.
4. Adaptive Learning and Climate Action ***Component 4: Regional Climate Resilience Platform***	- Strengthened institutional and regulatory systems- Increased resilience of people and regions	**SDG 17**: Partnerships for the Goals **SDG 16**: Peace, Justice and Strong Institutions **SDG 13**: Climate Action	Enhances cross-border cooperation, harmonized monitoring, and adaptive learning to scale and sustain effective climate action regionally.

Needs of the Recipient

The CWA region—comprising nine developing countries across Central Asia, the South Caucasus, and Pakistan—is experiencing intensifying climate risks that threaten human security, ecological stability, and economic development. Despite a

- The legacy of Aral Sea degradation continues to affect regional hydrology and food production.

3. Kazakhstan
   - Moderate to high water stress in southern regions dependent on glacier-fed rivers (e.g., Syr Darya, Ili).
   - Projected loss of over half of glacier volume by 2050 in the Tien Shan.
4. Kyrgyz Republic & Tajikistan
   - While currently water-rich due to glaciers, they face high future risk due to rapid glacial retreat.
   - Serve as "water towers" for much of Central Asia, feeding transboundary rivers.

combined GDP of over USD 900 billion,[39] the region remains constrained by low per capita income, fragile economies, and deep inequalities in rural and mountainous areas. Pakistan, for example, is among the most climate-vulnerable countries globally, with a GDP per capita of approximately USD 1,600 and large populations dependent on agriculture and water-sensitive sectors.

Climate Vulnerability and Exposure: The CWA region is one of the world's most climate-exposed zones, with glaciers in the Pamirs, Tien Shan, and Caucasus ranges providing critical freshwater to over 384 million people. These glaciers are retreating rapidly due to warming, with losses projected to exceed 100 km² in northern Pakistan and eastern Tajikistan by the end of the century.[40,41] This glacial retreat, along with rising temperatures, is altering river basins, disrupting agricultural seasons, and increasing the frequency of GLOFs, flash floods, and irregular snowmelt patterns.

The region is also facing increasing drought stress—especially in Kazakhstan, Uzbekistan, and Turkmenistan—where water availability is declining amid competing agricultural and energy demands.[42] Land degradation is accelerating in arid and semi-arid zones, driven by unsustainable land use, overgrazing, and erratic rainfall, threatening ecosystems and food production. Simultaneously, heat extremes are becoming more common: South Asia recorded several instances of temperatures exceeding 45°C in recent years, which are projected to become more frequent and prolonged.[43]

Adaptation and Mitigation Gap: Although countries in the region have developed NAPs and NDCs, their implementation remains limited due to underfunding, institutional fragmentation, and weak integration across sectors. The ADB Road Map for CWA highlights that current climate investments are insufficient, sporadic, and highly localized, lacking the scale and coherence to address systemic risks. Infrastructure for climate data, early warning systems, and integrated watershed management remains inadequate, and community-led adaptation solutions are not mainstreamed.

Economic and Social Development Constraints: Many CWA countries fall within the low- and lower-middle income brackets, with persistent inequality and low HDI scores in rural, mountainous, and Indigenous communities. Agriculture remains a major livelihood source—accounting for up to 25% of employment in some countries—and is highly sensitive to climate variability. Outmigration from climate-stressed rural zones is increasing, weakening local economies and social resilience.[44]

Barriers to Accessing Finance: Despite the urgency, access to climate finance remains a major barrier. Countries struggle to meet the institutional and technical requirements to attract and implement large-scale, cross-sectoral climate projects. Fragmented project pipelines, limited capacity to mobilize private capital, and dependency on external concessional resources further constrain national responses.[45] Countries such as Turkmenistan and Azerbaijan, for example, have received minimal GCF funding to date despite facing growing climate threats.

Justification for GCF Involvement: The GCF is uniquely positioned to deliver transformational, catalytic, and equitable climate action across the CWA region. GCF support will enable the scaling of solutions that blend traditional knowledge, scientific data, and nature-based infrastructure to enhance resilience. It will fill a critical financing gap for projects that are cross-border, multi-sectoral, and community-anchored—interventions often overlooked by bilateral or market-based finance.

Regional or Cross-Border Challenges: The region faces numerous climate risks, especially around water management in shared basins such as the Amu Darya and Syr Darya. Competing water uses for agriculture, energy, and urban supply create tensions between upstream and downstream users. The ADB Road Map stresses the importance of regional cooperation, yet current mechanisms are underdeveloped and underfunded. [46] The G2F Program is designed to support regional coordination, addressing both upstream glacial melt and downstream drought impacts through integrated solutions.

Equity and Inclusivity: Climate change in CWA disproportionately affects vulnerable groups, including women, smallholder farmers, Indigenous populations, and remote mountain communities. These groups often lack formal representation in decision-making and have limited access to adaptation finance and technologies. GCF support will embed gender-responsive, socially inclusive approaches to ensure these communities are central to the design, implementation, and governance of adaptation and mitigation actions.

The G2F Program is designed to strategically leverage existing and ongoing efforts while addressing current limitations. Its programmatic, multi-country approach allows for scaling successful models, bridging upstream-downstream linkages, and extending support to underserved countries such as Azerbaijan and Turkmenistan—which have received minimal GCF

[39] Asian Development Bank (2024). *Climate Action Road Map for Central and West Asia, 2025–2030*. Link
[40] Asian Development Bank (2024). *Climate Action Road Map for Central and West Asia, 2025–2030*. Link
[41] IPCC (2022). *Sixth Assessment Report – Climate Change 2022: Impacts, Adaptation and Vulnerability*
[42] Asian Development Bank (2024). *Climate Action Road Map for Central and West Asia, 2025–2030*. Link
[43] World Meteorological Organization (2022). *State of the Global Climate 2022*
[44] FAO (2022). Near East and North Africa Regional Overview of Food Security and Nutrition
[45] Asian Development Bank (2024). *Climate Action Road Map for Central and West Asia, 2025–2030*. Link
[46] Asian Development Bank (2024). *Climate Action Road Map for Central and West Asia, 2025–2030*. Link

assistance to date. A core value-add of G2F is its targeted focus on social sectors and nature-dependent populations, particularly rural and mountain communities, whose resilience is essential to long-term regional stability. Through GCF support, G2F can fill critical gaps in adaptation finance, foster regional cooperation, and deliver integrated solutions at the scale and speed demanded by the climate crisis.

D.5. Country ownership (max. 500 words, approximately 1 page)

The G2F Program exemplifies a regionally driven, nationally owned response to one of the most pressing and complex climate challenges facing Central Asia, Pakistan and South Caucasus: accelerating glacial melt and its cascading impacts on water security, agriculture, energy, and livelihoods. G2F builds upon and strengthens national commitments, while creating a unified platform for collaboration, learning, and action. The G2F Program is aligned with emerging regional climate strategies supported by multilateral partners, such as the CAREC Water Pillar, the Hindu Kush Himalaya Call to Action, and national roadmaps prepared under the Climate Action Roadmap for Central and West Asia, 2025–2030 led by ADB. These initiatives stress the need for integrated action on glacier monitoring, river basin planning, and regional knowledge sharing—all core features of the G2F Program.

1. Alignment with National and Regional Climate Strategies

The G2F Program is fully aligned with the Nationally Determined Contributions (NDCs), National Adaptation Plans (NAPs), and GCF Country Programmes of the participating countries. Across all nine countries, G2F responds to high-priority adaptation goals, including:

- Modernizing climate-resilient irrigation systems;
- Strengthening mountain and downstream water governance;
- Promoting climate-smart agriculture and inclusive agriculture-food systems;
- Managing disaster risks from glacial lake outburst floods (GLOFs), droughts, and extreme heat.

The G2F Program also supports implementation of emerging regional frameworks, such as:

- The Central Asia Climate Strategy (2024–2030);
- The CAREC Water Pillar and CAREC Climate Change Coordination Platform, which aim to harmonize regional responses to shared water and climate risks.

The G2F Program contributes directly to international declarations, including the International Year of Glaciers' Preservation (2025) and the International Year of Mountains, aligning with UNFCCC Global Goals on Adaptation and SDG targets on water, food, and climate resilience.

2. Country Capacity and Institutional Engagement

All G2F countries demonstrate high-level political commitment and operational readiness to implement program activities. ADB, as Accredited Entity, brings extensive experience supporting climate-resilient investments in mountain regions, working through capable national partners.

G2F will be implemented through national executing entities such as:

- Ministries of Climate Change, Agriculture, Water Resources, and Environment;
- Provincial and basin-level irrigation and water authorities;
- Social protection and disaster risk management agencies.

These institutions have a proven track record of delivering ADB- and GCF-financed projects and are supported by national Climate Change Councils or inter-ministerial climate committees that coordinate cross-sectoral responses.

To prepare and strengthen institutional ownership, G2F has been developed through a series of high-level regional consultations:

- The First NDA Meeting and Technical Dialogue in Istanbul (17–19 June 2024) launched discussions on a joint regional vision for glacier resilience;
- The Second NDA and Technical Dialogue in Astana (30–31 January 2025) focused on subproject prioritization and financing mechanisms;
- The Third Regional NDA Forum in Tashkent (30 April–1 May 2025) validated country contributions and governance arrangements;
- G2F was showcased during a ministerial event at UNFCCC COP29 in Azerbaijan, the high-level launch event of the International Year of Glaciers Preservation 2025 in Geneva (January 2025), and the World Day for Glaciers & World Water Day event at the UN in New York and Paris (March 2025);
- A technical session on partnerships for glacier resilience and cooperation will be delivered at the International Conference on Glaciers' Preservation in Dushanbe (29 May–1 June 2025);

- The Regional Glaciers and Water Resilience Conference in Dushanbe (May 2026) will provide a platform for regional progress monitoring and knowledge exchange.

Country Operations Review and Programming missions held in 2025 further helped identify climate finance pipelines and priority G2F subprojects. These processes ensured government ownership, regional coherence, and cross-border collaboration.

3. Stakeholder Engagement and Inclusivity

G2F is built on a foundation of inclusive and participatory engagement, ensuring that the needs and voices of vulnerable communities—particularly those in high mountain and downstream areas—are integrated into every phase of program design and implementation.

Key features of the stakeholder engagement process include:

- Country-level consultations with over 200 stakeholders, including ministries, local governments, Indigenous Peoples organizations, academia, and civil society;
- Integration of gender, youth, and Indigenous Peoples' perspectives in the design of early warning systems, agriculture value chains, and water governance mechanisms;
- Coordination with ongoing and planned GCF-financed projects, including UNDP's GLOF projects in Pakistan and Kyrgyz Republic, to ensure complementarity;
- Annual regional learning forums and CAREC-hosted peer exchanges to share innovations, lessons, and outcomes.

Each G2F subproject includes a Stakeholder Engagement Plan and grievance redress mechanism, aligned with ADB's Safeguard Policy Statement and the GCF's Environmental and Social Safeguards, Gender Policy, and Indigenous Peoples Policy.

The G2F Program is a regionally anchored, nationally led program that delivers on shared climate commitments, protects vital glacier-fed systems, and empowers countries and communities to manage water, food, and disaster risks in a changing climate. Through structured regional dialogues, coordinated stakeholder engagement, and alignment with both national and global frameworks, G2F establishes a model of cooperation and climate resilience in one of the world's most vulnerable mountain regions.

The Program is a country-driven, regionally coordinated response to climate-induced glacial melt and its cascading effects on water security, agriculture, energy, and rural livelihoods. Developed through extensive regional consultation, the program aligns with each country's Nationally Determined Contributions (NDCs), National Adaptation Plans (NAPs), and GCF Country Programmes. It is embedded within national climate strategies and reflects strong institutional ownership across all nine participating countries. The program supports both domestic adaptation goals and regional cooperation initiatives, including the Central Asia Climate Strategy (2024–2030) and the CAREC Water Pillar.

Armenia

1. **Alignment with National Climate Strategy and Policy Frameworks**
   Armenia's updated NDC (2021–2030) identifies water and energy security as critical adaptation priorities. The National Adaptation Plan (2021) emphasizes agriculture and water management, including sustainable irrigation and flood control. The Long-Term Low Emissions Development Strategy (2023) connects water availability to both renewable energy development and rural resilience. G2F supports these objectives by investing in upstream glacier-fed water systems.
2. **Country Capacity and Institutional Engagement**
   Armenia has a growing climate finance portfolio, including the following GCF projects:
   - FP010: *Energy Efficiency Green Bond – Armenia* (European Bank for Reconstruction and Development)
   - SAP014: *Forest Resilience of Armenia – Enhancing Adaptation and Rural Green Growth through Mitigation* (Environmental Project Implementation Unit)
   - FP225: *Electric Mobility Program – Accelerating the Transition to E-Mobility in Eastern Europe, Caucasus and Central Asia* (EBRD)
3. **Role of NDA**
   The Ministry of Environment, serving as Armenia's NDA, has led program coordination, facilitated cross-sectoral input, and endorsed Armenia's participation in G2F.
4. **Stakeholder Engagement**
   National consultations engaged stakeholders from government, civil society, academia, and Indigenous Peoples organizations. Lessons from SAP014 and other relevant adaptation programs informed the design of Armenia's G2F subproject.

Azerbaijan

1. **Alignment with National Climate Strategy and Policy Frameworks**
   Azerbaijan's Second NDC (2023) and NAP stress reduced water flows and the need for resilient water infrastructure. The National Water Strategy (2024) provides a roadmap for integrated water resources management, basin planning, and efficiency. G2F aligns with these priorities by enhancing glacial water flow reliability and basin-level planning.
2. **Country Capacity and Institutional Engagement**
   Azerbaijan participates in the following GCF projects:
   - SAP046: *Strengthening Climate Information and Early Warning Systems for Climate Resilient Development in Azerbaijan* (UNDP)
   - FP254: *Scaling Resilient Water Infrastructure (RWI) Facility* (European Investment Bank)
3. **Role of NDA**
   The Ministry of Ecology and Natural Resources (MENR), Azerbaijan's NDA, ensured program alignment with national water and climate strategies and facilitated coordination across government agencies.
4. **Stakeholder Engagement**
   Stakeholders were engaged through national dialogues and G2F consultations, with emphasis on linking the program to the new National Water Strategy and ensuring inclusive planning.

Georgia

1. **Alignment with National Climate Strategy and Policy Frameworks**
   Georgia's NDC (2021) and NAP (2023–2030) highlight the role of water in energy and agricultural resilience. The Law on Water Resource Management (2024) introduces modern river basin planning mechanisms. G2F supports these priorities by targeting irrigation modernization and runoff management.
2. **Country Capacity and Institutional Engagement**
   Georgia has implemented the following GCF project:
   - FP049: *Scaling-up Multi-Hazard Early Warning System and the Use of Climate Information in Georgia* (UNDP)
3. **Role of NDA**
   The Ministry of Environmental Protection and Agriculture (MEPA) has ensured program alignment and facilitated institutional coordination.
4. **Stakeholder Engagement**
   Consultations engaged water authorities, agricultural agencies, and local stakeholders, integrating local priorities into subproject design.

Kazakhstan

1. **Alignment with National Climate Strategy and Policy Frameworks**
   Kazakhstan's Second NDC (2023) addresses risks to water availability and agriculture from glacial retreat. G2F supports national adaptation priorities through sustainable irrigation and upstream watershed interventions.
2. **Country Capacity and Institutional Engagement**
   Kazakhstan is part of:
   - FP253: *Greening Financial Systems: Delivering Climate Finance for All* (GCF multi-country project with Frankfurt School of Finance and Management)
3. **Role of NDA**
   The NDA, housed in the Ministry of Ecology and Natural Resources, led national consultations and endorsed G2F alignment with climate goals.
4. **Stakeholder Engagement**
   National-level dialogues included ministries, basin authorities, and agricultural stakeholders, ensuring integrated input into subproject selection.

Kyrgyz Republic

1. **Alignment with National Climate Strategy and Policy Frameworks**
   Kyrgyzstan's NDC (2021) prioritizes water resource adaptation and agricultural resilience. National strategies focus on irrigation modernization and glacial basin planning, both core to G2F.
2. **Country Capacity and Institutional Engagement**
   Kyrgyzstan is engaged in:
   - UNDP's *GLOF II: Scaling-up Risk Reduction through Community-Based Adaptation in Northern Pakistan and Kyrgyz Republic* (FP084)
3. **Role of NDA**
   The Ministry of Natural Resources, Ecology and Technical Supervision (MNRETS) facilitated alignment with national strategies and regional collaboration.

4. **Stakeholder Engagement**
   Local consultations targeted water user associations, rural development agencies, and civil society to incorporate community-level resilience into project design.

Pakistan

1. **Alignment with National Climate Strategy and Policy Frameworks**
   Pakistan's NDC (2021), NAP (2023), and Climate Change Policy (2021) highlight glacial melt, GLOFs, and agricultural stress. The forthcoming Glacier Strategy (2025) further underscores water resilience.
2. **Country Capacity and Institutional Engagement**
   Key GCF projects include:
   - FP018: *Scaling-up of Glacial Lake Outburst Flood (GLOF) risk reduction in Northern Pakistan* (UNDP)
   - FP078: *Transforming the Indus Basin with Climate Resilient Agriculture and Water Management* (FAO)
3. **Role of NDA**
   The Ministry of Climate Change has coordinated national engagement and ensured G2F complements existing climate investments.
4. **Stakeholder Engagement**
   Extensive engagement with provincial agencies, local governments, and technical institutions has informed subproject design. G2F builds on lessons from UNDP and FAO initiatives.

Tajikistan

1. **Alignment with National Climate Strategy and Policy Frameworks**
   Tajikistan's NDC (2021) and Strategy for Adaptation to Climate Change (to 2030) emphasize water and agriculture. G2F builds on ADB's FP075 project by extending interventions into glacial catchments.
2. **Country Capacity and Institutional Engagement**
   Tajikistan is implementing:
   - FP075: *Building Climate Resilience in the Agriculture Sector of Tajikistan* (ADB)
3. **Role of NDA**
   The Committee for Environmental Protection coordinated national inputs and will lead G2F monitoring.
4. **Stakeholder Engagement**
   Building on FP075, consultations included mountain communities, technical agencies, and rural groups to define project priorities.

Turkmenistan

1. **Alignment with National Climate Strategy and Policy Frameworks**
   The 2022 NDC identifies drought and upstream runoff decline as key threats. G2F is Turkmenistan's first GCF-linked initiative and supports adaptation in the water-agriculture interface.
2. **Country Capacity and Institutional Engagement**
   Turkmenistan has worked with ADB on agriculture modernization and infrastructure, providing a platform for G2F implementation.
3. **Role of NDA**
   The Ministry of Finance and Economy has endorsed G2F and is leading institutional coordination.
4. **Stakeholder Engagement**
   Preliminary consultations engaged relevant ministries and experts. Implementation will expand this through inclusive community-level planning.

Uzbekistan

1. **Alignment with National Climate Strategy and Policy Frameworks**
   Uzbekistan's NDC (2021), Climate Strategy (2023–2030), and forthcoming NAP prioritize IWRM, climate-resilient agriculture, and glacial water management.
2. **Country Capacity and Institutional Engagement**
   Ongoing GCF projects include:
   - FP096: *Climate Adaptation and Mitigation Program for Aral Sea Basin (CAMP4ASB)* (ADB/FAO)
3. **Role of NDA**
   The Ministry of Economy and Finance coordinates national climate finance and has aligned G2F with sectoral strategies.

Stakeholder Engagement
Consultations involved national ministries, basin organizations, and civil society, building NAP readiness efforts and existing community-based projects.

D.6. Efficiency and effectiveness (max. 500 words, approximately 1 page)

Leveraging GCF funds for large-scale, cost-effective climate action. The presented G2F programmatic approach seeks to deliver tangible efficiency, effectiveness, and cost-effectiveness through careful leveraging of GCF finance against substantial financial obligations by the ADB and other parallel sources. Specifically, the scheme will use a lead contribution of USD 250 million from the GCF to mobilize an additional USD 3.25 billion from the ADB and other sources, resulting in a ratio of co-financing of over 10:1. This high leverage ratio is particularly noteworthy in the area of climate adaptation, where mobilizing bulk finance is typically challenging, especially in remote and vulnerable mountain regions. Leveraging GCF resources to finance the climate-specific, or 'additional,' aspects of ADB-supported projects enable the Program to draw on existing financial, governance, and implementation mechanisms. This linkages integration does its best to keep marginal transaction costs of accessing GCF funds to a minimum, thereby ensuring that inputs in finance are best transformed into real outputs and outcomes. Accordingly, the G2F Program is expected to achieve tangible benefits for large numbers of vulnerable recipients for each dollar invested.

Strategic focus of the G2F Program for climate adaptation. The Program will support at the same time a diverse array of climate resilience activities such as improving watershed management, encouragement of water-saving technology such as drip irrigation, strengthening of health systems, and modernizing early warning and enabling infrastructure. Many of these interventions may not yield financial returns, but they present valuable opportunities for private sector investment through an enabling environment for innovative financing mechanisms, risk-sharing instruments, and long-term impact-driven investment strategies. Accordingly, private capital crowding out is estimated to be negligible, and these activities are thus best addressed by concessional finance from the GCF. By focusing on cases of low private sector involvement, the G2F Program ensures that concessional funds address high social and environmental impact interventions and hence maximize positive outcomes and long-term sustainability of climate adaptation in some of the world's most risk-exposed regions.

Concessionality justification. The Program demonstrates that across ADB's lending groups A, B, and C, significant concessionality is achieved when compared with market-based terms applicable to each group (Table 17). This concessionality materially lowers the cost of capital and enhances financial feasibility across geographies. Notably, the analysis does not yet factor in the additional concessionality or strategic value derived from the ability of GCF and ADB financing to crowd in other sources of capital—particularly for nature-based solutions (NbS), which remain structurally underserved by conventional capital markets. Concessional finance plays a catalytic role in mobilizing resources for this asset class, which typically struggles to attract investment due to its diffuse revenue streams and perceived risk.

Financial viability and economic sustainability of representative indicative modelling. The economic and financial analysis (EFA) of the representative interventions, summarized in Table 16, confirms that the G2F initiative is well-justified for implementation. These interventions are economically sound and, under concessional financing assumptions, financially viable. While direct financial returns are in some cases limited, reflecting the public-goods nature of many components, the economic returns are substantial. This reinforces the case for concessional and public finance to enable investments that deliver wide-reaching societal benefits. Although the structure of these interventions constrains opportunities for fully commercial returns, there remains scope for targeted private sector participation within specific components. Further details of the indicative EFA modelling are provided in Annex 3 (*Excel and EFA report*).

The case for concessionality – concessional interest rates, payment holidays and grants. Modelling results demonstrate that, under ADB's concessional lending terms, beneficiaries access financing on substantially more affordable terms than under commercial loan conditions. This results in notable improvements in key financial indicators, including NPV, IRR, and DSR. For Group A and Group B countries in particular, the inclusion of payment holidays and grants, that reduce loan principle amounts, significantly improves DSR and overall affordability.

In addition, the inclusion of a relatively high grant component ensures that early-stage project cash flows can be met before revenue streams begin to materialize. For natural capital projects, particularly those in the water sector, there is often a significant time lag before any cash inflows are realized, and even when they do occur, they are typically modest in the initial years. Grant financing therefore plays a critical role in bridging this gap, reducing initial financial pressures and enabling the timely implementation of interventions that deliver long-term economic and environmental benefits.

The case for concessionality – the 40-year time horizon. Large-scale grey and green infrastructure projects typically operate over long investment horizons, often spanning several decades, as benefits and impacts accrue gradually over the asset's lifespan. Such infrastructure, particularly in the water, road and power sectors, are generally a public good, delivering broad economic and social value that cannot be fully monetized. For example, the Resilient Amu Darya River Basin Program, is a comprehensive integrated river basin management approach. It has a loan a repayment horizon exceeding 30 years, reflecting both its scale and the time required to realize benefits. Also, for other water projects, tariffs are often set below cost-reflective levels to maintain affordability, limiting potential for full cost recovery. As such, concessional terms, including low interest rates and extended maturities of up to 40 years, and grants, are essential to ensure debt service obligations remain sustainable,

enabling governments to deliver climate-resilient infrastructure with significant economic benefits but limited direct financial returns. It includes deteriorated watersheds for example, which have much longer time horizons for regeneration of vegetation and soil stabilization.

Table 15. Estimated Losses in US$ million (2026-2041)

Country	Avoided cost of flooding	Avoided cost of poor water sanitation	Avoided cost of water associates agri losses	Avoided cost of water Loss and degradation	Losses
Armenia	-	-	-	911	911
Azerbaijan	244	-	-	-	244
Georgia	408	-	-	44	452
Kazakhstan	277	-	-	-	277
Kyrgystan	258	195	-	-	453
Pakistan	188	-	2 271	-	2 458
Tajikistan	300	-	-	-	300
Turkmenistan	-	-	42	-	42
Uzbekistan	-	-	-	4 104	4 104

Table 16. Overall EFA results

A. 1. Financial (Without Project)

Country	NPV (USD million)	IRR (%)	DSR
Kyrgyz Republic (Group A)	-85.5	2.71	1.74
Pakistan (Group B)	515.6	27.2	5.9
Azerbaijan (Group C)	-59.12	1.47	1.64

A. 2. Financial (With Project)

Country	NPV (USD million)	IRR (%)	DSR
Kyrgyz Republic (Group A)	89.34	21	7.58
Pakistan (Group B)	663.12	41	7.84
Azerbaijan (Group C)	-37.05	4	1.93

B. Economic

Country	NPV (USD million)	BCR	IRR (%)
Armenia	733.14	5.12	38
Azerbaijan	138.73	2.31	25
Georgia	288.25	2.76	27
Kazakhstan	102.44	1.59	15

Kyrgyz Republic	301.91	3.00	27
Tajikistan	157.72	2.11	19
Turkmenistan	30.34	3.53	29
Uzbekistan	3 666.98	9.39	49
Pakistan	2 143.87	7.81	46
Overall	3 966.91	3.67	14

Table 17. Concessionality

Lending Group	Commercial Interest rate	Concessional terms
Group A – Kyrgyz Republic	15.59%	1% (10-year payment holiday)
Group B – Pakistan	11%	2% (5-year payment holiday)
Group C - Azerbaijan	15.89%	5.29%

E. LOGICAL FRAMEWORK

*This section refers to the project/programme's logical framework in accordance with the **GCF's Integrated Results Management Framework** to which the project/programme contributes as a whole, including in respect of any co-financing.*

E.1. Project/Programme Focus

Please indicate whether this proposal is for a mitigation or adaptation project/programme. For cross-cutting proposals, select both.

☐ Reduced emissions (mitigation)

☒ Increased resilience (adaptation)

E.2. GCF Impact level: Paradigm shift potential (max 600 words, approximately 1-2 pages)

Assessment Dimension	Current state (baseline)		Potential target scenario (Description)	How the project/programme will contribute (Description)
	Description	Rating		
Scale	In CWA, vulnerable upstream and downstream communities across glacier-fed river basins are facing increasing risks from glacial melt, drought, and water scarcity. However, adaptation responses remain fragmented, underfunded, and insufficient to address these systemic climate threats. Climate finance does not sufficiently target glacial systems or regional water issues.	Low	Paradigm shift involves: (i) transitioning from fragmented and reactive projects to programmatic, integrated adaptation approaches; (ii) mainstreaming glacial and river basin adaptation into national and regional investment systems; and (iii) unlocking and scaling innovative finance models to support climate-resilient infrastructure, NbS, and livelihoods at scale.	G2F will mobilize over USD 3.25 billion through GCF and co-financing to implement 25 projects across 9 countries, benefiting over 5 million people. It will introduce Sustainability-linked or outcome bonds, ecosystem compensation schemes (water fund), and concessional loans, all embedded in a regional framework that supports water governance and scalable impact. The program's Glacier Finance Facility will serve as a long-term mechanism to multiply adaptation investments well beyond GCF's contribution.
Replicability	Climate adaptation investments in glacier-fed regions are often context-specific, uncoordinated, and limited by weak evidence, policy fragmentation, and lack of knowledge sharing. There is limited replication of successful models across regions or sectors.	Low	Paradigm shift involves: (i) transitioning from fragmented and reactive projects to programmatic, integrated adaptation approaches; (ii) mainstreaming glacial and river basin adaptation into national and regional investment systems; and (iii) unlocking and scaling innovative finance models to support climate-resilient infrastructure, NbS, and livelihoods at scale.	G2F will enable replication through its Knowledge Management & Exchange component (Component 4), linked to CAREC and other regional platforms. It will generate and disseminate evidence, tools, and guidance on climate-resilient agriculture, NbS, early warning, and basin planning, while promoting cross-country exchange and uptake through policy dialogues, regional learning events, and decision-support tools. The use of a programmatic approach and standardized investment criteria facilitates scalability.
Sustainability	Policies and decision-making in most countries do not systematically integrate glacial melt risks or transboundary climate adaptation. There is limited ownership or capacity at the local level to sustain investments or integrate climate information into long-term planning.	Low	Paradigm shift includes: (i) moving from localized interventions to systematic replication and scaling of adaptation models; (ii) establishing adaptive learning loops and (iii) mainstreaming regional knowledge to enable cross-sector and cross-country adoption of best practices.	G2F will enable institutional sustainability by integrating climate risks into upstream policy, river basin governance, and public investment planning (Component 1). It will build the capacities of local governments and communities to sustain interventions (e.g., climate-smart agriculture, infrastructure, social protection) and align operations and maintenance systems with climate resilience goals. The project will institutionalize transboundary data sharing and cooperation, while ensuring national systems take ownership of adaptation responses.

E.3. GCF Outcome level: Reduced emissions and increased resilience (IRMF core indicators 1-4, quantitative indicators)						
GCF Result Area	**IRMF Indicator**	**Means of Verification (MoV)**	**Baseline**	**Target**		**Assumptions / Note**
				Mid-term	**Final**[47]	
Total Number of Beneficiaries	N/A	Baseline and endline surveys; Program monitoring data	0	Total: 18,039,782 Direct: 5,445,346 Indirect: 12,594,436 Female: 7,215,913 Male: 10,823,869	Total: 45,099,454 Direct: 13,613,365 Indirect: 31,486,090 Female: 18,039,782 Male: 27,059,673	The baseline value is 0, to be consistent with GCF's IRMF guidelines.
ARA1 Most vulnerable people and communities	Core 2: Direct and indirect beneficiaries reached	Program surveys; National or sub-national statistics	0	Total: 18,035,750 Direct: 5,444,598 Indirect: 12,591,152 Female: 7,214,300 Male: 10,821,450	Total: 45,089,374 Direct: 13,611,495 Indirect: 31,477,880 Female: 18,035,750 Male: 27,053,625	The baseline value for this indicator is 0. This indicator counts the number of individuals supported by GCF-funded projects/program. This is aligned with GCF's IRMF guidelines. Baseline and endline surveys will be conducted to further refine the number of beneficiaries from projects with GCF-funding support. Baseline surveys will be done within 12 months after the start of program implementation and within the last 12 months of program implementation.
ARA1 Most vulnerable people and communities	Supplementary 2.1: Beneficiaries (female/male) adopting improved and/or new climate-resilient livelihood options	Program records and monitoring data; National statistics	*0*	Total: 3,903,240 Direct: 2,602,160 Indirect: 1,301,080 Female: 1,561,296 Male: 2,341,944	Total: 9,758,100 Direct: 6,505,400 Indirect: 3,252,700 Female: 3,903,240 Male: 5,854,860	The baseline value for this indicator is 0. This indicator counts the number of individuals supported by GCF-funded projects/program. This is aligned with GCF's IRMF guidelines.
ARA2 Health, well-being, food and water security	Supplementary 2.2: Beneficiaries (female/male) with improved food security	Food Insecurity Experience Scale (FIES) surveys; Program records/reports	0	Total: 3,903,240 Direct: 2,602,160 Indirect: 1,301,080 Female: 1,561,296 Male: 2,341,944	Total: 9,758,100 Direct: 6,505,400 Indirect: 3,252,700 Female: 3,903,240 Male: 5,854,860	The baseline value will be determined within 12 months through surveys (e.g., FIES) after the start of program/project implementation. This is aligned with the GCF's IRMF guidelines. An endline survey will be conducted within the last 12 months of program implementation. Assumption that all beneficiaries will have improved food security, especially as climate change will impact agricultural production.
ARA2 Health, well-being, food and water security	Supplementary 2.3: Beneficiaries (female/male) with more climate-resilient water security	Program surveys; Secondary data from national/sub-national surveys/statistics; Administrative data from water sector agencies or companies	0	Total: 17,637,600 Direct: 5,291,280 Indirect: 12,346,320	Total: 44,094,000 Direct: 13,228,200 Indirect: 30,865,800 Female: 17,637,600	The baseline value will be determined within 12 months through surveys (e.g., water security situation) after the start of program/project implementation.

[47] The final target means the target at the end of project/programme implementation period. However, for core indicator 1 (GHG emission reduction), please also provide the target value at the end of the total lifespan period which is defined as the maximum number of years over which the impacts of the investment are expected to be effective.

				Female: 7,055,040 Male: 10,582,560	Male: 26,456,400	This is aligned with the GCF's IRMF guidelines. An endline survey will be conducted within the last 12 months of program implementation.
ARA1 Most vulnerable people and communities	Supplementary 2.4: Beneficiaries (female/male) covered by new or improved early warning systems	Program monitoring data; National population statistics	0	Total: 5,380,455 Direct: 2,371,612 Indirect: 3,008,843 Female: 2,152,182 Male: 3,228,273	Total: 13,451,137 Direct: 5,929,030 Indirect: 7,522,107 Female: 5,380,455 Male: 8,070,682	The baseline value is 0 as this indicator counts the number of beneficiaries covered by either new or improved systems following GCF-funded activities/support. This is aligned with the GCF's IRMF guidelines.
ARA1 Most vulnerable people and communities	Supplementary 2.5: Beneficiaries (female/male) adopting innovations that stregthen climate change resilience	Program monitoring data; National population statistics	0	Total: 17,637,600 Direct: 5,291,280 Indirect: 12,346,320 Female: 7,055,040 Male: 10,582,560	Total: 44,094,000 Direct: 13,228,200 Indirect: 30,865,800 Female: 17,637,600 Male: 26,456,400	The baseline value is 0. This is aligned with GCF's IRMF guidelines.
ARA 1: Most vulnerable people and communities. ARA 2: Health, well-being, food and water security. ARA 3: Infrastructure and built environment.	Core indicator 3: Value of physical assets made more resilient to the effects of climate change (and/or more able to reduce GHG emissions)	For ex ante estimate values: feasibility studies, economic/financial analysis, technical needs assessment; For ex post results: actual cost incurred through program monitoring data or assessment studies	0	TBD	TBD	The baseline value is 0 as this indicator aggregates the USD value of the support incurred via GCF-funded projects/program during the implementation period. This is aligned with GCF's IRMF guidelines. Value of assets needs made more resilient needs to be assessed with further studies; studies in component 1 (climate investment plans in river basins) will also highlight economic benefits of more resilient infrastructure / agriculture systems. In the Central and West Asia region, climate change is expected to impose substantial economic damages in the coming decades. According to ADB analysis, cumulative GDP losses for developing Asia—including Central Asia—could reach up to 16.9 percent by 2070 under a high-end emissions scenario. https://www.adb.org/sites/default/files/publication/1040876/ewp-771-economic-costs-climate-change-inaction.pdf
ARA 1: Most vulnerable people and communities. ARA 2: Health, well-being, food and water security. ARA 3: Infrastructure and built environment.	Supplementary indicator 3.1: Change in expected losses of economic assets due to the impact of extreme climate-related disasters in the geographic area of the GCF intervention	Historical data on economic losses and on replacement/ reconstruction costs during previous disasters of the same type; Cost-benefit analysis; Actual measured impact on changes in economic losses of similar interventions	7% (2015)	5%	3%	The baseline value is based on the historical data on direct economic losses from disasters, as this indicator relates to the reduction of risks from disasters. This is aligned with the GCF's IRMF guidelines
ARA4 Ecosystems and ecosystem services	Core 4: Hectares of natural resources brought under improved	Program-level monitoring data; National/regional GIS data	0	8,097,930 hectares	26,993,100 hectares	The baseline value is 0 as this indicator aggregates the natural resource areas supported by GCF-

	low-emission and/or climate-resilient management practice					funded interventions during the implementation period. Tfhe "Hectares of Ecosystem Conserved, Restored or Managed" refers to the total area (measured in hectares) of terrestrial or freshwater ecosystems where climate-resilient, sustainable, and/or low-emission management practices have been implemented. These actions contribute to climate adaptation, mitigation, and the long-term provision of ecosystem services.
ARA4 Ecosystems and ecosystem services	Supplementary 4.1: Hectares of terrestrial forest, terrestrial non-forest, freshwater and coastal marine areas brought under resoration and/or improved ecosystems	Program-level monitoring data; National/regional GIS data; River Basin Management Plans; Other specific or jurisdictional management plans (e.g., subnational or community-based initiatives)	0	8,097,930 hectares	26,993,100 hectares	The baseline value is 0 as this indicator aggregates the natural resource areas supported by GCF-funded interventions during the implementation period. Management plans will be disaggregated separately to avoid double-counting of hectares covered.

E.4. GCF Outcome level: Enabling environment (IRMF core indicators 5-8 as applicable)					
Core Indicator	**Baseline context (description)**	**Rating for current state (baseline)**	**Target scenario (description)**	**How the project will contribute**	**Coverage**
Core Indicator 5: Degree to which GCF investments contribute to strengthening institutional and regulatory frameworks for low emission climate-resilient development pathways in a country-driven manner	Many countries lack adequate legal, regulatory, and policy frameworks to support low-emission, climate-resilient development pathways, and often face significant financial and human resource constraints in implementing such frameworks. While efforts are underway to identify capacity gaps and provide climate-related training, coordination across government levels remains weak, and institutional responses are fragmented. Moreover, private sector actors and civil society organizations often lack the awareness, structures, and technical skills needed to meaningfully contribute to or hold others accountable for climate action.	low	Modernized and harmonized legal and institutional frameworks for climate-resilient river basin governance, promoting cross-border integration and coordination. Strengthened institutional capacity through training, tools, and systems for climate finance access and delivery, including ESG and green investment frameworks. Inclusive governance and participation of marginalized groups in climate planning, finance, and benefit-sharing mechanisms. Coordinated, cross-sectoral, and cross-country adaptation strategies supported by regional learning and monitoring platforms.	Two components of the program are dedicated to strengthening institutional and regulatory frameworks: Component 1: Climate Risk Planning and Investment Pipeline, and Component 4: Regional Knowledge Platform for Adaptive Learning and Climate Action.	Multi-countries
Core Indicator 6: Degree to which GCF investments contribute to technology deployment, dissemination, development or transfer and innovation	There is limited evidence that new technologies are being actively considered to address climate change, with innovation efforts constrained by insufficient financial resources and lack of institutional focus. Most public, private, and civil society organizations lack the skilled personnel and dedicated time to engage in innovation or knowledge transfer. Additionally, the absence of incentive mechanisms and dedicated capacities at the sectoral, local, or national levels severely hampers the promotion, dissemination, and adoption of climate-related innovations.	low	Integrated glacier-informed climate data systems into national planning and strengthen regional cooperation on data and early warnings. Strengthened systems embedding climate-smart agriculture and risk-informed land use planning in public programs. Developed technical capacity and policy support to scale climate-smart technologies across water, soil, and agriculture sectors.	Two program components are dedicated for this indicator: Component 2: G2F Innovation and Upscaling and Component 3: Inclusive Climate Finance and Agri-SME Platform.	Multi-countries
Core indicator 7: Degree to which GCF Investments contribute to market development/transformation at the sectoral, local, or national level	There is limited or no evidence of market assessments being conducted to identify future opportunities for low-emission, climate-resilient solutions. Current projects and programs are not contributing meaningfully to market development or transformation, nor are they incentivizing participation by reducing costs, risks, or other deployment barriers. As a result, demand for such climate-smart solutions remains minimal or non-existent in the targeted markets.	low	Aligned national and regional investment pipelines with climate resilience goals and develop multisectoral project portfolios. Inclusive financial access through targeted instruments, capacity-building, and digital financial inclusion initiatives. Institutionalized blended finance strategies and expand risk-sharing instruments such as guarantees and insurance products.	One program component is dedicated for this indicator: Component 3: Inclusive Climate Finance and Agri-SME Platform.	Multi-countries
Core indicator 8: Degree to which GCF investments contribute to effective knowledge generation and learning processes, and use of good practices, methodologies and standards	Projects and programmes lack routine systems for capturing and sharing lessons learned, resulting in weak MEL practices. There are no effective mechanisms for exchanging good practices or methodologies across initiatives, leading to knowledge being siloed and underutilized. Consequently, there is no evidence that learning is being used to improve methodologies, inform standards, or adapt project direction over time.	low	Created regional platforms for knowledge exchange, joint impact assessment, and adaptive learning. Coordinated, cross-sectoral, and cross-country adaptation strategies supported by regional learning and monitoring platforms.	One program component is dedicated mainly for this indicator: Component 4: Regional Knowledge Platform for Adaptive Learning and Climate Action. The key outputs include: (1) operationalization of the Regional Cooperation and Knowledge Hub, (2) establishment of the Regional Glacier Community if Practice, and (3) creation of adaptive monitoring, evaluation, and learning systems.	Multi-countries

E.5. Project/programme specific indicators (project outcomes and outputs)						
Project/programme results (outcomes/ outputs)	**Project/programme specific Indicator**	**Means of Verification (MoV)**	**Baseline**	**Target**		**Assumptions / Note**
				Mid-term	**Final**	
Outcome 1.1: Climate risk integrated into planning and governance	Number of national adaptation plans with integrated information on glacier, snowmelt, and climate risk	National adaptation plans (updated)	0	5	9	The targets refer to the number of updated NAPs, with integrated climate risks information. The midterm and final targets are the same because all NAPs are expected to be updated before the midterm implementation of the program. Assumption: Policy and institutional commitment to integrate climate risk continues.
Output 1.1.1 Climate risk integrated into national and sectoral planning	Number of climate-informed public investment frameworks developed	National/sub-national investment plans	0	5	9	Investment frameworks will focus on regional river basins, initially focusing on four river basins which cover the nine countries; these will be disaggregated by country but also used for regional investments.
Outcome 1.2. Public and private investment in adaptation scaled up	Number of bankable and science-based project pipelines developed	Project/concept proposals	0	20	20	The program only supports proposal development for this indicator, given that not every proposal will be approved, subject to the eligibility criteria and budget availability. Thus, project proposals are the expected MOV for this indicator. Assumption: Stakeholders provide timely input and validation for proposal development.
Output 1.2.1 Bankable, Science-Based Project Pipelines Developed	Number of government personnel trained and demonstrated knowledge and skills in proposal development	Training reports; Attendance sheets; Post-evaluation surveys/tracer studies	0	Total: 1,080[48] Direct: 360 Indirect: 720 Female: 432 Male: 648	Total: 2,700 Direct: 900 Indirect: 1,800 Female: 1,080 Male: 1,620	The government personnel refer to staff from the ministry of finance, hydrometeorology agencies, and other relevant line ministries, that are trained on funding proposal development, management of dynamic pipelines, and project performance.
Output 1.2.2 Innovative Finance Mechanisms Designed	Number of innovative finance mechanisms designed	Finance [49]mechanism documentation	0	3	5	The innovative finance mechanisms refer to at least the following: Payment for Ecosystem Services, disaster risk financing instruments, or outcome-linked bonds. The Program intends to support the design development of these mechanisms, hence the MOV on documentations were indicated.

[48] The proposal development training will be provided to 20 participants from each country, including representatives from the Ministry of Finance, Hydromet agencies, relevant line ministries, and civil society organizations, and expanded to include further participants.

[49] The types of innovative finance mechanisms are outlined in the Funding Proposal (FP) and Annex 2.0. These may include water governance mechanisms such as Payment for Ecosystem Services (PES), disaster risk financing instruments, or outcome-linked bonds. These options will be further explored and refined during the implementation phase.

Outcome 2.1. Early warning systems and climate services expanded	Percentage of at-risk population covered by multi-hazard early warning systems (disaggregated by gender and location) by Year 10	Government disaster risk management reports, EWS audit reports, population exposure mapping	0%	40% (5,380,185)	100% (13,450,462)	EWS infrastructure is in place and operational across vulnerable areas.
	Percentage of reduction in disaster-related (GLOFs, floods, droughts, and heatwaves) mortality per 100,000 people in project areas by Year 10[50]	Post-disaster assessments, health department mortality data	0%	5%	15%	The baseline value is 0% as this indicator accounts the reduction of mortality in project areas after during and after its implementation. Assumption: Hazard events are comparable and interventions reach the most vulnerable groups
	Percentage of reduction in economic losses (USD) per disaster event in project areas by Year 10	Disaster loss databases, damage assessment reports, insurance claim records	7% (2015)	5%	3%	Protective infrastructure and preparedness measures are in place and effective.
Output 2.1.1 Impact-Based Early Warning Systems Developed and Operationalized	Number of multi-hazard, impact-based EWS designed and deployed for GLOFs, floods, droughts, and heatwaves at national and basin levels by Year 2[51]	System design documents, deployment reports, hazard coverage maps	0	3	3	Technical expertise and climate risk data are available for design and modeling. The target is based on, at least, the number of projects in the pipeline. Baseline and end-line surveys will be conducted to determine the contribution of program's interventions in building resilience and avoiding losses from GLOFs.
	Community-based initiatives to build resilience of women and girls to external shocks implemented (number)	Project reports; Activity documentation; Attendance sheets; Post-evaluation surveys/tracer studies	0	10	30	The community-based initiatives include the following: (i) regular (and not just one-off) meetings; (ii) community-wide campaigns, dialogues, and actions; (iii) creating and disseminating information, including education and communication materials; (iv) capacity-building activities; and (v) other relevant initiatives as set out in the DMF and/or GAP.
	Number of local actors and responders trained and applied acquired skills on EWS operation, maintenance, and community engagement by Year 2	Training attendance sheets, post-training assessments, maintenance logs	0	Total: 270 Direct: 90 Indirect: 180 Female: 108 Male: 162	Total: 675 Direct: 225 Indirect: 450 Female: 270 Male: 405	The local actors and responders refer to those who are trained on EWS operation, maintenance, and community engagement. Assumption: Training is adapted to local context and includes gender-responsive approaches
Outcome 2.2 Efficient and sustainable water resource management	Number of people protected from flooding and drought due to nature-based	Project monitoring data, national and/or subnational statistics	0	Total: 17,637,600 Direct: 5,291,280	Total: 44,094,000 Direct: 13,228,200 Indirect: 30,865,800	The target is based on the estimated direct number of beneficiaries

[50] The economic value of preventing Glacial Lake Outburst Floods (GLOFs) is significant, encompassing avoided damages to infrastructure, reductions in agricultural losses, and the protection of livelihoods and local economies, including tourism. In addition to minimizing physical and economic disruption, GLOF prevention reduces emergency response and recovery costs and contributes to long-term economic stability by promoting confidence and investment in risk-prone regions. Structural measures—such as controlled glacial lake drainage and early warning systems—have demonstrated high cost-benefit ratios, often ranging from 1:4 to 1:10, depending on the specific context (UNDRR, 2020; World Bank, 2019). Moreover, these interventions help safeguard vital ecosystem services, including water resources, soil integrity, and biodiversity (WWF, 2016). By reducing disaster-related volatility, GLOF mitigation supports more resilient and sustainable development pathways at both local and national levels.

[51] Annex 2.0 presents the capacity needs assessment for Early Warning System (EWS) interventions. These interventions will be applied at the river basin level while also strengthening national and local systems. EWS may be cross-sectoral in nature to address specific types of disasters—such as glacial lake outburst floods or agricultural droughts—tailored to the risks relevant to each context.

	solutions or infrastructure interventions			Indirect: 12,346,320 Female: 7,055,040 Male: 10,582,560	Female: 17,637,600 Male: 26,456,400	
Output 2.2.1 Watershed and Climate-Resilient Landscape Restoration Implemented	Number of integrated river basin plans developed and adopted with upstream–downstream coordination mechanisms by Year 5	Planning documents, river basin authority records, stakeholder agreements	N/A	4	4	Water data systems and inter-agency collaboration platforms are functional. The target is based on the number of covered river basins.
	Number of watershed investment projects designed with institutional structures and funding arrangements aligned to public investment frameworks by Year 8	Program design documents, institutional MOUs, financial structuring reports	0	5	10	Stakeholder institutions engage actively and data from vulnerability mapping is accessible. The target is based on, at least, the number of estimated projects in the pipeline that will be funded under this indicator.
	Total area (ha) of degraded land restored through afforestation, rangeland regeneration, or wetland restoration in priority catchments by Year 8	Field monitoring reports, remote sensing data, vegetation baseline comparisons	0	13,496,550	26,993,100	Community participation and land tenure security enable restoration activities. The target is based on the estimated total area (ha) of land to be sustainably managed.
	Number of small-scale irrigation and water infrastructure systems rehabilitated or constructed in climate-sensitive areas by Year 8	Infrastructure audit reports, irrigation network maps, construction records	0	2	5	Technical specifications align with seasonal forecasts and community needs. The target is based on, at least, the number of estimated irrigation and water infrastructure systems projects in the pipeline.
Outcome 2.3 Resilience of farmers to climate shocks enhanced	Percentage of target households reporting year-round access to sufficient food by Year 10	Household food security surveys using FCS or HFIAS	Level to be assessed in more detail[52]	25%	50%	Baseline assessment will be conducted within 12 months after the start of project implementation to determine the baseline value. An endline assessment will be conducted within the last 12 months of project implementation. Assumption: Food security data is reliably collected at household level
	Percentage of reduction in post-harvest losses (by	Post-harvest storage and transportation records, field inspections	Level to be assessed in more detail	10%	20%	Baseline assessment will be conducted within 12 months after the start of project implementation to determine the baseline

[52] *Detailed data is not yet available, and also should recognize that different indices may differ, data should be approved and endorsed by host countries.* In Central Asia and the Southern Caucasus, food insecurity is generally moderate to low at the regional level. However, undernourishment and limited access to affordable, healthy diets remain more prevalent in rural and economically disadvantaged communities. Structural challenges, such as limited food system infrastructure and exposure to climate variability, contribute to localized food insecurity in parts of the region. While overall hunger levels are not classified as acute, disparities in access persist and require targeted policy interventions. In Pakistan, acute food insecurity continues to pose a serious challenge, particularly in areas affected by climate-related shocks such as floods and droughts. Recent assessments show that nearly one-third of the population in surveyed districts is facing Crisis (IPC Phase 3) or Emergency (IPC Phase 4) levels of food insecurity, especially during lean seasons or following extreme weather events. Vulnerable rural populations, including are disproportionately affected.

	volume) for priority crops in target areas by Year 10		(See footnote)[53]			value. An endline assessment will be conducted within the last 12 months of project implementation. Assumption: Farmers adopt improved post-harvest handling practices
Output 2.3.1 Climate-Smart Agriculture and Agriculture Systems Strengthened	Percentage of farmers adopting at least two climate-resilient agricultural practices in target areas by Year 10	Farmer surveys, agricultural extension records, training attendance logs	0%	50%	70%	Extension services are accessible and climate-resilient practices are culturally acceptable. The target is based on the number of estimated farmers (part of direct beneficiaries) from applicable countries with projects in the pipeline.
	Area (ha) of agricultural land under improved climate-resilient management practices by Year 10	Remote sensing/GIS data, agricultural land use surveys	0	125,000	250,000	Land registration or mapping mechanisms exist and are updated.
Outcome 2.4. Inclusive adaptation and social protection systems	Percentage of women, youth, elderly, and persons with disabilities in target areas enrolled in climate-responsive safety net projects by Year 10	Program enrollment records, social protection database, disaggregated beneficiary lists	0%	40%	40%	Baseline and endline surveys will be conducted within the first and last 12 months of project implementation to support the determination of absolute targets for this indicator. Assumption: Programs are accessible, inclusive, and target marginalized groups effectively.
Output 2.4.1 Climate-Responsive Social Protection and Health Systems Piloted	Percentage of population segments (women, youth, elderly, disabled) receiving targeted health services or advisories during climate-related events by Year 10	Health service delivery records, outreach campaign data, mobile health reports	0%	30%	60%	Baseline and endline surveys will be conducted within the first and last 12 months of project implementation to support the determination of absolute targets for this indicator. Assumption: Health systems integrate climate information and reach marginalized groups effectively.
	Percentage of health facilities in target areas with climate-adaptive infrastructure and	Facility assessments, government health infrastructure reports, checklists	0%	40%	80%	Baseline and endline surveys will be conducted within the first and last 12 months of project implementation to support the determination of absolute targets for this indicator.

[53] In Central Asia, overall food loss rates are estimated at approximately 30–35%, primarily due to inefficiencies in harvesting, storage, transportation, and market access. These losses are further amplified by climate-related shocks, such as droughts, extreme heat, and irregular rainfall patterns. However, the Food and Agriculture Organization (FAO) has not yet disaggregated data to quantify the specific share of food loss directly attributable to climate change in the region. In Pakistan, the impact of climate change on food systems is more directly evident. The 2022 super floods, intensified by glacial melt and extreme monsoon events, led to the destruction of up to 50% of the Kharif season crops, causing widespread food shortages and economic disruption. Projections indicate that climate-induced stress may reduce the yields of staple crops like wheat and rice by up to 7% by 2040, further aggravating food insecurity if effective food loss prevention measures are not adopted. There is a need for climate-smart post-harvest infrastructure, such as resilient storage and cooling systems, and to promote behavioral and systemic changes across food supply chains. These interventions are essential to mitigate food losses and enhance resilience to climate change in the G2F region.

	emergency preparedness protocols by Year 10					Assumption: Investments in health infrastructure are prioritized and protocols are updated regularly
Outcome 3.1. Increased access to finance for agricultural SMEs	Percentage of trained agri-MSMEs and smallholders accessing green financial products by Year 7	Loan/insurance disbursement records, client databases, project reports	0%	30%	30%	Baseline and endline surveys will be conducted within the first and last 12 months of project implementation to support the determination of absolute targets for this indicator. Assumption: Products are designed to be affordable and accessible to target populations
Output 3.1.1 Enhanced Institutional Capacity Building for Financial Institutions	Number of staff from commercial banks, DFIs, and regulators trained and applied knowledge on ESG, climate risk assessment, and green taxonomies by Year 5	Training attendance records, pre/post training assessments, training completion certificates	0	36	90	Assumption: Relevant institutions nominate staff and training is delivered as scheduled
	Number of gender-responsive credit policies or inclusive loan products developed and adopted by Year 4	Policy documents, loan product brochures, bank internal approvals	0	5	10	The target is based on the minimum estimated number of development financial institutions with gender-responsive credit policies. Assumption: Recommendations from audits are adopted and operationalized.
Output 3.1.2 Improved Capacities of Agri-MSMEs and Farmer Groups to Access Finance	Number of farmer groups, cooperatives, and rural enterprises participated in and applied skills obtained from financial literacy and climate finance workshops by Year 4	Workshop attendance sheets, registration logs, training reports	0	900	2,250	The current target values are based on the number of individual farmers from farmer groups, cooperative, or rural enterprises. Based on the selected countries with relevant projects in the ADB pipeline.
	Number of localized green finance guides/toolkits produced and disseminated (print, digital, radio) by Year 4	Published materials, distribution logs, media airtime reports	0	9	9	The target is based on at least 1 localized green finance toolkit per country. Assumption: Design and dissemination partners are in place and materials are linguistically accessible.
Output 3.1.3 Green Business Financing Products Established (Phase 2 – Years 3–7)	Number of blended finance models designed with partner banks incorporating concessional and commercial capital by Year 3	Model design documentation, bank partnership agreements, technical review reports	0	9	18	The target is based on at least 2 blended finance models designed per country, half of it expected to be achieved at the midpoint of program implementation. Assumption: Partner banks are willing to collaborate and regulatory environments allow blended structures.
	Percentage of risk-sharing tools (e.g., guarantees, first-loss capital) designed and utilized by financial partners by Year 3	Design documents, financial product guidelines, partner sign-off reports	0%	30%	30%	Assumption: Financial institutions are receptive to using risk mitigation mechanisms.
Outcome 4.1. Regional coordination and knowledge sharing strengthened	Online platform established and fully operational with multilingual access and climate finance tools by end of Year 2	Platform launch documentation, user access analytics, content uploads	N/A	Level 1	Level 3	A scale of measurement is devised to measure the extent of functionality and use of this platform as follows: Level 1 – Basic setup and limited use (technically functional and accessible; core

						contents uploaded; <=30% of target users registered and engaged); Level 2 – Active use and institutional uptake (regularly updated; >=50% of target users registered and engaged; features for interaction and collaboration; user support feedback loops in place; analytics for improvements); Level 3 – Embedded and adaptive (fully embedded in institutional knowledge and decision-making systems; >=70% of target users registered and engaged; integrated with other systems; user-generated content and feedback drive platform evolution; demonstrated impact on learning, innovation, or policy decisions).
Output 4.1.1 Regional Cooperation and Knowledge Hub Operationalized	Number of regional learning forums, peer exchanges, or research partnerships facilitated across G2F countries by Year 2	Event reports, participant lists, collaboration agreements	N/A	Forums: 6 Studies: 3	Forums: 16 Studies: 3	Political and logistical conditions allow regional coordination. The target currently refers to biannual knowledge exchange forums are conducted, starting Year 3. The program also targets at least 3 cross-country studies or regional assessments.
	Number of technical advisory panels convened and formal recommendations issued for policy scaling or innovation uptake by Year 10	Meeting minutes, published recommendations, policy briefs	N/A	1	3	Panel members are available and outputs are linked to decision-making channels. The target refers to the number of recommendations that will be provided by panels on Years 3, 6, and 9.
Output 4.1.2. RGCOP Established	RGCOP governance structure and Terms of Reference endorsed by all participating countries and regional institutions by end of Year 2	Signed ToR documents, meeting minutes, formal endorsements	N/A	1	1	Governments and partners agree on structure and principles of collaboration. The target refers to one RGCOP governance structure.
	Number of RGCOP technical subgroups established and operational (technical, finance, agri-water) by Year 3	Subgroup membership rosters, TORs, meeting logs	N/A	3	3	Member institutions assign active focal points. The target refers to the following subgroups: (1) technical, (2) finance, and (3) agri-water.
	Number of technical briefs or regional action roadmaps produced by RGCOP subgroups by Year 4	Brief publications, subgroup outputs, dissemination reports	N/A	2	6	Subgroups are resourced and supported to deliver outputs. The target refers to the number of regional action roadmaps which the RGCOP is expected to produce at least 1 updated document per year starting Year 4.
	Number of regional knowledge products and policy briefs disseminated through the G2F digital platform by Year 4	Digital platform analytics, publication logs, download statistics	N/A	4	14	Knowledge products are regularly curated and aligned with policy needs. The target refers to at least 2 knowledge products generated per year starting Year 4.
Output 4.1.3. Adaptive MEL Systems Deployed	G2F MIS is functional	User Guide, System documentation	N/A	Yes	Yes	The baseline is not applicable for this indicator. The midterm and final targets are the same, since it is expected to be fully functional at the start of program implementation.

Project/programme co-benefit indicators						
Co-benefit 1: Improved air and water quality, habitat conservation, and disaster risk reduction.	Percentage of intervention areas show reduced air pollution levels, improved water quality, and implemented habitat and DRR measures by Year 10	Program monitoring data; National/sub-national Air Quality Index Reports, Water Quality Testing reports	0%	25%	50%	The baseline value is 0%, as The intervention areas refer to the geographical locations covered by the applicable sector/type of projects with GCF-funding support (e.g., NbS, watershed management projects, etc.)
Co-benefit 2: Reduced GHG emissions	Percentage of reduction in baseline GHG emissions across targeted sectors	Program baseline and endline assessment/survey reports	TBD	5%	10%	The program will facilitate the conduct of baseline assessment to determine the baseline value for this indicator within 12 months after the start of project implementation. Currently, it is impossible to generate, as project pipelines are still subject to eligibility criteria assessment and budget availability. An endline assessment will be conducted within the last 12 months of project implementation.
Co-benefit 3: Improved local economy through better economic opportunities and poverty reduction.	Percentage of project-area households living below the national poverty line reporting increased monthly income attributable to improved economic opportunities generated by the program	National/sub-national household income and expenditure surveys	0%	10%	30%	The baseline value is 0% as this indicator only accounts the targeted poor households benefiting from improved economic opportunities brought by the program.

E.6. Project/programme activities and deliverables

Activities	**Description**	**Sub-activities**	**Deliverables**
1.1.1.1 Develop and institutionalize climate-informed public investment frameworks for relevant Host Countries.	These activities integrate climate risk—especially glacier-related impacts—into national and sectoral planning, focusing on four glacier-dependent basins to address water variability, infrastructure resilience, and upstream–downstream dynamics. It supports risk-informed investment planning and the development of adaptation projects and financing mechanisms, while also establishing the analytical foundations for monitoring and evaluation. Additionally, it advances regional integration through harmonized data, institutional frameworks, and coordinated platforms that enable cross-border planning and governance.	1.1.1.1.1 Conduct institutional and policy gap assessment for climate-informed public investments. 1.1.1.1.2 Integrate climate investment criteria into public investment planning and budgeting processes.	9 sector assessment/diagnostic studies
1.1.1.2 Support integration of glacier, snowmelt, and climate risk into National Adaptation Plans.		1.1.1.2.1 Provide technical inputs and policy recommendations for inclusion in NAPs.	
1.1.1.3 Apply scenario-based modeling tools for long-term fiscal, infrastructure, and land-use planning.		1.1.1.3.1 Develop and calibrate scenario-based models to assess climate impacts on fiscal, infrastructure, and land-use systems.	
1.2.1.1 Identify and prioritize adaptation project concepts across key sectors.	These activities provide technical assistance to help countries convert climate vulnerability and adaptation needs into science-based, fundable investment pipelines that incorporate cryosphere risks and align with international climate finance standards. Drawing on assessments from Annex 2 and frameworks from Output 1.1.1, it generates adaptation projects across key sectors and feeds directly into national and regional climate investment	1.2.1.1.1 Conduct multi-stakeholder consultations to identify sector-specific climate adaptation needs and opportunities	9 country/sector investment programs; 20 bankable project proposals
1.2.1.2 Prepare pre-feasibility and business case documents integrating climate and cryosphere risk data.		1.2.1.2.1 Compile and analyze climate and cryosphere risk data to inform project design. 1.2.1.2.2 Conduct climate risks assessments to include cryosphere analysis that will impact the proposed project.	

1.2.1.3 Train government agencies to develop and manage GCF-aligned project pipelines.	strategies to streamline access to GCF and ADB funding. These pipelines also link upstream assessments with tangible interventions in glacier-fed catchments, supported by robust screening for feasibility, climate additionality, and social safeguards.	1.2.1.3.1 Conduct targeted training workshops on GCF project cycle, investment criteria, and proposal development.	
1.2.2.1 Design and pilot Sustainability-linked or outcome bonds, climate-linked insurance, and resilience loans.	This activity develops innovative financing instruments—such as climate-linked insurance, PES, and debt-for-climate swaps—designed to de-risk adaptation and mobilize capital for nature-based and resilient infrastructure in glacier-dependent regions. Grounded in the investment frameworks from Outputs 1.1.1 and 1.2.1, it translates climate priorities into bankable solutions that attract funding from climate funds, investors, and domestic institutions. These tools also address market gaps in climate finance across CWA and support regional cooperation through knowledge sharing and replicable financial models.	1.2.2.1.1 Conduct feasibility studies and design innovative climate finance instruments tailored to regional risks. 1.2.2.1.2 Conduct gap analysis and readiness assessment on adoption of development criteria for sustainability-linked bonds. 1.2.2.1.3 Prepare criteria sustainability-linked bonds. 1.2.2.1.4 Assessment and inventory of asset databases for climate-linked insurance.	5 financing mechanism studies/assessments; 5 trainings PES, risk insurance, sustainability-linked bonds
2.1.1.1 Design and deploy multi-hazard, impact-based early warning systems for GLOFs, floods, droughts, and heatwaves.	These activities establish community-centered, interoperable early warning systems (EWS) for GLOFs, floods, droughts, and heatwaves, enabling proactive, impact-based responses across key sectors in glacier-fed basins and beyond. It addresses critical capacity gaps in modeling, coordination, and last-mile communication through system upgrades and targeted training for national and local actors. Linked to Outputs 1.1.1, 1.2.2, 2.4.1, and 4.1.3, the EWS integrates real-time data, triggers pre-arranged social protection and risk financing, and supports continuous learning and performance tracking.	2.1.1.1.1 Co-design early warning protocols and impact thresholds through hazard mapping, risk modeling, and community consultation. 2.1.1.1.2 Deploy early warning infrastructure and communication systems. 2.1.1.1.3 Train relevant institutions and communities.	3 EWS projects completed
2.1.1.2 Build integrated communication platforms linking meteorology, agriculture, and emergency services.		2.1.1.2.1 Design and develop a centralized digital platform for climate-risk data integration and dissemination.	
2.1.1.3 Operationalize last-mile communication in local languages.		2.1.1.3.1 Develop and localize risk communication content in accessible formats and local languages.	
2.1.1.4 Train local actors and community responders to operate and maintain EWS tools.		2.1.1.4.1 Establish local maintenance teams and simulate emergency response drills.	
2.1.1.5: Establish financing protocols linking EWS to pre-arranged social protection and ex-ante disaster risk financing.		2.1.1.5.1 Develop and compile standard operating procedures (SOPs) and financing protocols that operationalize the link between EWS and key sectors.	
2.2.1.1 Design and implement watershed investment programs.	These activities deliver a mix of nature-based and grey infrastructure solutions to restore glacier-fed watersheds, reduce climate risks, and strengthen ecosystem services supporting agriculture, water systems, and rural livelihoods. Guided by climate hazard and ecosystem vulnerability assessments, interventions are strategically targeted to address GLOFs, erosion, drought, and snowmelt in high-risk catchments. By tackling upstream and downstream vulnerabilities, it enhances flood mitigation, water regulation, and food security, while also supporting early warning systems, adaptive agriculture, climate finance, and basin-wide knowledge sharing.	2.2.1.1.1 Review and assess project designs. 2.2.1.1.2 Incorporate climate risks into project designs.	17 watershed investment programs designed, implemented, and completed
2.2.1.2 Implement afforestation, rangeland regeneration, and wetland restoration in priority catchments.		2.2.1.2.1 Conduct ecological and hydrological assessments to inform restoration planning.	
2.2.1.3 Develop nature-based flood protection.		2.2.1.3.1 Design and implement climate-resilient water infrastructure incorporating nature-based solutions.	
2.2.1.4 Strengthen community-based resource management systems.		2.2.1.4.1 Provide support to community-based resource management groups and governance structures.	
2.2.1.5 Institutionalize integrated river basin planning with upstream-downstream coordination.		2.2.1.5.1 Facilitate stakeholder mapping and coordination mechanisms between upstream and downstream users across sectors.	
2.3.1.1 Introduce water-efficient irrigation technologies (e.g., drip, solar pumps, micro-irrigation)	These activities boost the resilience and productivity of farming systems in glacier-fed basins through climate-smart technologies, sustainable practices,	2.3.1.1.1 Conduct demonstration pilots and field trials of water-efficient irrigation technologies.	5 climate-smart projects completed

2.3.1.2 Promote resilient seed systems, livestock systems, agroecological farming, and sustainable land use	and improved post-harvest infrastructure. It addresses key vulnerabilities and innovation gaps identified in Annex 2.0—particularly in water management, seed systems, and extension services—using solutions like solar irrigation, agroecology, and localized climate services. Informed by climate modeling and integrated with Components 1, 2, 3, and 4, it supports adaptation finance, food security, and digital advisory platforms.	2.3.1.2.1 Support the development and distribution of climate-resilient and locally adapted seed varieties through community seed banks and extension services.	
2.3.1.3 Provide localized agrometeorological advisories and seasonal forecast tools.		2.3.1.3.1 Develop and localize seasonal climate forecasts and agrometeorological advisories tailored to crop calendars and livelihood practices.	
2.3.1.4 Upgrade cold storage, drying, and processing infrastructure to reduce food loss		2.3.1.4.1 Rehabilitate or construct energy-efficient and climate-resilient cold storage, drying, and processing facilities.	
2.4.1.1 Design and pilot adaptive social safety nets triggered by EWS.	These activities pilot adaptive social protection and climate-informed health interventions to shield vulnerable glacier-fed communities from intensifying climate shocks like floods, droughts, and heatwaves. It strengthens institutional systems to link early warnings with rapid response mechanisms—such as cash transfers, food aid, and resilient health services—while addressing gaps in targeting, flexibility, and climate-sensitive care. By promoting livelihood diversification, coordinating across sectors, and supporting data-driven learning, it builds long-term resilience and enables inclusion in climate-resilient value chains.	2.4.1.1.1 Develop design parameters for adaptive social safety nets, including EWS-based triggers, eligibility criteria, and delivery modalities.	5 climate-responsive social protection and health-related projects completed
2.4.1.2 Mainstream climate risk in local health services.		2.4.1.2.1 Conduct climate-health vulnerability assessments and integrate findings into local health planning and service delivery.	
2.4.1.3 Expand vocational training and diversified livelihood options.		2.4.1.3.1 Deliver vocational training and enterprise development support tailored to youth, women, and vulnerable groups.	
2.4.1.4: Facilitate coordination between health, emergency situations (including climate emergency situations), and social welfare institutions		2.4.1.4.1 Establish inter-agency coordination mechanisms and protocols for integrated climate and disaster response planning.	
3.1.1.1 Conduct training on ESG standards, climate risk assessment, and green taxonomies.	These activities strengthen the technical, operational, and regulatory capacities of national and local financial institutions to deliver climate-aligned finance—particularly in agriculture, natural resource management, and nature-based solutions. According to Annex 2.0, most participating countries lack climate risk assessment capacity, green lending tools, and ESG integration in their financial systems. This limits the flow of capital to glacier-dependent and climate-sensitive sectors. G2F addresses these constraints by embedding international climate finance standards into institutions' operations and enabling long-term systemic transformation.	3.1.1.1.1 Develop training modules and materials on Environmental, Social and Governance (ESG) standards, climate risk assessment, and green finance taxonomies.	20 capacity-building sessions; 15 green taxonomy/ESG reports
3.1.1.2 Develop digital lending platforms and green finance screening tools.		3.1.1.2.1 Design and develop digital platforms to facilitate access to green and climate-resilient financial products.	
3.1.1.3 Policy support to strengthen national green finance classification and disclosure frameworks.		3.1.1.3.1 Conduct policy gap analysis and stakeholder consultations on existing green finance classification systems and disclosure standards.	
3.1.1.4 Integrate gender-responsive safeguards in lending systems.		3.1.1.4.1 Develop and institutionalize gender-responsive safeguard policies, procedures, and capacity-building modules within financial institutions.	
3.1.2.1 Capacity-building workshops for farmer groups, cooperatives, and rural enterprises.	These activities improve the financial literacy, investment readiness, and borrowing capacity of vulnerable farmer groups, cooperatives, and agri-MSMEs—especially in glacier-fed and climate-stressed areas. As noted in Annex 2.0, these actors are disproportionately excluded from formal finance due to low awareness, complex/strenuous application processes/requirements, and weak links to institutions. Output 3.1.2 provides the "last-mile" support needed to bridge this access gap.	3.1.2.1.1 Design training modules tailored to the needs of farmer groups, cooperatives, and rural enterprises on climate-smart agriculture, financial literacy, and market access.	20 capacity-building sessions
3.1.2.2 Develop accessible green finance guides and toolkits.		3.1.2.2.1 Co-develop user-friendly green finance guides and toolkits tailored to MSMEs, cooperatives, and rural enterprises.	
3.1.2.3 Create engagement platforms linking cooperatives, government financial institutions, and policy actors.		3.1.2.3.1 Facilitate the establishment of inclusive, multi-stakeholder engagement platforms for dialogue and collaboration on green and climate-resilient finance.	
3.1.3.1 Design of a blended finance model with partner banks.	These activities enable local and regional financial institutions to deploy green finance products tailored to climate-affected agricultural value chains. As detailed in Annex 2.0, a major barrier to financing climate-smart agriculture is the lack of risk-sharing mechanisms and affordable credit terms. Output 3.1.3 addresses this by co-	3.1.3.1.1 Co-design a blended finance structure with partner banks, combining concessional and commercial capital for climate-smart investments.	18 studies on innovative financing
3.1.3.2 Establish eligibility criteria and risk-sharing tools.		3.1.3.2.1 Develop eligibility criteria and screening guidelines for climate-smart projects and enterprises accessing blended finance.	

3.1.3.3 Provide tailored technical assistance and investment readiness support to MSMEs.	developing layered blended finance models, concessional loans, and guarantee schemes that align with climate investment priorities under Component 2.	3.1.3.3.1 Deliver customized technical assistance packages including business planning, financial literacy, ESG compliance, and climate risk integration.	
4.1.1.1 Establish online hub and data-sharing platforms.	These activities establish a regional platform for structured knowledge exchange, cross-border learning, and the replication of successful adaptation practices from G2F countries. Annex 2.0 identifies a lack of coordination and institutional continuity as key challenges limiting regional collaboration on climate adaptation—especially in glacier-fed basins where countries share hydrological risks and opportunities.	4.1.1.1.1 Design and develop an integrated online hub to host knowledge products, project data, and policy resources on climate action and green finance.	1 digital knowledge hub
4.1.1.2 Facilitate regional forums, peer-to-peer learning, and joint research partnerships.		4.1.1.2.1 Organize regional knowledge-sharing events and peer-learning exchanges among government agencies, research institutions, and private sector actors.	20 regional forums
4.1.1.3 Establish technical advisory panels for climate innovation.		4.1.1.3.1 Convene multi-disciplinary experts and institutional partners to form technical advisory panels on climate innovation and finance.	20 meetings
4.1.2.1 Establish the RGCOP coordination mechanism and Terms of Reference.	These activities create the Regional Glacier Community of Practice (RGCOP), an institutional mechanism to support multi-country engagement on climate adaptation. As described in Annex 2.0, the region lacks an enduring, inclusive platform to coordinate technical and policy responses to cryosphere-related risks.	4.1.2.1.1 Convene consultations with key regional stakeholders to co-design the structure, functions, and governance of RGCOP.	
4.1.2.2 Convene biannual RGCOP meetings across participating countries.		4.1.2.2.1 Organize and host biannual RGCOP meetings to review progress, share knowledge, and coordinate regional climate and green finance initiatives	
4.1.2.3 Operationalize subgroups on technical, finance, and agriculture-water policies		4.1.2.3.1 Establish structure, membership, and workplans for each RGCOP thematic subgroup through stakeholder consultations and expert nomination	9 protocols/policies on data-sharing
4.1.2.4 Develop and disseminate regional knowledge products and policy briefs.		4.1.2.4.1 Disseminate knowledge products to stakeholders through digital platforms, regional events, and institutional networks	
4.1.3.1 Conduct M&E Systems Analysis (MESA)	These activities implement a regionally harmonized Monitoring, Evaluation, and Learning (MEL) framework to ensure G2F implementation is adaptive, accountable, and evidence-based. The MEL framework will enable performance tracking for all G2F components and countries. Importantly, it will also support ADB's broader regional investment portfolio by aligning indicators, reporting formats, and data flows with ADB's corporate results framework. This ensures that G2F not only delivers its own results but also enhances regional monitoring capacity for follow-on investments.	4.1.3.1.1 Conduct assessment of the M&E enabling environment. 4.1.3.1.2 Conduct assessment of monitoring systems 4.1.3.1.3 Conduct assessment of evaluation systems	18 M&E systems analysis reports (1st within 12 months after the start of program implementation and 2nd within the last 12 months)
4.1.3.2 Develop a standardized compendium of forms and data-collection tools for outcome, output, and activity indicators.		4.1.3.2.1 Build on the existing data-collection tools and templates based on MESA results. 4.1.3.2.2 Harmonize data-collection tools to ensure coherence and consistency across projects 4.1.3.2.3 Consolidate and standardize data-collection tools into a compendium	1 compendium of forms
4.1.3.3 Develop a GMIS.		4.1.3.3.1 Conduct needs assessment and planning to understand user needs, data requirements, and workflows. 4.1.3.3.2 Develop system design to define data architecture, data follow and user roles, forms and reports, ensure alignment with reporting frameworks (e.g., GCF and ADB KPIs), and incorporate data validation, and user access controls. 4.1.3.3.3 Conduct pilot-testing and validation of the system to gather user feedback, fix bugs, and optimize system performance. 4.1.3.3.4 Conduct capacity building for administrators, data-entry users, and decision-makers, develop user manuals, SOPs, and training materials. 4.1.3.3.5. Conduct maintenance and continuous improvement to troubleshoot issues, update functionalities and indicators as needed, conduct periodic user refresher trainings, and evaluate MIS's effectiveness.	1 G2F Program Management Information System (MIS)

E.7. Monitoring, reporting and evaluation arrangements (max. 500 words, approximately 1 page)

Strategic Overview

Monitoring, Evaluation, and Learning is a foundational pillar of the G2F Program. It responds to a key challenge in climate adaptation across CWA: the fragmentation of projects, absence of long-term impact tracking, and limited cross-country learning. G2F Program addresses these gaps by embedding a structured and regionally coordinated MEL system into program design from the outset.
The MEL approach supports both compliance and innovation—ensuring accountability to the GCF and ADB, while enabling adaptive learning, reflection, and policy feedback. It facilitates continuous improvement and enhances the program's ability to respond to emerging climate risks and opportunities.

The MEL framework supports two core functions:

- **Ensuring compliance and accountability** with GCF and ADB reporting, evaluation, and safeguards requirements;
- **Fostering adaptive learning** to inform decision-making, enable regional collaboration, and promote effective climate resilience strategies in glacial basins and downstream communities.

Alignment with ADB and GCF Frameworks

The G2F MEL system is firmly grounded in ADB's institutional architecture and aligned with the best global practices:

- **ADB's Evaluation Policy** ensures independent, credible, and evidence-based evaluation of outcomes, impacts, and institutional effectiveness;
- **ADB's Corporate Results Framework** sets standards for tracking development effectiveness, including resilience, inclusivity, and cross-border cooperation;
- **ADB's Knowledge Management Action Plan (KMAP) 2021–2025** promotes the systematic use of knowledge to strengthen program design, implementation, and learning.

At the same time, G2F Program fully adheres to GCF's:

- **Integrated Results Management Framework (IRMF)**, including core adaptation indicators, paradigm shift potential, and enabling environment criteria;
- **Evaluation Policy**, which emphasizes learning, accountability, and the assessment of long-term transformation.

G2F Program's MEL structure is designed as a multi-level, participatory, and iterative system that reflects both institutions' shared commitment to impact, transparency, and continuous improvement.

ADB Knowledge and Impact Assessment Approach

ADB views knowledge as a strategic asset and a core driver of development effectiveness. Under Strategy 2030, knowledge is recognized as one of ADB's operational priorities, and the KMAP (2021–2025) provides a roadmap to operationalize this vision across the project cycle.

G2F applies the four pillars of ADB's knowledge approach throughout the program:

1. **Enhancing the Quality of Knowledge Products**
   G2F will generate practical, demand-driven knowledge products—such as field-based case studies, policy briefs, and learning synthesis papers—to support evidence-informed action and replication across the region.
2. **Improving the Management of Knowledge Assets**
   A digital knowledge repository will store lessons, implementation results, and community innovations, ensuring institutional memory and wider accessibility even after project completion.
3. **Strengthening Knowledge Partnerships**
   G2F will work with regional platforms (e.g., CAREC), academic institutions, and civil society to co-develop knowledge and promote peer-to-peer learning across participating countries.
4. **Promoting a Knowledge Culture**
   The program will invest in building the capacity of NDAs, executing entities, and local stakeholders in adaptive learning, results communication, and impact assessment. Annual regional learning events and country-level workshops will further embed a culture of inquiry and learning.

Monitoring and Evaluation Arrangements

The MEL system is structured across three levels:

- **Project Level:** EEs will conduct semi-annual reporting, monitor safeguards (ESMPs, IPPs, GAPs), and provide audited financial statements. This ensures systematic data collection on outputs and early outcomes.
- **Program Level:** ADB, as Accredited Entity, will submit Annual Performance Reports to GCF, aggregating progress across projects and assessing achievements against core indicators, gender and inclusion targets, and financial milestones.

- **Independent Oversight:** Mid-Term Reviews and Terminal Evaluations will be conducted by external experts to ensure objectivity. All evaluations will be publicly disclosed and include mechanisms for tracking follow-up actions.

Participatory monitoring will be institutionalized through annual stakeholder reviews, led by NDAs and involving local communities, civil society organizations, and marginalized groups.

G2F will also adopt evaluative monitoring—a hybrid approach that not only tracks implementation milestones but also captures learning on how resilience is built, what adaptation pathways succeed, and under what conditions.

Evaluation Schedule and Approach
G2F will undergo the following evaluations:

- **Mid-Term Review (Year 3–5):** To assess implementation status, identify emerging outcomes, and enable course correction.
- **Terminal Evaluations (end of project/program):** To evaluate strategic relevance, effectiveness, sustainability, and contributions to transformation using GCF's three-point paradigm shift and enabling environment rating scales.

All evaluations will be independent, methodologically rigorous, and structured to feed into both GCF reporting and ADB's organizational learning.

Baselines and Results Measurement
Each project will establish:

- **Quantitative baselines** for output and outcome indicators, disaggregated by gender, geography, and beneficiary group;
- **Qualitative baselines** to assess institutional readiness, enabling environment, and risk context;
- **Scorecards** based on GCF's IRMF to track progress toward enabling transformation at midterm and terminal stages.

This dual system of measurement ensures both tangible results and systemic change are monitored throughout the program lifecycle.

Knowledge Generation and Learning Systems
To support regional learning and replication, G2F will establish a dedicated Knowledge and Learning Workstream under Component 4. This includes:

- **Annual regional learning exchanges**, enabling dialogue among implementing partners, NDAs, and technical agencies;
- A **digital knowledge platform** that aggregates tools, innovations, and real-time learning across countries;
- **Synthesis reports and learning papers** that communicate lessons to GCF, ADB, and external audiences;
- Partnerships with CAREC and other platforms to share results and scale regional adaptation efforts.

A **Knowledge Management Strategy** will be finalized during inception to ensure learning is embedded in implementation and contributes to policy and institutional development at the national and regional levels.

MEL Governance and Capacity
A dedicated **G2F MEL Expert** will be embedded in the program secretariat and will:

- Oversee the design and implementation of MEL systems across countries and components;
- Ensure consistency in data collection, safeguards reporting, and results synthesis;
- Manage external evaluations and quality assurance;
- Facilitate learning loops and engagement between NDAs, EEs, and ADB teams.

The MEL Expert will work closely with ADB's evaluation and knowledge departments to ensure that findings are used to strengthen current operations and shape future climate programs. Annex 11 details a Monitoring and Evaluation Plan.

F. RISK ASSESSMENT AND MANAGEMENT

F.1. Risk factors and mitigations measures (max. 3 pages)

The G2F Program recognizes the diverse and multi-layered risks associated with delivering a regional, multi-country, and multi-sectoral climate adaptation program. These risks are grouped by category, described in terms of their likelihood and potential impact, and accompanied by appropriate mitigation strategies. Each risk is assessed in terms of its probability and impact. The mitigation measures are intended to reduce either the likelihood of the risk occurring or the severity of its consequences, in accordance with ADB's Risk Management Framework, Anticorruption Policy (2010, as amended), and the Environmental and Social Framework (2024). These policies guide due diligence, integrity, compliance, and environmental and social safeguards across all ADB-financed projects and programs.

Selected Risk Factor 1: Security and Geopolitical Risks: Regional Instability

Category	Probability	Impact
Governance	Low	Low

Description

Security and Geopolitical Risks: Regional Instability: National, regional or broader geopolitical instability could disrupt implementation or limit cooperation between countries. Regional instability is largely outside the control or influence of the G2F Program and cannot be directly mitigated through project activities alone. Such risks may arise due to diplomatic breakdowns, national elections, armed conflicts, or broader geopolitical shifts that prevent effective delivery or regional collaboration. Though there are some political tensions in the region, the World Bank's FY25 List of Fragile and Conflict-Affected Situations (FCS[54]) which identifies countries experiencing significant challenges due to conflict, institutional fragility, or both, does not identify any countries within the G2F Program. None if the countries are classified in the World Bank's Fragile and Conflict-Affected Situations (FCS). ADB does not define any of the countries (as identified in the World Bank list), as being Fragile States or Conflict Regions. ADB has policies and procedures in place to manage operations in conflict areas should this situation change, aligned with ADB's Fragile and Conflict-Affected Situations and Small Island Developing States Approach and Operational Procurement Guidelines.

Reference: https://thedocs.worldbank.org/en/doc/608a53dd83f21ef6712b5dfef050b00b-0090082023/original/FCSListFY24-final.pdf

Mitigation Measure(s)

G2F will leverage ADB's neutral and trusted Central Asia Regional Economic Cooperation (CAREC) platform to maintain regional dialogue and facilitate cooperation even amid geopolitical challenges. 55 Flexible programming and adaptive management approaches will allow for dynamic reprioritization of activities and reallocation of resources if needed. While these measures cannot eliminate the underlying cause of instability, they can reduce the risk of program disruption and ensure continuity where possible. As such, these mitigation efforts lower the probability of impact by enabling responsive adjustments and safeguarding essential activities from broader political shocks

If geopolitical tensions remain high, for example in South Asia (which could impact on activities in Pakistan), ADB will discuss mitigation measures with ADB Senior Management and Resident Mission. It is noted that this is an unprecedented situation and at time of writing 11th May 2025 the geopolitical situation is evolving.

Selected Risk Factor 2: Money laundering, terrorist financing and prohibited practices

Category	Probability	Impact
Prohibited practices	Low	Low

Description

Money laundering, terrorist financing and prohibited practices: Risks related to use of GCF finance for money laundering, terrorist financing and prohibited practices

[54] https://thedocs.worldbank.org/en/doc/b3c737c4687db176ec98f5c434d0de91-0090082024/original/FCSListFY25.pdf

55 CAREC, conceptualized in 2001 is a partnership of 11 countries and development partners working together to promote development through cooperation, leading to accelerated economic growth and poverty reduction

Mitigation Measure(s)
GCF financing will be provided as loans and/or grants to sovereign entities. As GCF funds will be provided alongside co-financing from ADB, ADB anticorruption and integrity policies and required due diligence will apply at project level, which will mitigate this risk. ADB conducts integrity due diligence (IDD) on nongovernment counterparts or recipients of ADB financing, to assess any previous involvement in integrity-related or money-laundering issues. In addition, ADB conducts proactive integrity reviews on ongoing sovereign projects to mitigate integrity risks. ADB's Office of Anticorruption and Integrity (OAI) through its Due Diligence Unit, is tasked to (i) advance awareness of ADB's anticorruption and AML/CFT policies in collaboration with other departments; (ii) act as focal point for and provide independent advice to Management and concerned departments on significant integrity or money laundering or financing of terrorism (ML/FT) concerns, including investigations as required to facilitate ADB's ability to assess significant integrity or ML/FT concerns; and (iii) provide oversight and guidance to concerned departments on integrity and ML/FT risks, including AML/CFT internal controls, and integrity due diligence, which encompasses ML/FT checks. Furthermore, all projects must comply with ADB's Anticorruption Policy (1998, as amended to date) and acknowledge that ADB reserves the right to investigate directly, or through its agents, any alleged corrupt, fraudulent, collusive or coercive practice relating to the projects; and recipients of the grant/loan shall cooperate with any such investigation and extend all necessary assistance for satisfactory completion of such investigation. In terms of financial management assessment, in accordance with ADB's Charter, all projects must take necessary measures to ensure that the proceeds of any loan made, guaranteed or participated in by ADB are used only for the purposes for which the loan was granted and with due attention to considerations of economy and efficiency. Accordingly, ADB undertakes financial due diligence and financial management assessment (FMA) of the executing agency and/or implementing agency of ADB-funded projects. The FMA is a review of the entity's systems, to assess gaps and mitigation measures for financial and management accounting, reporting, auditing, and internal controls. It also involves an assessment of the entity's disbursement and cash flow management arrangements, and governance and anticorruption measures. ADB defines "executing agency" as the agency with overall responsibility and oversight for the carrying out of a loan, grant or a TA-grant funded project, and it will be specifically identified in the financing agreement for the project. A project may also include one or more "implementing agencies", which are governmental or other bodies responsible for implementing specific activities under a project. The proceeds for projects under the program will be disbursed in accordance with ADB's Loan Disbursement Handbook (2017, as amended from time to time), which sets out detailed parameters and procedures for the release of funds to the borrower. Public disclosure of the audited project's financial statements, including the auditor's opinion on the project financial statements, will be guided by ADB's Access to Information Policy. ADB's OAI serves as the initial point of contact for all allegations of integrity violations in projects and other activities of ADB. Allegations are independently and objectively assessed and, where necessary, investigated pursuant to ADB's Anticorruption Policy. OAI registers and reviews all complaints to determine whether they require further investigation. This information is accessible to ADB Management and staff. It may be shared outside ADB with appropriate permission. Witness Protection, ADB protects, to the extent possible, the identities of whistleblowers and witnesses acting in good faith, to ensure they are not subjected to retaliation. Pursuant to ADB's procurement rules, individuals and entities listed in the United Nations Security Council (UNSC) sanctions list will not be eligible to participate in, or to be awarded, a contract financed under the CRPP. ADB also screens implementing agencies and payees against the UNSC sanctions list and undertakes the necessary risk assessment and management. Moreover, none of the ADB's project activities will be undertaken in any jurisdiction which is subject to UNSC sanctions.

Selected Risk Factor 3: Prohibited Activities		
Category	**Probability**	**Impact**
Prohibited practices	Low	Low

Description
Prohibited Activities: Certain activities are strictly prohibited from being financed by ADB or the GCF, as defined in ADB's Environmental and Social Framework (2024) and its Prohibited Investment Activities List (PIAL). These include activities involving child labor or forced labor, trade in endangered species, conversion or degradation of critical natural habitats, and production or trade in harmful or banned substances.
Mitigation Measure(s)
G2F will conduct rigorous environmental and social due diligence as per the new ESF guidelines. Screening tools and safeguards will be applied to exclude any activities falling under the PIAL. Project activities will be pre-assessed for compliance, and appropriate exclusion clauses will be embedded in financing agreements and procurement documents. Monitoring will be ongoing, with independent oversight to ensure alignment with ADB's and GCF's environmental, social, and ethical standards. List of Prohibited Activities – See Annex 6, or ADB ESF.

Selected Risk Factor 4: Data Limitations and Limited Adoption of Technology		
Category	**Probability**	**Impact**

Technical and operational	Low	Medium
Description		
Data Limitations and Limited Adoption of Technology: A key technical risk is the limited availability and reliability of glacier and hydrological data, which may undermine the quality of climate modelling and planning. A second risk involves limited uptake of climate-resilient technologies, such as early warning systems, efficient irrigation infrastructure, and climate-smart agriculture (CSA) practices.		
Mitigation Measure(s)		
G2F will establish a regional glaciology and hydrology observatory, invest in interoperable monitoring systems, and collaborate with scientific institutions to improve data accuracy and accessibility. It will also pilot regionally appropriate technologies, scale up proven solutions, enhance knowledge transfer through South–South cooperation, and strengthen national extension services. These actions are expected to lower the risk probability from low to very low and are aligned with ADB's Climate Risk Management Framework and Operational Plan for Integrated Disaster Risk Management (2021–2030).		
Selected Risk Factor 5: Delivery Challenges in Remote Areas		
Category	**Probability**	**Impact**
Technical and operational	Low	Medium
Description		
Delivery Challenges in Remote Areas: Delivery delays may arise due to the geographic inaccessibility and logistical challenges of working in mountainous regions. There is also the potential for disruptions in the supply chain for key agricultural inputs and equipment.		
Mitigation Measure(s)		
G2F will implement decentralized delivery mechanisms, engage local partners, and use phased roll-out strategies. It will develop regional procurement systems and support local manufacturing and input supply chains to reduce dependency and enhance delivery reliability. These measures align with ADB's Fragile and Conflict-Affected Situations and Small Island Developing States Approach and Operational Procurement Guidelines.		
Selected Risk Factor 6: Access to Capital and Co-Financing		
Category	**Probability**	**Impact**
Credit	Low	Medium
Description		
Access to Capital and Co-Financing: Local financial institutions may lack the capacity or willingness to support adaptation-focused SMEs. Additionally, delays in disbursement of co-financing or counterpart contributions could hinder implementation.		
Mitigation Measure(s)		
G2F will provide concessional finance, de-risking instruments, and technical assistance to local banks to help them build adaptation finance pipelines. Co-financing commitments will be formalized during proposal development, and implementation plans will include contingency buffers and phased approaches to accommodate timing issues. These steps are guided by ADB's Public Financial Management Roadmap, Financial Sector Development Strategy, and Private Sector Operations Guidelines.		
Selected Risk Factor 7: Currency Volatility		
Category	**Probability**	**Impact**
Forex	Low	Medium
Description		
Currency Volatility: Currency fluctuations could impact SME borrowing capacity or increase repayment burdens where finance is denominated in foreign currency.		

Mitigation Measure(s)		
G2F will explore currency hedging instruments, build contingency buffers into financial models, and coordinate with partner institutions to reduce exposure to forex risks. These actions are designed in accordance with ADB's Financial Management and Analysis of Projects Guidelines and Sovereign Risk Assessment Framework.		
Selected Risk Factor 8: Institutional Fragmentation		
Category	**Probability**	**Impact**
Governance	Low	Medium
Description		
Institutional Fragmentation: Fragmented institutional mandates and limited coordination between ministries may result in slow or inconsistent program implementation.		
Mitigation Measure(s)		
Targeted institutional capacity building under Component 1 will strengthen inter-ministerial coordination.		
Selected Risk Factor 9: Delays in National Approvals		
Category	**Probability**	**Impact**
Legal	Low	Medium
Description		
Delays in National Approvals: Delays in obtaining approvals or alignment with national legal frameworks could impede implementation.		
Mitigation Measure(s)		
G2F will engage early with national legal authorities and integrate activities with national plans and existing legal frameworks to ensure alignment and streamline approvals. These efforts are consistent with ADB's Country Partnership Strategy Guidelines, Safeguard Policy Statement (2009), and Legal and Regulatory Diagnostic Tools.		
Selected Risk Factor 10: Engaging with Sanctioned Entities		
Category	**Probability**	**Impact**
Sanctions	Low	Low
Description		
Engaging with Sanctioned Entities: The risk of inadvertently engaging sanctioned jurisdictions or non-compliant partners.		
Mitigation Measure(s)		
G2F will adhere strictly to ADB's Anticorruption Policy. All participating institutions and partners will be screened under ADB and GCF compliance frameworks. These safeguards are expected to keep the risk at a very low level and ensure full alignment with ADB's Integrity Principles and Guidelines, as well as the Office of Anticorruption and Integrity (OAI) procedures.		
Selected Risk Factor 11: Limited Capacity of Executing Entities		
Category	**Probability**	**Impact**
Technical and operational	Low	Medium
Description		
Limited Capacity of Executing Entities: In some countries, the designated executing entities may have insufficient institutional capacity or lack the systems and resources required to manage complex, multi-sectoral climate adaptation programs. This can lead to delays, reduced quality of implementation, or failure to comply with fiduciary and safeguard requirements.		

Mitigation Measure(s)
G2F will conduct early capacity assessments of executing and implementing partners. Where capacity gaps are identified, the program will include tailored technical assistance, on-the-job training, and ongoing performance monitoring. Support will focus on financial management, procurement, safeguards compliance, and adaptive management. These measures are aligned with ADB's Capacity Development Framework and aim to lower implementation risk by strengthening institutional effectiveness and readiness across all delivery levels. may have limited institutional capacity or weak coordination systems to effectively manage complex, multi-sectoral climate adaptation programs. This could affect the pace, quality, or scope of implementation. G2F will incorporate provisions for regular institutional performance monitoring and deliver tailored capacity-building support for executing and implementing entities. Training, technical assistance, and knowledge exchange will be provided to strengthen project management, financial oversight, procurement, and safeguards compliance. These efforts are aligned with ADB's Capacity Development Framework and will reduce institutional risk over time by fostering institutional readiness and adaptive capability. The ADB Guidelines for Capacity Development provides guidance on how ADB supports institutional and organizational capacity building across its operations.

Selected Risk Factor 12: Procurement Compliance and Capacity		
Category	**Probability**	**Impact**
Technical and operational	Low	Low

Description
Procurement Compliance and Capacity: There is a risk of non-compliance or delays due to limited understanding of ADB's procurement rules and procedures by executing and implementing agencies, as well as inadequate institutional capacity to resolve procurement-related issues in a timely and effective manner. This may affect procurement planning, bid evaluation, and contract management, particularly for complex or multi-country activities under the program.

Mitigation Measure(s)
All procurement under the program will be conducted in accordance with ADB's **Procurement Policy (2017, as amended from time to time)** and the associated **Procurement Regulations for ADB Borrowers (2017, as amended from time to time)**. These guidelines ensure that procurement activities are: "economically efficient, transparent, and fair, and promote competition and value for money while ensuring quality and integrity in the procurement process." (ADB Procurement Policy, para. 4) Specific mitigation measures include: • Early procurement planning and training for executing and implementing agencies • Use of ADB's Standard Bidding Documents (SBDs) and procurement templates • Technical support from ADB staff and/or consultants during procurement implementation • Risk-based procurement review procedures and oversight mechanisms • Inclusion of procurement specialists in project teams, and periodic performance monitoring Where appropriate, hands-on support and capacity building will be provided to national procurement units to ensure compliance, particularly in countries with limited procurement systems or experience managing externally funded projects.

Selected Risk Factor 13: Compliance with Environmental and Social Safeguards (ESS)		
Category	**Probability**	**Impact**
Technical and operational	Low	Low

Description
Compliance with Environmental and Social Safeguards (ESS): The revised ESF, approved by ADB's Board of Directors on 22 November 2024, provides more robust protection for people and the environment while enhancing the effectiveness of risk management across ADB-financed and administered projects. The ESF was developed through a comprehensive review process, informed by the 2020 Independent Evaluation Department (IED) assessment of the previous Safeguard Policy Statement (SPS), and aligns ADB's practices with those of peer multilateral development banks (MDBs). It incorporates good global practices, responds to regional contexts and financing modalities, and emphasizes implementation efficiency and outcomes. **Key Elements of the ESF:**

1. **Vision Statement** – Outlines ADB's long-term commitment to environmental and social sustainability.
2. **Environmental and Social Policy** – Sets mandatory requirements for ADB operations.
3. **Ten Environmental and Social Standards** – Define borrower/client obligations.
4. **Financing Modalities Guidance** – Clarifies ESS application across ADB products.
5. **Prohibited Investment Activities List** – Identifies ineligible activities for ADB financing. *(See: Environmental and Social Framework | Asian Development Bank)*

Benefits of the New ESF Include:

- Enhanced protection for affected people and ecosystems
- Stronger alignment with peer MDBs and international good practice
- New standards on child protection, labor, and community safety
- A dedicated climate standard affirming alignment with the Paris Agreement
- Strengthened biodiversity safeguards supporting nature-positive investments
- Increased transparency, participation, and grievance redress mechanisms

Mitigation Measure(s)

ADB will implement a phased rollout of the new ESF. Key support measures include:

- Capacity building for ADB staff, executing and implementing agencies, and contractors
- Training on new safeguard requirements and implementation procedures
- Technical support for borrowers and clients during project design and implementation
- Development of non-mandatory technical guidance (ESS Guidance Notes), incorporating feedback from ESF consultations, with draft notes to be published for public comment in Q3 and finalized in Q4 2025

These measures will help ensure effective application of the new standards.

Selected Risk Factor 14: Political Instability - Afghanistan:

Category	Probability	Impact
Other	High	High

Description

Political Instability- Afghanistan: Afghanistan is not a beneficiary of GCF financing under the G2F Program. However, its **critical hydrological role** (as upstream riparian of the Panj Amu which contributes to the Amu Darya river basin) is fully acknowledged.

Afghanistan plays a critical role in the regional hydrological system, with over 80% of its surface water derived from glacial and snowmelt sources. These waters feed major rivers, including the Amu Darya, Helmand, Kabul, and Hari Rud, serving downstream countries such as Pakistan, Iran, Turkmenistan, and Uzbekistan. However, direct engagement in Afghanistan is severely constrained due to ongoing political instability and lack of formal governance structures. International sanctions restricting official development assistance and GCF financing Absence of operational water-sharing agreements. Expanding Afghan water infrastructure projects (e.g., Qosh Tepa Canal, Shahtoot Dam), raising tensions with neighboring states and risking downstream water availability Afghanistan's exclusion from the G2F Program limits the capacity to implement coordinated adaptation measures in glacier source areas and undermines regional water security efforts. The inability to conduct in-country interventions presents both programmatic and geopolitical risks to achieving G2F objectives. While ADB is engaging in essential services support in Afghanistan, it does not recognize the de-factor government as the sovereign recognized government. It provides off-budget support for education, food security and health interventions through off-budget support.

Mitigation Measure(s)

Given that Afghanistan is currently outside the operational control of the G2F Program, the following measures should be noted to highlight ADB's (off-budget) engagement with the country:

1. Indirect Engagement via the Aga Khan Foundation:
   ADB is partnering with AKF to implement community-based disaster risk management in Afghanistan's glacial regions. This includes:
   - Local adaptation to floods, droughts, and glacial lake outburst floods (GLOFs)
   - Development of early warning systems and climate information services
   - Water-smart agriculture and local water governance training
2. Food Relief and Social Resilience through WFP Coordination:
   ADB supports linkages with the World Food Programme and other humanitarian actors to sustain food security and basic services for vulnerable communities in water-stressed Afghan regions.
3. Integration into Regional Water Modeling:
   Afghan hydrology and infrastructure developments (e.g., Qosh Tepa Canal) will be included in regional climate and water modeling systems to inform adaptive planning in downstream countries, to extent that data is available.

G2F will re-engage with Afghanistan as political conditions improve. To note that some regional academic institutions are considering a postgraduate training program for Afghanistan graduates in climate science and glacial research which may contribute (outside G2F support) to improved knowledge.

G. GCF POLICIES AND STANDARDS

G.1. Environmental and social risk assessment (max. 750 words, approximately 1.5 pages)

Environmental and Social Risk Classification

ESS will be conducted in accordance with the Asian Development Bank's Social Safeguard Policy Statement (2009) and from 2026 the application of improved ESF which are aligned with the GCF ESS.

The G2F Program has been classified as Environmental and Social Risk Category A.

This classification reflects the inclusion of a limited number of high-risk activities—specifically, the construction of large irrigation dams—which are essential to long-term resilience strategies that address glacial melt and the shifting timing of water availability due to climate change. These Category A projects require a high degree of environmental and social diligence, for which ADB is accredited and placed to implement, with sustainable infrastructure a key component of countries adaptation targets. At the same time, the majority of program activities have been screened as Category B, with site-specific, reversible, and mitigable environmental and social risks. The program will apply a differentiated safeguards approach based on risk classification.

Justification for Category A (Selected High-Risk Activities):

- Construction of strategic irrigation dams to manage earlier and more erratic glacial runoff;
- Potential for cumulative and downstream impacts on water regimes, land use, ecosystems, and community livelihoods;
- Require comprehensive Environmental and Social Impact Assessments and detailed Environmental and Social Management Plans;
- These will be managed under ADB's enhanced ESF protocols, including biodiversity protection, climate integration, and promotion of nature-based solutions, as outlined in Risk Section G of the Funding Proposal.

Justification for Category B (Majority of Activities):

- Moderate, well-understood risks associated with rehabilitation of irrigation infrastructure, small-scale storage, and slope stabilization;
- Predominantly localized impacts on land, water, and community infrastructure;
- No large-scale biodiversity loss or involuntary resettlement anticipated;
- Projects will undergo individual screening and risk categorization during implementation.

Justification for Category C Activities (Minimal or No Environmental and Social Risk)

Definition:
Category C activities are those that are unlikely to result in adverse environmental or social impacts, typically involving non-physical, low-risk interventions.

- Component 1: Policy and Institutional Strengthening -Provides technical support for climate-resilient planning, scientific analysis, and aligning national policies with adaptation goals.
- Component 3: Inclusive Climate Finance -
  Promotes climate-smart financial solutions, digital finance platforms, and capacity-building for financial institutions and agri-SMEs.
- Component 4: Regional Climate Resilience Platform -Strengthens regional cooperation through knowledge platforms, data sharing, and cross-border policy dialogue.

Justification:
These activities are focused on technical assistance, capacity-building, policy development, data management, and financial innovation. They do not involve physical infrastructure, land acquisition, or community displacement. As such, they pose negligible environmental and social risks and align with ADB's Safeguard Category C classification. No environmental assessment is required.

Environmental and Social Assessment Instruments

It should be duly noted that ADB due diligence for environmental and social safeguards is conducted at investment sub-project level and follows ADB policies and procedures.

To ensure robust risk management, the following instruments have been developed:

- **Environmental and Social Management Framework**
  Provides a structured approach to environmental and social screening, risk categorization, mitigation planning, and monitoring. Aligned with ADB's ESF (2024) and GCF standards

- **Indigenous Peoples Planning Framework**
  Ensures compliance with ADB ESS 3 and the GCF Indigenous Peoples Policy, including Free, Prior, and Informed Consent requirements
- **Gender and Social Inclusion Strategy** (linked to the G2F Gender Action Plan)
  Embedded within the ESMF to ensure gender-equitable and inclusive planning and risk mitigation.
- **Project-Specific Instruments to be Developed:**
  - Environmental and Social Impact Assessments – for Category A projects
  - Environmental and Social Management Plans
  - Indigenous Peoples Plans
  - Stakeholder Engagement Plans
  - Environmental and Social Commitment Plans, as required

Table 18. Key Environmental and Social Risks and Mitigation Measures

Risk/Impact Area	Potential Risks	Mitigation Measures
Environmental impacts (soil, water)	Construction-related disruption; altered hydrology	ESMPs, climate-informed design, site selection, erosion control, water quality monitoring
Biodiversity and ecosystems	Pressure on upland ecosystems, potential habitat loss	Biodiversity assessments, exclusion of critical habitats, use of nature-based solutions
Social inclusion and vulnerability	Risk of exclusion of women, Indigenous Peoples, and smallholders	Gender Action Plan, Indigenous Peoples Policy Framework (IPPF) implementation, inclusive consultation frameworks
Indigenous Peoples	Impacts on traditional practices or access to land and resources	Screening, FPIC process, culturally tailored IPPs
Occupational and community health	Construction and operational safety hazards	EHS plans for contractors, community awareness, localized grievance procedures

Oversight, Implementation Capacity, and Monitoring
Executing Entities (EEs) will receive ongoing support from ADB to apply the ESS and manage environmental and social risks. Key implementation arrangements include:

- Capacity building and training in safeguards planning and ESS application;
- Deployment of qualified environmental and social specialists for each project;
- ADB oversight, including review and clearance of safeguards instruments;
- Regular monitoring, supervision missions, and semi-annual reporting to GCF;
- Access to ADB's centralized Safeguards Help Desk for technical support and troubleshooting.

Grievance Redress Mechanism (GRM)
A comprehensive project-level GRM will be established in each participating country to handle complaints and ensure accountability. Key features include:

- Gender- and child-sensitive intake and resolution mechanisms;
- Local accessibility and culturally appropriate procedures;
- Linkage with the ADB Accountability Mechanism and the GCF Independent Redress Mechanism;
- Monitoring and reporting of grievances by type, location, and demographics.

Stakeholder Engagement and Information Disclosure
More than **200 stakeholders** participated in G2F consultations across participating countries.
Key Priorities Identified:

- Equitable access to infrastructure and finance, especially for marginalized communities;
- Inclusion of women in water governance and agricultural planning;
- Transparent safeguards disclosure and engagement mechanisms.

Project-specific SEPs will be prepared during implementation. All environmental and social instruments (ESMF, IPPF, ESMPs, etc.) will be disclosed publicly on ADB and national portals, in accordance with:

- The **GCF Information Disclosure Policy**; and
- The **ADB Access to Information Policy (2018)**.

Indigenous Peoples
All Indigenous Peoples safeguards under G2F are embedded in the Annex 6 the **Environmental and Social Management Framework (ESMF)**, which governs implementation across all countries and subprojects. The full ESMF—including

Indigenous Peoples screening templates, roles and responsibilities, and capacity-building measures—can be found in Annex 6.0 of this proposal. The G2F Program is committed to protecting the rights and dignity of Indigenous Peoples through compliance with ADB ESS 3 (2024) and the GCF Indigenous Peoples Policy.

G2F will:

- Screen all projects for potential Indigenous Peoples impacts;
- Undertake meaningful consultations and obtain FPIC when required;
- Prepare and disclose Indigenous Peoples Plans where applicable;
- Ensure equitable access to project benefits and culturally appropriate grievance redress.

To date, no Category A Indigenous Peoples impacts have been identified. However, the frameworks and procedures established under the IPPF will guide all future project assessments and consultations.

The G2F programme is firmly grounded in principles of equity, inclusion, and climate justice, and recognizes that Indigenous Peoples (IPs) and ethnic minority communities are often among the most climate-vulnerable populations in glacier-dependent regions. The recognition of Indigenous Peoples varies across the G2F countries. While none have formally ratified ILO Convention No. 169, several host Indigenous or similarly vulnerable communities that meet functional definitions as per ADB's Safeguard Policy Statement (2009) and GCF's Indigenous Peoples Policy (2018), including characteristics such as self-identification, collective attachment to ancestral lands, distinct language or culture, and historical marginalization.

All Indigenous Peoples safeguards under G2F are embedded in the Environmental and Social Management Framework (ESMF), which governs implementation across all countries and subprojects.

G2F fully aligns with:

- **ADB's Safeguard Policy Statement (2009)** and **forthcoming Environmental and Social Framework (ESF, 2025)**;
- **GCF Indigenous Peoples Policy (2018)**, which requires meaningful consultation, benefit-sharing, and protection of IP rights;
- **UNDRIP** and ILO guidance on recognizing community characteristics over legal definitions.

Table 19. List of Countries and Indigenous People and Vulnerable Groups

Country	Indigenous Peoples / Similar Groups Identified	Relevant Context
Pakistan	Yes (e.g., Kalash, communities in Gilgit-Baltistan, Chitral)	Culturally distinct mountain communities vulnerable to glacial hazards and water insecurity.
Tajikistan	Yes (e.g., Pamiri people in GBAO)	Ethnolinguistically distinct; highly exposed to GLOFs and water stress.
Kyrgyz Republic	No formal IPs, but highland and nomadic groups	Maintain traditional land use and governance; vulnerable to climate impacts in glacial zones.
Uzbekistan	No formal IPs, but include Karakalpaks and rural minorities	Karakalpakstan faces water stress and ecological decline; limited climate adaptation access.
Kazakhstan	No formal IPs; semi-nomadic and rural minorities	Exposed to drought and glacial retreat in mountain areas.
Turkmenistan	No formal IPs, but tribal groups and rural minorities exist	Climate-fragile regions face water scarcity and lack of adaptation finance access.
Armenia	No formal IPs; includes Yazidis and rural ethnic groups	Agriculture-dependent Mountain communities face shifting hydrology and erosion risks.
Georgia	No formal IPs; ethnic minorities in glacial zones (e.g., Svans, Kists)	Mountain communities with distinct cultural identity affected by cryosphere risks.
Azerbaijan	No formal IPs; minorities such as Lezgins and Talysh	Highland and forest-dwelling groups with traditional practices and marginal service access.

G.2. Gender assessment and action plan (max. 500 words, approximately 1 page)

Gender Equality in Climate Action: ADB's Strategic Approach in Central Asia, Pakistan, and the South Caucasus

ADB recognizes gender equality as a cornerstone of inclusive, sustainable development and effective climate action. This principle is embedded in ADB's Policy on Gender and Development (1998) and operationalized through Strategy 2030, with the aim of "Accelerating Progress in Gender Equality" as one of its seven operational priorities. This priority is sustained in the Strategy 2030 Midterm Review where gender equality is carried forward into the strategic focus area of Resilience and Empowerment to go hand in hand with women's empowerment and resilience to the effects of climate change. ADB's Operational Plan for Gender Equality and Women's Empowerment (2021–2025) reinforces this commitment by directing gender mainstreaming across all areas of operations, including climate adaptation, through inclusive planning, equitable access to resources, and resilience- and capacity building approaches.

In the mountain regions of Central Asia, Pakistan, and the South Caucasus, escalating climate hazards, including glacial melt, drought, extreme heat, floods, landslides, and GLOFs, are amplifying existing gender disparities. These impacts disproportionately affect women, girls, elderly persons, and marginalized groups, particularly in remote and climate-exposed communities. ADB ensures that its climate operations in the region are gender-responsive, enabling equitable participation and benefit-sharing, while empowering women as agents of change in resilience and adaptation efforts.

Operationalizing Gender Equality: The G2F Gender Action Plan

The Gender Action Plan (GAP) for the G2F Program translates ADB's gender commitments into a targeted, multi-country framework that supports climate-resilient agriculture, water resource management, and cooperation. Aligned with Operational Priority 2, and the Resilience and Empowerment strategic focus area of Strategy 2030, the GAP addresses structural barriers limiting women's and girls' access to productive resources, climate information, finance, and leadership opportunities in mountain and downstream communities. To ensure national relevance and ownership, the GAP aligns with ADB Country Gender Assessments (CGAs) and national gender equality strategies. It also contributes to SDG 5, the UNFCCC Gender Action Plan, and UN Women guidance on gender-responsive climate action.

Core GAP Objectives:

- Promote women's leadership and voice in water governance and agricultural cooperatives;
- Expand women's access to climate-resilient infrastructure, early warning systems, and technologies;
- Strengthen women's participation in value chains, entrepreneurship, and climate finance;
- Reduce unpaid care burdens by improving water access and social protection systems.

All G2F projects will be gender categorized (GEN, EGM, or SGE) following ADB's Guidelines on Gender Mainstreaming Categories (2012) and updated in 2025. Further, at least 60% of all G2F projects approved each year, would have met GEN and EGM criteria, including having project-specific gender action plans with baseline data, performance indicators, and targets.

Climate Vulnerabilities and Gendered Impacts

1. Gender-neutral climate risk planning and investment frameworks

While all nine G2F countries in the region have developed their national climate action plans (NAPs) and have set their Nationally Determined Contributions (NDC), not all of these provide clear directions on addressing women's gender-differentiated climate risks and vulnerability. In Central Asia, only Uzbekistan has a specific gender action plan for the country's national climate action plan.

Gendered Impacts:

- Gender neutral NAPs, NDCs, and other climate-related sector policies leave out gender concerns
- Gender-blind risk assessments and planning, as well as information systems, do not consider gender-differentiated impacts, leaving women's vulnerability unaddressed
- Gender responsive projects may be overlooked in country programming

ADB Responses:

- Integrate gender equality concerns in NAPs, NDCs, and other climate-related sector policies,
- Develop gender-sensitive vulnerability risk assessments, and all management information systems
- Support inclusive DRR and climate information services;
- Use sex-disaggregated vulnerability data in planning.
- Train climate change ministries and local government units on gender mainstreaming

2. Women's vulnerability to climate change impacts is exacerbated by limited access to climate technologies and climate-smart agricultural extension services, unequal access to land, and inadequate health and social protection services.

In countries like Uzbekistan, Pakistan, Kyrgyz Republic, Georgia, and Armenia, women make up 30%–50% of the agricultural workforce but hold less than 12% of registered land titles (FAO, 2021).

Gendered Impacts:

- Unreached by early warning systems due to poor connectivity and underrepresentation in local governance;

- Gender disparity in access to land, irrigation, and agricultural extension services;
- Female workload increases due to seasonal male migration, yet women are not represented in water user organizations and other decision making farmer groups
- Mobility constraints for elderly women and women-headed households;
- Increased women's time poverty due to unpaid household work including water and fuel collection, as well as care work;
- Inadequate financial protection after climate shocks.

ADB Responses:

- Deliver climate-smart agriculture and agroecology training;
- Strengthen land tenure security and legal awareness;
- Promote women's cooperatives and inclusive value chains;
- Design health and social protection schemes to support women during climate shocks;
- Incentivize male participation in household and care work;

3. Lack of access to financial resources and capacity building, prevents women from going beyond agricultural production to take on opportunities in the value chain, thus making them more vulnerable to the effects of climate change.

Agriculture remains as the backbone of rural livelihoods in the region, employing up to 50% of the total workforce, yet it is the most vulnerable to climate shocks, and the least funded. Women's labor in agriculture could reach up 43% of the agricultural workforce, but most of them work without formal recognition or for very little remuneration. Women make up 25% of enterprise owners in the region, most of whom own micro enterprises.

Gendered Impacts:

- Small share in agricultural enterprises render women powerless in decision making;
- Limited access to finance by women entrepreneurs, due to limited knowledge, being unreached by financial institutions; absence of collateral for loans as land titles are not in women's names;
- Weak gender capacity of financial institutions to cater to the specific needs of women.

ADB Responses:

- Leverage gender-responsive finance through GCF-supported pilot;
- Capacity building for women farmers groups and cooperatives especially in accessing finance;
- Training financial institutions in gender mainstreaming, so they can develop gender responsive finance tools;

4. Women have limited participation in regional water governance bodies, and regional knowledge platforms are gender neutral.

While women make up almost 50% of the agricultural workforce, only about 12% of women are in governance bodies.

Gendered Impacts:

- Underrepresentation in river basin organizations, water user associations, and other climate bodies;
- Very little participation in national and municipal climate planning;
- Disjointed inter-governmental efforts in the region on gender-responsive climate planning
- Regional knowledge platforms have not fully integrated gender

ADB Responses:

- Support women's participation in regional water governance bodies;
- Establish gender sensitive digital knowledge platforms at the regional level;
- Include gender indicators in the G2F management information systems;
- Conduct cross-country / regional knowledge exchange events.

Stakeholder Consultations and Gender Integration

Extensive **multi-stakeholder consultations** were undertaken to inform the G2F Gender Action Plan, involving national governments, executing and implementing agencies, women's organizations, CSOs, and regional actors. These engagements were critical to identifying gendered vulnerabilities and shaping context-specific solutions.

Key Consultation Inputs:

- Address women's unequal access to land, finance, and water;
- Promote women's roles in local water governance, early warning, and cooperatives;
- Ensure safe, accessible infrastructure with integrated services;
- Strengthen institutional capacity and women's participation in climate planning.

These inputs are directly reflected in the GAP's design, ensuring that climate finance investments promote equal participation and benefit-sharing.

Gender Country Assessments and Ongoing Dialogue
ADB has published CGAs for eight of the participating countries. These documents provide in-depth analysis of gender-based barriers and inform targeted responses under the G2F Program. Additional developments include:

- A new CGA for Turkmenistan is under preparation and will be finalized in 2026;
- Four other countries are currently undertaking extensive consultations to update their CGAs (Uzbekistan, A, B and C), ensuring up-to-date, evidence-based inputs.

Gender Integration During Project Development

Each project under the G2F Program will undergo a detailed gender and social inclusion assessment during design, ensuring responsiveness to local needs and context. This includes:

- Inclusive stakeholder consultations;
- Analysis aligned with ADB's Safeguard Policy and gender classification;
- A project-specific GAP with measurable targets and indicators.

These assessments will ensure that **gender-responsive actions are embedded from the outset**, and that **GCF investments contribute to lasting, equitable resilience outcomes**.

Table 20. Cross-Cutting Gender Strategies for Climate Resilience

Strategic Area	Description
Gender Action Plans	Required for all adaptation investments, with indicators, targets, and budgets.
Capacity Building	Training for National Designated Authorities, implementing partners, and civil society organizations on gender-responsive action.
Gender-Responsive Finance	Design of financial instruments (e.g., Sustainability-Linked Bonds) with gender targets.
Knowledge Exchange	Facilitation of regional learning and South–South collaboration.
Monitoring and Data	Strengthening of sex-disaggregated data systems for adaptation outcomes.

Conclusion

Climate change and gender inequality are mutually reinforcing, particularly in fragile and mountainous contexts. Through the G2F Program, ADB is advancing an inclusive, transformative climate agenda—ensuring that women, girls, and vulnerable groups are not only protected from climate risks but also empowered as leaders in resilience building. By embedding gender equality across design, financing, and implementation, ADB's approach ensures that climate finance investments contribute to sustainable, inclusive, and equitable development in Central Asia, Pakistan, and South Caucasus.

A full Gender Action Plan is presented in **Annex 8.0**.

G.3. Financial management and procurement (max. 500 words, approximately 1 page)

Financial Management and Procurement

All projects and technical assistance activities under the G2F Program will be implemented in accordance with ADB's systems and policies on financial management, auditing, integrity, disbursement, and procurement. These systems are designed to ensure strong fiduciary oversight, accountability, and value for money across all GCF-funded components of the program.

ADB's institutional standards will apply to all projects supported under G2F, consistent with the FAA and aligned with national systems and the roles of Executing and Implementing Entities (as outlined in Section B.4 on Implementation Arrangements).

1. Financial Management and Audit

Financial management procedures for each G2F project will be developed during project preparation and outlined in their respective Project Administration Manuals (PAMs) or Grant Implementation Manuals (GIMs). These procedures will adhere to the principles of ADB's:

- Financial Management and Analysis of Projects,
- Loan Disbursement Handbook (2022, as amended),
- Access to Information Policy (2018).

ADB will assess the financial management capacity of executing and implementing agencies, including fiduciary risk, internal controls, staffing, and ability to report in a timely and accurate manner. Where necessary, capacity strengthening measures will be identified and implemented.

Disbursements for all GCF-supported G2F activities will be made in accordance with ADB's Loan Disbursement Handbook, and arrangements will be agreed upon with the governments and agencies concerned. Public disclosure of audited financial statements, including auditor opinions, will follow ADB's Access to Information Policy.

Financial statements, including auditor opinions, will follow ADB's Access to Information Policy.

Performance will be supervised regularly through:

- Quarterly financial progress reporting;
- Annual audited financial statements (AFS) and management letters;
- Monitoring of compliance with financial covenants (where applicable).

2. Integrity and Anti-Corruption

ADB will conduct integrity due diligence on executing and implementing agencies in accordance with its Anticorruption Policy (1998, as amended), which includes measures on anti-money laundering and counter-terrorist financing.

All project partners must adhere to ADB's requirements regarding:

- Prohibited practices (fraud, corruption, coercion, collusion, and obstruction);
- Use of GCF proceeds solely for intended and eligible purposes;
- Notification and handling of integrity-related risks or complaints.

ADB's Office of Anticorruption and Integrity (OAI) will oversee compliance and may conduct spot reviews or investigations where appropriate.

3. Procurement Arrangements

All procurement under G2F, including goods, works, and consulting services, will be carried out in accordance with:

- ADB's Procurement Regulations for ADB Borrowers (2017, as amended),
- ADB's Procurement Guidelines,

Each project's procurement approach will be detailed in its PAM or GIM and include:

- Selection methods and packaging strategy;
- Thresholds for prior and post-review;
- Procurement oversight and performance reporting.

ADB has conducted or will conduct a procurement capacity and risk assessment for each Implementing Agency. Identified risks will be addressed through:

- Tailored procurement plans;
- Hands-on support from ADB staff;
- Procurement training and compliance tools.

Procurement processes will be managed by national agencies with ADB support, ensuring alignment with country systems while adhering to GCF and ADB fiduciary requirements. A detailed procurement plan for the use of GCF grants, including the technical assistance component, is provided in Annex 10.

4. Roles and Responsibilities

ADB, as the AE, will:

- Provide fiduciary oversight of all GCF-funded projects;
- Review and clear financial reports, audits, and procurement packages;
- Monitor and report on compliance with financial and procurement covenants;
- Provide technical and policy support to strengthen the financial management and procurement capacities of national agencies.

EE will be responsible for maintaining adequate financial records, submitting timely financial and procurement reports, and complying with audit requirements. Implementing Agencies will conduct procurement in line with the approved plans and monitor contract implementation.

Conclusion

By applying ADB's robust fiduciary and procurement systems, the G2F Program ensures transparency, accountability, and efficiency in the use of GCF resources. The institutional safeguards provided by ADB's policies, combined with the oversight of the AE and executing agencies, offer a high level of assurance for financial integrity and delivery performance across all components of the program.

G.4. Disclosure of funding proposal

Note: The Information Disclosure Policy (IDP) provides that the GCF will apply a presumption in favor of disclosure for all information and documents relating to GCF and its funding activities. Under the IDP, project and programme funding proposals will be disclosed on the GCF website, simultaneous with the submission to the Board, subject to the redaction of any information that may not be disclosed pursuant to the IDP. Information provided in confidence is one of the exceptions, but this exception should not be applied broadly to an entire document if the document contains specific, segregable portions that can be disclosed without prejudice or harm.

Indicate below whether or not the funding proposal includes confidential information.

☐ No confidential information: The accredited entity confirms that the funding proposal, including its annexes, may be disclosed in full by the GCF, as no information is being provided in confidence.

☒ With confidential information: The accredited entity declares that the funding proposal, including its annexes, may not be disclosed in full by the GCF, as certain information is being provided in confidence.

Accordingly, the accredited entity is providing to the Secretariat the following two copies of the funding proposal, including all annexes: full copy for internal use of the GCF in which the confidential portions are marked accordingly, together with an explanatory note regarding the said portions and the corresponding reason for confidentiality under the accredited entity's disclosure policy, and redacted copy for disclosure on the GCF website.

The funding proposal can only be processed upon receipt of the two copies above, if containing confidential information.

H. ANNEXES

H.1. Mandatory annexes

☒	Annex 1	NDA no-objection letter(s) **(template provided)**
☒	Annex 2	Feasibility study - and a market study, if applicable
☒	Annex 3	Economic and/or financial analyses in spreadsheet format
☒	Annex 4	Detailed budget plan **(template provided)**
☒	Annex 5	Implementation timetable including key project/programme milestones **(template provided)**
☒	Annex 6	E&S document corresponding to the E&S category (A, B or C; or I1, I2 or I3): **(ESS disclosure form provided)** ☐ Environmental and Social Impact Assessment (ESIA) or ☐ Environmental and Social Management Plan (ESMP) or ☐ Environmental and Social Management System (ESMS) ☐ Others (please specify – e.g. Resettlement Action Plan, Resettlement Policy Framework, Indigenous People's Plan, Land Acquisition Plan, etc.)
☒	Annex 7	Summary of consultations and stakeholder engagement plan
☒	Annex 8	Gender assessment and project/programme-level action plan **(template provided)**
☒	Annex 9	Legal due diligence (regulation, taxation and insurance)
☒	Annex 10	Procurement plan **(template provided)**
☒	Annex 11	Monitoring and evaluation plan **(template provided)**
☒	Annex 12	AE fee request **(template provided)**
☐	Annex 13	Co-financing commitment letter, if applicable **(template provided)**
☒	Annex 14	Term sheet including a detailed disbursement schedule and, if applicable, repayment schedule

H.2. Other annexes as applicable

☐	Annex 15	Evidence of internal approval **(template provided)**
☐	Annex 16	Map(s) indicating the location of proposed interventions
☒	Annex 17	Multi-country project/programme information **(template provided)**
☐	Annex 18	Appraisal, due diligence or evaluation report for proposals based on up-scaling or replicating a pilot project
☐	Annex 19	Procedures for controlling procurement by third parties or executing entities undertaking projects financed by the entity
☐	Annex 20	First level AML/CFT (KYC) assessment
☐	Annex 21	Operations manual (Operations and maintenance)
☐	Annex 22	Assessment of GHG emission reductions and their monitoring and reporting (for mitigation and cross cutting-projects)[56]
☒	Annex 23	Theory of Change Diagram

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

[56] Annex 22 is mandatory for mitigation and cross-cutting projects.