

REPORT

# Confluence Beyond Borders in a Changing Climate: Dialogue for Cooperation in Central Asia and Afghanistan





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#### Cover photo

The Panj River bordering Tajikistan and Afghanistan. Source: Alec Forss

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## Acronyms

<b>BWOs</b>	Basin Water Organisations
<b>RBOs</b>	River Basin Organisations
<b>CAREC</b>	Central Asia Regional Economic Cooperation
<b>CAWEP</b>	Central Asia Water and Energy Program
<b>DFA</b>	Taliban de facto authorities
<b>DRR</b>	Disaster Risk Reduction
<b>GLOFS</b>	glacial lake outburst floods
<b>ICWC</b>	Interstate Commission for Water Coordination
<b>IFAS</b>	International Fund for Saving the Aral Sea
<b>OCEEA</b>	Office of the Co-ordinator of OSCE Economic and Environmental Activities
<b>OSCE</b>	Organisation for Security and Cooperation in Europe
<b>QTC</b>	Qosh Tepa Canal
<b>RIAOR</b>	Framework for Response to the Implications of Afghanistan for the OSCE Region
<b>SDGs</b>	Sustainable Development Goals
<b>SIWI</b>	Stockholm International Water Institute
<b>USAID</b>	United States Agency for International Development
<b>UN</b>	United Nations
<b>UNAMA</b>	United Nations Assistance Mission in Afghanistan
<b>UNRCCA</b>	United Nations Regional Centre for Preventive Diplomacy for Central Asia
<b>WHO</b>	World Health Organisation
<b>WWW</b>	World Water Week

## Executive Summary

- **The region of Central Asia and Afghanistan faces growing water insecurity and natural hazards amidst a rapidly changing climate with rising temperatures, extreme weather events, and glacial melt affecting the volume, peak, and variability of river flows.** Increased water scarcity and unpredictability of water availability will exacerbate already severe seasonal shortages. These challenges are likely to cascade into rising humanitarian needs, slower economic development, and increased risks to social and regional stability.
- **The transboundary nature of the region’s two major river systems of the Aral Sea Basin – the Amu Darya and Syr Darya – necessitates effective regional cooperation to manage shared waters.** Cooperation will come under increasing pressure as altered flows under climate-driven events heighten tensions between upstream and downstream needs, threatening food and energy security as well as regional stability. Water scarcity is further exacerbated by low levels of water productivity in addition to governance gaps, trust deficits, and the absence of fully inclusive regional cooperative mechanisms capable of managing shared water risks under a scenario of climate uncertainty.
- **Despite being a riparian state to the Amu Darya, Afghanistan has not been included in existing regional water governance frameworks. This historical absence is further compounded by plans for unilateral infrastructure development under the Taliban de facto authorities (DFA) – most notably the ongoing construction of the Qosh Tepa Canal (QTC).** Placing further demands on water from the Amu Darya, the QTC poses risks in particular for downstream Uzbekistan and Turkmenistan. The QTC lays bare the risks of Afghanistan’s absence from regional arrangements and underscores the need for dialogue and cooperation, not only on the canal but also on larger basin and cross-sectoral issues across the region.
- **Without improved coordination among Central Asian countries including Afghanistan, the region risks experiencing cascading climate-fragility impacts – from increased competition over water and heightened instability, to rising poverty, migration, insecurity, and setbacks to the Sustainable Development Goals (SDGs).** Given that the issue of water is complex and cross-cutting, cooperation cannot focus solely on water allocation and management: it also needs to integrate climate adaptation, food security, energy and trade connectivity, transportation, regional security, and sustainable development more broadly that involve stakeholders and interests beyond water.

- **By aligning technical collaboration on water with leveraging broader regional interdependencies and confidence-building measures**, the region has an advantageous opportunity to turn shared challenges—including climate impacts and unilateral water development—into catalysts for constructive engagement that enhance benefit-sharing, regional economic integration, and long-term stability.
- **Despite constraints, evidence of increased political will and momentum by the five Central Asian states to pursue deeper regional cooperation, including addressing shared water challenges, presents a major opportunity.** Broadening cooperation and making it more inclusive by incorporating Afghanistan as a key partner in regional dialogues is crucial for mitigating risks and harnessing shared benefits. Rising hydrological uncertainty and increasing water insecurity amplify not only risks but also incentives for cooperation. Now is the time to reframe Afghanistan not as a peripheral actor but as a critical upstream riparian whose inclusion is indispensable for long-term basin stability.



A high-altitude lake in the Tajik Pamirs. Source: Alec Forss.

## Takeaways for Key Stakeholders

Building on discussions from an expert workshop convened by SIWI in Prague, Czech Republic, in November 2025, the following takeaways highlight priority actions for key stakeholder groups to address growing climate- and water-related risks in Central Asia, including Afghanistan, while strengthening inclusive regional cooperation. Particular focus is put on the gradual and pragmatic incorporation of Afghanistan as a riparian actor in regional mechanisms. This paper and its identified takeaways do not necessarily represent the views of all participants or organisations they represent. Rather it reflects a synthesis of insights and discussions during the workshop.

### Government Actors in Central Asia and Afghanistan



**Given growing water scarcity, priority should be given to sustainable and efficient water use particularly in agriculture,** through transitioning to climate-resilient crops and drip-feed irrigation, as well as **improving water resource management and ecosystem preservation across river basins** including glaciers, glacial lakes, watersheds, riverbanks, and groundwater.



**Enhance the capacity and efficacy of existing regional water governance so that it better reflects evolving climate and hydrological realities.** This can be achieved by establishing stronger mechanisms for data-sharing and information exchange on climate and hydrological data, including water quality, cryosphere monitoring, and improved coordination on early warning systems for disaster risk reduction, and joint discharge monitoring in which Afghanistan is also included. Technical cooperation can also serve as a stepping stone to broader political dialogue and confidence-building.



**Develop a coordinated approach to Afghanistan's gradual integration into regional cooperation frameworks, aligning and leveraging engagement towards this.** Inclusion of Afghanistan as an observer in existing regional mechanisms, as well as renewal or reactivation of earlier memoranda of understanding on water issues, could serve as practical first steps.



**Reform and expand existing regional water governance mechanisms to better integrate key sectors crucial to the region's water security including agriculture, irrigation, energy, and environmental management.** Improved coordination across sectors and countries is essential to ensure that water use is both equitable and sustainable, with a particular focus on mitigating climate-induced water stress.



**Explore opportunities to integrate water cooperation into broader regional cooperation frameworks, such as trade, transit, and energy collaboration.** By capitalizing on existing interdependencies, Central Asia and Afghanistan can enhance regional stability, promote economic development, and strengthen incentives to foster mutually beneficial arrangements that support sustainable water use and climate resilience.



**Support increased public awareness of climate change and engagement on climate adaptation and mitigation including the need for water conservation** through investment in science and education, granting a stronger role for civil society, as well as mainstreaming gender equality and social inclusion in water and environmental governance.



**Promote an enabling environment for the private sector to more confidently invest in sustainable water management** by strengthening the rule of law, providing financial incentives, reducing bureaucracy, clarifying regulations, and strengthening investment protection.

## External Actors including International Organisations



**Provide support and encourage ongoing reforms in regional water and climate strategies,** including supporting the initial inclusion of Afghanistan as an observer – including participation in technical meetings or data-sharing forums – to ensure inclusive and comprehensive regional approaches.<sup>1</sup>



**Encourage a holistic approach in donor-supported projects and programmes** by recognizing the interconnectedness of water, health, energy, agriculture, soil protection, and the environment, in ways that improve synergies across these sectors rather than addressing them in isolation.

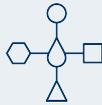
<sup>1</sup> Prior to 2021, Afghanistan had observer status with the United Nations Regional Centre for Preventive Diplomacy for Central Asia (UNRCCA), for example, and was part of the German-led Green Central Asia Initiative.



**Improve coordination and investment among donors** to avoid unnecessary duplication and to ensure that their projects and support consider Afghanistan's role and contribution within the regional water system.



**Support efforts to counter misinformation and polarized narratives around water and climate** by promoting transparent data sharing, joint analysis, and evidence-based communication across the region.



**Support bilateral initiatives with Afghanistan, upon request, that can improve transboundary water cooperation in the Amu Darya Basin.** Linking water to energy, trade, and regional connectivity can create shared incentives for cooperation around water infrastructure development and support the gradual expansion toward basin-wide cooperation.

## Private Sector



**Promote investment and adoption of climate-smart technologies to improve water-use efficiency and resilience,** especially in water-intensive industries like agriculture and mining.



**Adhere to and support sustainable water management practices across the basin.** Given increasing interest in the region's critical minerals, there is a need to reduce water waste and contamination in their extraction and processing.



**Invest in diversified renewable energy solutions to support the transition away from fossil fuels and address regional energy shortages.** Such investment should aim to reduce the region's overreliance on hydropower generation and enhance energy and water security under changing climate conditions.



**Strengthen capacity development on key aspects of water cooperation, including water diplomacy,** through regional programmes supported by private sector partners.

## Knowledge Organisations and Expert Groups



**Facilitate multi-track dialogues involving Central Asian countries and Afghanistan that bring together government officials, former senior officials, individuals well connected in government circles, experts, civil society actors, and technical specialists.** These dialogues should focus on shared concerns such as water security, climate adaptation, climate-induced hazards, and regional integration, helping to identify and bridge political gaps and explore practical avenues for cooperation.



**Support existing priorities, initiatives, and conferences on water in the region,** including where possible increasing the traction of expert dialogues by holding them on the side-lines of high-level water-related events in the region.



**Provide capacity development support to not only water professionals but also those from other sectors, including from Afghanistan,** to address knowledge and capacity asymmetries across the region, as well as enhance mutual understanding and consolidate policy and research networks in the region.



**Support efforts to counter misinformation and conflict narratives around water** by enhancing awareness among government actors and the broader public regarding the necessity and shared benefits of regional cooperation.



**Foster the exchange of global lessons, good practices, and scientific expertise to inform regional water governance.** Joint research initiatives, monitoring programmes, and knowledge exchange platforms on water availability, climate impacts, irrigation efficiency, virtual water flows, and regional socio-economic linkages can strengthen evidence-based policymaking and regional cooperation.

## 1. Regional Overview

Central Asia is undergoing rapid and complex transformations at the intersection of climate change, water scarcity, shifting geopolitical dynamics, and deepening regional interdependencies. These pressures are especially visible in the Amu Darya Basin. Originating in the glacier-fed tributaries of the Pamir, Tien Shan, and Hindu Kush mountains, the Amu Darya flows westward and then north toward the severely depleted Aral Sea. One of the world's most heavily allocated transboundary river systems,<sup>2</sup> the Amu Darya constitutes a critical lifeline for Afghanistan, Uzbekistan, Tajikistan, and Turkmenistan, while also forming a state border along significant stretches of its course. Kyrgyzstan is also a riparian state of the Amu Darya Basin.



The Panj River, the primary headwater of the Amu Darya, through the Wakhan Corridor, Afghanistan. Source: Shutterstock.

The Amu Darya and the Syr Darya are inextricably linked, both hydrologically and through international law, as part of the broader Aral Sea Basin. This paper focuses on the Amu Darya because of Afghanistan's upstream role, the scale of current infrastructure development, and the basin's particularly acute climate and governance challenges.

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<sup>2</sup> Holmatov, B. et al (2025). New tools for transboundary water challenges in Central Asia. Retrieved February 3, 2026, from International Water Management Institute: <https://www.iwmi.org/blogs/new-tools-for-transboundary-water-challenges-in-central-asia/>; Strategic Climate Adaptation Planning for the Amu Darya Basin in Uzbekistan. Retrieved February 3, 2026, from Future Water: <https://www.futurewater.eu/projects/climate-adaptive-water-resources-management-in-the-aral-sea-basin/>

Amidst a potential long-term future of water scarcity, competition, and conflict in the region—exacerbated by climate change and the construction of large-scale water infrastructure projects—the Stockholm International Water Institute (SIWI) convened a three-day consultative workshop in Prague, Czech Republic, in November 2025. The meeting entitled ‘Confluence Beyond Borders in a Changing Climate: Dialogue for Cooperation in Central Asia and Afghanistan’—focused on the intersections of water, climate change, and regional cooperation—provided a platform to reflect on shared challenges and explore opportunities for future collaboration.

The workshop brought together a diverse group of actors from Central Asia and Afghanistan as well as other experts with knowledge of the region. These included government officials, representatives of international organisations, academics, and think tank experts. The scope of expertise included water management, climate change, agriculture, energy, critical minerals, regional security, peacebuilding, and sustainable development. This diversity encouraged interdisciplinary dialogue and a holistic assessment of regional challenges and opportunities. Particular focus was put on the inclusion of Afghanistan as an increasingly important riparian stakeholder, recognizing that its participation is a hydrological necessity irrespective of a narrower political definition of the region as comprising the five Central Asian states.<sup>3</sup>

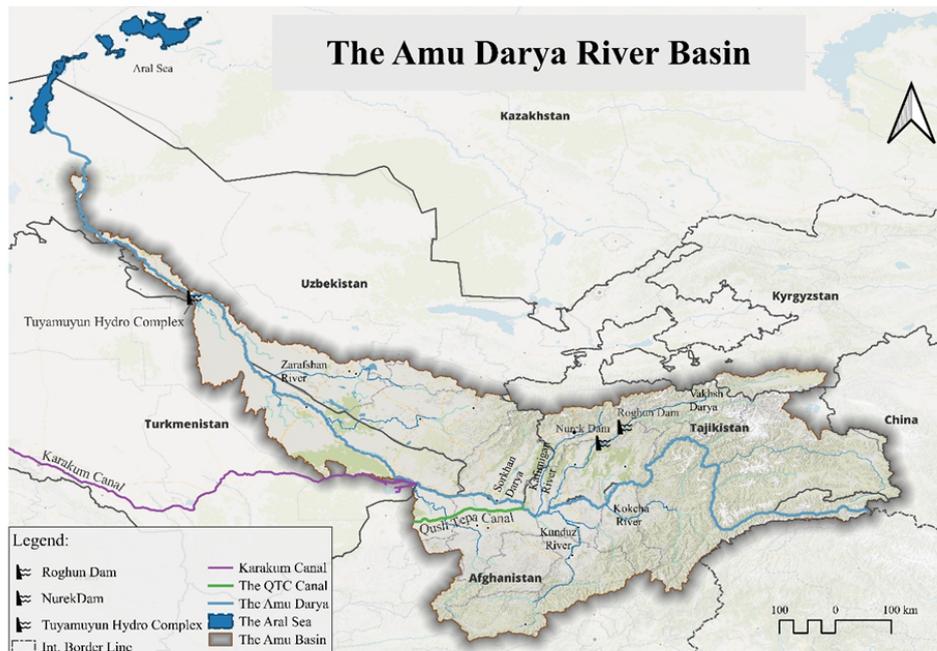


Map 1. Central Asia's shared rivers

<sup>3</sup> Accordingly, while Central Asia predominantly refers to the five post-Soviet states of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan, shared cultural, geographic, and hydrological factors, among others, point to the need for a broader definition of the region that also includes other countries and areas. Particularly important in the context of transboundary waters is the inclusion of Afghanistan as an important riparian state of the Amu Darya basin. Central Asia and Afghanistan also have deep cultural, historical, ethnic, and religious connections.

## 1.1 The Qosh Tepa Canal: A Looming Regional Test? Infrastructure Development and the Future of the Amu Darya Basin

Major developments shaping the basin dynamics of the Amu Darya include Tajikistan’s completion of the Rogun Dam, projected to be finished by 2033, as well as construction of Afghanistan’s largest irrigation canal, the QTC on the Amu Darya. While two out of three construction phases of the canal are nearing completion, it remains unclear if it will be fully operational by 2028-29 as originally intended by the Taliban de facto authorities.



Map 2. The Amu Darya Basin and major water infrastructure<sup>4</sup>

The QTC in particular is regarded as a looming test for the region. Once complete, the canal could divert an estimated 8–20 percent of the Amu Darya’s average annual flow.<sup>5</sup> The canal’s abstraction of water is expected to coincide with the downstream irrigation season, compounding risks for downstream Uzbekistan and Turkmenistan. Like Afghanistan, both countries’ rural livelihoods depend heavily on irrigated agriculture. This added withdrawal of water from the Amu Darya will exacerbate already severe seasonal shortages and increase uncertainty for

<sup>4</sup> Faizee, M. H., Faqiryar, J. N., Mohamed, Y., & Sehring, J. (in press). [Map]. In *The Qosh Tepa Canal: Implications for Amu Darya hydrology and regional hydrogeopolitics* [Unpublished report]. Water, Peace and Security Partnership.

<sup>5</sup> Estimates suggest the lower limit of water diversion by the Qosh Tepa Canal (QTC) may be as low as 8%. See American Association for the Advancement of Science (AAAS), Feasibility Study Report for the Qosh Tepa Canal (2019), cited in Edward Kuchins et al., Afghanistan’s Qoshtepa Canal and Water Security in Central Asia (CFIPI, 2024), p. 14. Available at: <https://cftni.org/wp-content/uploads/2024/11/2024-11-26-CFTNI-Afghanistans-qoshtepa-canal-and-water-security-in-central-asia.pdf>

downstream communities, while putting further on existing management and cooperation mechanisms.

## 1.2 Climate Change and the Escalating Crisis of Water Security

Water management infrastructure projects are unfolding amidst rapidly intensifying climate impacts. Rising temperatures, altered precipitation patterns, and the accelerated retreat of the Pamir and Hindu Kush glaciers are reshaping water availability across the basin.<sup>6</sup> Climate models predict an average temperature rise of 2.8°C across the basin by 2060, accompanied by declining precipitation.<sup>7</sup>

Glaciers play a critical role in sustaining summer flows, providing steady meltwater during peak irrigation periods and buffering the system during dry years. However, research shows this buffering capacity has reached or is nearing its peak,<sup>8,9</sup> after which overall runoff will decline. Although accelerated glacial melt may temporarily boost river discharge, this phase will be short-lived and will eventually fall sharply as glacial reserves are depleted.<sup>10</sup> In addition, the fast retreat of glaciers in the high-altitude headwaters of the Amu Darya basin is leading to the formation and expansion of new glacial lakes, which increases the potential for future glacial lake outburst floods (GLOFs). This poses a devastating hazard for downstream communities and infrastructure.<sup>11</sup>

Moreover, changes in the snowpack, from a reduction in volume to melting earlier in the season, will also have a large impact on runoff. Annual snow cover could decline by 10–36 percent, with autumn and spring reductions up to 25 percent, shifting peak melt to winter and spring with a reduction in summer flows. This may further stress water availability for and irrigation precisely when agricultural demand is highest.<sup>12</sup>

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<sup>6</sup> Knoche et al. (2017). Bridging Glaciological and Hydrological Trends in the Pamir Mountains, Central Asia, *Water*, 9(6), 422.

<sup>7</sup> Murodov, A., Cuo, L., Li, N., Murodov, D., Hou, M., & Hussain, G. (2023). Extreme Hydrometeorological Conditions and Changes in the Amu Darya River Basin in Central Asia. *Journal of Hydrometeorology*, 24(2), 315–334.

<sup>8</sup> Glantz, M. H. (2005). Water, Climate, and Development Issues in the Amu Darya Basin. *Mitigation and Adaptation Strategies for Global Change*, 10(1), 23–50.

<sup>9</sup> Shokory, J.A.N. and Lane, S.N. (2023). Patterns and drivers of glacier debris-cover development in the Afghanistan Hindu Kush Himalaya. *Journal of Glaciology*, 69, 1-15.

<sup>10</sup> Salehie, O., et al. (2022). Assessment of Water Resources Availability in Amu Darya River Basin Using GRACE Data. *Water*, 14(4), 533.

<sup>11</sup> Azizi, F., & Lane, S. N. (2025). Classification and evaluation of dangerous glacial lakes in the Hindukush region of Afghanistan (HKA) using a multi-criteria approach. *Geomatics, Natural Hazards and Risk*, 16(1). <https://doi.org/10.1080/19475705.2025.2571983>

<sup>12</sup> Murodov, A., Cuo, L., Li, N., Murodov, D., Hou, M., & Hussain, G. (2023). Extreme Hydrometeorological Conditions and Changes in the Amu Darya River Basin in Central Asia. *Journal of Hydrometeorology*, 24(2), 315–334 and Nepal et al. (2021). Future snow projections in a small basin of the Western Himalaya. *Science of The Total Environment*, 795 (15).



Turquoise waters from glacial melting in the Fann Mountains, western Tajikistan. Source: Shutterstock.

Meanwhile, agricultural water requirements are expected to rise by around 9 percent by 2050, even without additional QTC withdrawals, thus likely further exacerbating seasonal deficits.<sup>13</sup> In addition to changes in river flows, satellite assessments indicate a persistent decline in terrestrial water storage across the Amu Darya basin since the early 2000s, driven primarily by sustained groundwater depletion rather than short-term climate variability.<sup>14</sup> The situation is further compounded by population growth, urbanization, and economic development that will all place further demands on water.

Overall, climate trends are expected to increase flow variability, reduce water availability during dry seasons, and intensify competition between sectors and states. The Amu Darya's dependence on meltwater makes it among the most climate-sensitive basins in Central Asia. Reduced flows also heighten tensions between the needs of different sectors—namely hydropower generation and irrigation—in upstream and downstream countries and communities, thus threatening both food and energy security.

While large-scale conflict over water has not yet materialized and the risk should not be unduly exaggerated, recent years have witnessed deadly intra- and inter-state clashes, across the region, some of which were triggered by water management issues.<sup>15</sup>

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<sup>13</sup> ADB. (2013a). Technical Assistance Consultant's Report Republic of Tajikistan: Developing Water Resources Sector Strategies in Central and West Asia Financed by the Water Financing Partnership Facility and ADB Developing Water Resources Sector Strategies in Central. 001(June).

<sup>14</sup> Azizi, A. H., et al. (2024). Assessing long-term water storage dynamics in Afghanistan: An integrated approach using machine learning, hydrological models, and remote sensing. *Journal of Environmental Management*, 370, 122901.

<sup>15</sup> "Deadly fighting on Kyrgyzstan-Tajikistan border kills at least," BBC News, 30 April 2021, <https://www.bbc.co.uk/news/world-asia-56940011> Kazakhstan-Kyrgyzstan clashes (<https://fiia.fi/sv/publikation/water-and-fire-at-kyrgyz-tajik-border>); Karakalpak protests (<https://responsiblestatecraft.org/2022/07/05/the-karakalpakstan-protests-are-both-a-history-lesson-and-warning-for-the-west/>).

### 1.3 The Ripple Effects: Socio- Economic and Environmental Consequences

The socio-economic consequences of reduced water availability will be significant. In downstream states, where 90–95 percent of water withdrawals are used for agricultural purposes, increasing variability threatens rural incomes, well-being, and social stability. Women and vulnerable groups are likely to be disproportionately affected. In Uzbekistan, for example, women make up 62 percent of the cotton-picking workforce<sup>16</sup>, while in Turkmenistan a substantial share of agricultural labour remains involuntary.<sup>17</sup> Reduced agricultural activity risks eroding one of the few available sources of income for low-income households. A combination of water scarcity, climate change, and underdevelopment also has severe socio-economic consequences for Afghanistan, which are factors also implicated in its unilateral development of the QTC.



Women agricultural workers, Samarkand, Uzbekistan. Source: Shutterstock.

The frequency and severity of droughts are projected to increase, directly threatening the incomes of rural communities that depend on agriculture and livestock on both banks of the Amu Darya.<sup>18</sup> Groundwater increasingly functions as a short-term buffer during droughts and low-flow periods when surface water availability declines. However, abstraction exceeds recharge, leading to the long-

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CNN. (2022, July 4). Uzbekistan says 18 killed, hundreds wounded in unrest.

<https://edition.cnn.com/2022/07/04/asia/uzbekistan-violence-protests-karakalpakstan-intl-hnk/index.html>

Radio Free Europe/Radio Liberty. (2024, May 9). Faced with shortages, Turkmen look for escape, but not everyone can get out. <https://www.rferl.org/a/turkmenistan-shortages-food-energy-escape/32542948.html>

<sup>16</sup> ILO, Uzbek cotton is free from systemic child labour and forces labour, 2022, International Labour Organisation News (<https://www.ilo.org/global/about-the-ilo/newsroom/news/>)

<sup>17</sup> Central Asia Labour Rights Monitoring Mission, Forced labour remains the norm in Turkmenistan's cotton fields, 2018 (<https://labourcentralasia.org/en/news/forced-labor-remains-the-norm-in-turkmenistan-s-cotton-fields/?f=9QpLXdfW>)

<sup>18</sup> Azizi et al., (2024); Do, S. K., et al. (2024). Assessing terrestrial water storage variations in Afghanistan using GRACE and FLDAS-Central Asia data. *Journal of Hydrology: Regional Studies*, 55, 101906.

term depletion of terrestrial water storage and reduced resilience of rural livelihoods. Recent analysis of groundwater and terrestrial water storage dynamics show that droughts in the Amu Darya basin are associated with sharp declines in subsurface water storage, followed by only partial recovery in subsequent wet years, resulting in a progressive lowering of the basin's water storage baseline.<sup>19</sup>

At the same time, severe—though less frequent—flood events can also undermine livelihoods. While the economic consequences of floods may appear limited at the national scale, their localized impacts can be devastating. For example, Kazakhstan's government has failed to prepare adequately for seasonal flooding that has become more severe in recent years.<sup>20</sup> As floods trigger large-scale riverbank erosion and destroy specific areas, entire livelihoods risk collapse. Recovery can be slow or even unattainable. As a result of both droughts and floods, population movements, including migration and other forms of spatial mobility, will become a significant and unavoidable consequence. Environmental impacts will also deepen. As inflows decline, the Aral Sea delta region is likely to experience further desiccation. Lower water levels will accelerate ecological degradation in the delta region, worsen sand and dust storms, and contribute to increasingly severe public health outcomes, including respiratory and waterborne diseases across the region.<sup>21</sup>



Derelict ships on the desiccated Aral Sea bed. Source: Shutterstock.

## 1.4 Water as a Catalyst for Regional Cooperation

These challenges are occurring amid evolving geopolitical and institutional constraints. Regional water governance mechanisms, namely the International Fund for Saving the Aral Sea (IFAS), the Interstate Commission for Water Coordination (ICWC), and Basin Water Organisations (BWOs), established in the early 1990s, are

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<sup>19</sup> Do, S. K., et al. (2024).

<sup>20</sup> Assel Satubaldina, "Tracing Kazakhstan's Seasonal Floods Through Time," *The Astana Times*, 11 April 2024, <https://astanatimes.com/2024/04/tracing-kazakhstans-seasonal-floods-through-time/>

<sup>21</sup> Roberson, C. (2014). *Aral Sea Catastrophe*. Retrieved January 2026, from *International Pollution Issues*: <https://intpollution.commons.gc.cuny.edu/aral-sea-catastrophe/>

increasingly strained. Kyrgyzstan's frozen participation and Afghanistan's absence from these institutions heighten uncertainty for downstream states, complicating coordinated and long-term basin planning and institutional stability across the wider Aral Sea Basin.

For example, the construction of the QTC in the absence of an inclusive basin-wide framework between Afghanistan and neighbouring Central Asian states, raises questions about the volume and timing of water abstraction in a context of uncertainty about overall water availability in the basin. This is further compounded by limited data sharing as well as worsening climate change impacts.



Aerial view of the Qosh Tepa Canal, Afghanistan. Source: Shutterstock.

Because the QTC project is still under construction, and its impacts will unfold gradually, there is an opportunity to explore cooperative approaches, including technical collaboration, improvements to water-use efficiency, modernized irrigation systems, adaptive cropping, and improved water accounting. Simultaneously, neighbouring states can leverage this window to implement complementary reforms and strengthen and adapt their own water management systems. This could be more effective if done collaboratively between Afghanistan and Central Asian states.

Engagement framed around shared challenges—climate adaptation, health, food and energy security, disaster risk reduction, and regional connectivity—may offer more constructive and politically feasible entry points than focusing exclusively on water allocation that risks exacerbating a zero-sum perspective. The broader regional landscape reinforces the need for cooperation. Beyond a shared river system, the region is interconnected by energy systems, electricity trade, transport corridors, and emerging links to South Asia, the Gulf states, and China. Afghanistan remains a key geographic corridor despite its political isolation under

the Taliban de facto authorities. All five Central Asian states are engaging with Afghanistan to varying degrees. Uzbekistan is actively engaging with Afghanistan on water, trade, and transit. Trade rose sharply between the two countries in 2025, reaching USD1.6 billion—a 45.5 percent increase from 2024 and an 84.4 percent rise compared with 2023—according to Uzbekistan's National Statistics authority.<sup>22</sup> Turkmenistan maintains more limited but has ongoing cooperation, the most notable example being its engagement on the TAPI (Turkmenistan–Afghanistan–Pakistan–India) gas pipeline project. As recently as February 2026, a high-level delegation from Turkmenistan was received by their Afghan counterparts in Herat province to reaffirm cooperation on major regional energy, transport, and infrastructure projects.



The Friendship Bridge across the Amu Darya, connecting Uzbekistan and Afghanistan. Source: Wikimedia Commons, CC BY-SA 4.0.

However, ad hoc and bilateral engagement with Afghanistan on water cooperation is inherently limited, and it risks fragmenting basin-wide cooperation and sidelining other riparian states whose interests and actions are inextricably linked. Additionally, effective cooperation cannot be sustained in isolation; it must be embedded within a regional framework that ensures inclusivity, predictability, and trust among all riparians. Anchoring water cooperation within broader and ongoing regional processes—such as trade, transit, and energy cooperation—can help create interdependencies and incentives that encourage more durable and mutually beneficial outcomes for water cooperation. Without such coordinated and regionally embedded action, the region risks experiencing cascading climate–fragility impacts, including increased competition over water, heightened instability, intensified poverty, migration, and setbacks to the Sustainable Development Goals (SDGs) and the region’s green transition.

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<sup>22</sup> Ariana News. (2026, January 30). Uzbekistan–Afghanistan trade rises to \$1.6 billion in 2025. <https://www.ariananews.af/uzbekistan-afghanistan-trade-rises-to-1-6-billion-in-2025/>

## 2. Insights from the Workshop

The three-day workshop highlighted the growing urgency to address regional water and climate challenges through coordinated, inclusive, and forward-looking processes. Three overarching themes structured the discussions:

### 2.1 Climate Change as a Basin-Wide Threat Multiplier

Participants emphasized that the rapidly changing climate is reshaping hydrology across the region. Rising temperatures, accelerated glacier melt, more frequent heatwaves, and increasingly unpredictable rainfall patterns are altering water availability, timing, and reliability. These shifts intensify the threat of natural hazards such as droughts, floods, glacial lake outburst floods, landslides, mudflows, and riverbank erosion, which pose risks to agricultural productivity and heighten socioeconomic vulnerability. These hydrological stressors also compound institutional fragility. Amid unilateral infrastructure projects, and in the absence of effective basin-wide cooperation among all riparian states, climate-driven changes reinforce national threat perceptions, increase uncertainty, and heighten the likelihood of inter-state tensions across the region.

### 2.2 The Qosh Tepa Canal and Future Water Governance

In addition to climate change, the QTC was widely discussed as a driver of future uncertainty. While the QTC is important for Afghanistan's food security and poverty eradication, a number of participants noted concerns about the canal's potential impacts on downstream water availability, irrigation seasons, and regional food and energy security. At the same time, many saw the QTC as a potential catalyst for broader regional water governance reform—creating an impetus to modernize irrigation, improve water use efficiency, transition towards low-water crops, improve data sharing and monitoring mechanisms, and reform regional cooperation mechanisms. This could also include the exchange of local and indigenous knowledge on traditional and community-based water management practices that have supported water sharing and resilience in arid environments. There was broad recognition that, notwithstanding political difficulties, engagement with Afghanistan as a riparian country is both necessary and unavoidable.



Qosh Tepa Canal. Source: National Development Corporation Afghanistan.

## 2.3 Regional Connectivity and Geopolitical Dynamics

Discussions broadened beyond water to the region’s strategic interdependencies. Participants noted that energy, trade, transit, health, food security, and increased interest in the region’s critical minerals all intersect, directly or indirectly, with water management and climate resilience. Other regional and extra-regional actors—including China, the EU, the U.S., Russia, Gulf States, and international organisations—are also important in shaping investment flows, energy transition, diplomatic priorities, and the region’s development trajectories. Participants emphasised that water cooperation cannot be isolated from these wider relations and dynamics. Particular focus was put on the role of the EU, U.S., China, Russia, Organisation for Security and Cooperation in Europe (OSCE), and the United Nations Assistance Mission in Afghanistan (UNAMA).

The 2019 EU strategy on Central Asia guides cooperation with the region focused on promoting resilience, prosperity, and regional cooperation.<sup>23</sup> Although Central Asia has not always been a top policy priority for the EU, interest has grown since Russia’s invasion of Ukraine, driven by Central Asia’s potential as an alternative energy supplier, the development of the Middle Corridor transit-trade route linking Asia and Europe, as well as a source of critical minerals. Participants emphasized how the EU is well placed to provide funding and expertise in renewable energy, energy security, environmental protection, and climate resilience. Discussions also highlighted the need for greater EU investment in scientific cooperation and education.

<sup>23</sup> European External Action Service (EEAS). (2019). New EU Strategy on Central Asia. May 15, 2019. [https://www.eeas.europa.eu/node/62412\\_en](https://www.eeas.europa.eu/node/62412_en).

Notably, the EU and its member states are already active in initiatives such as the Central Asia Water and Energy Program (CAWEP). Engagement with Afghanistan remains limited, however, due to the lack of diplomatic recognition of the DFA; though the EU Delegation does maintain a presence in Kabul and engages regularly with the DFA on selected issues. In addition, European countries engage actively through bilateral initiatives, including Germany's Green Central Asia Initiative, which addresses climate-related security risks and technical cooperation, and Switzerland's Blue Peace Central Asia, which supports transboundary water cooperation, sustainable development, and peace through dialogue, capacity building, and technical solutions.

China has vested political, security, and economic interests in Central Asia engaging bilaterally as well as multilaterally through the Shanghai Cooperation Organisation and the Belt and Road Initiative. A major investor in renewable energy in the region particularly solar power, other key areas of engagement include climate-smart agriculture, 'green' mining, education and training, as well as technical assistance and investment in water infrastructure projects including the Rogun Dam. China is also a riparian stakeholder through shared waters of the Ili River with Kazakhstan. In the context of Afghanistan, questions were raised by participants about the impacts of Chinese mining investments on water resources. The DFA cancelled a 25-year Chinese oil extraction contract in mid-2025, citing contractual violations.<sup>24</sup> Despite environmental concerns and lack of oversight of Chinese investors, the technical expertise of Chinese actors was viewed positively by some Afghan stakeholders.

Russia remains an important economic and security actor in the region. It has shared waters with Kazakhstan and is a littoral state to the Caspian Sea, which has witnessed declining water levels. Russia also closely follows developments in Central Asia, including through its engagement with the United Nations Regional Centre for Preventive Diplomacy for Central Asia (UNRCCA) and its hosting of UNRCCA-sponsored meetings of Central Asian states in Moscow. Yet Russia is not a key actor in regard to climate and water cooperation in the Amu Darya Basin. Russia took no action, for example, during the episodic water-related conflicts between Kyrgyzstan and Tajikistan, despite being the most important security partner for both states.

Since the U.S. withdrawal from Afghanistan, U.S. engagement in the region has weakened. The rowing back of climate commitments under the Trump administration as well as dismantlement of the U.S. Agency for International Development (USAID), and more recent withdrawal from the World Health Organisation (WHO), have also diminished the U.S.'s role in engaging with issues of climate, water, health, and sustainable development. Despite this, the November

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<sup>24</sup> Le Monde, "Afghanistan: The Realities Behind the Economic Recovery Claimed by the Taliban," 17 December 2025, [https://www.lemonde.fr/en/international/article/2025/12/17/afghanistan-the-realities-behind-the-economic-recovery-claimed-by-the-taliban\\_6748610\\_4.html](https://www.lemonde.fr/en/international/article/2025/12/17/afghanistan-the-realities-behind-the-economic-recovery-claimed-by-the-taliban_6748610_4.html).

2025 summit between the Trump administration and Central Asia leaders under the C5 plus 1 platform raises the prospect of trade and investment deals, although not necessarily in the sphere of water or climate.

Participants also discussed the role of the UN and the OSCE in the context of water-climate cooperation in the region. It was highlighted that UNAMA could play a key bridging role with Afghanistan considering the political context and its mandate to engage the DFA. While UNAMA lacks specific capacity on transboundary water cooperation, it was discussed that climate adaptation represents an entry point with the de facto authorities, with UNAMA playing a potential supporting bridge taking into account its mandate on regional cooperation, role in aid coordination, and engagement on climate change and environment with the de facto authorities.

The OSCE has a mandate on water management. In particular, the Office of the Co-ordinator of OSCE Economic and Environmental Activities (OCEEA) engages on transboundary water cooperation, water diplomacy, and good water governance. While Afghanistan was included until 2021, there has been no direct engagement with the Taliban authorities since then. Additionally, the Framework for Response to the Implications of Afghanistan for the OSCE Region (RIAOR) addresses vulnerabilities and improving resilience in communities in the Central Asia border region with Afghanistan. It was asserted, however, that Russia's war on Ukraine has diverted a lot of resources away from the region amidst a lack of funding.



Dried up river bed outside of Aybak city district, close to the proposed route of the QTC. Source: Shutterstock.

## 2.4 Risks and Opportunities

Across the workshop sessions, **five clusters of risk** clearly emerged:

1. Uncertainty stemming from both climate impacts and the QTC's evolving hydrological effects;
2. Low levels of water productivity, and increased soil salinity, due to outdated technologies and practices, mean that countries are ill-prepared for growing water scarcity;
3. Heightened competition over water, potentially exacerbating regional tensions and instability;
4. The ineffectiveness of existing water governance arrangements to address new hydrological realities amidst climate change;
5. Geopolitical rivalries and diplomatic tensions, which could complicate cooperation or fragment regional platforms.

Participants expressed concern that inaction could allow these pressures to accumulate, increasing fragility and undermining regional stability.

Despite significant challenges, participants identified several **promising developments and opportunities**:

1. Increased evidence of political will to pursue deeper cooperation and integration among the five Central Asian states which could bode well for addressing shared climate and water challenges;
2. Climate impacts can constitute a unifying entry point: natural hazard management, early warning systems, and joint climate adaptation strategies offer less sensitive and therefore politically feasible areas for engagement;
3. The QTC could serve as a catalyst for regional water management reform: the canal has the potential to incentivise improvements in water-use efficiency, basin-wide data sharing mechanisms, and inclusive regional platforms that involve Afghanistan;
4. Leveraging regional interdependencies: trade, transit, energy linkages, and infrastructure investments (such as electricity grids, trade and transit corridors, and virtual water trade) create incentives that extend beyond water.

Such interdependencies could broaden the 'basket of benefits' available to riparian states, offering gains in food and energy security, market access, and economic connectivity that can offset diminishing water shares.

## 3. Potential Pathways for Cooperation

Building on the workshop discussions—and informed by the basin’s climatic and hydrological realities as well as broader regional interdependencies—four potential pathways for future dialogue and cooperation emerged. Collectively, these pathways seek to reduce uncertainty, mitigate climate and water risks, and leverage regional interdependencies in support of more sustainable and cooperative development outcomes.

While Central Asia hosts a range of water, energy, and development-related cooperation platforms, Afghanistan has historically remained outside these arrangements. The pathways identified therefore focus on two complementary approaches: where feasible, gradually onboarding Afghanistan into existing regional mechanisms; and where such platforms are absent or insufficient, initiating new, inclusive pathways in which Afghanistan can participate as a riparian actor. Such pathways are thematically grouped here and are not necessarily considered as separate from other processes on water and climate diplomacy.

### 3.1 Shared Water Resources: Utilization, Preservation and Ecosystem Resilience

This workstream focuses on technically grounded, practical cooperation around the sustainable and efficient use of shared water resources in Central Asia, in particular extending initiatives and cooperation to Afghanistan where information and exchanges are lacking or limited. The objective is to identify actionable areas where riparians can collaborate to enhance resilience and ensure non-conflictual, sustainable water use.

The impact of climate change requires increased **research, monitoring, and knowledge-sharing regarding seasonal flow variability** as a result of changes in precipitation patterns, the rapid melting of glaciers, and changes in the snowpack. In addition to surface water, collaboration is also required to assess the condition of ground water and transboundary aquifers, including the identification of stressors. Existing gaps in water data and monitoring, especially in Afghanistan, make extending technical cooperation particularly important for effective basin-wide water management. Increasing uncertainty around future water availability makes joint monitoring and information-sharing essential for cooperative water management.

Climate change increases the risk of extreme events including floods. Accordingly, there is a need for improved **regional coordination for Disaster Risk Reduction (DRR)**, including dam safety, hydrological and infrastructure monitoring, early warning systems, and emergency response. New and existing infrastructural

projects would also benefit from joint social and environmental impact assessments to better mitigate risks and build confidence among states.

Climate adaptation and resilience require addressing environmental degradation through **ecosystem management and restoration**. Areas of cooperation include riverbank protection to prevent erosion as well as sediment management. Sustainable water use also extends to watersheds and addressing land degradation, salinization, and desertification. Nature-based solutions encompass conservation and the establishment of local and transboundary protected areas. This also extends to valuing and incorporating indigenous or traditional knowledge and practices.

Preparing for a water-scarce future requires **addressing water-use efficiency** that presently remains very low across the region. The modernization of irrigation, enhancing capacity-building and technological innovation, as well as transitioning to less water-intensive crops can all serve as catalysts for cooperation and exchange.



The Amu Darya running through Uzbekistan looking towards Turkmenistan. Source: Shutterstock.

### **3.2 Water Governance Frameworks – Legal, Institutional & Policy Cooperation**

This workstream addresses the rules, norms, and institutions—national and regional—that shape cooperation. Building on technical entry points, it seeks to explore realistic governance pathways that can support predictable, rules-based water and climate cooperation between Central Asian countries and Afghanistan. Evolving scientific understanding of climate and hydrological change underscores the need for adaptive and flexible water governance frameworks. A number of key areas are identified below.

**Assessment of national institutional frameworks for water governance and climate adaptation across riparian countries.** While Central Asian countries

have updated their national water codes in recent years as well as made climate commitments, the efficacy of water and climate governance would be bolstered through improved regional harmonization of legislative frameworks and their implementation. In addition, legal and institutional options for future cooperation with Afghanistan and its gradual inclusion in the regional water institutions can also be explored by **revisiting the existing legal agreements on shared waters**, including bilateral arrangements with Afghanistan.

**Capacity-building to inclusive regional water institutions** should align water cooperation with emerging climate and development agendas, while strengthening dialogue, negotiation, and conflict-resolution capacities. Particular emphasis should be placed on basin-wide coordination, with the inclusion of Afghanistan as an overarching goal of these efforts.

**Strengthening gender inclusive water governance** is also essential as women and children are disproportionately affected by climate change. This includes enhancing the engagement of women in leadership and decision-making roles within the water sector. Targeted capacity development of women and young professionals within legal, institutional, and policy cooperation frameworks strengthens institutional legitimacy, improves risk-informed decision-making, and supports conflict prevention by ensuring that governance systems are inclusive, adaptive, and responsive to evolving climate-security dynamics. SIWI, for example, has supported the Women in Water Management Network in Central Asia and Afghanistan since 2021.

**Assessing engagement with global water and climate institutions and frameworks.** This involves mapping and scoping the role of Multilateral Development Banks, UN entities, donors, and international water instruments in supporting regional cooperation, joint investments, and capacity building. This also entails consideration of how existing constraints to engagement, including political and organisational mandates, can be navigated, particularly in the case of Afghanistan. Prior to 2021, international financial institutions and the UN played an active role in the region—including World Bank supported UNRCCA negotiations, and World Bank and Asian Development Bank engagement in Afghanistan—demonstrating the feasibility and value of multilateral involvement in regional water–energy cooperation.

### 3.3 Water–Energy Nexus

This workstream builds on discussions around energy security, critical minerals, green energy, and regional energy projects and infrastructure. It examines how energy interdependence can serve as a driver for cooperation on water and climate resilience, creating shared incentives for long-term stability. Topics to be explored include:

**Assessment of the water–energy nexus**, including hydropower potential, energy demands, and interdependencies that can support cooperation. This includes reviewing existing and potential regional energy projects and related infrastructure involving Afghanistan. These include, among others, CASA-1000, an electrical power grid exporting surplus electricity generated by hydropower from Central Asia to South Asia; the TAPI Pipeline, a natural gas pipeline between Turkmenistan, Afghanistan, Pakistan, and India; and the TUTAP power transmission line linking Turkmenistan, Uzbekistan, and Tajikistan with Afghanistan and Pakistan.



Ceremony marking completion of the Turkmen section of the TAPI natural gas pipeline. Source: Wikimedia Commons, CC BY-SA 4.0.

Synergies can also be considered for the joint construction and operation of hydropower projects, such as Kambarata-1 between Kazakhstan, Kyrgyzstan, and Uzbekistan, due for completion in 2028. Kambarata-2, already in operation, demonstrates the feasibility of large-scale upstream hydropower as part of a coordinated regional energy and water management framework. Additionally, Afghanistan possesses large, untapped potential for hydropower and renewable energy that could be utilized for cascade development. The Central Asian cooperative model—such as the arrangements for Kambarata-1 and the joint hydropower project on the Zarafshan River—provide good examples for such regional cooperation.

**Examining linkages between energy and trade:** This involves identifying mutually beneficial arrangements in energy generation, electricity trade, and regional transmission grids. In particular, exploring how incentives for benefit-sharing can be structured while maintaining sustainable water use and allocation. Although energy trade already exists among the countries and solar power is gradually being integrated into the regional grid, additional incentives—such as supplying gas and electricity at reduced prices or exchanging energy for water deliveries beyond a

country's allocated quota—offer an opportunity to deepen regional cooperation and create mutually beneficial resource-sharing arrangements.

**Green energy and climate finance** are essential for climate change mitigation and adaptation. Opportunities can be explored for joint green infrastructure, resilience bonds, Multilateral Development Bank engagement, renewable energy transitions, and climate-smart investments.

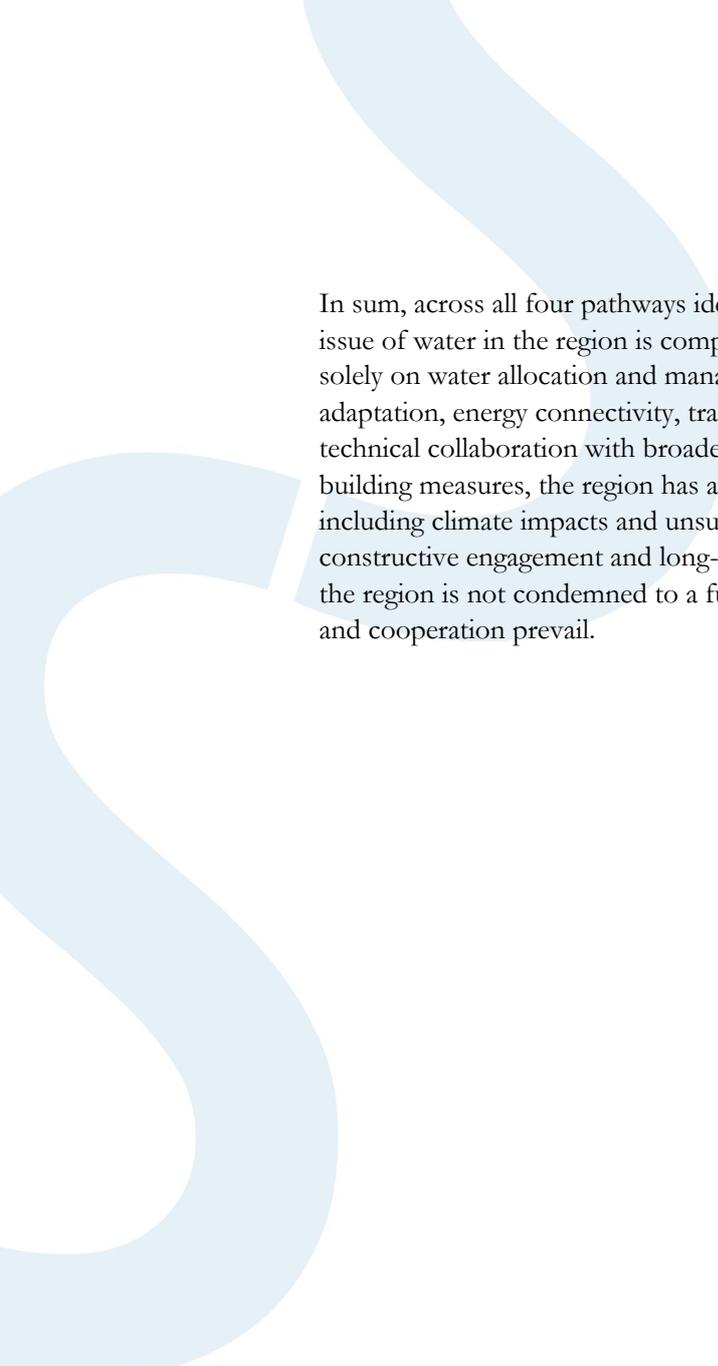
### 3.4 Leveraging Regional Interdependencies

Water cooperation cannot be divorced from broader regional dynamics. Coordination across related sectors can increase incentives for collaboration while creating space for trade-offs. Enhanced regional trade, transit, and economic corridors between Central Asia and Afghanistan can support broader cooperation—including on water, climate resilience, and energy systems. Trade and connectivity can reduce water stress by allowing countries to rely less on water-intensive domestic production and make better use of regional comparative advantages. Key areas for focus could include:

**Afghanistan's role as a regional bridge between Central Asia and South Asia**, enabling wider economic and infrastructural integration. This involves mapping regional transport corridors critical for trade between Central and South Asia, including the Termez–Mazar–Kabul–Peshawar Railway, linking Uzbekistan with Pakistan, and the Turgundi–Herat–Kandahar Railway Project. Other potential routes include the Lapis Lazuli Corridor, China–Kyrgyzstan–Uzbekistan Railway (with potential Afghan linkage), and connectivity options through Afghanistan's Wakhan Corridor.

**Creating enabling conditions for trade facilitation and market access.** This involves addressing tariffs, customs transit, digital trade corridors, and harmonized standards—particularly in water-intensive sectors such as agriculture and textiles. Economic diversification and trade can also be explored to leverage comparative advantages, taking into account water usage and trade in less water-intensive crops.

**Improved border management and transit governance** through harmonizing border procedures, visa regimes, enhancing logistics coordination, and facilitating the cross-border movement of goods and people. In addition, the scope for Free Trade Zones and Special Economic Corridors can be explored as similar options to existing trade and transport hubs, such as Termez and Aqina, on the borders of Uzbekistan, Turkmenistan, and Afghanistan. Despite present political constraints, options for Afghan participation in the Central Asia Regional Economic Cooperation (CAREC) Program can also be examined.



In sum, across all four pathways identified above, participants recognized that the issue of water in the region is complex and cross-cutting. Cooperation cannot focus solely on water allocation and management: it also needs to integrate climate adaptation, energy connectivity, trade, and sustainable development. By aligning technical collaboration with broader regional interdependencies and confidence-building measures, the region has a unique opportunity to turn shared challenges—including climate impacts and unsustainable water management—into catalysts for constructive engagement and long-term stability. Despite alarming climate realities, the region is not condemned to a future of water scarcity and conflict if dialogue and cooperation prevail.