

ANNEX 4 Cross boundary and SPECA sub-regional analysis

Launched in 1998, the UN SPECA was established to promote sub-regional cooperation and integration into the world economy. The total population of SPECA participating States (Afghanistan, Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) increased from 83 to 132 million between 2000 and 2023, while its GDP grew over tenfold during this period – from \$46 to \$525 billion.¹

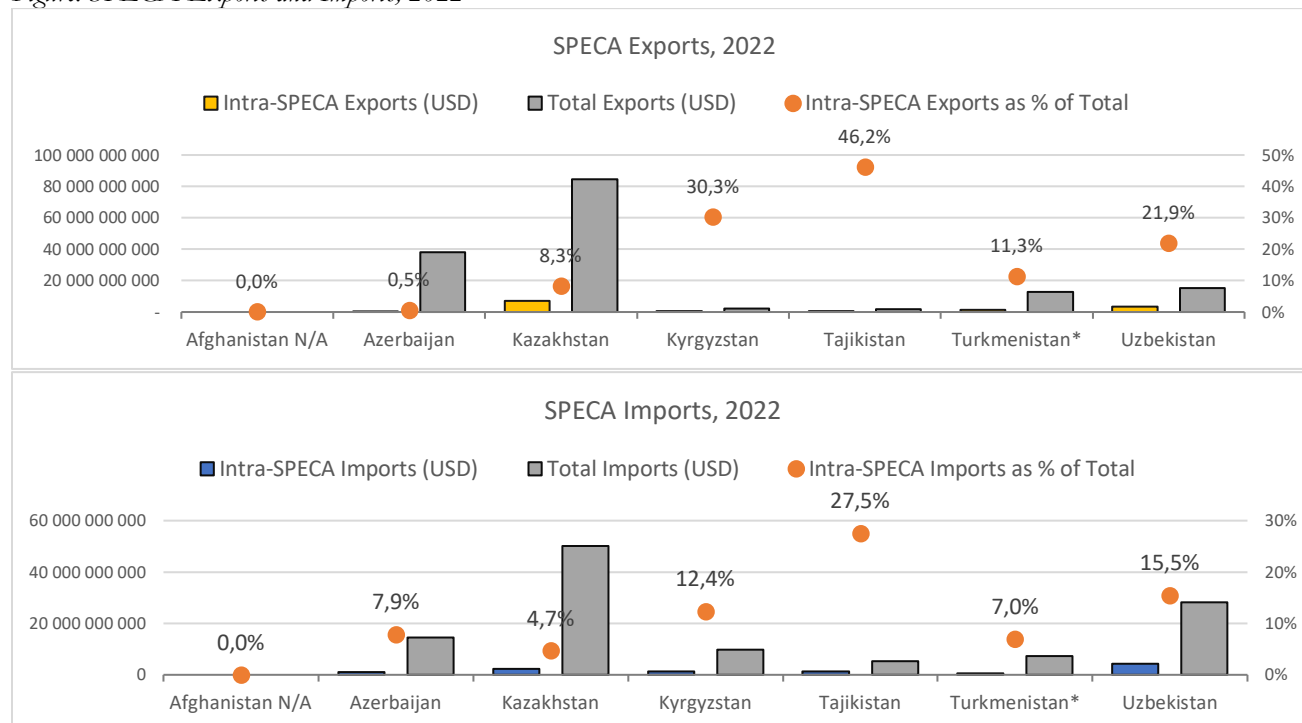
The 2024 SPECA Heads of States Summit called for further deepening economic cooperation and regional integration, with commitments to improve connectivity, harness digital transformation and support green transition. The establishment of the SPECA Multi-Partner Trust Fund (MPTF) aims to collectively address bottlenecks in trade, energy, cross-border investments, and transport. This common chapter explores issues that affect SPECA participating States simultaneously, with focus on trade and investment, transport connectivity, energy connectivity and transboundary water management, highlighting opportunities for greater cooperation to promote sustainable economic transformation.

5.1 Trade and Investment

Among the key challenges to be addressed by the seven SPECA participating states is investment in strengthening regional trade through increasing the value of intra-SPECA flows, developing more complex value chains, digitalisation and inter-regional investments.

While total trade flows of SPECA participating States stood at approximately \$269.7 billion in 2022,² intra-SPECA trade amounted to only \$24.5 billion, or 9.1% of the total trade volume. Despite a gradual increase from 8.2% in 2018, these figures remain modest compared to other economic regions,³ highlighting untapped potential. Kazakhstan emerges as a major trade partner, accounting for around 50% of the region’s total trade volumes, but its trade integration within SPECA is below the regional average with only 8.3% of its exports and 4.7% of its imports being intra-SPECA.

Figure. SPECA Exports and Imports, 2022



¹ DataBank – World Development Indicators <https://databank.worldbank.org/home.aspx>

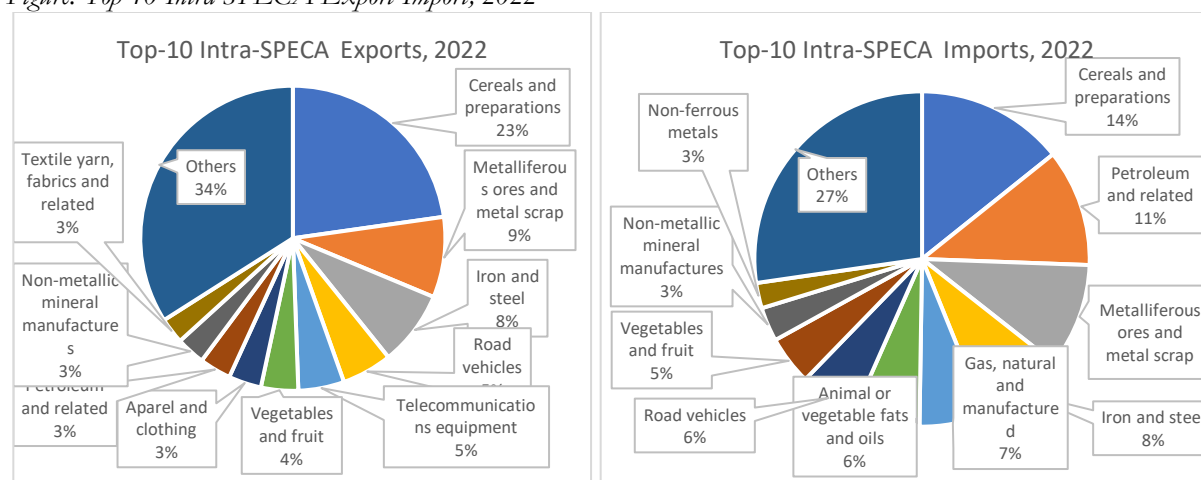
² UN Comtrade Database <https://comtradeplus.un.org/TradeFlow> Most recent data on Afghanistan (2019) is not included in the analysis. However, SPECA trade with Afghanistan is included. For Turkmenistan, national statistics for the year 2022 are reported.

³ The intra-EU28 trade accounts for 61% of the total trade, while intra-regional trade in East Asia and ASEAN accounts for 28% and 23% of the total for the region, respectively. Source: UN Comtrade Database <https://comtradeplus.un.org/TradeFlow>

Azerbaijan contributes 25% to regional exports, yet only 0.5% of these exports are directed towards SPECA participating States. In contrast, Tajikistan and Kyrgyzstan, despite very modest trade volumes, show strong reliance on regional partners.

At the commodity level, intra-SPECA trade flows⁴ underscore the dominance of natural resources and primary sectors. Cereals are the top traded commodity, while other agricultural products include vegetables, fruits, and animal or vegetable fats and oils. The region's wealth in hydrocarbons and raw materials is reflected in the concentration of trade in petroleum, metalliferous ores, gas, metals and minerals. With the concentration of trade in natural resources and primary commodities, the potential for developing more complex value chains within SPECA remains largely untapped. Building upon the agricultural sector, there is an opportunity to advance trade of processed food. Similarly, the textile and garments sub-sector could lead to trade of goods along more complex value chains.

Figure. Top-10 Intra-SPECA Export-Import, 2022



Sources: National Statistics

Addressing underlying root causes is essential for economic diversification and to increase the value of intra-SPECA flows. Historically, SPECA participating States opted for competition rather than economic integration, prioritising trade with large economies. The total manufacturing value added (MVA) as a proportion of GDP in SPECA participating States dropped from 15% in 2000 to 9.5% in 2023, reflecting structural shifts in SPECA's economies despite a doubling MVA per capita.⁵ This decline in MVA's GDP ratio, coupled with insufficient investments in infrastructure and technology, limited the growth of advanced manufacturing and processing industries, crucial for a diversified trade portfolio in the region. Despite these challenges, recent studies indicate a unique trend: Central Asia leads with a 48% infrastructure development rate. Yet, it lags in industrial performance and innovation, underscoring the need for SPECA participating states to prioritise enhancements in technological and creative capacities.⁶

However, while improving trade facilitation continues to be a significant challenge for the primarily landlocked SPECA participating States, new opportunities and challenges have emerged.⁷ In response to the geographical limitations, countries are prioritising the digitalisation of customs procedures to enable effective integration in global value chains (GVCs).⁸ Existing tariff and non-tariff barriers, such as complex customs procedures, inconsistent documentation and tariff regimes, create significant delays and high transaction costs. Countries

⁴ Source: UN Comtrade Database <https://comtradeplus.un.org/TradeFlow> For Turkmenistan, 2022 national statistics are reported, which do not include commodity-level data. This implies the SPECA trade balance does not add up, especially at the commodity level, where for example Petroleum is the 2nd most imported commodity within SPECA (USD 1,192,017,052 or 11% of the TOT M) but only the 8th most exported one (USD 402,623,289 or 3% of TOT X) due to the sizeable imports from Turkmenistan, not recorded among the exports.

⁵ UNIDO Statistics Portal https://stat.unido.org/analytical-tools/sdg?tab=charts&country=R2_143&code=004&year=2022

⁶ UNIDO Industrial Development Report 2024 <https://www.unido.org/sites/default/files/unido-publications/2024-06/Industrial%20Development%20Report%202024.pdf>

⁷ Recent limitations regarding the use of land and airspace of Russia, have necessitated adjustments to regional transport routes.

⁸ UNIDO Statistics Portal https://stat.unido.org/analytical-tools/sdg?tab=charts&country=R2_143&code=004&year=2022

in the region face significant problems related to dysfunctional sanitary (animals) and phytosanitary (plants) systems and a lack of coordination between border controls, which create vulnerability to transboundary pests and diseases and constrain the potential of Central Asian nations to expand agri-food trade.

Trade is also hampered by uneven adoption of digital and sustainable trade facilitation measures⁹ and insufficient implementation of paperless trade,¹⁰ which remain below comparable economic regions. Further, restrictions on human movement, such as Turkmenistan's visa regimes, as well as complex import licensing procedures and varying standards and regulatory practices, including health and safety regulations, limit intra-SPECA trade in goods and services. Migrants play a crucial role in international trade and exports. In the SPECA region, 5.9 million international migrants were resident, and 14.8 million originated from this region, with 4.1% of all movements being within SPECA.¹¹ Remittances play a fundamental role in SPECA participating States, where 0.05% of total SPECA GDP relies on inward remittances. At the same time, remittances make up 39.1% of GDP in Tajikistan and 22.3% in Kyrgyzstan and 15.3% in Uzbekistan, making them a significant income source in these countries.¹²

Concerning the intra-regional investments, in Central Asia, mutual Foreign direct and varying standards investment reached around USD 1.1 billion, with Kazakhstan (87%) and Uzbekistan (13%) as the main investors. Kyrgyzstan received 63% of the mutual FDI, mostly in the extractive industry (31.7%). Compared to other economic regions, intra-SPECA investments are limited¹³ and mostly channelled into natural resources due to perceived lower risks, hindering diversification into manufacturing and services. Issues like unclear investment protection concepts and risks from inconsistent legislative transparency remain, with states varying in their openness to foreign investment and maintaining monopolies in certain sectors.¹⁴

Through joint ventures SPECA participating States can offer a large market and incentives for mutual FDI. Such investments require harmonising regulatory and administrative procedures and further improving the business environment, as well as investment promotion strategies addressing barriers related to the size of business. An integrated market with movement of people, goods, services, and capital can mutually benefit SPECA participating States. To approach trade holistically it is extremely important to incorporate the human mobility aspect to advance sustainable development¹⁵. For example, by extending trade agreements to include regulations on free movement of people, in turn countering irregular migration and protecting rights.¹⁶

For a shift towards more intra-SPECA trade and investments in value chains, SPECA participating States must capitalise on existing strengths while addressing challenges through comprehensive reforms. Some key steps include improving infrastructure, liberalising economic policies, and creating an investor-friendly environment. Regional cooperation and integration can open larger markets for manufactured goods, supporting complex industrial sectors. Leveraging greener technologies and financing, sharing expertise and infrastructure costs, and developing regional agreements for sustainable projects can create favourable conditions. It is estimated that implementing Trade Facilitation Agreement measures as outlined by the World Trade Organisation could reduce trade costs by 7%, while digital trade facilitation measures could cut costs by over 15%.¹⁷ As underlined

⁹ A UN survey on Digital and Sustainable Trade Facilitation shows that while some countries have made strides in implementing digital customs systems and single window systems, adoption of technology for customs and border procedures is uneven across the region. In 2023, SPECA participating States have an average implementation rate of digital and sustainable trade facilitation measures of 66%, with Azerbaijan and Uzbekistan leading with 87% and 85%, while Afghanistan, Tajikistan, and Turkmenistan lag behind with rates as low as 43%.

UN Global Survey on Digital and Sustainable Trade Facilitation 2023

¹⁰ SPECA regional average has increased from 55% to 60% between 2021-2023, but remains 6 percentage points lower than the Asia-Pacific average. Source: United Nations Global Survey on Digital and Sustainable Trade Facilitation 2023.

¹¹ The main five destination countries were Russian Federation (38.5%), followed by the Islam Republic of Iran (18.3%), Pakistan (10.8%), Germany (10.7%) and Ukraine (4.2%) (UNDESA 2021: <https://www.un.org/development/desa/pd/content/international-migrant-stock>)

¹² KNOMAD, WB (2024) <https://www.knomad.org/data/remittances>, WB (2022) ODA(2022) FDI <https://data.worldbank.org>

¹³ Intra-ASEAN investments, for example, account for 17% of total FDI. See <https://unctad.org/publication/asean-investment-report-2021>

¹⁴ BITs in Central Asia: Opportunities and Risks, The American Review of International Arbitration, Columbia Law School.

<https://aria.law.columbia.edu/bits-in-central-asia-opportunities-and-risks/?cn-reloaded=1>

¹⁵ https://rosanjose.iom.int/sites/g/files/tmzbd11446/files/documents/2024-01/oim_sdg_consultancy-2.pdf

¹⁶ Global Compact for Migration (2018), Objectives 18 and 19:

¹⁷ ESCAP, UNECE (2023), Digital and Sustainable Trade Facilitation in the UN SPECA.

in the 2024 SPECA Joint Ministerial Statement¹⁸, the promotion of e-commerce, cross-border paperless trade, and power trade, the effective use of trade portals, and the establishment of direct contacts between relevant authorities, can boost regional trade turnover.

5.2 Transport Connectivity

Improving transport connectivity for trade and economic growth in the SPECA region with investments in quality and capacity of transport infrastructure, cargo information management system, common regulatory frameworks and unification of standards, as well as strategic interests coordination with the Middle or Trans-Caspian Corridor for increasing common benefits.

Transport connectivity is crucial for trade and economic growth in the SPECA region, but significant gaps remain and disparities in transport infrastructure quality and capacity are evident. The relative connectivity ranges from 53% to 70% of the connectivity achieved by the Netherlands, with Azerbaijan leading at 70% followed by Turkmenistan (68%), while the lowest rates are in Tajikistan (53%) and Kyrgyzstan (54%).¹⁹ These gaps result from uneven development focus, with investment decisions influenced by national interests rather than by comprehensive regional strategies.

Road networks are underdeveloped, especially in rugged terrain like Kyrgyzstan and Tajikistan. Even in areas with better infrastructure and extensive networks, such as in Uzbekistan and Kazakhstan, road quality and maintenance are a major obstacle to efficient and safe transport. Outdated design and construction standards inherited from the USSR, inadequate design axle load and severe climatic conditions lead to much faster deterioration of roads than maintenance can be carried out. Urgent changes are also needed to improve the national road safety system to significantly reduce the number of road deaths and injuries. Updates could be done by accession to and efficient implementation of core Road Safety UN Legal Instruments.

Kazakhstan and Uzbekistan have relatively extensive rail networks, critical for their connectivity to both Europe and Asia, but face capacity limitations due to insufficient tracks and outdated logistical handling facilities, which lead to bottlenecks, especially at border crossings. Turkmenistan and Tajikistan, on the other hand, struggle with outdated rail technology and insufficient service frequencies.

Seaports in Azerbaijan, Kazakhstan, and Turkmenistan such as Baku/Alat, Aktau and Turkmenbashi, are crucial for trade along the Caspian Sea but require modernisation and better integration with rail and road networks to improve handling capacities. Notably, both Baku/Alat and Aktau have expansion plans in place, and the port of Alat has recently been modernized, including its rail and road connections, to significantly expand its capacity. However, most other seaports remain underutilised due to infrastructure gaps, underdeveloped intermodal transport hubs, regulatory barriers, limited number of vessels and irregular shipment schedules in the Caspian Sea, which makes them costly and uncompetitive compared to alternative routes. This is largely due to administrative inefficiencies, lack of modernisation, and insufficient regional planning.

Enhancing the multimodal interoperability of cargo information exchange along corridors and with neighbouring regions is needed. As envisaged in the SPECA Roadmap for the Digitalisation of Multimodal Data and Document Exchange along the Trans-Caspian Transport Corridor, use of tools for digitalisation of transport services (e.g., eTIR, eCMR) and common semantic standards (UN/CEFACT) is recommended to better harmonise the procedures.²⁰ Despite the advancements, fragmented adoption of digital technology hampers regional efficiency and affects both the speed and costs of cross-border movements.²¹ Contributing

¹⁸ Joint Ministerial Statement of Ministers/Heads of Delegations of the UN SPECA participating States gathered in Bangkok on 23 April 2024 on the sidelines of the 80th session of the UNESCAP for a high-level dialogue with the heads of the UN regional commissions and heads of international organisations.

¹⁹ ITF North and CA Transport Outlook, International Transport Forum Policy Papers, No. 105, OECD Publishing, Paris

²⁰ Common semantic standards and Multimodal Transport Reference Model offered by the UN Centre for Trade Facilitation and Electronic Business (UN/CEFACT) should be used as the basis, as envisaged in the SPECA Roadmap for the Digitalisation of Multimodal Data and Document Exchange along the Trans-Caspian Transport Corridor, which was adopted by the Presidents of the SPECA participating States on 24 November 2023 at their summit in Baku. See: <https://unece.org/speca/speca-digitalization-roadmap>

²¹ Azerbaijan is connected with eTIR International and NCTS, Uzbekistan is connected with eTIR and has developed its own system, the etransit, which digitalised fully all customs processes, while Kazakhstan, Kyrgyzstan and Tajikistan are working with the UN to interconnect with eTIR and have their own customs systems and automations. Notably, SPECA customs authorities signed an agreement to develop a common transit system.

factors include the absence of advance cargo information systems and customs-to-customs cooperation, a non-unified regulatory regime for cross-border shipments by rail, limited IT infrastructure, lack of technical expertise, absence of integration between national agencies at the border and with their counterparts across the international border, and insufficient governmental support. Harmonisation of transport documents and customs procedures across SPECA participating States remains fragmented, which complicates cross-border transportation and creates barriers to effective regional integration.

These discrepancies are often rooted in differing national legislative priorities and the absence of a common regional framework to oversee and coordinate trade and transport procedural standards, as well as the lack of a unified regional transport policy, which leads to unoptimised resource allocation. The existing UN transport infrastructure agreements and regional commissions/committees serve as frameworks for harmonisation of efforts on rail and road transport, and better coordination in operationalisation of the Trans-Caspian corridor. However, a cohesive strategy is needed to unify these efforts under a regional agenda. There are some efforts to coordinate interoperability of transport corridors, such as the Coordination Committee on the Trans-Caspian and Almaty-Tehran-Istanbul Corridors, however, their effectiveness needs further assessment.

Lastly, the Middle or Trans-Caspian Corridor has the potential to improve connectivity between Europe and Asia through SPECA participating States. While traffic along this corridor has tripled since it started operating in 2017 and increased 2.5-fold over the year last year, cargo volumes are still marginal compared with the primary overland route, which is the Northern Corridor via the Trans-Siberian railway.²² The Trans-Caspian Corridor is considered the second-best overland option, but is constrained by issues listed above. Should it become the preferred new route, the existing Caspian Sea infrastructure may become a bottleneck.

5.3 Energy Connectivity and Transboundary Water Management

Development in the energy sector is associated with the strengthening of the UES CA with the focus on national and regional generating capacities and power grids, as well as low- and zero-carbon energy sources to reduce emissions and transition to sustainable energy systems. SPECA participating States have significant energy production capacities due to vast reserves of coal, oil, natural gas, and hydropower resources. However, energy resources are unevenly distributed, leading to varied power generation structures. Kazakhstan (12th in proven oil reserves²³), Azerbaijan, Uzbekistan, and Turkmenistan (4th in proven natural gas reserves²⁴) rely on hydrocarbons, while Kyrgyzstan (55 TWh/year) and Tajikistan (264 TWh/year) heavily rely on hydropower given by their river systems and mountainous terrain. In Soviet times, the power systems of South Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan were part of the UES CA, which enhanced operational reliability.

This integrated UES CA system managed energy and water needs collectively,²⁵ minimising fuel prices and power losses while coordinating irrigation and energy supplies, thus ensuring efficient resource management across borders.²⁶ After the USSR's dissolution, centralised funding for UES CA operations stopped, disrupting this regime and causing energy shortages and environmental issues. To overcome these challenges, the CA states signed the Agreement on Parallel Operation of Power Systems in 1991 and established the jointly financed Unified Dispatch Office of CA Power Systems. Kazakhstan, Kyrgyzstan, and Uzbekistan maintain interconnected electricity grids, supporting mutual electricity trade and enhancing grid stability. Turkmenistan operates its energy system with Iran, having exited the UES in 2003. Tajikistan, after a period of isolation due to non-compliance with operational standards, is anticipated to rejoin the UES CA in 2024.

SPECA participating States are increasingly focusing on low- and zero-carbon energy sources to reduce emissions and transition to sustainable energy systems. Azerbaijan aims to generate 30% of its electricity from renewable sources by 2030, while Kazakhstan plans to achieve carbon neutrality by 2060. Kyrgyzstan and

²² According to the Eurasian Rail Alliance Index, transported volumes between EU hubs and China via Northern Corridor fell 31.9% on the year in 2022 (from 618,180 TEUs in 2021 to 386,374 in 2022). EBRD (2023), Sustainable Transport Connections between Europe and Central Asia

²³ <https://www.iea.org/reports/kazakhstan-energy-profile>

²⁴ <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/electric-power/042623-turkmenistan-to-develop-pipeline-to-export-gas-to-europe-president>

²⁵ https://eabr.org/upload/iblock/599/EDB_WEC_CA_Report_EN_web.cleaned.pdf

²⁶ For instance, during summer irrigation, electricity from the Naryn and Vakhsh HPP Cascades was given to neighbouring republics, while Kyrgyzstan and Tajikistan received fuel and electricity for thermal plants from Soviet reserves in autumn and winter.

Tajikistan are expanding their hydropower capacities and exploring other renewable energy sources, such as solar and wind. Uzbekistan is investing in solar energy projects and improving efficiency of its natural gas-fired power plants.

To meet growing electricity consumption, extensive construction of generating capacities and power grids is required at both national and regional levels. Geographically long transmission distances and uneven load distribution in the UES CA might cause stability issues and equipment overloading. A Centralised Emergency Control System is needed to manage emergency disturbances and maintain system stability.²⁷ Additionally, to manage imbalanced capacity due to the rising share of renewable energy and increasing consumption, a centralised system for automatic frequency and power control should be established. Azerbaijan, Kazakhstan and Uzbekistan have signed a Memorandum of Understanding on Merging Energy Systems to catalyse production and export of green energy to Europe through Azerbaijan, integration of energy systems, and the effective utilisation of renewable resources.²⁸

For maximising potential of water resources for sustainable development for the countries in CA and given the existing inter-dependencies, attention needs to be paid to policy frameworks for transboundary integrated water management, better water governance and management, coordination over shared water resources and regional-scale modelling, supported by technological innovation in the sector. Water resources are critical for the CA's economic development, agri-food production, and energy production. Agriculture accounts for 80% of water consumption in Central Asia,²⁹ often using outdated and inefficient irrigation practices that exacerbate water loss. Water use is highly inefficient in all countries of the SPECA region, with water stress exceeding 100% in Turkmenistan and Uzbekistan.³⁰

The transboundary nature of water creates dependence and potential for conflict. Upstream countries like Kyrgyzstan and Tajikistan have significant water resources due to their mountainous terrain, and account for almost all the water resources in CA. Downstream countries, like Azerbaijan, Kazakhstan, Turkmenistan, and Uzbekistan, heavily depend on these flows. This geographic disparity has been a source of tension, particularly during droughts or water allocation disputes.

Country	SDG 6.4.1 (Water Use Efficiency \$/m ³)	SDG 6.4.2 (Water Stress %)
Azerbaijan	4 \$/m ³ (2021)	57% (2021)
Kazakhstan	8 \$/m ³ (2021)	34.1% (2021)
Kyrgyzstan	0.88 \$/m ³ (2021)	50.04% (2021)
Tajikistan	1 \$/m ³ (2021)	70% (2021)
Turkmenistan	2 \$/m ³ (2021)	135% (2021)
Uzbekistan	2 \$/m ³ (2021)	121.5% (2021)

The situation is further compounded by the fast population growth in Uzbekistan and Tajikistan, as well as the looming threat of climate change. Rising temperatures and the retreat of glaciers, particularly in the Pamir Mountains, are projected to significantly reduce water availability in the coming decades: average river flows in Central Asia are expected to decrease by 10-20% by 2050.³¹ Furthermore, in 2022, Afghanistan began the construction of the Qush-Tepa canal. As a result, water availability in the Amudarya basin in Uzbekistan is expected to decrease by 30% by 2030, and land area under cultivation may decrease by 19%. The estimated impact would be equal to 0.7% of Uzbekistan's GDP, and about 250,000 jobs could be lost in crop production. Climate change is expected to worsen the uneven distribution of CA's water resources, making them more seasonal and geographically variable. Regional water models often have uncertainties, resulting in missed opportunities, especially in areas needing coordination with neighbouring countries over shared water resources, demanding regional-scale modelling. Optimal infrastructure investments urgently require enhanced data availability and improved biophysical system modelling capacity. Developing advanced, transparent modelling and monitoring tools will enable more precise infrastructure planning and irrigation development.

²⁷ Software and hardware complex providing automatic preservation of power system operation [Energy Connectivity in Central Asia | UNECE](#)

²⁸ <https://report.az/en/energy/azerbaijan-kazakhstan-and-uzbekistan-sign-mou-on-merging-energy-systems/>

²⁹ <https://www.fao.org/aquastat/en/>

³⁰ Source: <https://www.sdg6data.org/en/node/1>

³¹ Intergovernmental Panel on Climate Change, 2022 <https://www.ipcc.ch/>

New technologies, such as enhanced remote sensing, offer opportunities to improve water and meteorological modelling systems, addressing changing availability and competing demands for water.

The institutional framework to manage transboundary water resources is considered inadequate. Agreements like the 1992 Almaty Framework Agreement³² provide a foundation for cooperation, but progress is hindered by lack of comprehensive dialogue and a focus on water in isolation from energy and agriculture. The International Fund for Saving the Aral Sea³³ has facilitated regional water management discussions since 1993, but its effectiveness is limited by resources, non-participation of Kyrgyzstan³⁴, and lack of enforcement levers. Despite these challenges, opportunities for regional collaboration exist, as countries share a recognition of interdependence on water resources. The Dushanbe Water Process, launched by Tajikistan in 2016, serves as a platform for dialogue on water cooperation. International actors like the UN and the WB can promote dialogue, support innovative water management practices, and encourage the integration of a "nexus approach" that acknowledges the interconnectedness of water, energy, and agriculture. Local ownership and participation in water governance, particularly by women, who play a central role in water management at the household level, are also crucial for long-term stability.

³² Almaty Framework Agreement on the Use of Water and Energy Resources of Interstate Sources, established by the five CA states
http://www.cawater-info.net/library/eng/1/ca_cooperation.pdf

³³ <https://aral.uz/en/about/>

³⁴ <https://www.newscentralasia.net/2023/09/15/kyrgyzstan-eyes-ifas-return-but-only-if-all-countries-interests-are-considered-equally/>