# Water Infrastructure in Central Asia Promoting Sustainable Financing and Private Capital Participation

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# Water Sector Financing

- CAREC Institute's **research focus** in 2022-2023
- Study conducted for **five countries**, regional report + country overviews
- **Round tables and expert interviews**, data collection:  infrastructure assessment
- Review of **recent publications** on water sector financing


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# Water Challenges of Central Asia

- **Water shortage** is growing in the context of favorable demography and economic growth
- Climate change is seriously **harming the water resources of the region**
- **New developments** – water intake in Afghanistan complicates the water situation
- Water solutions seen **as solutions to the sustainable development** of the region (Kazakhstan and Uzbekistan's attempts)


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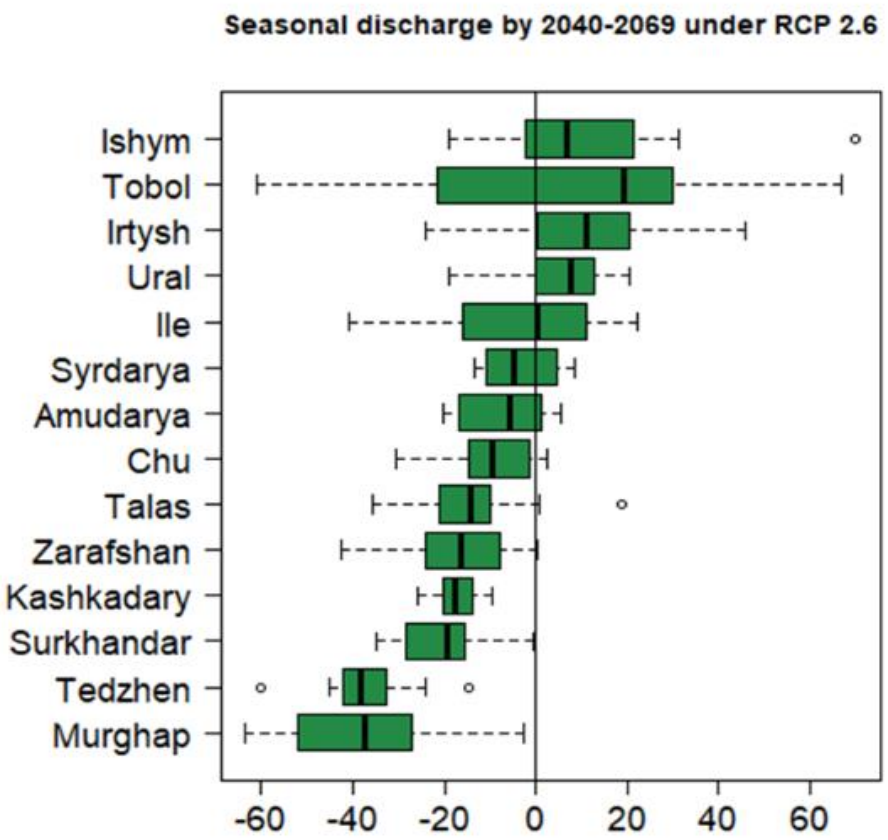
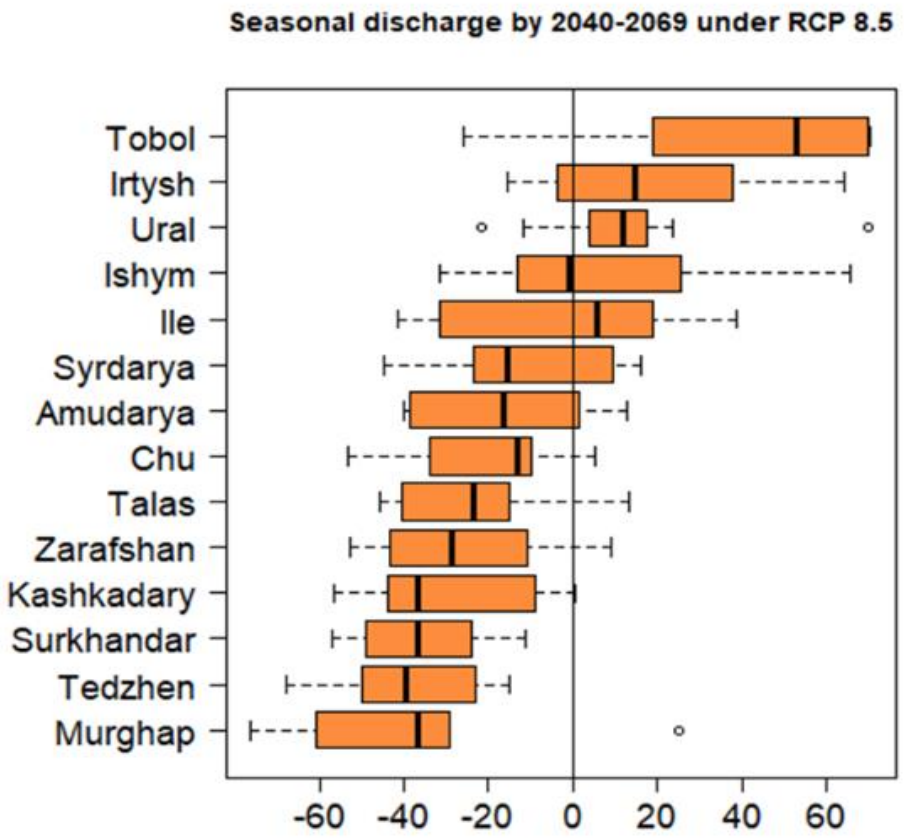
# Water Challenges of Central Asia




CAREC Institute.2022

# Water Security

- **Shift the narrow** definition of water security:
  - from water **quantity and water allocation** to a **multifaceted** interpretation highlighting interdependency between geophysical and socioeconomic components
  - The Asian Water Development Outlook (AWDO) states, "…water security is more than just providing sufficient water for people and economic activities… but it is also about having **healthy aquatic ecosystems and protecting us against water-related disasters**" (ADB 2020).
  - Water stress might exacerbate the water crisis in Central Asian countries, and strengthening water security requires **improved governance and infrastructure investments**.
  - A recent study on assessing water security in Central Asia reveals that water professionals prioritize **water infrastructure investments** for domestic, agricultural, energy, and environment-related uses to improve water security in the region (Assubayeva et al., 2022).

# Role of water in the economy

- Water – the most **constrained and valuable** resource in Central Asia
- Water – the bedrock of socioeconomic development
- **Irrigated farming contributes** 5-28% to the region's GDP and consumes almost 30% of aggregated energy production.
- **Increasing uncertainties** under the climate change impacts - water cycle and growing competing demands
- Central Asian governments **urgently need innovative and new policies** and long-term solutions to make more productive and efficient use of water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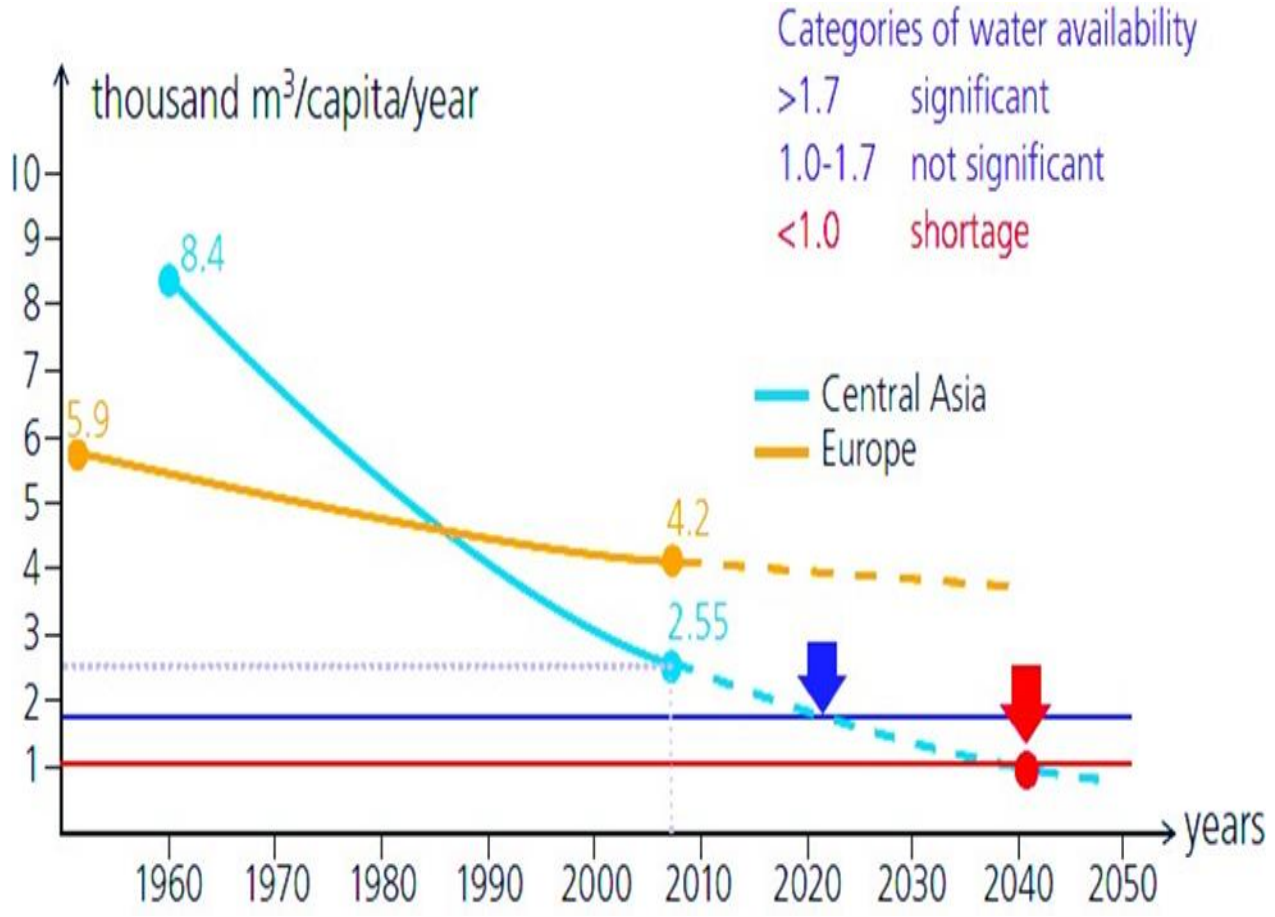
# Role of water in the economy (water scarcity)

**severe decline in agricultural productivity** in lower Amu Darya and Syr Darya, irrigated land – out of use

**cropping and animal losses** in Kazakhstan, Uzbekistan and Turkmenistan. Drinking water deficit, energy problems


a severe **shortage of drinking water and household uses, cropping losses i**n northern parts of Uzbekistan, eastern Turkmenistan, and South Kazakhstan. Outmigration processes from the affected areas

# Role of water in the economy (water scarcity)




Change of Water Availability in Central Asia (source: World Bank, 2019).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# Role of water in the economy

**Nearly 5 million migrants** from Central Asia were living in the Russian Federation by end of 2020 **(IOM. 2023)**

By 2050, Central Asia could **see as many as 2.4 million climate migrants (World bank.2022)**

Annual losses of about **USD 6 billion**, the number of people who migrate each year in search of work amounts to **2.5–4.3 million, or 10-15% of** the economically active population **(UNCCD. 2023)**

- **Environmental degradation** is undoubtedly a primary force for migration
- Water **scarcity creates a space** for potential conflicts
- **Water scarcity and poverty are interconnected** issues in Central Asia

# Water Sector Transformations

| # | Periods | Transformations | Observed intentions |
|---|---|---|---|
| 1 | **Late 1980's and early 1990's** | • agricultural transformations from collective, large scale, soviet production systems into more individual and private production systems (Lerman. 200, O'Hara. 2003,<br>• Water systems - former on-farm systems of large farms abolished and individual water users have bene competing in this level | • **Preserving soviet water system** at the regional and national level<br>• Setting **up new water system** at the former collective farm level (on farm) |
| 2 | **Mid 1990's- 2000's** | • Formation of water users' associations, donor lead reforms and focus on setting up post soviet water systems<br>• Transboundary issues are emerging as facto in water policy and management | • **Crafting new water systems, integrating water into the nation-building efforts**<br>• Setting **up new local water institutions**, hydro services, WUA's |
| 3 | **2000's- 2010's** | • Setting up normative reforms in water sector: IWRM period | • Making water sector **attractive for international financing** and support |
| 4 | **2015- current efforts** | • Financial and economical aspects of WMO's, infrastructure development and water security focused reforms | • Organization of **more sustainable and operational water sector** |

Source: Abdullaev and Petrick. Forthcoming

# Water Sector Financing in Central Asia

- **Water infrastructure financing** takes the lion's share of overall sector financing
- According to CAREC Institute, 2023, almost 60-75% of water sector financing in Central Asian countries is spent on **constructing, operating, and maintaining water infrastructure**
- The current setting of the water infrastructure is meant for a **large-scale, mechanized, and collective farming system.**
- The **main canals and major water infrastructure** are intact and perform relatively good
- Numerous diversion and delivery water infrastructures **are outsized, delivering excessive water** to smaller lands and segmented, individualized farms.
- **Financing the old and outdated water infrastructure** not adequate for the current agricultural setting of Central Asian countries

# Water Sector Financing in Central Asia

**Infrastructure investment needs by region, 2016–2030 (annual average, $ billion in 2015 prices)**

| Region | Baseline estimates | Share of GDP | Climate-Adjusted estimates | Share of GDP, % |
|---|---|---|---|---|
| Central Asia | 33 | 6.8 | 38 | 7.8 |
| East Asia | 919 | 4.5 | 1,071 | 5.2 |
| South Asia | 365 | 7.6 | 423 | 8.8. |
| Southeast Asia | 184 | 5.0 | 210 | 5.7 |
| Pacific | 2.8 | 8.2 | 3.1 | 9.1 |
| Asia and the Pacific | 1,503 | 5.1 | 1,744 | 5.9 |

- Recent WB study (WB.2023)- climate financing/green transition – USD 48 billion- **10% for water infrastructure**

| Country | Quantity of projects | Total investment (US$M) |
|---|---|---|
| Kazakhstan | 50 | 5,809 |
| Kyrgyzstan | 6 | 140 |
| Tajikistan | 5 | 961 |
| Turkmenistan | N/A | N/A |
| Uzbekistan | 14 | 2,811 |
| **Total** | **75** | **9,163** |

Source: The World Bank Private Participation in Infrastructure Database

# Current State of Water Infrastructure Financing

- **Kazakhstan** state budget support for the irrigation water infrastructure increased in 5 years from **16 million USD to 50 million USD**

- **Kyrgyzstan's** total state budget to finance is **12 million USD in 2021**

- **Uzbekistan** - **20 projects with a total cost of 2 billion US dollars** (1.86 billion USD funded by IFIs and 293.6 million USD contribution of the State)

# Water sector financing

- The state's role in **water financing is crucial**. Most of the water sector's functions are considered public services, and water infrastructure is public infrastructure.

- Financing the water sector - **part of setting up reliable, sustainable water services for the public and people**

- The central concept applied in this research is state **budget (public) water sector** financing. The private sector is emerging as new modes of water sector financing


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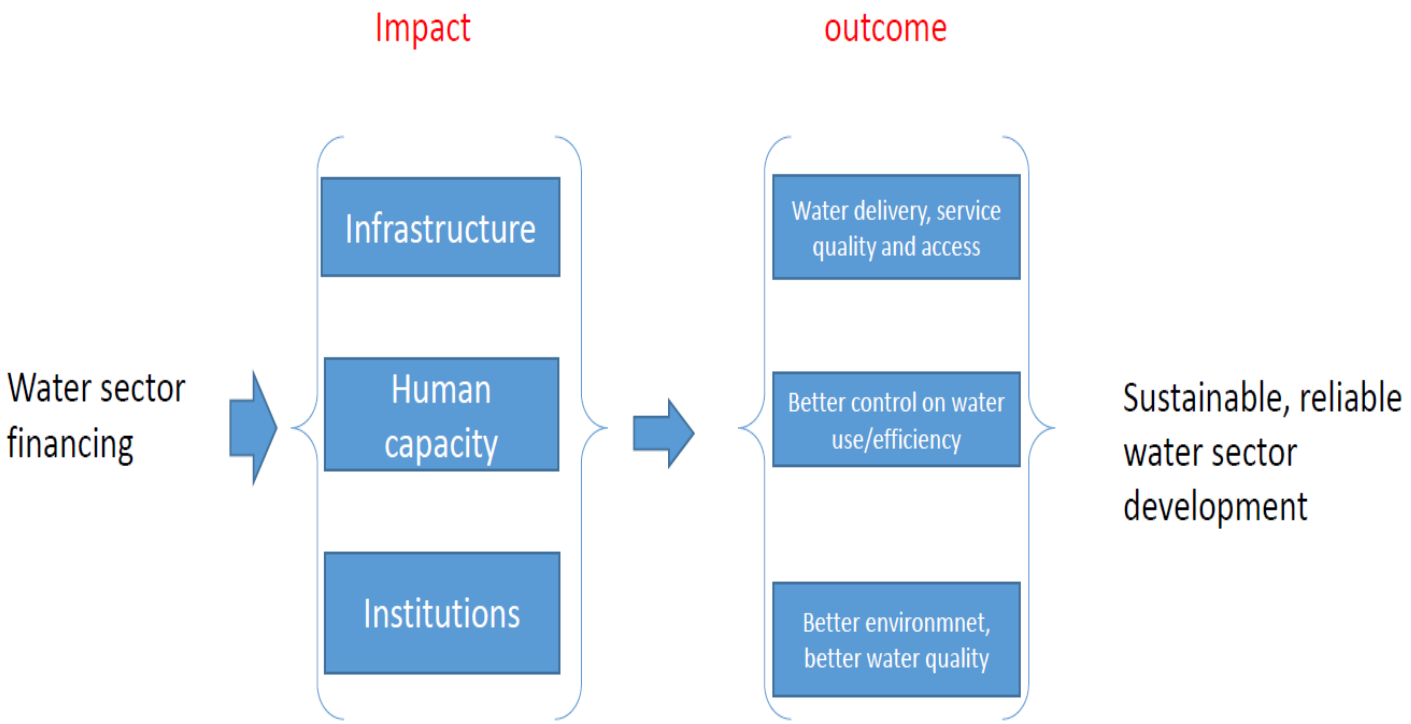
# Water sector financing





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# Land and water reforms- infrastructure ownership

- Water and land reforms - **political transformations** the countries faced after the collapse of the Soviet system

- The reforms - **new institutes** at the local level and the development of financial sustainability

- The ownership rights for the irrigation systems are **distributed among different structures** based on the level of irrigation infrastructure

- The state continued to own and control most of the water infrastructure while transferring the **usage rights to water management organizations** and different groups (e.g., WUAs, farmers, and so forth)

# Current level financing of the water sector needs

| # | Countries | Operation and maintenance, % from required | Capital investment and construction of new infrastructure % from required |
|---|---|---|---|
| 1 | Kazakhstan | 65 | 45 |
| 2 | Kyrgyzstan | 32 | 35 |
| 3 | Tajikistan | 43 | 27 |
| 4 | Turkmenistan | 56 | 40 |
| 5 | Uzbekistan | 57 | 41 |

CAREC Institute.2022

# Subsidies to energy and irrigation in CA countries

| Country | Total subsidies | To energy | To irrigation |
|---|---|---|---|
| Kazakhstan | 150 | 70 | 80 |
| Kyrgyzstan | 30 | 25 | 5 |
| Tajikistan | 32 | 20 | 12 |
| Turkmenistan | 45 | 20 | 25 |
| Uzbekistan | 50 | 40 | 10 |

Abdullaev. 2019

# Current level financing of the water sector needs

- Costs for the maintenance and operation - **assigned to different organizations**
- The national budget covers **mainly the major irrigation systems**
- The service fees – **are ignorable and do not contribute** much to supporting the water systems
- The **provincial and local budgets** cover inter-farm systems, on-farm canals, and other local irrigation facilities
- The water sector's infrastructure, human, and transport needs are **inadequately addressed**

# Private sector financing

- Privatization, concessions, or any other private engagement in the water sector - **infrequent phenomenon** in Central Asian countries
- Limited cases of **ownership and investment in the water sector by private players** were observed in the region
- High level of **regulatory and unclear ownership** of water infrastructure limits private engagement on large scales
- Water agencies operate and maintain the water infrastructure- **ownership rights are unclear**
- Infrastructure - belongs to **different line ministries** or agencies (e.g., energy, water supply)

# Private sector financing

Infrastructure projects with **private capital participation** in Central Asia – 1990-2021

| Country | Quantity of projects | Total investment (US$M) |
|---|---|---|
| **Kazakhstan** | 50 | 5,809 |
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| **Total** | 75 | 9,163 |

Source: The World Bank Private Participation in Infrastructure Database https://ppi.worldbank.org/en/ppi

# Private sector financing

- There are risks associated with infrastructure investment and low rate of return – the private sector **is reluctant to invest in the water sector**

- Unlocking private investment - **innovative schemes to address concerns**:
  - improved public-private partnership (PPP),
  - financial guarantees,
  - utilization of the spillover effect of infrastructure - of additional tax revenues to investors

- Mobilizing private investment - governments and private investors **increase their focus on infrastructure in the water sector**

- Setting up **respected property rights** and predictable factors affecting return on the infrastructure

# Recommendations

- Rehabilitation of dilapidated infrastructure and **re-configuring water systems into individualized agricultural** land
- Currently, **almost 60% of the water** withdrawn for irrigated agriculture is lost before the irrigated plots
- The mostly public, state-owned, and highly regulated nature of the water sector makes it uneasy and **none-attractive for the FDI, private financing, and other types of funding**
- It is essential to create **a favorable regulatory framework** for private sector players, to manage investment risks and unlock value by engaging
- **Improving agriculture policies** and more market-oriented, deregulated policies may generate private companies' interest in investing in water services


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# Recommendations

- **Access to necessary data and information** through openness and radical engagement with society and businesses of different
- **Long-term performance and infrastructure sustainability** are intrinsically connected with how well stakeholders integrate and cooperate
- **Capacity building and technology** integration are key areas for improving operation, maintenance of the water infrastructure, and professional water services provision.
- The attraction of private partnerships could **bring more technological updates** to the water sector.
- The **digital solutions'** more comprehensive application of new approaches in the water sector will bring more efficiency and effectiveness to water resources development and use

# Thank you


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