

## BALANCING THE USE OF WATER RESOURCES IN THE AMU DARYA BASIN

BETWEEN  
ENERGY AND  
AGRICULTURE



### A SUMMARY

Central Asia and Afghanistan are abundant in natural resources, including land, water and energy. However, in the Amu Darya Basin, shared by Afghanistan, Uzbekistan, Tajikistan, Kyrgyzstan and Turkmenistan, there is an **imbalanced use of water resources between the different economic and livelihoods needs of all basin countries**. Currently, **8 percent** of the Amu Darya's Basin's **hydropower** potential is used, while almost **90 percent** of its water is used for **agriculture**. While Afghanistan is a main contributor to the Amu Darya (21.5%) Afghanistan utilizes 7 to 8 percent of its water resources. In addition, river regulation poses problematic relations between upstream and downstream users. The lack of inclusive management (including Afghanistan) at the basin level, and the **lack of mutually agreed on regulatory regime of the Amu Darya Basin, are resulting in tense relations between the riparian countries, and can result in putting the region's food and energy security at risk**.

**Agriculture** remains a major economic activity in the region, and contributes significantly to the GDP of all basin countries (12 percent of the gross domestic product in Turkmenistan, 20 percent in Uzbekistan, 22 percent in Tajikistan, 29 percent in the Kyrgyz Republic, and 33 percent in Afghanistan). The contribution of hydropower to general **energy** consumption is highest in Tajikistan (about 98 percent) and in Kyrgyzstan (about 75 percent), and lowest in Turkmenistan (about 1 percent). While an integration of the riparian countries into a regional energy market could feasibly allow them to meet more than **71 percent of the region's energy requirements from hydropower production**, amounting to an output of about 150 GWh.

All basin countries face challenges with managing water resources in the Amu Darya Basin. At the heart of these challenges, is the lack of transparent sharing of hydrological data, which in turn is exacerbated by lack of continuity in data sharing and limited resources, leading to insufficient measurement and basin level planning. Equally damaging for water resources management is the poor operation and maintenance of an aged infrastructure and an absence of financial assets for rehabilitation. This results in loss of agricultural land and inefficient water use whereby **around 50-60 percent of water is lost** during transportation. Furthermore, institutional challenges persist. Regional organizations responsible for management of the basin's water and energy resources have limited implementation power, particularly in the presence of conflicting national policies of individual states in the basin. Last, the lack of mutually agreed systematic regulation of river reservoirs prevents the balanced use of reservoirs for both irrigation and hydropower production.

**The Amu Darya Basin is not suffering from a shortage of water resources, yet the lack of effective management frameworks triggers tensions between the countries over the use of water resources**. Therefore, promoting equitable water governance is essential for preventing conflicts. In fact, each of the riparian countries promotes unilateral economic development plans that depend on different uses of water and different operation modes for the river reservoirs, particularly between hydropower production and agriculture. Furthermore, despite trying to transition towards a governance system based on IWRM principles and having a number of regional organizations that deal with the trans-boundary nature of the basin resources, there are discrepancies between mandates and current practices.

While the region has been developing electricity-trade arrangements and the establishment of a Central Asia - South Asia Regional Electricity Market (CASAREM), each country in the basin is developing its own national strategy resulting in a collapse in Regional Power trade, resulting in the increasing the countries' dependence on hydro resources for their energy needs. **The Basin's population's dependence on water for agriculture** impacts livelihoods and food security. About 20 to 30 million people directly or indirectly depend on irrigated agriculture in basin countries. Throughout this area, there is a need for cooperation over water and energy resources and to reducing dependence on water for agriculture.

**Afghanistan's development plans (a late developer) will pose a new set of demands over the Amu Darya river flow.** Twenty-five percent of the Afghan population depends on the Amu Darya for their livelihoods and economic activity. Lastly, the **potential consequences of climate change, low resilience and mitigation** pose a major challenge. Water availability of the Amu Darya may decrease by up to 40 percent due to the

effects of climate change. The Central Asian climate can undergo significant warming, resulting in major environmental, economic and social disruptions; especially, since the demand for water continues to grow faster than the natural supply. Also, there may be an increased occurrence of droughts, decreased grain productivity and energy production capacities could be affected.

A path towards balanced water use in the Amu Darya Basin requires commitment from basin countries and international actors in the region on:

- 1) **Recognizing the energy-agriculture-food nexus of water resources** and the crisis that can emerge in food, energy and economic security in the absence of good governance of water resources.
- 2) **Setting water and energy use efficiency high on national-sector strategies and interstate organizations' agendas.** Having energy loss and water conservation as a common problem, water and energy efficiency can be a point of cooperation among riparian countries on raising awareness and infrastructure rehabilitation.
- 3) **Encouraging government-corporate-civil society partnerships,** supported by a new generation of financial instrument.
- 4) **Improving interstate cooperation on integrated water resources management** that would require the introduction of new cooperation patterns on developing legal, administrative and financial mechanisms.
- 5) **Cooperating on developing small and medium hydropower projects in the region for mutual benefit** and a potential gain for the region.
- 6) **Developing more sustainable and alternative ways of energy provision such as wind and solar energy development projects** by identifying and promoting cost-effective energy efficiency improvements, expanding the use of renewable energy, facilitating the introduction of new clean energy technologies, and giving incentives for the public and private sectors to invest in these areas.
- 7) **Defining the region's water reservoirs' active storage capacity under the sedimentation and climate change threats** in order to control reservoir sedimentation and to explore new innovative approaches to address water-sharing mismanagement and partisanship.