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Central Asia's Battle with Water Scarcity: Government and International Interventions

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About the authors

Bruce Pannier studied Central Asia at Columbia University under the legendary Central Asian scholar Edward Allworth. Pannier went to Tashkent State University in the summer of 1990, and in 1992-1993 led a sociological research project in villages in Kazakhstan, Kyrgyzstan, Turkmenistan, and Uzbekistan, and has been a frequent visitor to the region since then. He worked for the Prague-based Open Media Research Institute in 1995-1997 before joining Radio Free Europe/Radio Liberty, where he worked until 2022. Pannier is an ENC external advisor and he has written for Jane's Intelligence, Freedom House, The Economist Intelligence Unit, the Cairo Review, the FSU Oil & Gas Monitor, The Diplomat, Foreign Policy Research Institute, and Eurasianet.

Abstract

Water has been Central Asia's most precious resource for as long as people have been living in the region. Central Asia is an arid region. Roughly, the western third is desert and semi-desert. Central Asia is now a bellwether for climate change. Since 2021, there have been record high temperatures in the summers around the region, reduced precipitation, leading to drought over large areas, and melting glaciers in the eastern mountains. And it is happening while Central Asia's population is rapidly growing.

The new realities have spurred Central Asian governments to take urgent steps to alleviate the situation. However, the challenges the region faces are unprecedented and enormous. As the five Central Asian states search for solutions to the coming trouble, they are also seeking, and finding, help from foreign governments and international institutions.

Keywords: Water, Central Asia, Climate Change, Drought, Population Growth, Sustainability, Desertification, Water Scarcity

The Situation

Central Asia's water problems are compounded by the Soviet legacy. During the Soviet era, water from Central Asia's two great rivers – the Amu-Darya and the Syr-Darya – was liberally, some would say recklessly, used for agriculture and to support cities and towns that expanded or were founded during the Soviet period. At the start of the 20th century, the population of Central Asia was some 8 million people. The population is now approaching 80 million.

For thousands of years the Amu-Darya and Syr-Darya provided water to the Aral Sea, once the world's fourth largest inland body of water. It's been decades since the Amu-Darya reached the Aral Sea, and the Syr-Darya is little more than a trickle when it finally makes its way to the Aral Sea, which is why the Aral Sea is now less than one-tenth its size of less than 60 years ago. To the north of the Aral Sea is the Kyzyl-Kum (Red Sand) Desert and to the south the Kara-Kum (Black Sand) Desert and as the sea has receded and seabed has dried out, dust storms have become more frequent.

A study released in April 2024 by the Leibniz Institute for Tropospheric Research and the Free University of Berlin showed the drying of the Aral Sea has "made Central Asia 7% dustier in the last 30 years" (Phys, 2024). A huge dust storm blowing from the Aral Sea in June 2023 covered much of Uzbekistan and reached all the way to Tajikistan's capital Dushanbe (Ozodlik 2024). Two large dust storms blew through Turkmenistan at the start of 2024 (Daryo, 2024) and Almaty, Kazakhstan (Tengrinews, 2024) and Bishkek, Kyrgyzstan (AKIpress news, 2024) were both hit by dust storms in late March 2024. Heavy winds in May 2018 blew alkaline soils from the dried out bottom of the Aral Sea over areas of northeastern Turkmenistan and western Uzbekistan, withering crops (Radio Free Europe/Radio Liberty, 2024). Similar, but smaller storms have blown into Turkmenistan since then.

Temperatures have been gradually increasing. The Avicenna Tajik State Medical University said in February 2024 that Tajikistan's "air temperature has risen by up to 10°C over the last century." (Tajik State Medical University, 2024). In December 2023, Kanat Abdrakhmatov, the president of Kyrgyzstan's National Academy of Sciences, said since 1991, the average number of days of winter in Kyrgyzstan has decreased from 95 to 71 and the average number of summer days has increased from 145 to 154 (Azattyk, 2024). Drought devastated areas of western Kazakhstan in the summer of 2021, prompting the Kazakh Agriculture Ministry to ban exports of grain and fodder so that supplies could be redirected to western Kazakhstan (Radio Free Europe/Radio Liberty, 2024) amid a mass die-off of livestock (Anadolu Agency, 2024).

In summer 2023, drought left Kyrgyzstan's Kirov reservoir with only some three percent of the usual amount of water at one point in August. The reservoir releases water into the Talas River that flows into southern Kazakhstan's Zhambyl Oblast, but with no water in the Kyrgyz reservoir, there was none for Kazakh farmers. Kyrgyzstan's massive Toktogul reservoir was built in the Soviet era. The reservoir has a maximum capacity of some 19 billion cubic metres (bcm) of water and also serves a hydropower plant (HPP) that provides some 40 percent of Kyrgyzstan's electricity (hydropower accounts for some 90 percent of Kyrgyzstan's domestically produced electricity (UNDP, 2024).

The water in the reservoir has rarely reached 19 bcm, but in the last three years it has fallen to critically low levels that threatened to halt operations at the Toktogul HPP. The water level is lowest in March-April. On March 7, 2020 the water level was 12.3 bcm, exactly one year later it was 9.3 bcm, on March 7, 2022 it was 8.33 bcm (Azattyk, 2024), on that date in 2023 it was 7.98 bcm. On March 4, 2024 it was 7.7 bcm (Azattyk, 2024) and there were concerns the level could drop the so-called "dead zone" of 6.5 bcm, a level so low that the HPP's turbines would cease operating and Kyrgyzstan would quickly experience a serious power outages.

Due to the drop in water levels in reservoirs at the country's HPPs, Kyrgyzstan's government declared a three-year period of energy crisis that came into effect on August 1, 2023 (Kloop, 2024). Water from the reservoir is also vital to agriculture in downstream countries Uzbekistan and Kazakhstan, but power shortages in Kyrgyzstan have forced Kyrgyz authorities to continue releasing water in winter to power the Toktogul HPP. In an effort to alleviate Kyrgyzstan's winter energy problems, and allow water to accumulate in the reservoir, Kazakhstan and Uzbekistan have been exporting electricity to Kyrgyzstan, though both those countries have been experiencing their own energy deficits during recent winters.

Many of the glaciers in the mountains of Kyrgyzstan and Tajikistan are melting. Some have proven surprisingly resilient and the reasons for this are being studied now (The World, 2024), but Kyrgyz Deputy Minister of Natural Resources Asel Raimkulova said in November 2023 that the number of glaciers in Kyrgyzstan would fall by half by 2050, and that by the end of the century, the glaciers may disappear entirely (24kg, 2024). Some officials in the Natural Resources Ministry believe the process could happen much quicker.

At the 2023 United Nations Climate Change Conference, one report noted "over the past few decades, more than a thousand glaciers in Tajikistan have been destroyed." (World Meteorological Organization, 2023). The consequences of this are clear as almost 60% of Central Asian waters originate from glaciers and snow reserves of Tajikistan (Tajik State Medical University, 2024).

Domestic Solutions

As the effects of climate change have increasingly manifested themselves in Central Asia, including three successive years of drought, with a fourth already forecast in 2024, governments there have put a new focus on water issues.

According to the Eurasian Development Bank (EDB), part of the Russian-led Eurasian Economic Union (EEU), irrigated land accounts for 40 percent of Kazakhstan's agricultural output, 82 percent in Tajikistan, 85 percent in Kyrgyzstan, 87 percent in Uzbekistan, and 100 percent in Turkmenistan (InBusiness, 2024).

In November 2022, Kazakhstan's then-Prime Minister Alikhan Smailov ordered the country's water and irrigation canals cleared and repaired (Vlast, 2024), new Prime Minister Olzhas Bektenov ordered the Water Resources and Irrigation Ministry (created in 2023) to prepare a set of measures for rational water consumption and initiate a water conservation campaign (Astana Times, 2024).

Uzbek President Shavkat Mirziyoyev followed in November 2023, ordering a "shock" programme that would see 1,500 kilometres of the country's canals relined with concrete in 2024 and another 2,000 kilometres in 2025 (Ozodlik, 2024). He said 46 bcm of water, or about 90 percent of Uzbekistan's annual water consumption, goes toward agriculture and that some 12 bcm of that water is wasted due to the dilapidated irrigation system. Mirziyoyev also said that "as a result of climate change, the volume of water resources in Uzbekistan has decreased by 20% over the past three years" (GazetaUz, 2023). The Uzbek president cited figures that showed Uzbekistan could face a deficit of some 15 bcm of water annually by 2030.

Already in December 2022, Kazakhstan was constructing eight new reservoirs and 16 emergency reservoirs (Tengrinews, 2023), and in late May 2024, Kazakhstan's Ministry of Water Resources and Irrigation announced plans to build 57 new water reservoirs by 2023 (Astana Times, 2024). Kyrgyzstan announced in February 2024 that it would build three new reservoirs (24kg, 2024).

In Kazakhstan's case, the move to clear waterways and build new reservoirs is already proving successful. Kazakhstan suffered the worst flooding in 80 years in spring 2024 but was able to redirect some of that water into reservoirs and dried-up lakes. The country's Ministry of Water Resources and Irrigation said in late May that diverted flood waters added more than 12 bcm of water to the country's water supply (Tengrinews, 2024).

Turkmenistan and Uzbekistan face an additional water problem as the Taliban government in Afghanistan is moving forward on construction of the 285-kilometre Qosh Tepa canal. The canal would draw water from the Amu-Darya,

a vital water source for agriculture in Tajikistan, Uzbekistan, and Turkmenistan. The latter two countries in particular are looking at a loss of 15-20 percent of the water to downstream communities once the Afghan canal is functioning.

Downstream communities in Turkmenistan and Uzbekistan that were thriving a half century ago are already now find it difficult, and in some cases nearly impossible to remain there due to current reductions in water. The Qosh Tepa canal is scheduled to be completed by 2028, but construction is ahead of schedule. After Afghanistan starts taking water for the canal, dozens, at least, of communities downstream in Uzbekistan and Turkmenistan will need to be resettled.

The EDB's chief economist, Yevgeny Vinokurov, said at a November 2023 round-table discussion in Kazakhstan that when Afghanistan starts taking large volumes of water from the Amu-Darya, Central Asia will enter a period of "chronic water deficit" (Tazabek, 2024).

Assistance

Europe is at the forefront of international partners helping Central Asia cope with the challenges of climate change and managing water. The European Union's (EU) Global Gateway programme (European Commission, 2024) includes assistance in combating the effects of climate change in Central Asia. The EU's Team Europe Initiative on Water, Energy, and Climate Change that "builds on the joint efforts of the European Union and the countries of Central Asia to promote a sustainable blue and green transition" (Central Asia Climate Portal, 2024). Parts of that programme deal with "managing water and energy resources sustainably... transboundary water governance, and the inclusion of climate change in the regional political dialogue on water..." (European Commission, 2022).

The World Bank, EU, Switzerland (through its State Secretariat for Economic Affairs) and the United Kingdom are partnering in the Central Asia Water and Energy Programme (CAWEP). CAWEP "works to improve the enabling environment for regional cooperation on water and energy security in Central Asia under a changing climate." (World Bank, 2024).

The European Bank for Reconstruction and Development (EBRD) is helping fund are modernization of 118 pumping stations in Central Asia's densely populated Ferghana Valley, providing safe drinking water to people in Tajikistan (EBRD, 2024), and construction of a new wastewater treatment plant in Kazakhstan's northwestern city of Aktobe (EBRD, 2024). The United Nations Special Programme for the Economies of Central Asia (SPECA (UNECE, 2024)), the Asian Development Bank (ADB, 2024), and US Agency for International Development (USAID, 2024)

have been helping the Central Asian countries in a wide range of areas, including sustainable water use.

The Islamic Development Bank (IDB) is funding “construction and reconstruction of reservoirs, hydraulic structures and irrigation systems, digitalization and the introduction of water-saving technologies, as well as allocate grants to prepare relevant technical documentation” in Kazakhstan (Astana Times, 2024). The IDB also is assisting Tajikistan’s Khatlon region to improve water resource management (Central Asia Climate Portal, 2024).

The EEU’s Eurasian Development Bank published a list in November 2023 of 10 recommendations for the Central Asian countries to “safeguard irrigated land potential and promote efficient water consumption (EABR, 2024)” However, possibly because Tajikistan, Turkmenistan, and Uzbekistan are not EEU members, there was no mention of any EEU projects or assistance, even for EEU member countries Kazakhstan and Kyrgyzstan.

Conclusion

Central Asia is in a precarious situation. Government efforts need to be tied to educating the public about the need to break centuries-old habits regarding water use and adapt to new realities created by climate change. Conservation and rational use of water is critical. Internationally, Central Asia is now a test case for learning effective strategies that can diminish the consequences of climate change. What is happening today in Central Asia likely will be happening to other countries soon, making it important for the international community to help Central Asia find solutions to its water problems with the hope those solutions can be used in other countries.

References

ADB, 2024 CAREC: ADB, https://www.adb.org/projects/41316-012/mai.

Anadolu Agency, 2024 Dried-up wheat fields, dead livestock gripping Kazakhstan as extreme drought takes hold: Anadolu Agency, https://www.aa.com.tr/en/energy/energy-security/dried-up-wheat-fields-dead-livestock-gripping-kazakhstan-as-extreme-drought-takes-hold-/33469.

Astana Times, 2024 Islamic Development Bank sets to finance water projects in Kazakhstan: Astana Times, https://astanatimes.com/2024/04/islamic-development-bank-sets-to-finance-water-projects-in-kazakhstan/.

Astana Times, 2024 Kazakhstan to build 57 new water reservoirs until 2030: Astana Times, https://astanatimes.com/2024/05/kazakhstan-to-build-57-new-water-reservoirs-until-2030/

Astana Times, 2024 New Kazakh Prime Minister outlines key government tasks: Astana Times, https://astanatimes.com/2024/02/new-kazakh-prime-minister-outlines-key-government-tasks/.

Azattyk, 2024 Экология и климатические изменения в Центральной Азии: Azattyk, https://rus.azattyk.org/a/32714615.html.

Azattyk, 2024 Экологические вызовы в Центральной Азии: Azattyk, https://rus.azattyk.org/a/32848608.html.

Azattyk, 2024 Введение режима ЧС в энергетике Кыргызстана: Azattyk, https://rus.azattyk.org/a/31742279.html.

Central Asia Climate Portal, 2024 Europe initiative in Central Asia: Central Asia Climate Portal, https://centralasiaclimateportal.org/europe-initiative-in-central-asia/.

Central Asia Climate Portal, 2024 Improvement of water resources management in Khatlon region: Central Asia Climate Portal, https://centralasiaclimateportal.org/improvement-of-water-resources-management-in-khatlon-region/.

Daryo, 2024 Dust storms more frequent in Turkmenistan since October: Daryo, https://daryo.uz/en/2024/01/10/dust-storms-more-frequent-in-turkmenistan-since-october.

EABR, 2024 Efficient irrigation and water conservation in Central Asia: EABR, https://eabr.org/en/analytics/special-reports/efficient-irrigation-and-water-conservation-in-central-asia/.

EBRD, 2024 EBRD finances largest municipal project in Kazakhstan to date: EBRD, https://www.ebrd.com/news/2024/ebrd-finances-largest-municipal-project-in-kazakhstan-to-date.html.

EBRD, 2024 EBRD posts strong operational results in Central Asia in 2023: EBRD, https://www.ebrd.com/news/2024/ebrd-posts-strong-operational-results-in-central-asia-in-2023.html.

European Commission, 2022 EU announces new initiatives in Central Asia: European Commission, https://ec.europa.eu/commission/presscorner/api/files/document/print/es/ip_22_6963/IP_22_6963_EN.pdf.

European Commission, 2024 Global Gateway overview: European Commission, https://international-partnerships.ec.europa.eu/policies/global-gateway/global-gateway-overview_en.

Gazeta.uz, 2023 Водные ресурсы в Узбекистане: Gazeta.uz, https://www.gazeta.uz/ru/2023/11/30/water/.

InBusiness, 2024 Water deficit in Central Asia: InBusiness, https://inbusiness.kz/ru/news/deficit-vody-v-centralnoj-azii-kakie-puti-resheniya-problemy-vidit-eabr.

Kloop, 2024 Режим ЧС в энергетике в Кыргызстане: Kloop, https://kloop.kg/blog/2023/07/24/v-kyrgyzstane-vvedut-rezhim-chs-v-energetike-do-konsta-2026-goda/.

Ozodlik.org, 2024 Дефицит воды: Ozodlik.org, https://rus.ozodlik.org/a/32457955.html.

Ozodlik.org, 2024 Проблемы водных ресурсов в Центральной Азии: Ozodlik.org, https://rus.ozodlik.org/a/32708020.html.

Phys.org, 2024 Aral Sea Central Asia significantly: Phys.org, https://phys.org/news/2024-04-aral-sea-central-asia-significantly.html.

Radio Free Europe/Radio Liberty, 2024 Central Asia drought anger: Radio Free Europe/Radio Liberty, https://www.rferl.org/a/central-asia-drought-anger/31387259.html.

Radio Free Europe/Radio Liberty, 2024 New bill arrives for damage to Aral Sea: Radio Free Europe/Radio Liberty, https://www.rferl.org/a/new-bill-arrives-for-damage-to-aral-sea/29259882.html.

Tajik State Medical University, 2024 Glacier melting and its impact on Tajikistan: Tajik State Medical University, https://www.tajmedun.tj/en/news/university/glacier-melting-and-its-impact-on-tajikistan/.

Tazabek, 2024 Кыргызстан и водные ресурсы: Tazabek, https://www.tazabek.kg/news:2021717.

Tengrinews, 2023 Восемь водохранилищ в Казахстане: Tengrinews, https://tengrinews.kz/kazakhstan_news/8-vodohranilisch-postroyat-v-kazahstane-485947/.

Tengrinews, 2024 Пыльная буря накрыла Алматы: Tengrinews, https://tengrinews.kz/kazakhstan_news/pyilnaya-burya-nakryila-almatyi-530530/.

Tengrinews, 2024 Сколько паводковой воды собрали в водохранилищах Казахстана: Tengrinews, https://tengrinews.kz/kazakhstan_news/skolko-pavodkovoy-vodyi-sobrali-vodohranilischah-kazahstana-536510/.

The World, 2024 Scientists study why some of Central Asia's glaciers are resilient to climate change: The World, https://theworld.org/stories/2024/05/13/scientists-study-why-some-of-central-asias-glaciers-are-resilient-to-climate-change.

24.kg, 2024 Kyrgyzstan may lose glaciers faster than predicted: 24.kg, https://24.kg/obschestvo/280518_minprirodyi_kyirgyizstan_mojet_poteryat_ledniki_byistree_chem_prognozirovalos/.

24.kg, 2024 Нехватка поливной воды в Кыргызстане: 24.kg, https://24.kg/obschestvo/287674_nehvatka_polivnoy_vodyi_vkyirgyizstane_hotyat_postroit_tri_vodohranilischa/.

UNDP, 2024 Change for the better in Kyrgyz Republic's renewable energy sector: UNDP, https://www.undp.org/kyrgyzstan/blog/change-better-kyrgyz-republics-renewable-energy-sector.

UNECE, 2024 Mountains matter and the cryosphere is critical: UNECE, https://unece.org/statistics/speca.

USAID, 2024 USAID Central Asia Environment and Water Fact Sheet: USAID, https://www.usaid.gov/central-asia-regional/fact-sheets/usaidcentral-asia-environment-and-water-fact-sheet.

YouTube, 2024 Kazakhstan's struggle with climate change: YouTube, https://www.youtube.com/watch?v=VodsxlFO8o0.

Vlast, 2024 Smailov instructed to intensify work on the repair and restoration of canals and reservoirs: Vlast, https://vlast.kz/novosti/52689-smailov-porucil-aktivizirovat-rabotu-po-remontu-i-vosstanovleniu-kanalov-i-vodohranilis.html.

World Bank, 2024 Central Asia Water & Energy Program: World Bank, https://www.worldbank.org/en/region/eca/brief/cawep.

World Meteorological Organization, 2023 Mountains matter and the cryosphere is critical: World Meteorological Organization https://wmo.int/media/news/mountains-matter-and-cryosphere-critical