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High and Dry: Central Asia's Failure to Avert the Impending Water Crisis

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In 2016, the World Resources Institute published a map called Water Stress by Country, comparing the shortages of fresh water experienced by countries across the world. This map clearly indicates the Mongolian-Arabian belt of high water stress, which includes Central Asia, along with Mongolia, Afghanistan, Iran, Pakistan, and the Arabian Peninsula. As a result of a number of factors, it can be argued that these countries belong to a zone of coming crisis, a lack of fresh water.

A study by the Intergovernmental Panel on Climate Change, operating under the auspices of the United Nations, shows that since the beginning of the twentieth century the overall temperature in the region has increased by 1-2 percent, and one can expect further raising by 2-4 percent in the coming decades. According to the World Bank, this trend may result in a 11 percent fall in the region's GDP in the next 20 years.

Central Asia's main sources of water resources are two major river basins, the Amudarya and Syrdarya, both of which are tributaries of the Aral Sea, which used to be one of the world largest lakes. According to forecasts, due to the expected melting of mountain glaciers, the river runoff in the Amudarya river basin will be reduced by 30 percent, compared with the average annual runoff over the past 10 years. This will lead to increased spring runoff, causing more flooding, as well as dramatically reduced water availability in the summer, causing more droughts. There is no need to say that this trend will most severely affect agriculture, a dominant sector of the economy in Uzbekistan and Turkmenistan, as well as southern Kazakhstan.

Are countries in the region prepared to face this scenario? Do all of them have adequate awareness of this issue? At the very least, there are no signs of discussions in the public sphere going on in the region on this subject.

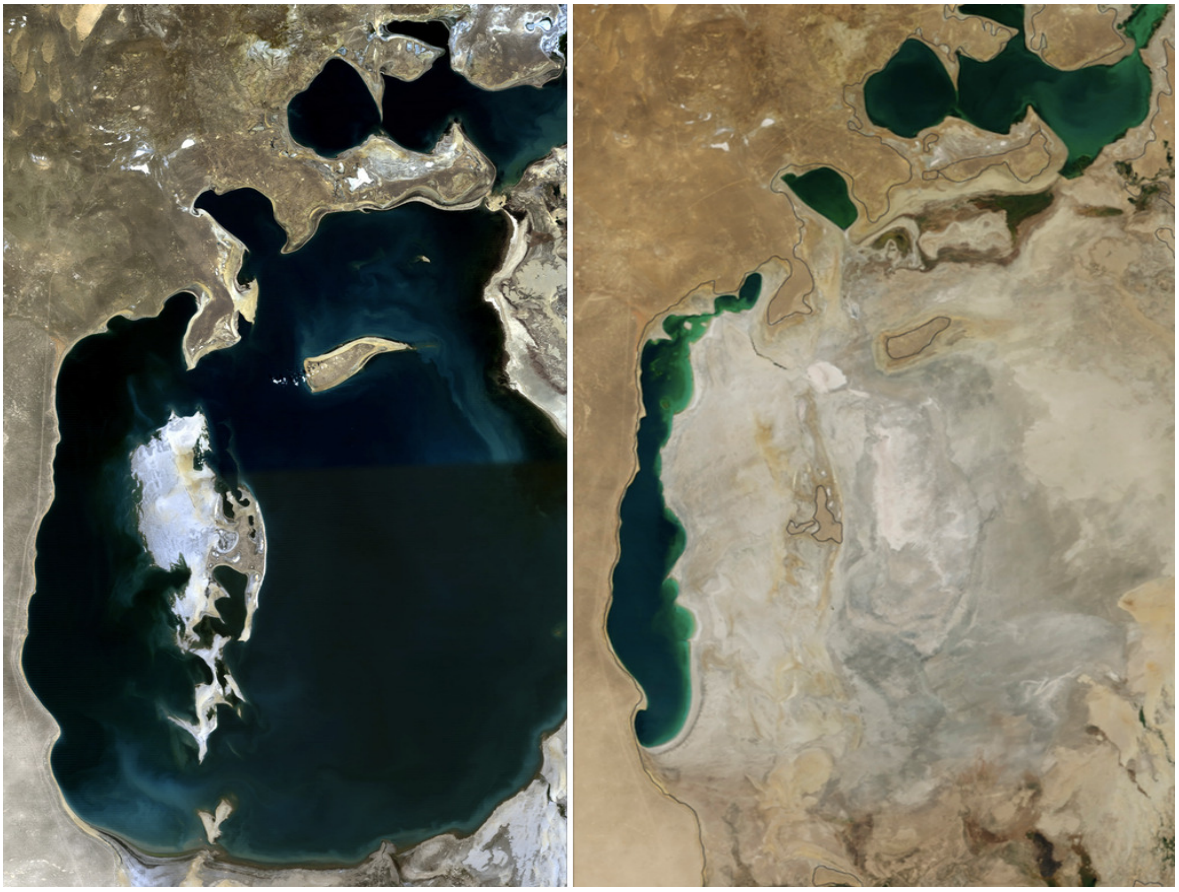
The coming shortage of fresh water is only part of the broader set of water scarcity problems in Central Asia. These problems also include a lack of irrigation water for agriculture, as well as the pollution of the Amudarya and Syrdarya by high content of salts and agrochemicals from irrigation runoff. As a result, we are witnessing a social and economic crisis in the regions located downstream from the two main rivers,

as well as declining quality of life in those areas, as populations experience water shortages and are forced to consume water with high salt content.

National level solutions

The long-term solution to Central Asia's water problems very much depends on how governments in the region approach the problem on the national level. There are three fundamental factors in this respect.

The first one is the governments' attitudes towards domestic water conservation, especially in light of climate change's effects on the availability of water for household consumption and for the economy. There are no signs that countries that rely upon the Amudarya and Syrdarya are undertaking efforts to ration available water resources. There have been no attempts to learn from other countries that deal with water scarcity, such as Israel. Instead, the region's agriculture promotes waste of water resources. According to the local Uzbekistani expert Arustan Zholdasov, up to 50 percent of water resources are being lost in Uzbekistan's irrigation networks.



The Aral Sea, in 1989 (shown on left) and 2014 (right). Photo Credit: NASA, via public domain.

Wasteful use of water resources is characteristic to all countries in the region. According to Olli Varis, Turkmenistan consumes annually about 5.5 thousand cubic meters of water per capita, which is the highest rate in the world. This is four times greater than per capita consumption in the United States, and 13 times higher than in China. Uzbekistan and Kyrgyzstan annually consume about two thousand cubic meters per capita, ranking as the fourth and fifth most wasteful water consumers in the world. Tajikistan and Kazakhstan are seventh and eleventh, respectively.

The second factor is the high birth rate in the region, which increases the total demand for fresh water. Although the fertility rate in the region is gradually falling, overall population growth is still rising steadily. In Uzbekistan, for example, the number of births per thousand fell from 35 in 1991 to 19-20. However, in 2015, the total population of Uzbekistan grew by 444,000, or by 1.5 percent. Over the last five to six years the annual population growth rate in this country was in the range of 410,000 to 440,000.

The main contributor to the high birth rate is the large rural population in each country. For example, in Uzbekistan, 64 percent of citizens live in a rural area, up from 60 percent in 1991. These rural populations also heavily rely on agriculture, which comprises 91.3 percent of current water demand in the region. In comparison, industry and households consume only 4.3 percent and 4.4 percent respectively.

The agrarian nature of the Central Asian states is the third fundamental factor that contributes to the water shortage problem. Therefore, urbanization could be a solution to regional water scarcity. However, that would require more jobs in industry and services. Unfortunately, deeply flawed economic policies in Uzbekistan and Turkmenistan do not promote development towards a service-based economy. Both countries still preserve elements of a command economy, which, along with high corruption, prevents business development. In Uzbekistan , farmers also face compulsory production quotas and administratively-imposed procurement prices removing the incentives to invest in water-saving irrigation technology.

Issues of regional cooperation

A number of national and regional institutions have been established in the region in the past few decades to combat water scarcity. Examples include the International Fund for Saving the Aral Sea, the Interstate Coordination Water Commission of Central Asia, and the Research and Information Centre. These organizations, as well as a number of water management projects, have received financial and technical assistance from international donors and agencies, such as Swiss, German, and American international development agencies, the United Nations Development Programme, the World Bank, the Asian Development Bank, and the European Union, among others. In other words, there is no shortage of financial and intellectual resources to solve this problem.

It is time to raise the question of whether these initiatives produce effective outcomes. The Fund for Saving the Aral Sea is dedicated to preventing further depletion of the Aral Sea, which was once the fourth largest body of water in the world. However, according to available data, as of 2016, almost 90 percent of the Aral Sea’s water surface has already disappeared.

This inefficiency of the Fund for Saving the Aral Sea is not surprising, as practically all interstate initiatives and institutions in the region have similarly proven to be hollow, refusing to move beyond empty declarations.

Due to this failure to develop regional approaches to rationalizing the use of water resources, and most importantly, to enforce already adopted agreements in practice, the region remains split between two groups of countries: first, those situated in the upper reaches of the region’s main rivers and, for understandable reasons, not experiencing a lack of water, and second, those located in the lower reaches of these rivers. The first group includes Kyrgyzstan and Tajikistan, a significant proportion of whose territory is the highlands. The second group comprises Kazakhstan, Turkmenistan and Uzbekistan, all of which have arid climates with a large area of steppes and deserts. In Uzbekistan, only the Kyzylkum desert, the sixteenth largest in the world, covers 60 percent of its territory. A similar situation is in Turkmenistan where the Karakum desert occupies 70 percent of the country’s territory.

Table 1.
Total Annual Water Flow in the Amudarya and Sytdarya River Basins (per country per capita)

	The Upper River Countries			The Lower River Countries				Total
	Kyrgyzstan	Tajikistan	Total	Kazakhstan	Turkmenistan	Uzbekistan	Total	
Syrdarya, km^3	27.5	1.0	28.5	2.5		5.6	8.1	36.6
Amudarya, km^3	1.7	58.7	60.4	—	1.4	6.8	8.2	68.6
Total, km^3	29.2	59.7	88.9	2.5	1.4	12.4	16.3	105.2
Total, %	28%	57%	85%	2%	1%	12%	15%	100%
Population, thousands (2016)	6,033.8	8,669.5	14,703.2	17,855.4	5,438.7	30,300.4	53,594.5	
Water resources per person annually, m^3	4,839	6,891	6,049	141	258	408	304	

Water resource and population statistics in Central Asia, by country. Calculated on the basis of data provided by Cwater-info.net.

For comparison, Kyrgyzstan and Tajikistan together account for 85 percent of the annual circulation of water in rivers and reservoirs in the Aral Sea basin, leaving only 15 percent of the other three countries. In terms of annual volume of water resources per capita, the first group of countries accounts for 6,000 cubic meters of river water, while the second group only 304 — 23 times less.

As it would seem, the uneven distribution of water resources between these two groups of countries begs for closer cooperation. However, over the past two and a half decades, the level of regional cooperation has remained very low. Regional conflicts further complicate matters, as countries have occasionally become involved in border conflicts, the blocking of gas supplies at border crossings, and arguments over hydroelectric power projects.

Most of the tension is taking place between Uzbekistan and its neighbors Kyrgyzstan and Tajikistan. Uzbekistan fears that its neighbors' plans to construct large hydroelectric power plants could disrupt its water supply by changing the flow of water in major tributaries of the Amudarya and Syrdarya. Uzbekistan has threatened to cut its gas supply to Kyrgyzstan and Tajikistan in response. This is a stark example of the deep mutual distrust between regional neighbors.

In Soviet times, Moscow oversaw the observance of the balance in distribution of water and energy resources within the region. On the one hand, a schedule and per country quotas were set up for water outflow from reservoirs on the territory of Kyrgyzstan and Tajikistan (from the Toktogul and Nurek hydroelectric power stations on the Naryn and the Vakhsh rivers), and Moscow could indeed guarantee that these quotas were met. On the other hand, Uzbekistan provided the upstream countries with gas, which removed the need in the two highland countries for additional electric energy during the winter season and reduced the need for a large volume water outflow from the water reservoirs in this period of

the year. With the collapse of the Soviet Union and the formation of new independent states, each side began pulling the blanket over themselves, thus breaking the previously established balance. Gas supplies to the upper reaches of the country began to experience disruptions, especially in winter periods. In turn, Kyrgyzstan and Tajikistan started letting down maximum water down from their already existing reservoirs to compensate for a lack of energy during the winter. The extra water outflow began to cause the flooding of settlements and the overfilling of water reservoirs in the territory of Uzbekistan and southern Kazakhstan during the winter period when the need for water in these countries is low. The constriction of the Kambarata-1 and Rogun hydro plants would exacerbate this situation, unless all parties agree to reestablish and to observe the gas supply–water quota balance. Unfortunately, in reality the conflict has gone too far.

To prevent the realization of the Rogun project, in addition to diplomatic pressure, Uzbekistan began resorting to an economic blockade, by waging a "railroad war" with Tajikistan. In 2011, a bridge in Surkhandarya region of Uzbekistan, on which the railway line linking Kurgan-Tyube in the southern region of Tajikistan with the Uzbekistani city of Termez along with other CIS countries, was blown up. It is quite obvious that it was done by the Uzbekistani side to deny Tajikistan the use of Uzbekistan as a transit territory for Tajikistani railway freight cars.

Conclusion

As we can see, the solution to the problem of conservation and rational use of water resources requires a complex set of measures at the national and regional levels, and most importantly, the development of robust institutions. If the formation of institutions does not work at the national level, it is unlikely that we will see the emergence of capable institutions on a regional scale. It seems that regional governments and local populations are not prepared to meet the challenge and prevent an impending water crisis. As for international organizations, agencies, and donors, although they want to help countries in Central Asia solve these problems, they are not able to replace these governments and do the work that these governments are supposed to do themselves.

Given the current state of affairs, I remain quite skeptical about the possibility of solving key problems of a looming water shortage in the region. Perhaps, an old saying better reflects what we can expect in observable future: "The worse the better." Until the people of Central Asia begin experiencing real hardships due to lack of water, they are unlikely to confront the government with a strong political will and desire for change.

http://hir.harvard.edu/high-dry-central-asias-failure-avert-impending-water-crisis/