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INSTITUTE FOR WAR & PEACE REPORTING
IWPR
ИНСТИТУТ ПО ОСВЕЩЕНИЮ ВОЙНЫ И МИРА

DISCOURSES AND STRATEGIES FOR SOLVING ENVIRONMENTAL ISSUES IN CENTRAL ASIA

The author of this publication is Muslimbek Buriev, *a researcher from Tajikistan and a graduate of the OSCE Academy's Master's degree in Politics and Security*. This report presents a critical analysis of environmental problems in Central Asia.

It is intended for young experts and consultants, researchers, decision makers, as well as the wide range of readers interested in environmental issues and governance in Central Asia. Nargiza Muratalieva, editor of the regional analytical platform CABAR.asia, provided editorial preparation for the publication.

The opinions expressed in this document do not necessarily reflect the positions of CABAR.asia.

IWPR is an international non-profit organization that supports independent media and civil society in transition countries. Working in 28 states, IWPR began operations in Central Asia in 1999.

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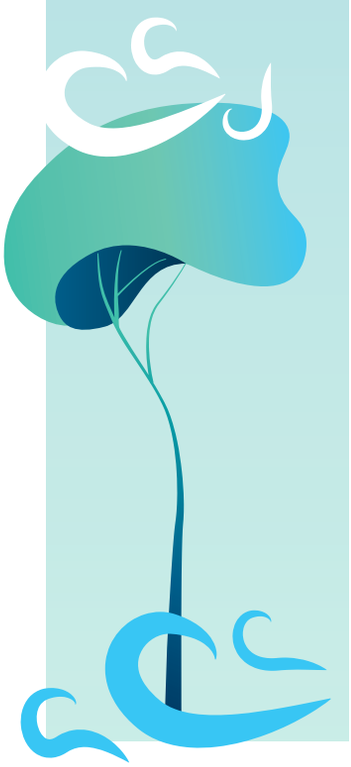
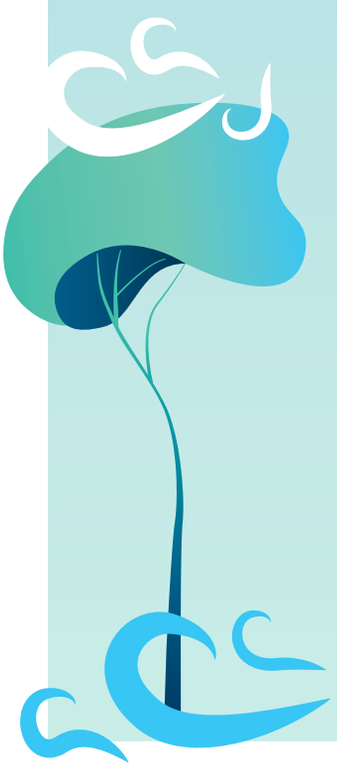




SUMMARY

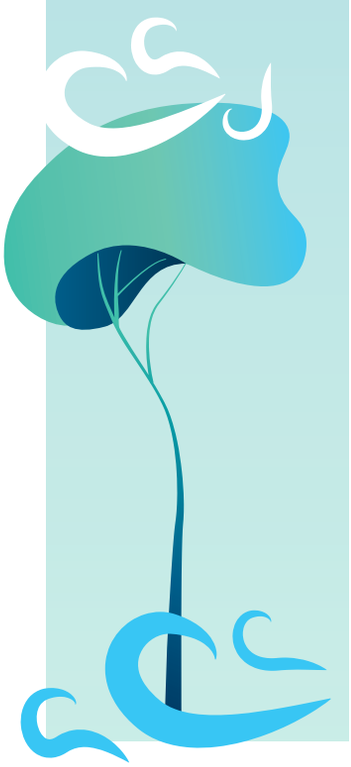
Environmental issues have never been central to the agendas of Central Asian countries. Problems related to the development of the economy, agriculture, and industry have outweighed environmental concerns. Ecology has only recently become part of social and political conversations in the region, though the level of focus varies widely given the different levels of social and economic development. The outdated technical equipment of the region's systems, including its water supply infrastructure, is an additional factor aggravating the ecological situation.

Among all environmental issues, water resources are the most integrated into the intergovernmental and regional agenda, though the regional approach to resolving water disputes is at present inferior to solutions at the bilateral level. Given all the natural climatic risks in the region, including aridity, climate change, and population growth, poor water resource management poses a significant additional threat.

Industrial development, together with accelerating urbanization and urban population growth, are defining characteristics of contemporary Central Asia, as is the concomitant increase in atmospheric emissions. Countries in the region perceive air pollution as a matter for individual states; there is nothing analogous to the interstate and regional dialogue associated with water resources. Unlike water, air is not seen as a resource that can be measured or assessed in terms of economic benefits. The scientific and technical bases for monitoring of air quality are weak, while state programs have not yet proven their effectiveness. Industrial enterprises – a main source of air pollution – are reluctant to introduce waste reduction equipment, while state level regulation primarily involves a system of fines and fees.

NGOs and civil society clearly act as lobbying groups In Kazakhstan and Kyrgyzstan, monitoring the implementation of state programs and disseminating information about the environmental situation. The success of civic initiatives in these countries can provide resonant examples for Central Asian republics with weak links between government agencies and the non-governmental sector.

NGOs, in the event there is a shortage among relevant personnel in the ranks of government officials, can help reduce this deficiency. Government programs, many of which fail to address critical issues, can also benefit from closer links with communities and international donors.



INTRODUCTION

Urbanization, population growth, and climate change will negatively impact the countries of Central Asia in the near future, a region in which state structures dominate the environmental agenda, though non-governmental and international organizations are also working in parallel, if not always in concert, with these efforts. Both are adopting doctrines and strategies, as well as developing programs, to inform the population about environmental problems and to assist in solving them.

The countries of the region face shared threats, including the environmental risks attendant to population growth and climate change, for which they need to make immediate preparations. There are also technical issues like outdated infrastructure, the lack of qualified personnel, and inadequate financial resources. Measures to address these problems have long been integrated into the sustainable development agenda of each of the Central Asian countries, though the programs designed to implement them have not always been effective.

This work is an effort to outline the most significant environmental issues in the region and to analyze measures to solve them. In addition, it attempts to highlight cases of successful practice as well as to identify existing programs with significant shortcomings.

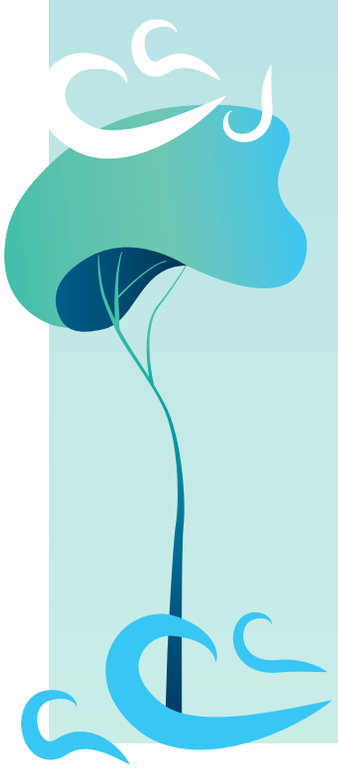
The report is rooted in expert meetings held by the Institute for War and Peace Reporting (IWPR) in Kazakhstan, Uzbekistan, Kyrgyzstan, and Tajikistan. The topic of these meetings was the cooperation of non-governmental organizations with government agencies in matters of water use and air pollution.

Water resources are vital for the countries of the region given the interconnectedness of its water systems. Agriculture, a key source of income for regional economies, is the main consumer of these resources; using them efficiently is essential for economic development.

Industrial growth, and the lack of green technologies in developing economies, have made air pollution an increasingly urgent problem in Central Asia. The region's growing urban populations, together with the associated rise in automobile traffic – cars dominate transportation in Central Asia – have also contributed to the deterioration of air quality.

The goal of this work is to analyze each of these problems, considering the status quo for the region and each country separately, and to assess the existing approaches to solving water resource and air quality issues.

It is hoped that careful consideration of these matters will allow us to develop recommendations for both regional authorities and non-state actors.



WATER AS A STRATEGIC RESOURCE IN CENTRAL ASIA

The availability of water, water reserves, and the rational use of water resources are stumbling blocks for Central Asia among issues related to the environment. The region inherited its irrigation systems for agricultural land and urban water supply, as with so much else, from the Soviet Union.

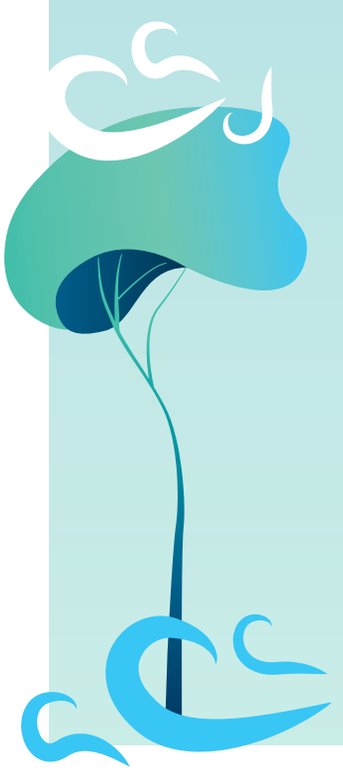
After gaining independence and establishing state borders, the heads of the newly formed states understood that water supply systems would need to be regulated collectively, given the common interest each state shares in water reserves.

The countries of Central Asia actively cooperated with each other on numerous joint measures, including a series of protocols adopted in 1991 in Tashkent to solve the matter of the shrinking Aral Sea. Ministers of all five Central Asian countries met and issued statements on this occasion to emphasize their «inextricable dependence and interconnection of interests» in relation to the Aral Sea basin and the use of its water resources.

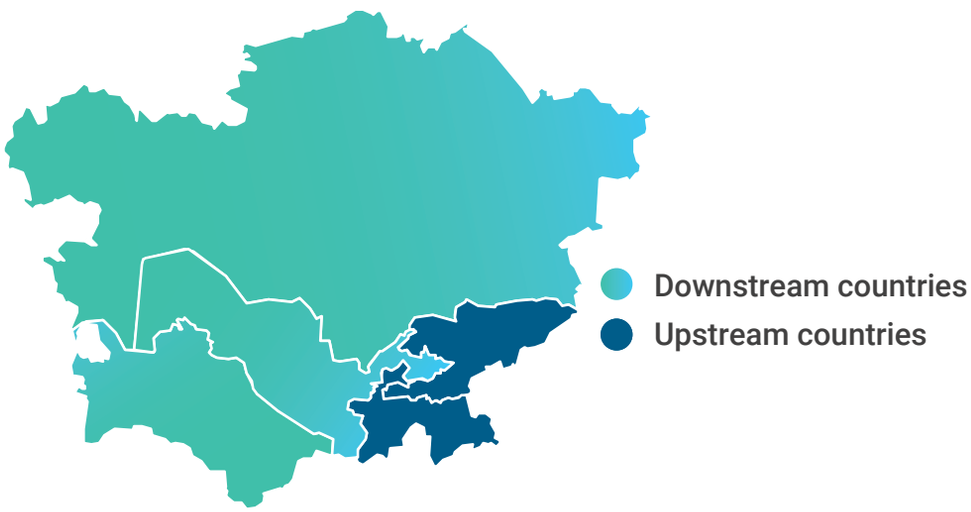
The water ministers of each Central Asian state later signed a joint agreement on «Cooperation in the field of joint management involving the use and protection of interstate water resources.» Formalized in Almaty in 1992, it led to the creation of the Interstate Water Coordination Commission.

Water is the only environmental issue actively discussed at the interstate level. There are clear motivations for regional interdependence, though also a number of complicating factors. An arid climate characterizes most of Central Asia. Use of water increases during the summer months, especially in agriculture, where it is used to support vegetable and grain crops and to sustain livestock in dry weather conditions. The population's awareness of rational water use remains deficient, aggravating this situation.

There is also the position of each country relative to the flow of the Amu Darya and Syr Darya rivers. There was a clear division between upstream and downstream countries in the Soviet era, with this demarcation playing a determinate role in water resource systems at the interregional level. The upstream countries – Tajikistan and Kyrgyzstan – consumed less water in winter than in summer, allowing them to accumulate water reserves they could then release in the summer months to irrigate agricultural lands in the downstream countries Kazakhstan, Uzbekistan and Turkmenistan. The latter provided upstream countries with electricity in winter "in return," though this joint water use regime ceased to function with the collapse of the USSR. Tajikistan and Kyrgyzstan now face shortages of electricity in winter, while some downstream countries struggle with a lack of water in the summer months.



This situation naturally forced heads of state to take joint measures to restore the region's prior water balance and to satisfy collective interests.[1]



Central Asian countries realized that water was their most important strategic resource after independence, something evident given regional realities and established historical ties. Each republic established platforms to facilitate joint discussion and regulation of water issues in the early 90s, though disputes over water use still take place at the interstate level. Sharing resources remains an issue even though water use is understood to be a regional matter.

[1] Bukharizade, N., "Водные ресурсы в Центральной Азии: зависимая независимость," Fergana, 17.06.2015, https://www.fergananews.com/articles/8589

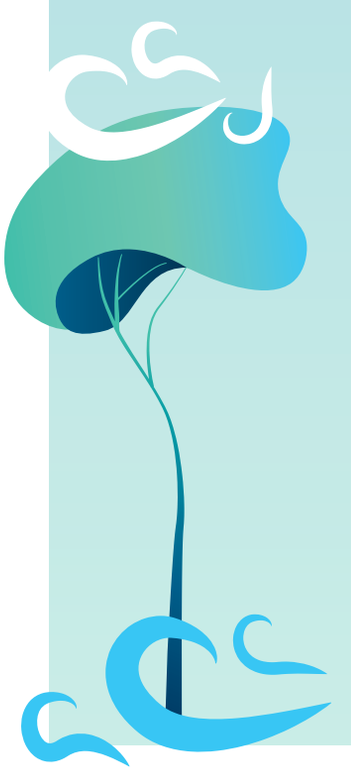
DISPUTES AND DECISIONS

Tajikistan and Kyrgyzstan have both decided to actively develop hydropower. Each state has great potential in this regard. Tajikistan started construction of the Rogun and Dashtijum dams on the Vakhsh and Pyanj rivers, respectively, after independence, while Kyrgyzstan is currently building two hydroelectric power plants (HPPs), Kambarata 1 and 2. The development of hydropower in these countries brings with it certain risks for downstream countries, including Uzbekistan, which voiced fears in the Karimov era that the Rogun dam would strengthen Tajikistan's control over the release of water and restrict its availability for agriculture in Uzbekistan.

This situation improved with the ascension of Shavkat Mirziyoyev, who helped establish relations with the Rahmon regime by forging compromises on numerous controversial issues. Tashkent for its part stopped openly expressing its dissatisfaction with the Rogun HPP, or «managed to abandon the emotional component» of its complaints, while stressing that the interests of Uzbekistan should be taken into account in any further construction or expansion of the station.

The two leaders also discussed establishing technical cooperation on hydropower issues. Both sides have begun negotiations on the joint construction of two hydroelectric power plants in Tajikistan near the Zarafshan River. The government of Uzbekistan provided the roadmap for the implementation of the agreements, though the projects are designed to provide both states with electricity.[2]

At the same time, upstream countries have expressed consistent outrage over the lack of compensation for the water that is accumulated in winter and then sent to downstream countries.[3] The Kyrgyz authorities have pointed to the absence of any mechanism to reimburse upstream countries for the funds they lose in winter. They emphasize the Toktogul, Kirov, and Orto-Tokoi reservoirs, which are important sources of water for border regions in neighboring Kazakhstan.[4] Kyrgyzstan has periodically suspended water supplies from its reservoirs in the past. Kazakhstan allocates money and electricity exchanges for the operation of the reservoirs.[5]



[2] Avesto.tj, Таджикистан и Узбекистан построят две ГЭС на реке Зарафшон, 29.01.2019, http://avesta.tj/2019/01/29/tadzhikistan-i-uzbekistan-postroyat-dve-ges-na-reke-zarafshon/

[3] Asia-Plus, Таджикистан ждет компенсаций за свою воду, 21.02.2020, https://asiaplustj.info/ru/news/tajikistan/economic/20200221/tadzhikistan-zhdet-kompensatsiyu-ot-sosedei-za-svoyu-vodu

[4] Sputnik.KZ, Кыргызстан хочет возобновить компенсации за воду в Центральной Азии, 25.12.2019, https://ru.sputnik.kg/asia/20191129/1046379050/kyrgyzstan-voda-central-asia.html

[5] Economist.KG, Кыргызстан и Казахстан обменяются 270 млн кВт/ч электроэнергии, 19.07.2019, https://economist.kg/2019/07/19/kyrgyzstan-i-kazahstan-obmenyajutsya-270-mln-kvt-ch-elektroenergii/

Kazakhstan's involvement in negotiations indicates the importance it places on resolving disputes and resuming regional cooperation in the long-term. It has urged Kyrgyzstan to rejoin the Fund for Saving the Aral Sea, from which it suspended its participation in 2015. The Kazakh side frequently refers to the initiatives of the country's first president, Nursultan Nazarbayev, who proposed a Central Asian water and energy consortium.[6] Kazakhstani ecologists also oppose the construction of nuclear power plants in Uzbekistan, calling on Tashkent to address potential environmental risks, including for water bodies, which, in case of accidents, may be exposed to radioactive contamination.[7]

Kyrgyzstan has had disputes with Uzbekistan over Kambarata 1 and 2 as well, though both sides reached a compromise on this issue, agreeing to jointly implement the projects in an effort to safeguard interests of concern to both countries.[8]

Uzbekistan and Kazakhstan – downstream countries with the most developed economies in the region – take noticeably different approaches to resolving disputes. Uzbekistan focuses on bilateral cooperation with Tajikistan and Kyrgyzstan, while Kazakhstan emphasizes the importance of a broader region-wide consensus.

Tashkent's approach has shown more effective results. The political will of the new administration in Tashkent is a motivating factor, spurring efforts to resolve controversial issues that have impeded otherwise promising approaches. It is also evident in the joint projects it has initiated to effect scientific and technical rapprochements with neighboring states.

The broader regional approach of Kazakhstan is not new, though it has done little to resolve disputes between states. Interstate platforms rarely help in controversial situations as states are more inclined to rely on bilateral negotiations; the recommendations of supranational bodies do not have the same impact. There is currently no common denominator to bind countries together at the regional level and the individual concern of each state for its economic development remains a centrifugal force. Central Asian states have disparate economic priorities, while the perception of water use as a regional problem is at present only rhetorical. This state of affairs prevails despite the widespread awareness in the region that the water supply systems in its border areas are interconnected.

As a result, it is necessary to analyze water use in each country separately to understand what common solutions neighboring states may realize in the future.

[6] Azzatyq Ryhy KZ, Казахстан и Кыргызстан обсудили вопрос сотрудничества в водно-энергетической сфере, 17.12.2019, https://rus.azattyq-ruhy.kz/economics/3104-kazakhstan-i-kyrgyzstan-obsudili-voprosy-sotrudnichestva-v-vodno-energeticheskoi-sfere

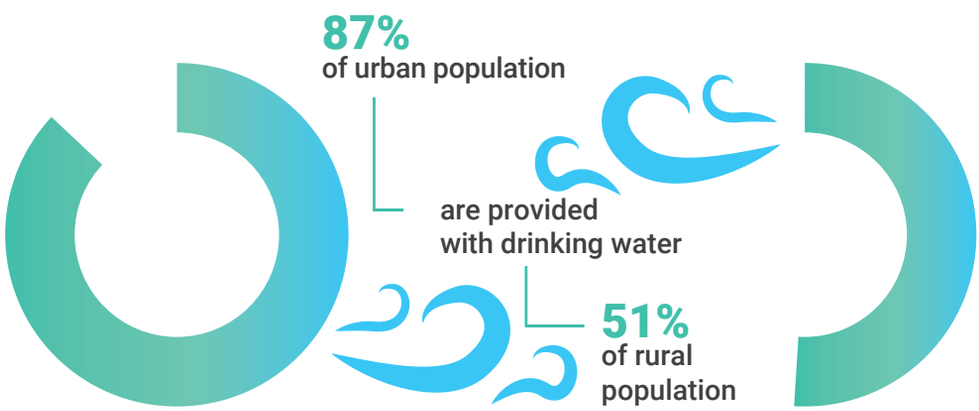
[7] Azzatyq Ryhy KZ, АЭС под боком? Планы Узбекистана и реакция в Казахстане, 13.09.2019, https://rus.azattyq.org/a/kazakhstan-uzbekistan-plans-to-construct-nuclear-power-plant/30161820.html

[8] Radio Azzatyq, Бишкек и Ташкент обсудят строительство Камбаратинской ГЭС-1, 20.02.2019, https://rus.azattyk.org/a/kyrgyzstan_uzbekistan_kambar-ata_ges/29781030.html

KAZAKHSTAN: STRENGTH AND DEPENDENCE

Water resources in Kazakhstan are a challenging issue. There are numerous problems with water resources in the country, according to large-scale studies carried out by Kazakhstan's Institute of Geography, including water scarcity and pollution. Local experts predict that water shortages will triple by 2050; they point to deteriorating water infrastructure and outmoded approaches to the construction of water supply systems as primary causative factors.[9] Irrigation systems experience accelerated wear, with large volumes of water wasted or lost in consequence. There are also no technologies for water saving or accounting. Water quality decreases as a result, while salinization in irrigated areas increases together with desertification. Beyond this, there are multiple difficulties in efficiently allocating already limited water sources.

Figure 1. Provision of the population of Kazakhstan with drinking water



According to available data, 87% of the urban population and 51% of the rural population are provided with drinking water in the country.[10] Half of all water consumption falls to agriculture, though it is believed that Kazakhstan successfully supplies water to all sectors of the economy. Water availability differs depending on the region, however, a consequence of the geographic location of the country. The central part is drier and the most problematic in terms of water supply. Rural settlements remote from district centers are most vulnerable to water shortages. For them, water is delivered in limited quantities through the transportation of tanks. Access to centralized water supply systems in some parts of the country reaches only 19%, while the level of water supply deterioration in urban centers at times reaches 60%.[11]

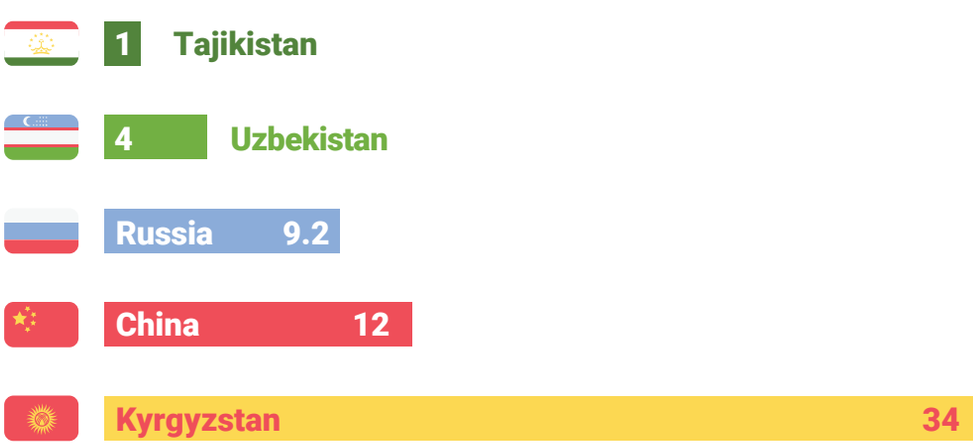
[9] Адылбекова, К, 2019 Как Казахстан решает проблему дефицита питьевой воды в эпоху нефтяного лидерства в Центральной Азии?, CABAR.Asia, https://cabar.asia/ru/kak-kazahstan-reshaet-problemu-defitsita-pitevoj-vody-v-epohu-neftyannogo-liderstva-v-tsentralnoj-azii/

[10] Курсив.KZ, Как в Казахстане обстоят дела с водным вопросом? 21.02.2019, https://kursiv.kz/news/ekonomika/2019-02/kak-v-kazakhstane-obstoyat-dela-s-vodnym-voprosom

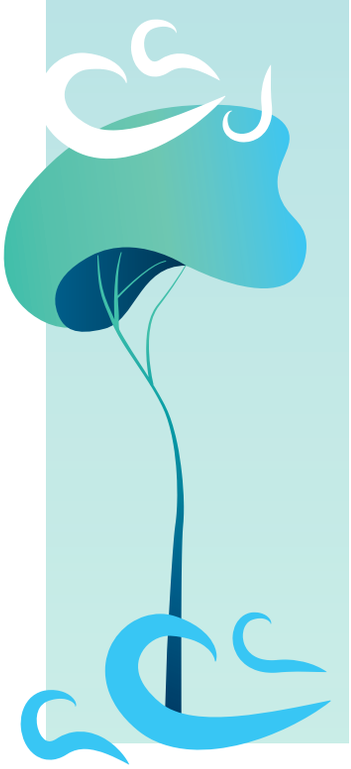
[11] Курсив.KZ , Как будут решать проблему нехватки качественной воды питьевой воды в Казахстане? 20.10.2017, https://kursiv.kz/news/kompanii-i-rynki/2017-10/kak-budut-reshat-problemu-nekhvatki-kachestvennoy-pitevoy-vody-v

Nearly half of all water sources originate outside the country, which makes border areas dependent on the spillways of neighboring states. The total volume of water received from Kyrgyzstan for the Chu-Talas basin in southern Kazakhstan is about 7 km3 according to the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Development Program. It is 33 km3 for the Aral-Syrdarya basin in the east, 27 km3 of which comes from Kyrgyzstan, while smaller amounts, 4 km3 and 1 km3, come from Uzbekistan and Tajikistan, respectively. China provides 12 km3 of the water volume to the Balsha-Alakol basin in the west, which is regulated by bilateral agreement. Russia delivers lesser volumes to the Tobolsk-Turgai and Ural-Caspian basins in the northern part of the country: 0.6 km3 and 8.6 km3, respectively. Central Asian states, as well as Russia and China, play critical roles in Kazakhstan's water supply.

The volume of water resources in Kazakhstan derived from external sources (in cubic km) [13]



External water sources make Kazakhstan vulnerable to the environmental problems of its neighbors. The melting of glaciers, a consequence of increasing annual temperatures in the region, has decreased the volume of water supplied to the Central Asian rivers that supply its water. Several regions are experiencing increased aridity as a result of climate change together with an associated increase in the demand for water.



[12] Aibek Zhupankhan, Kamshat Tussupova & Ronny Berndtsson, "Water in Kazakhstan, a key in Central Asian water management," *Hydrological Sciences Journal*, Vol 63, #5, 752–762, 2018, https://www.tandfonline.com/doi/full/10.1080/02626667.2018.1447111

[13] Op. cit.

THE FAILURE OF STATE PROGRAMS: HOPE FOR THE NON-GOVERNMENTAL SECTOR?

Kazakhstan adopted the Potable Water Ppogram in 2002 to comprehensively address water access issues, though the results were unsatisfactory, a result of inefficiencies in implementation and documented instances of corruption and embezzlement. Its technical components were deficient and there was a corresponding negative impact on the environment.

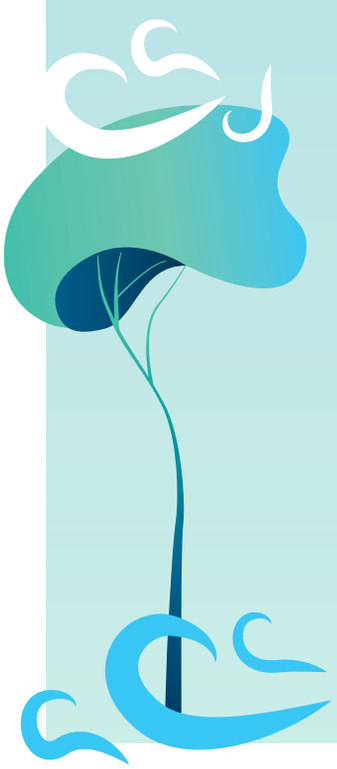
There was also the Ak-Bulak, or "Pure Spring," initiative, which was adopted in 2011 after the conclusion of the Potable Water program. Ak-Bulak was part of a state program for regional development; it aspired to provide clean drinking water to 85% of the rural population and 100% of the urban population by 2020. The program did not provide for the construction of new water infrastructure, however, a key necessity given the aging water supply system in the country. The program is far from complete, though it can be argued that the Ak-Bulak program will not resolve Kazakhstan's water supply problems.

The failures of state programs spurred initiatives in civil society and the non-governmental sector, with calls for independent or public oversight of state strategies and projects meant to solve water problems. The public organization «Angel», for example, is involved in monitoring the results of the Potable Water program and has estimated the damage of the initiative to be some 250 million tenge (620 thousand US dollars). These organizations have also worked to lobby authorities in situations where their decisions failed to address significant environmental factors. ECOM (Eurasian Coalition on Health, Rights, Gender and Sexual Diversity) has dealt with numerous problems related to the Irtysh River in the north of the country, for example, with its members opposing construction projects in the river basin using judicial and expert resources.

Svetlana Mogilyuk, a representative of ECOM, indicated in an expert meeting organized by IWPR that her organization works with government agencies to identify key issues of concern. She also stressed the need for competent analyses to systematically evaluate solutions to pressing environmental concerns, terming this a clear priority. An approach involving both public and non-governmental perspectives is requisite to resolving environmental issues; outreach to the public through information campaigns and by coverage of water issues in local media are equally vital.[14]

[12] Mogiliuk, S. "Выстраивание коммуникации и совместной работы с государственными органами и ОМСУ по улучшению управления водными ресурсами и сохранению водных экосистем: успехи, проблемы и рекомендации," Экспертная встреча IWPR, 14.04.2020

The overall situation with NGOs is not promising, however, with the number of such organizations decreasing in recent years and with many receiving little or no funding. Cooperation between government agencies and NGOs is also deficient; the numbers of those involved in expert groups and platforms that bring together representatives of the public sector and NGOs are minimal. Only 8% of all such organizations cooperate with government agencies according to the Survey of the Activities of Environmental NGOs in Kazakhstan.[15] Small NGOs rarely receive any kind of support from international donors; this is particularly applicable to small associations operating in rural areas. State funding is also negligible, hence NGO efforts to solicit private funding.



[15] CAREC (2017), "Обзор деятельности Экологических НПО в Казахстане," https://carececo.org/ОБЗОР%20ЭКОЛОГИЧЕСКИХ%20НПО%20В%20РК.pdf

UZBEKISTAN: NATURAL THREATS AND THE HUMAN FACTOR

Water resources in Central Asia are most critical in Uzbekistan, one of two "double landlocked" countries in the world, as it is surrounded by neighbors with no direct access to the sea. Most of its water resources are external and originate primarily in Tajikistan and Kyrgyzstan. This has resulted in frequent disputes with the two upstream countries, both of which are actively developing hydropower resources. Uzbekistan's rhetoric toward hydropower construction in key river basins has been pointedly negative.

Uzbekistan is surrounded by countries that do not have direct access to the seas.

The climate of the country, which consists primarily of mountainous regions and desert, is arid. The Karakalpakstan region suffers from frequent droughts, while the shrinking Aral Sea releases hundreds of tons of salt annually into the Amu and Syr Darya rivers.

This situation poses a critical threat to agriculture. Cotton remains a pillar of the Uzbek economy; problems of water scarcity and salinization carry major economic risks as a result. Poor-quality irrigation systems, in which 30-60% of all water supplied for irrigation is lost, are also a complicating factor.[16]

The water deficit in the country is 12-13% below required indicators according to some estimates, a shortage that may worsen with population growth, climate change, and associated increases in water demand.[17] [18]

[16] Egamov, A., 2019, Uzbekistan's Impending Water Crisis, The Diplomat, https://thediplomat.com/2019/09/uzbekistans-impending-water-crisis/

[17] Azizov, A. "Водные ресурсы Узбекистана проблемы безопасности и управления," экспертная встреча IWPR, 18.04.2020

[18] Alimzhanov, B. "Водные проблемы Узбекистана: вопросы экологии и менеджмента," CABAR.Asia, 2020, , https://cabar.asia/ru/vodnye-problemy-uzbekistana-voprosy-ekologii-i-menedzhmenta/

Uzbekistan occupies a high position relative to countries such as Sudan and Israel in total annual water withdrawal per capita, though it ranks 153 out of 180 countries in renewable water resources.[19] There are significant losses in the volume of potable water, with these amounting to 469 million cubic meters in 2019 or to 32% of the total volume of water suitable for drinking.[20]

The deficient state of water management poses an additional threat given the natural climatic risks in the country such as aridity, climate change, and population growth. This is an obvious conclusion.

Azamat Azizov (National University of Uzbekistan) noted in an IWPR expert meeting that the main reasons for poor water management in the country are the absence of water-saving technologies and water supply recycling system; he also pointed to the lack of any established practice for reusing secondary water resources such as waste and drainage water. Water resources are squandered as a result, sometimes irrationally, and methods for replenishing water resources are not being applied.[21]

RELYING ON EXTERNAL PARTNERS

Uzbekistan has a comprehensive strategy for resolving water issues, though it has approached solutions to these problems in different ways.

The new Mirziyoyev government began by settling disputes with Tajikistan and Kyrgyzstan. Its views on water resource issues have changed, with the administration directing its attention to the imperfections of its internal water supply system rather than expressing dissatisfaction with neighboring countries, something that was common in the Karimov era.

Uzbekistan, however, still perceives bilateral approaches as the first step in solving common regional problems. Shavkat Mirziyoyev proposed to adopt a regional program for the use of water resources In 2018 but simultaneously established and strengthened cooperation with each of Uzbekistan's neighboring countries; this distinguished it from Kazakhstan, which has actively promoted broader regional approaches to water resource management.

Uzbekistan's strategy can be attributed to a lack of internal human resources, with the foreign policy intransigence of the regime adding a further complicating factor to water use solutions. There is a plan for the integrated development of the country through 2030; it promises the introduction of effective irrigation technologies, the reconstruction of

[19] IndexMundi, 2014, Renewable internal freshwater resources per capita, https://www.indexmundi.com/facts/indicators/ER.H2O.INTR.PC/rankings

[20] Regnum, 30.10.2018, Потери питьевой воды в Узбекистане достигли 469 млн кубометров, https://regnum.ru/news/2510647.html

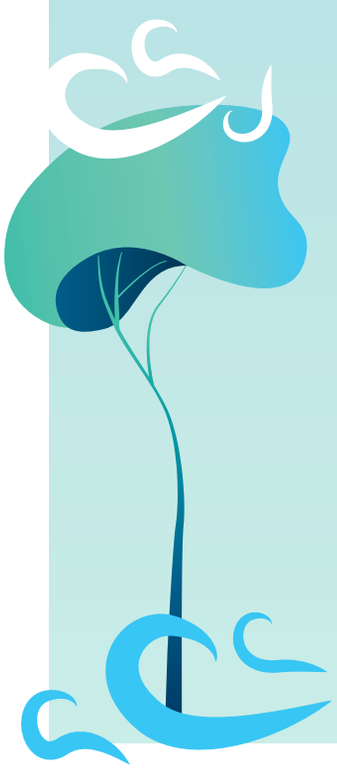
[21] Azizov, A. "Водные ресурсы Узбекистана проблемы безопасности и управления," экспертная встреча IWPR, 18.04.2020

canals, and the full provision of the population with clean drinking water. The list is impressive on paper but detailed descriptions of necessary measures in the field of water resources are not enough. It is probable that the country is only at the initial stages of developing a solution, however, with its strategy doing little more than outlining the status quo of water in Uzbekistan. In addition, it makes no mention of the need to train scientific personnel in water resource management, even though this is critical.

International donor organizations have become more active in Uzbekistan. The World Bank provided a loan totaling 239 million USD to improve water supply and quality in Karakalpakstan, Syrdarya and Samarkand, the regions most impacted by water deficits.[22] The Asian Development Bank will direct 145 million USD to improve the water supply system in the western part of the country through 2025.[23] The Asian Infrastructure Investment Bank (AIIB) recently allocated funds in the amount of 385 million for similar goals in the Bukhara region.[24]

The regions targeted in these projects are a positive development as donors had previously prioritized initiatives in Fergana and Andijan; this is according to the report of the International Institute of Water Regulation.[25] International donors are now adopting more balanced approaches and directing assistance to regions in need.

That said, it would take time to understand how effectively the funds will be used and how serious donors are in contributing counsel, particularly given local staffing shortages in the country.



[22] Kun.Uz, ВБ выделил Узбекистану 239 млн долларов для улучшения инфраструктуры водоснабжения, 13.03.2020, https://kun.uz/ru/news/2020/03/13/vb-vydelil-uzbekistanu-239-mln-dollarov-dlya-uluchsheniya-infrastruktury-vodosnabjyeniya

[23] Asian Development Bank, Uzbekistan: Western Uzbekistan Water Supply System Development Project, https://www.adb.org/projects/50259-002/main

[24] Podrobno.UZ, Азиатский банк инфраструктурных инвестиций выделил 385 миллионов долларов на организацию водоснабжения в Бухарской области, 04.04.2020, https://podrobno.uz/cat/economic/aziatskiy-bank-infrastrukturnykh-investitsiy-vydelil-385-millionov-dollarov-na-organizatsiyu-vodosna/

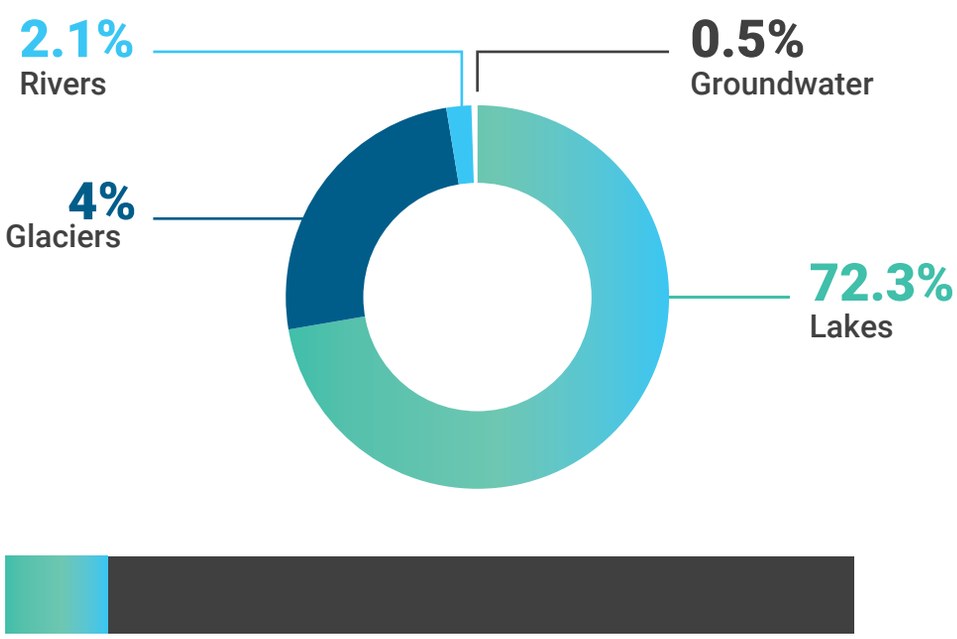
[25] Djumaboev, K., Kholmatov, B. and A. Hamidov, 2017, Overview of Water-related Programs in Uzbekistan, International Water Management Institute (IWMI), http://centralasia.iwmi.cgiar.org/regional-content/central_asia/pdf/overview-of-water-related-programs-in-uzbekistan.pdf

KYRGYZSTAN: WATER BUT ALSO WASTE

Kyrgyzstan has the most abundant water resources among Central Asian states and is the only country in the region with water autarky; it is able to provide all water from domestic sources, according to many estimates.

Surface river runoff comprises approximately 50 billion cubic meters of river flow. There are 13 billion cubic meters of groundwater and 1745 billion cubic meters of lake water reserves.[26] The country has 12 additional artificial reservoirs with a total volume of more than 10 million cubic meters. Kyrgyzstan utilizes only 12% of its total water potential, with the remainder used to supply neighboring countries.[27]

Figure 3. Sources of water resources in Kyrgyzstan (%)[28]



12%
of the total water potential is used by Kyrgyzstan

[26] Shatmanov, O.T., Zhanbirov, Zh.G., Tursymbekova, Z.Zh, Karimov, T.Kh, "Водные ресурсы Кыргызской Республики," Государственный Фонд Экологической Информации Республики Казахстан, 2016, http://ecogosfond.kz/wp-content/uploads/2018/12/CA.D.202-Vodnye-resursy-Kyrgyzskoj-Respubliki.pdf

[27] Mambetov, T. "Предотвращение загрязнения воды в Кыргызстане," Экспертная встреча IWPR, 09.04.2020

[28] Op. cit.

Kyrgyzstan, like Uzbekistan and Kazakhstan, loses large amounts of water due to poor irrigation systems, lack of water-saving technologies, and owing to the inefficient allocation of water resources.

The pollution of river waters is another significant problem. The primary cause is waste from industrial and metallurgical enterprises; this is exacerbated by the irrational use of water resources. The country lacks systems for collecting and storing waste and disposing it. Groundwater, which is less susceptible to pollution, is an alternative but the costs of establishing groundwater supply systems, developing wells, and installing pumps are prohibitively high.

Though 99% of the urban and 85% of the rural population are provided with water, water pollution remains a key threat to both populations according to the UN.[29] The abundant water supply is accompanied by high levels of pollution, increasing risk factors for contracting acute intestinal diseases.

THERE ARE SOLUTIONS BUT NOT FOR EVERYTHING

The state program «Taza Suu» (Clean Water) is an initiative meant to provision 100% of Kyrgyzstan's population with clean water. Foreign donors and credit institutions have allocated funds to implement the program, which is scheduled for 2024. The work will be carried out in stages according to individuals involved in the program and is dependent on financial returns. Its primary goal is to work in rural areas, rehabilitate water supply systems, and build new infrastructure.

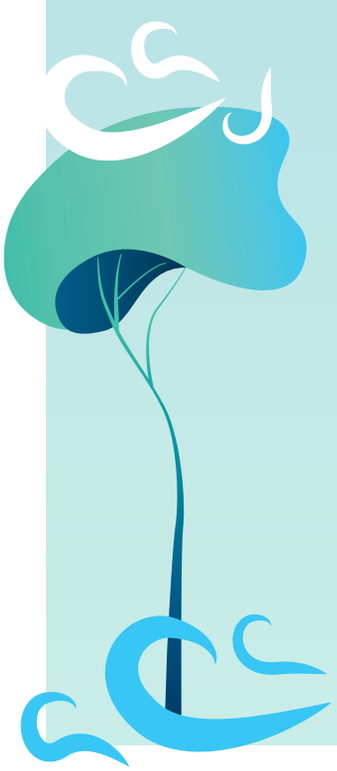
The national government and its responsible partner organizations regularly report positive results, though there is skepticism about whether authorities will manage to implement the program in time. There are also doubts about the relevance of program goals: it addresses the need to modernize and renovate water supply systems but leaves issues of water pollution unresolved.

Other initiatives involve more systemic ambitions. International partners in water resource projects understand that it is necessary to change the legal framework and increase the administrative capacity of local authorities. The "Integrated Water Resources Management" project, for example, which is funded by the World Bank, is proposing decrees to regulate the functioning of state bodies and to better organize platforms for coordinating stakeholder interests, including those of NGOs and local communities.

[29] UN-Water Global Analysis and Assessment of Sanitation and Drinking Water, 2014, https://www.who.int/water_sanitation_health/monitoring/investments/kyrgyzstan-10-nov.pdf

Local NGOs have noted the deficient capacity of those responsible for water regulation. Anara Choitonbaeva (the Kyrgyz Alliance for Water and Sanitation) remarked at an expert meeting organized by IWPR that some departments are negligent when monitoring regulations on the provision of drinking water, which impairs the ability of local authorities to sustain water supply systems. She added that it was necessary to decentralize planning in this instance and establish cooperation between regional authorities, civil society, public funds, and business associations.[30]

Initiatives of this kind require political will as well as personnel able to reform the legislative framework for the country's water sector, though it is unclear whether Kyrgyzstan is capable of ensuring reform and how much more time and money will be needed.



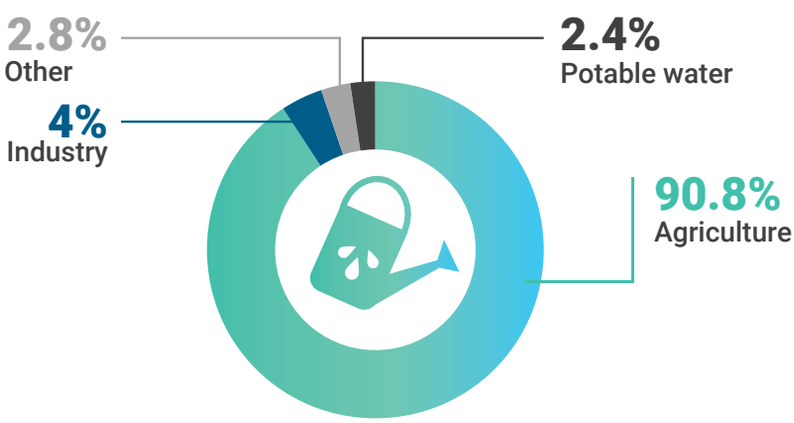
[30] Chotonbaeva, A. "Опыт КАВС по выстраиванию коммуникации и совместной работы с государственными органами и ОМСУ по улучшению водоснабжения и санитарии: успехи, проблемы и рекомендации," Экспертная встреча IWPR, 09.04.2020

TAJIKISTAN: WATER RESOURCES ARE NOT FOR EVERYONE

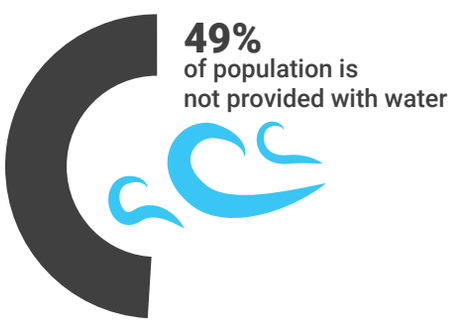
Water resource wealth and its regional significance is a matter of pride for the government of Tajikistan, a country in which the annual volume of river flow is 56 cubic km of water.

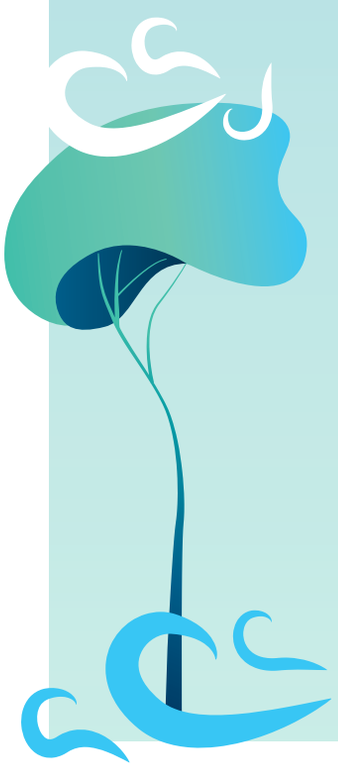
Glaciers makes its abundant water reserves possible. There are some 10 thousand with a total area of 8500 square kilometers.[31] Its glaciers and snowfields comprise more than 400 cubic km of water reserves and provide some 60% of all water resources in the region.[32] Water drives Tajikistan's agrarian economy, which consumes more than 90% of Kyrgyzstan's total water resources.[33]

Figure 4. Consumption of water resources in Tajikistan by industry[34]



Tajikistan, like Kyrgyzstan, is an upstream country with significant water reserves but similar water supply problems. Only half (51%) of the country's population is provided with water at present. Its water infrastructure is outdated, sanitation in rural and some urban areas is deficient, and many collection points for human waste are not connected to sewage systems: 60% in urban areas and 1.7% in rural.[35]





[31] Mukhabbatov, Kh. "Водные ресурсы Таджикистана и проблемы водопользования Центральной Азии," *Проблемы постсоветского пространства*, (3), 29-45, 2016, https://www.postsovietarea.com/jour/article/view/86/87

[32] Rakhimov, A., (2011), "О состоянии водных ресурсов Таджикистана," https://cyberleninka.ru/article/n/o-sostoyanii-vodnyh-resursov-tadzhikistana/viewer

[33] Министерство Энергетики и Водных Ресурсов Республики Таджикистан, https://www.mewr.tj/?page_id=576

[34] Министерство энергетики и водных ресурсов Республики Таджикистан, Использование водных ресурсов, https://www.mewr.tj/?page_id=576

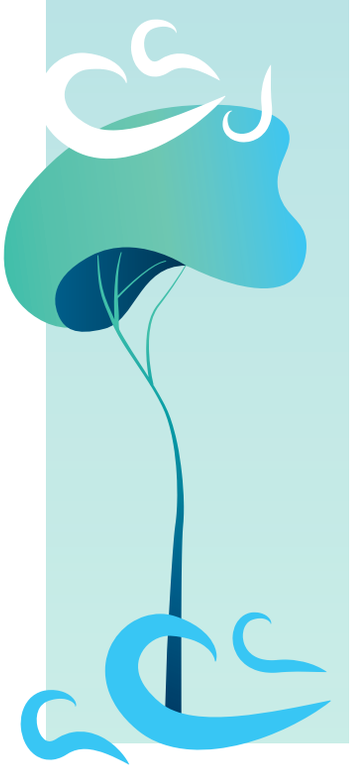
[35] World Bank, "Стакан наполовину полон: Диагностика взаимосвязи уровня благосостояния с условиями водоснабжения, санитарии и гигиены в Республике Таджикистан – ОБЗОР," 2017, https://reliefweb.int/sites/reliefweb.int/files/resources/W17089.pdf

The natural threat of mudflows, which destroy small settlements as well as water supply systems, aggravate the situation. Only 57% of urban and 31% of rural households have access to safe potable water according to the World Bank. Poor water quality adversely affects the physical safety of the population, causing intestinal diseases and other afflictions.

There are difficulties with the continuous supply of water even in areas where it is ostensibly provided. Water in Dushanbe is often interrupted by multiple failures in the water supply systems.[36] In cities water supply can be shut off for a day without warning; rural areas, due to water failures, can remain without water for weeks. This situation is a result of outdated water supply systems, which lose their resistance to low temperatures in winter, causing pipes to freeze.

There is no developed metering system for water consumption. Shamsiddin Jalolov, senior researcher at the Academy of Sciences, notes that the existing system records water consumed per day but does not take into the categories of farms that consume water.[37] Separate accounting for each category would improve planning and balance water distribution.

The institutional framework for water regulation is overly complicated, with responsible agencies unable to delineate their areas of responsibility clearly and effectively. The functions of departments overlap, even though they have to coordinate their actions with national and regional authorities, which complicates communication and systems of accountability.



[36] Op. cit

[37] Dzhalolov, Sh., "Доклад по работе городских систем," экспертная встреча IWPR, 15.04.2020

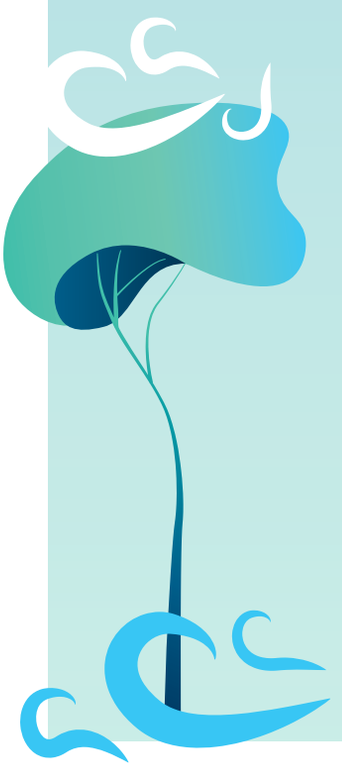
WATER DIPLOMACY AND ITS RESULTS

Water has long been a key element in Tajikistan's foreign policy interactions, with the Central Asian republic actively promoting the global agenda in the field of water resources management. It has also participated in the creation of global initiatives like «Water for Life» and «Water for Sustainable Development» at the UN.

The main objective of these policies is to focus international attention on the problems of water regulation in Tajikistan, which lacks both the human and financial resources to solve these problems. It is estimated, for example, that some 2 billion US dollars would be required to fully provide the population with water.

Tajikistan has attracted a huge number of international donor organizations to assist in programs reforming the water sector. These are mainly focused on increasing access to water and improving water and purification infrastructure in rural areas.

There are significant problems that remain outside the attention of donors, however, including inefficiencies in the institutions responsible for water regulation and deficits in the human resources needed to solve local water issues. This may be a matter of prioritization, with international donors more focused on the living conditions of populations in remote areas, though it is possible donors lack confidence in projects involving state agencies, as Tajik authorities may block such initiatives. The government itself does not have the ability to independently reform institutional structures.



AIR POLLUTION AS AN ENVIRONMENTAL PROBLEM, COVID-19 AND CITIES

4.2 million people die from air pollution each year according to the World Health Organization. Air quality is a problem for many countries, including those in Central Asia. It is likely that attention to air pollution will increase amid the coronavirus pandemic.

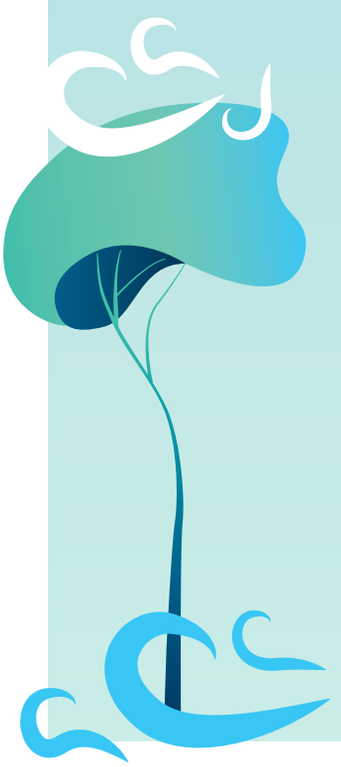
Scientists at Martin Luther University in Germany have directly linked high levels of nitrogen dioxide in the air to coronavirus fatalities.[38] The issue of air pollution is of importance to Central Asia, and to the entire world, as a result.

Restrictions on movement and economic activity during the pandemic have improved air quality indicators throughout the region in addition to highlighting the main sources of pollution. Measures to improve air quality are nevertheless receding into the background as countries focus on controlling the spread of the coronavirus. It is assumed that problems with air quality will worsen, and need to be addressed again, when the pandemic ends and quarantine restrictions are lifted.

There is increased attention to air quality in Central Asia, though mostly on the part of the public, something evidenced in the various civic initiatives, public discussions, and media coverage focused on issues of air quality.

Most Central Asian territory is devoted to agriculture, at least in terms of economic specialization. Industrial centers are predominantly in urban areas, including in capitals, with the result that air pollution reaches its highest levels in cities with their dense populations, traffic congestion, factories, and heat and power plants.

These factors also make cities ideal environments for the spread of the coronavirus infection. The urban population is the primary stakeholder on issues of clean air. The rural population is not as acutely affected by air pollution. The greater access to media in urban areas, including online and social media, also facilitates opportunities for civilian eco-activism.



[38] Deutsche Welle, 21.04.2020, В Германии выявили связь между загрязнением воздуха и смертностью от Covid-19, https://www.dw.com/ru/в-германии-выявили-связь-между-загрязнением-воздуха-и-смертностью-от-covid-19/a-53195287

AIR IS SHARED BUT POLLUTION IS NOT?

Increasing levels of air pollution are associated with urbanization processes and the accompanying growth of urban populations. There is an increased strain on transport systems and the number of cars is growing, leading to significant emissions of carbon dioxide into the atmosphere.

Weak technical equipment aggravates this situation in Central Asia. Systems for monitoring and measuring emission levels do not meet required standards; treatment technologies are either introduced slowly or are completely absent.

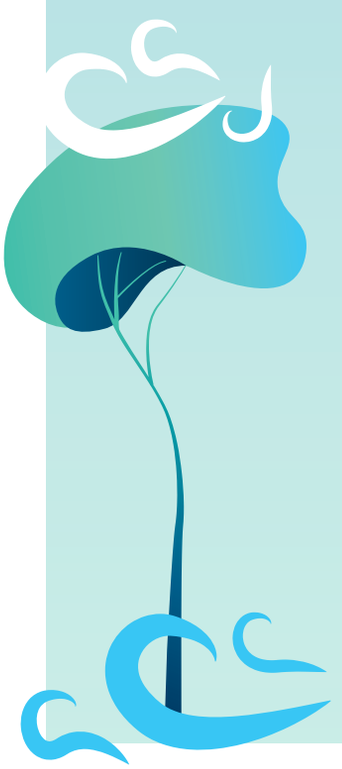
Oil production and oil processing enterprises, machine-building plants, and heat generating stations contribute their share of emissions in those Central Asian countries with developed industrial and production complexes. Many of these enterprises are key to regional economies. State environmental departments exert minimal pressure on them as a result. The extra financial burden associated with introducing sustainable production methods is not beneficial to the companies themselves and they are a primary source of tax revenue in state budgets.

There are natural factors also contributing to the deterioration of air quality, including the desiccation of the Aral Sea floor and the numerous desert areas of the region, which cause frequent dust storms. These factors impact individual countries but also their transboundary areas.

There is little understanding of air pollution as a regional matter. Administrations tend to perceive it as a country level issue, unlike the matter of water resources, which involves aspects of interstate and regional dialogue. Water is directly linked to economic development, though air is not seen as a resource that can be measured or assessed in terms of economic benefits.

Transboundary air pollution remains a significant factor. There is the Tajik aluminum smelter (TALCO) situated on the Tajik-Uzbek border, for example, which causes air pollution through emissions of hydrogen fluoride. This impacts the western regions of Tajikistan suffers but also Uzbekistan's border areas, the Syrdarya region in particular. The leadership of TALCO hosted an international commission in 2010, though nothing is known about its results or what it developed or planned to address issues of air pollution. The issue has not been raised in any substantive manner since the rapprochement of the two countries in 2016, and TALCO has since acted as a partner to the Uzbek machine-building plant Krantas in an agreement signed between the countries on truck production in 2018.

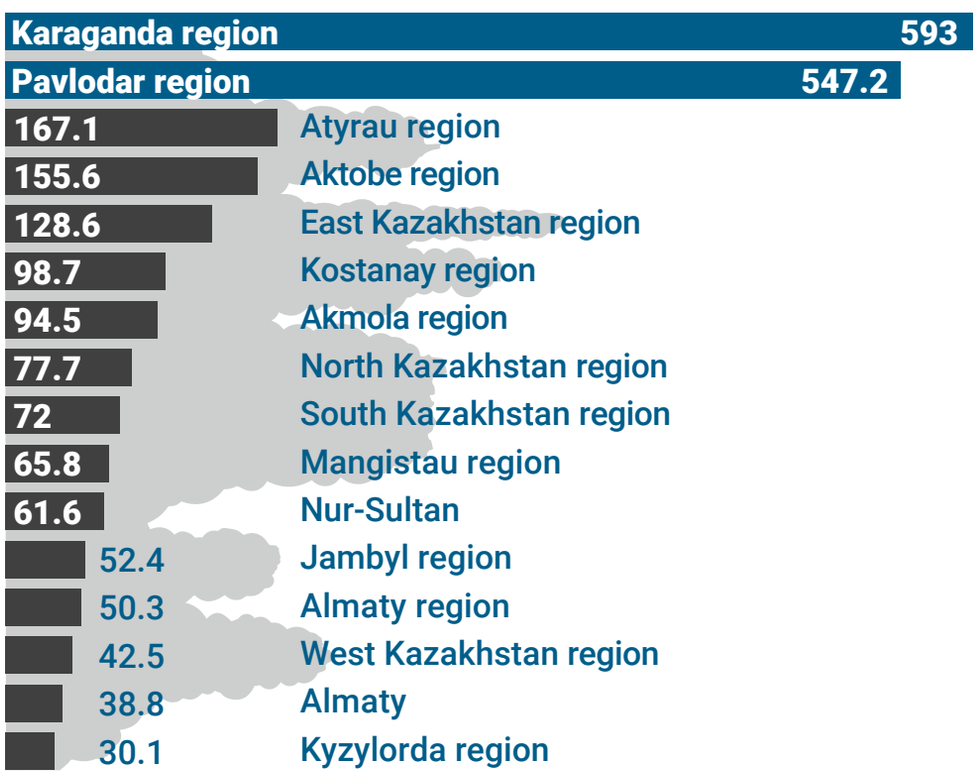
Air problem solutions remain within the jurisdiction of the individual republics and there no significant cross-border approaches, hence the importance of focusing on the current situation in each Central Asian state.



KAZAKHSTAN: ECONOMIC DEVELOPMENT AT THE EXPENSE OF THE ENVIRONMENT

Kazakhstan relies on its natural resources, including oil, gas, and metals, for both production and processing. Its production volumes are increasing and also negatively impacting air quality. There was a 3.8% increase in atmospheric emissions from 2017 to 2018, and there are numerous cities with high levels of air pollution according to Kazhydromet, including industrial centers in central and eastern Kazakhstan like Karaganda, Temirtau, Zhezkazgan, Pavlodar and Ust-Kamenogorsk.[39]

Figure 5. Harmful emissions in Kazakhstan by region for 2016 (in thousands of tons)[40]



Metallurgical plants working with titanium and lead produce 128 thousand tons of waste In Ust-Kamenogorsk yearly. Respiratory diseases are common in the city due to the presence of lead in the air, as well as other substances such as zinc and beryllium.

[39] 365info.kz, Грязный воздух Казахстана: в чем ошибся мировой рейтинг, 13.03.2019, https://365info.kz/2019/03/gryaznyj-vozduh-kazahstana-v-chem-oshibsya-mirovoj-rejting#:~:text=Астана%20по%20степени%20загрязнения%20воздуха,позиции%20в%20аналогичном%20списке%20стран.&text=Всего%20исследуется%20более%203%20тысяч%20городов%20из%2073%20стран%20мира

[40] InformByuro, 24.07.2017, Загрязнение экологии в Казахстане: больше всех воздух портят в Карагандинской области, https://informburo.kz/novosti/zagryaznenie-ekologii-v-kazahstane-bolshe-vseh-vozduh-portyat-v-karagandinskoy-oblasti.html

Unlike industrial cities, it is the large number of cars that contribute to air pollution in Almaty, with automobiles accounting for roughly 82% of all harmful emissions.[41] There are also the complications of its geography. The city is situated in a kind of trench, preventing air circulation, which means harmful substances linger in the atmosphere and then settle on the surface.

The average air quality index in Almaty according to IQair is 57 (μg of harmful particles PM2.5 per cubic meter), with the index sometimes reaching 65 and 68. The World Health Organization measures this indicator at 10 micrograms per cubic meter or less and the daily rate at 25 micrograms per cubic meter.

In Nur-Sultan, there are different indicators in summer and winter. The IQair index in the capital averages 21 in summer but can reach 82 in winter, a result of thermal power plants. Their load increases in the winter months together with the amount of harmful substances emitted into the atmosphere.

CIVIL SOCIETY AS A PANACEA

Kazakhstan adopted a revised environmental code last year, with the document focused on regulating enterprises that negatively affect the environment or that might impact it adversely. Its amendments take into account the importance of environmental restoration by imposing responsibility on enterprises.

In the past, the administration imposed fines on enterprises for environmental damage, including for harmful emissions, though this also served to replenish the state budget. The system of fines was meant to fund efforts to repair environmental damage. The oversight mechanisms of this system were inefficient, however, with only some 10% of the funds being properly applied.[42]

The new environmental code imposes liability on enterprises, which now have to pay a fine and restore the environmental damage they have caused, though the matter of how the state will use the fines is an unresolved question. It is difficult to predict with what efficiency state departments will allocate the financial penalties they collect or if they will be used as intended.

Civil society, and non-governmental organizations that defend the interests of the population, can play important roles in this process. The new code has taken this into account by securing the participation of non-state actors in assessing environmental damage, monitoring the implementation of funds, and making court decisions against offending enterprises.

[41] Suleimenova, N.Sh., Daulbaeva, A.N., Utibaeva Z.D., "Основные источники загрязнения воздуха и экологическая обстановка воздушного бассейна г. Алматы, Ізденістер, нәтижелер. Исследования, результаты," 2011, https://articlekz.com/article/12900

[42] Abakanov, E., "Новый экологический кодекс Казахстана: ожидания и перспективы," CABAR.Asia, 2020, https://cabar.asia/ru/novyj-ekologicheskij-kodeks-kazahstana-ozhidaniya-i-perspektivy/

There are still no clear regulations, however, in instances in which sectors other than industry impact air pollution. Local authorities retain jurisdiction over air quality in cities like Almaty and Nur-Sultan. They are transitioning to safer energy sources, providing municipal facilities and urban transport with gas energy supply systems. There is nothing comprehensive about this approach, however, as it leaves problems with private transport and homes unresolved.

The participation of civil society is relevant here. Civil society organizations are active in Kazakhstan, including on matters of air pollution. Elena Yerzakovich, a representative of the group Clean Air, provided several examples of the longstanding dialogue between the population and the authorities in Almaty at an expert meeting on the IWPR platform.

Civil society has participated in many initiatives, often with the involvement of the expert community and with the support of international organizations. There has been active discussion of air pollution issues since the early 90s, though it has not generated a comprehensive plan for the transition to more environmentally friendly transport.

Yerzakovich pointed to problem issues as well, including the lack of effective communication between government agencies, civil society, and the population, and an absence of adequate planning: "Public councils on environmental issues, operating under the jurisdiction of city administrations or individual government agencies, often disband within several meetings due to unrealistic or overly long-term goals or as a result of vague work programs."[43]

That said, civil society has significant potential in Almaty and broad public support among independent activists. One example of successful civic activity is the Almaty Urban Air project; this is an application that helps users track changes in atmospheric air quality.

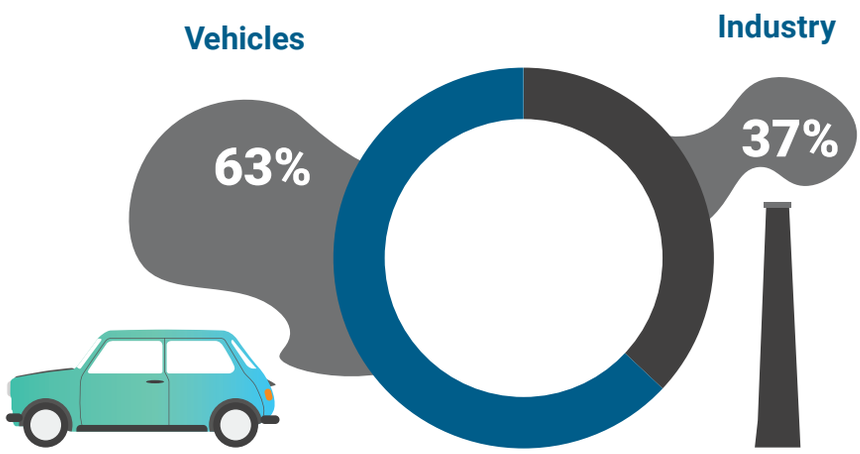
The project subsequently evolved into a working group that disseminates information about the state of the environment in the city in addition to providing analyses based on accumulated data. Such initiatives are rare in the region. It should be noted that the project is supported by donations and private funds and has no government support, putting it in a precarious position.

[43] Erzakovich, E., 14.04.2020, Взаимодействие НПО, горожан и государственных органов Казахстана по проблемам загрязнения воздуха в г. Алматы, Экспертная встреча IWPR

UZBEKISTAN: REGIONAL LEADER IN POOR AIR QUALITY

Like Kazakhstan, Uzbekistan has a relatively developed industrial complex, particularly in terms of mechanical engineering, though industry is also a significant source of air pollution in the country. The country's technology and equipment are less advanced, however, one result of which is Uzbekistan ranking 16th among countries with the lowest air quality in the IQair rating. It emits harmful substances into the atmosphere at a rate of 245 thousand tons per year. Industry accounts for 37% of all emissions, with fuel combustion from vehicles comprising the remaining 63%.

Figure 6. Sources of harmful emissions into the atmosphere in Uzbekistan per year[44]



The country also has difficulties with the technical equipment necessary to control levels of harmful emissions into the atmosphere.

Umid Abudjalilov (the State Ecology Committee of the Republic of Uzbekistan) indicated several matters requiring immediate attention at an IWPR expert meeting:

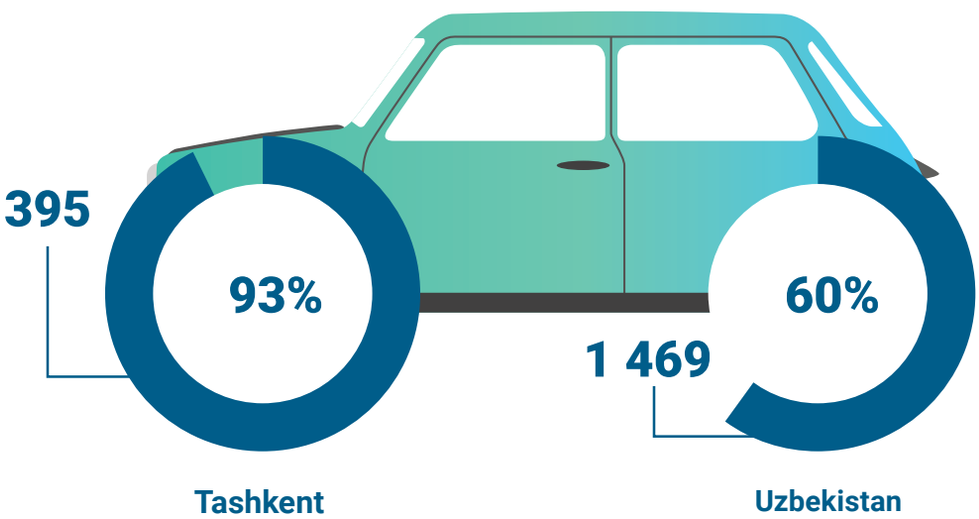
1) lack of automated systems to monitor air pollution;
2) few automated systems to monitor pollutants from stationary sources at large businesses;
3) continued combustion of low-quality lignite, with its minimal heating value, at large thermal power plants;
4) continued consumption of ozone-depleting substances as refrigerants in accordance with established quotas;
5) requirements that do not meet the quality levels of the "Euro" standard;
6) the production of engine fuel in the republic and the operation of motor vehicles.[45]

[44] Umid Abduzhalilov, Охрана атмосферного воздуха в Республике Узбекистан, Экспертная встреча IWPR 18.04.2020

[45] Op. cit.

Tashkent has the lowest air quality of all regional capitals with an average IQair index of 99 μg per cubic meter. Car exhaust gases have an overwhelmingly negative impact on air quality and are the main source of air pollution in the country as a whole (60%).[46]

Figure 7. Automobiles as the main source of air pollution in Uzbekistan (data in thousand tons, 2018) [47]



There are monitoring systems active in the capital, and the media regularly provide information on air quality problems. There are 63 measuring stations overall. They monitor 25 of the republic's cities, though the information they provide to the country's Hydrometeorological Center is often outdated and updated very slowly. It is clear that cities such as Bukhara, Karshi and Bekabad have dangerous amounts of atmospheric pollutants, for example, though little is known about the factors causing this.

Authorities plan to create an online map to track air quality throughout the country, but this will only reflect the current situation. It makes no effort to identify causal relationships, suggesting its measures will have little practical effect.

[46] Gazeta Uz, 12.08.2019, 90% выбросов в атмосферу в Ташкенте приходится на автотрансопрт, https://www.gazeta.uz/ru/2019/08/12/air-pollution/
[47] Op. cit.

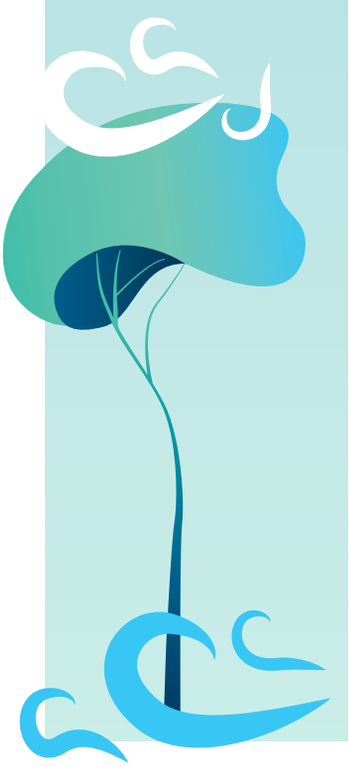
CARS – NEW ENGINES AND FACTORIES – AND MEASURING STATIONS (ALL AT THEIR OWN EXPENSE)

Uzbekistan has adopted an environmental protection plan to guide it through 2030. The document identifies transport as a primary source of environmental problems and prohibits the production of cars whose engines do not meet European environmental standards.

It makes no mention of cars produced earlier, however, and there are no references to restrictions on industrial facilities, including those specializing in automobile production. The authorities are trying to regulate the production of more environmentally friendly vehicles while exercising little or no control over the environmental impact of production.

The authorities are only now starting to install systems to monitor enterprises emitting harmful substances into the atmosphere. The air situation might deteriorate further between installation and the first analyses, however, hindering the plan to reduce air pollution in the country by 10%.

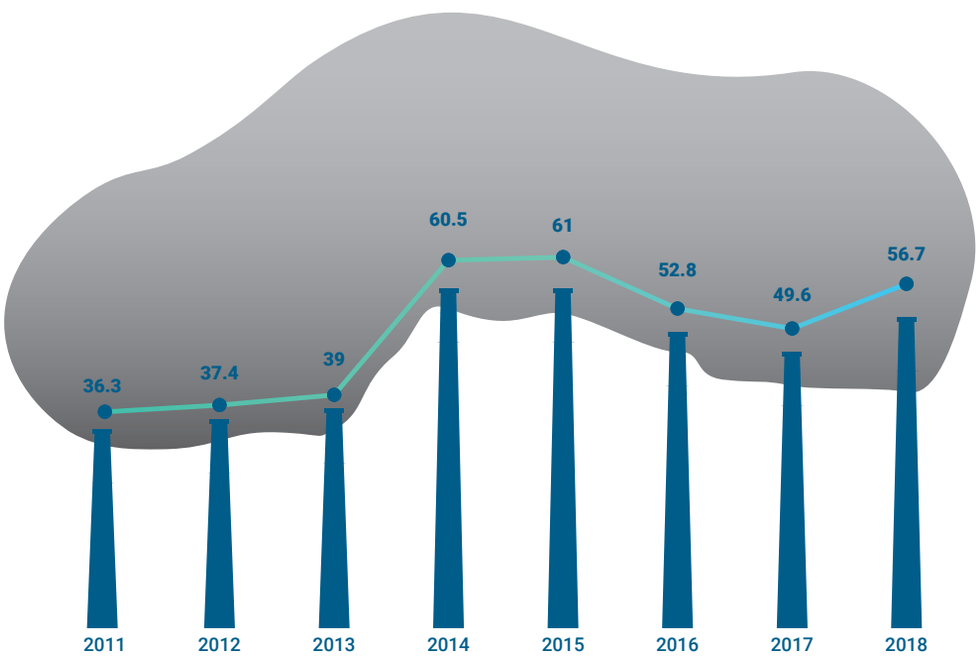
There is also minimal effort to address air quality problems on the ground. Tashkent authorities perform toxicity checks on cars en masse, obliging "violators" to pay fines. This approach is not sustainable, however, without further action to better air quality problems, and any effective effort would need to monitor and control the application of fines to real environmental solutions. It is necessary to involve civil society in the implementation of these and similar programs, though civil organizations are not as active in Uzbekistan as Kazakhstan, which impedes the transition to more inclusive air quality control.



KYRGYZSTAN: CARS AND STOVES

Kyrgyzstan has seen an increase in atmospheric pollutants. Bishkek, the capital of the republic and the the city with the largest population, has been a dangerous point of pollution for several years, with its harmful emissions into the atmosphere comprising 44% of all such emissions in Kyrgyzstan.[48] Its main sources of pollution are thermal plants, fuel combustion in private homes, and motor vehicles. This trend is also typical for the Chui and Issyk-Kul regions, and is especially evident from August to April, when harmful emissions rise as a result of the "heating season" and increased car traffic.

Figure 8. Harmful emissions into the atmosphere from 2011-2018. in Kyrgyzstan (in thousands of tons)[49]



Transport is still the main source of air pollution in cities, comprising 75% of the 240 thousand tons emitted per year in Bishkek.[50] Private cars continue to prove attractive to urban residents who have abandoned public transport alternatives, though this is only part of the problem. There is no proper monitoring of certain categories of transport or any clear understanding of which forms of transport should be subject to restrictions and according to which indicators.

[48] Nishanbaeva, L., "Отчет по показателям воздуха и качества воды в Кыргызстане, компонент MONECA проекта FLERMONECA," 2015, http://naturalresources-centralasia.org/flermoneca/assets/files/Report%20air%20quality-KG.pdf

[49] Sputnik.kg, Как загрязняют воздух в Кыргызстане — удручающие цифры, 19.08.2019, https://ru.sputnik.kg/infographics/20190819/1045480394/kyrgyzstan-vozduh-zagryaznenie-vybrosy-atmosfera-ehkologiya.html

[50] Sabyrbekov, R., Аналитический отчет: Источники загрязнения воздуха в городах Кыргызстана, Центр окружающей среды и развития АУЦА (ЦОР), 2018, http://ced.auca.kg/wp-content/uploads/2019/10/%D0%92%D0%BE%D0%B7%D0%B4%D1%83%D1%85-%D0%A0%D0%A1-%D0%B4%D0%BB%D1%8F-%D1%81%D0%B0%D0%B9%D1%82%D0%B0.pdf

It is poorly regulated as a rule, which has led to an increase in vehicles and more traffic congestion. All this is happening in tandem with an urban population that is rapidly expanding due to underdevelopment in rural and more remote areas.

The combustion of various materials, primarily for heating, is also a matter of concern, with growing numbers of private homes, especially those on the outskirts of cities, burning coal. The country's thermal power plants, most of which require modernization, also fire coal, increasing pollution locally. One solution may be to transition to gas (both for transport and to heat private homes), though this would require huge investments to refit or replace existing technical equipment in the public and private sectors. It may be especially unattractive to car owners, who may resent the cost of installing gas cylinders or the inconvenience of using them. There is at present no regulation on the transition to environmentally friendly fuels in any case, with the choice falling to individual citizens.

HOPELESS FROM THE TOP AND PROACTIVE FROM THE BOTTOM

Kyrgyzstan adopted the Law on the Protection of Atmospheric Air in 2016, though it is limited to defining requirements for industrial facilities and vehicles. The law provides for establishing a deeper strategy but is little more than an action plan outlining the tasks necessary for regulating air quality in the country.

The primary difficulty is the different levels of air pollution across the country. Kyrgyzstan is not a country with a developed industry and the number of cars varies drastically from city to city, making it difficult to set uniform standards. Norms based on the situation in Bishkek, for example, would have little relevance in other parts of the country.

Monitoring systems are unable to provide real-time tracking of air quality across the country, and there is no comprehensive monitoring of the negative impact of economic activity by category (industry, construction, and so on). This impedes clear planning and effective prioritization of environmental policy. Technical equipment that can constantly monitor air quality will be needed in any transition to more effective and complex environmental protections.

Non-governmental organizations are trying to resolve these issues. Maria Kolesnikova, the head of the NGO MoveGreen, noted at an IWPR expert meeting that her organization had installed sensors in 2017 that made it possible to regularly observe air quality in Bishkek, Karakol, and Tokmok.[51] MoveGreen, like the Urban Air project in Almaty, also launched an app to make air quality information available.

[51] Kolesnikova, M. Гражданский мониторинг качества воздуха в Бишкеке: успехи и барьеры, Экспертная встреча IWPR, 09.04.2020

TAJIKISTAN: NO METERS AND NO ISSUES

The problem of air pollution is absent from public discussion in Tajikistan. There is little attention to this problem, either from the state or the general population, and air quality can seem like a minor issue in comparison to the country's poverty, unemployment, and economic and social difficulties.

THE PROBLEM OF MONITORING IN TAJIKISTAN IS NOT A MATTER OF INSUFFICIENT COVERAGE OR THE ADMINISTRATION'S INABILITY TO PRESERVE AND ORGANIZE DATA. THERE SIMPLY ARE NO MONITORING SYSTEMS.

There are currently three stations in the country, one at the Hydrometeorological Center, and two mobile stations that the State Committee for Environmental Protection possesses.[52] These are insufficient to cover a single region or even to monitor the capital, Dushanbe, which means there is no way of measuring which parts of the city emit the highest amount of pollutants into the air.

There is practically no measurement or mapping of air pollution in Dushanbe. Abdukodiri Khurshed, an independent environmental expert, noted at an IWPR expert meeting that this also limits the ability of the media to provide information and high-quality coverage.[53]

The sensor at the US Embassy in Dushanbe is the only reliable and accessible source of information on air quality in the city. The IQair rating of Dushanbe averages 72 in warmer months according to the sensor's measurements, though it reaches as high as 170 in winter. Independent observers stress that air quality in Dushanbe is rarely within generally accepted norms, meeting acceptable standards on only 4 out of every 195 days of observation.[54]

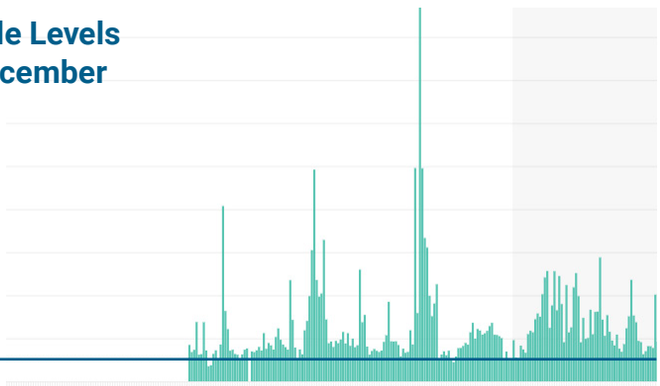
In Khurshed's opinion, the main causes of air pollution in the capital are transportation, construction work, and the frequent dust storms originating from Afghanistan.

[52] Dzhallolov, Sh., "Экспертная встреча IWPR," 15.04.2020

[53] Khurshed, A. "Доклад по качеству воздуха в Таджикистане," Экспертная встреча IWPR, 15.04.2020

[54] Baizybekov, E., "Насколько опасен воздух в Центральной Азии – объясняем на графиках," CABAR.Asia, 2020, https://cabar.asia/ru/naskolko-opasen-vozduh-v-tsentralnoj-azii-obyasnyaem-na-grafikah/

Figure 7 PM2.5 Particle Levels in Dushanbe, June-December 2019 (µg / m3)[55]



NO PLANS AND NO STANDARDS

Strategic measures to combat harmful atmospheric emissions are still taking shape in Tajikistan. Numerous laws have been passed to ensure monitoring and the collection of fines and duties, including from car owners.

The republic adopted a law on road transport and environmental safety in 2015, though there is no long-term planning involved. There are also no standards for automotive engines. International organizations have recommended that Tajikistan introduce the EURO-3 and EURO-4 standards for engines for several years now, but work in this direction, and on road transportation in general, has proceeded slowly.[56]

Its fines are not significant enough to impact the transition to more environmentally friendly methods, while the financial resources at its disposal for air quality control, even those from international donors, are limited. Coordination between environmental authorities and law enforcement is lacking, which significantly hinders the implementation of international environmental standards.

Tajikistan collects data on the volume of emissions inconsistently and usually only every 5-10 years as part of international commissions. There is no ongoing or open monitoring given the low interest in the country. The population lacks awareness of air pollution issues, which rarely become topics for public discussion in the media. The state sees no incentive to ramp up its activities on these issues given the public's inattention.

[55] Op. cit.

[56] Европейская экономическая комиссия ООН, Обзор результативности экологической деятельности: Таджикистан, 2017, https://www.unece.org/fileadmin/DAM/env/epr/epr_studies/Synopsis/ECE_CEP_180_Tajikistan_Synopsis_rus.pdf

RECOMMENDATIONS

WATER USE

Water is a critical resource for Central Asia. The water systems of countries in the region are interconnected, which explains the similarity of problems in otherwise distinct republics. It is logical to develop general recommendations in these circumstances, considering the successes and failures of the measures taken by each of the Central Asian countries.

The condition of water supply systems is a problem for the region as a whole. Deterioration of infrastructure leads to huge water losses, with residents in various areas suffering shortages and deficits.

- It is necessary to take the experience of Middle Eastern countries, including Israel, into account by introducing technologies to save water resources and reuse them in the event of acute shortages. These technologies are critical for agriculture in arid regions and especially apposite to Central Asia given the agrarian component of its economies.

- It is necessary to keep records of water use and waste to provide detailed, regular assessments of water supply system efficiency.

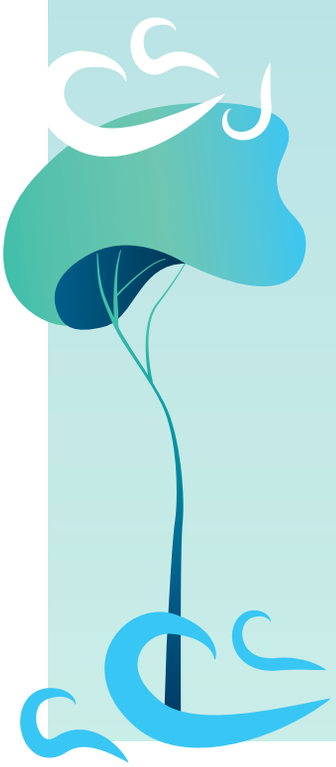
- There is a need to determine daily consumption rates per person and per household to set a water supply standard, which will help in understanding how efficiently water resources are used.

- Authorities should encourage environmentally friendly and sustainable solutions to water consumption on the part of private organizations and then implement these solutions as widely as possible. This will help in instances in which budget allocations are insufficient.

Pollution from industrial and human waste negatively impacts the quality of the water that consumers use, with all the attendant risks of increased intestinal and other human diseases this entails. Salinization of river water is equally harmful, adversely affecting irrigation in agricultural areas. It is common to both downstream and upstream countries, though the latter are more responsible, as downstream countries depend on the water sources that originate in Kyrgyzstan and Tajikistan.

- Tajikistan and Kyrgyzstan need to strengthen controls over industrial enterprises, the main sources of waste, through the establishment of waste storage and disposal processes.

- Though unpopular, tax breaks for industrial facilities are an important tool in leveling financial costs and in encouraging production methods that are safer for river and waste waters, though tariffs on water would also need to increase (this is the unpopularity of such a step).



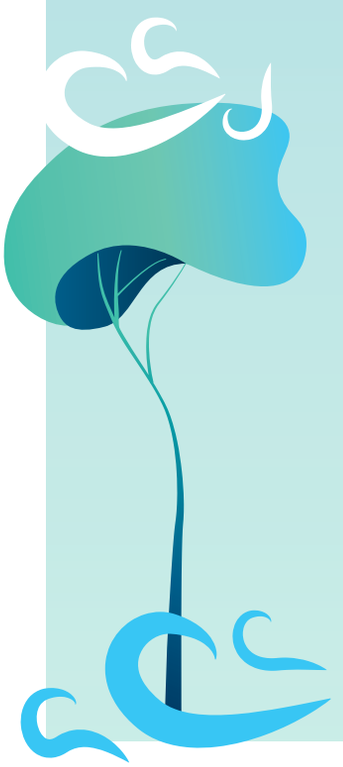
- This is especially necessary for Tajikistan given the lack of communication between the population and the authorities responsible for delivering the water supply. Effective and ongoing communication fosters mutual trust and will allow citizens a more transparent understanding of how tariffs are set.

Ineffective efforts to address water supply problems are rooted in failed interactions between state and non-state actors. They also reflect the inability of civil society and the population to monitor how funds from such government initiatives are spent as well as the lack of opportunities in this country for meaningfully participating in environmental reform efforts

- The experience of public organizations in Kazakhstan shows how necessary it is to conduct campaigns to inform the population about water use problems, water pollution, and inferior water supply systems. It is a rare precedent in Central Asia but demonstrates the close ties of civil society organizations and the local populace.

- It is important to ensure the participation of local associations operating in small towns and villages, not just large organizations. Locally based organizations, as a rule, have more direct access to public opinion in remote or rural areas; this is vital given that water supply issues are more acute in these regions than in urban settings.

- The active involvement of civil society in water use solutions will attract the attention of international donors which might help offset the lack of local budgetary resources for large-scale environmental solutions.



AIR QUALITY

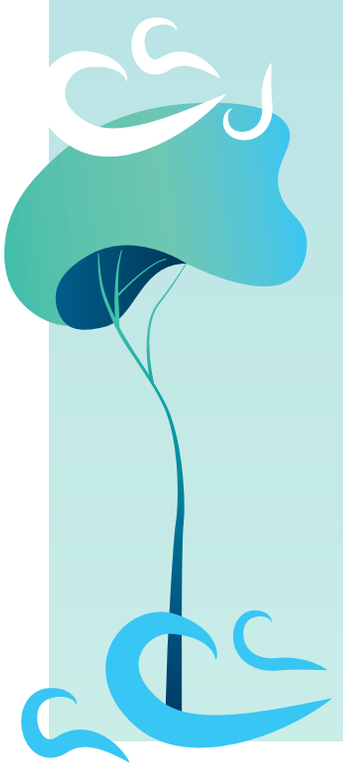
Levels of air pollution differ across Central Asia, though the primary sources of harmful atmospheric emissions are relatively uniform. The countries in the region are distinct in terms of their levels of industrial development, and the measures taken by the authorities and civil society also diverge. Recommendations therefore need to be rooted in the specific conditions prevailing in each country.

KAZAKHSTAN

- The framework of the new Environmental Code mandates efforts to assess the environmental damage enterprises cause. It is necessary to ensure that civil organizations monitor these efforts. They need to scrutinize judicial review of cases involving code violations, penalties paid to the state by industrial enterprises, and the allocation of fines toward measures to restore of air quality.
- Countries need to devote special consideration to the critical state of air quality in industrial cities. It is necessary to develop categories of air pollution and identify threats to the population in urban areas where individuals are more susceptible to the risk of respiratory diseases. Civil associations should be involved in monitoring any programs meant to reduce air pollution.
- Civil society needs to develop communication channels that provide transparent information on air quality; it is critical in delivering information to uninformed population groups.
- There is a general need to strengthen emission analysis and set emission standards that minimize harm to health. This information should be made available online and include data for all cities, or at least all large industrial cities in Kazakhstan.

UZBEKISTAN

- Environmental protection strategies should include periodic and regular analysis of air quality indicators; these, in turn, should inform measures to reduce pollutants and restore air quality.
- Information provided by online sources should include a breakdown by emission source to identify pollution causes in each city.
- It is necessary to establish clear requirements for vehicles with Euro standard engines. It is also important to make the transition to environmentally friendly cars more profitable by lowering customs duties for such vehicles. It is possible to compensate for customs shortfalls by increasing maintenance costs for vehicles not meeting environmental standards.



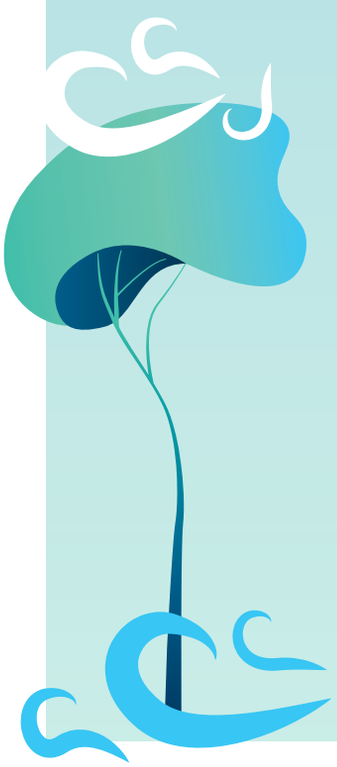
- Fines and taxes should be spent on restoring air quality levels and analyzing harmful emissions from large industrial facilities. It is important to ensure transparency in the use of these funds.
- It is necessary to provide enterprises tax breaks to incentivize more environmentally friendly production, especially to those businesses subject to mandatory installation of emission meters at their own expense.
- It is important to strengthen civil society. At present, it has little voice in air pollution issues or in the environmental agenda as a whole, though this is dependent on the political will of the new administration in Tashkent. It should take the initiative in reaching out to civil associations. Given the more "friendly" attitude of the new administration to reform, civil society should start actively promoting the interests of the population, including in matters of air quality.

KYRGYZSTAN

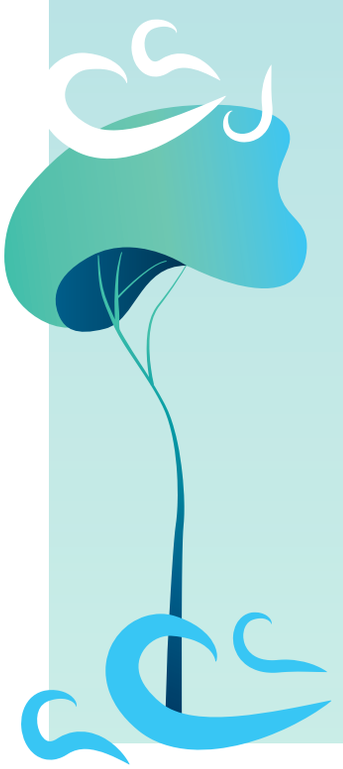
- To reduce harmful atmospheric emissions, Kyrgyzstan needs to develop a comprehensive strategy that identifies and addresses the main sources of air pollution. It will also need to measure exhaust emissions from cars and establish energy efficiency standards for private homes. Financial incentives for car and homeowners will be critical in any strategy meant to encourage the transition to greener fuels.
- There is a need to provide all cities measuring stations to ensure round-the-clock monitoring of changes in air quality.
- There is great potential for civil society activism in Kyrgyzstan. State structures need to harness this. They should make it possible for civil organizations to monitor air equality and accept the results of this monitoring, using the data as the basis for further action
- It is necessary to organize public councils in the municipal bodies of each city, with these councils including experts and representatives of public environmental organizations. The experience of private initiatives should be used to provide data for all cities in the country.

TAJIKISTAN

- There is an information vacuum in Tajikistan regarding environmental issues. Environmental organizations need to work with the population and conduct information campaigns to influence the development of public discourse.



- It is necessary to develop a financial plan for installing measuring stations, at least in Dushanbe. The administration needs to determine the cost of modern measuring equipment and then allocate the necessary budgetary funds, or if those funds are lacking, attract donor funds by engaging issues of air quality more seriously.
- It is necessary to mobilize environmental protection authorities to participate in conferences and seminars and ensure the joint participation of representatives from the Academy of Sciences and the independent expert community. These events should be devoted to the discussion and development of methods for assessing environmental solutions.
- Local environmental organizations should act in concert by forming a joint alliance. The measures of non-state actors are fragmented at present, with insufficient media coverage to generate public interest. Potential funding problems will depend on how interested local authorities are in supporting non-governmental initiatives.
- Intensify work on the implementation of Euro standards for car engines, using the experience of Uzbekistan by requiring that only new cars comply with these standards.
- Ensure effective communication between departments and establish a clear system of accountability.



CONCLUSIONS

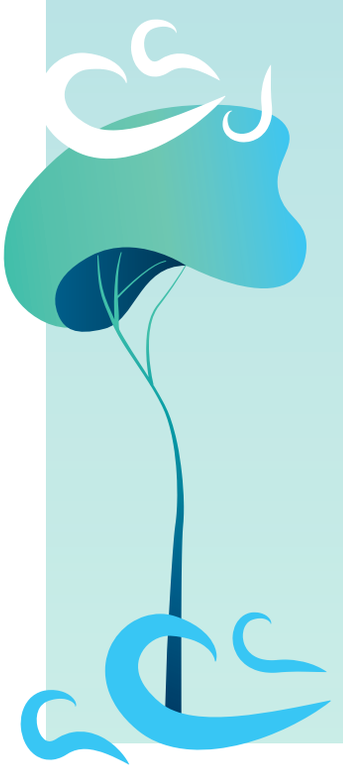
Though significant and sustained attention has been paid to water and energy problems in the region, other issues, including air pollution, still need to be addressed. Water is of regional importance for hydropower and agriculture. Of all environmental resources, it is the most integrated into the intergovernmental and regional agenda. Non-governmental actors play important roles when it comes to water supply by representing the interests of local communities, though this role is manifest only in Kazakhstan and Kyrgyzstan. NGOs in Uzbekistan and Tajikistan are not involved in decision-making processes on water issues and concentrate instead on implementing small projects at the local level.

Air pollution is becoming more and more critical given the expanding urban populations in the region, though authorities have done little more than study the problem. Systems for measuring air quality and the main sources of harmful atmospheric emissions need to be improved. Industrial enterprises, a main source of air pollution, are reluctant to introduce waste reduction equipment, while state authorities regulate this problem with blunt instruments such as fines and fees. Civil society organizations are independent actors on matters of air pollution, and have implemented significant initiatives, though they often require government assistance.

Civil society is the one factor that can dramatically impact environmental issues in Central Asia. It possesses significant organizational and expert resources and can disseminate information widely. Equally important, non-governmental organizations provide alternative views and different approaches to environmental issues.

Regional governments have been paying close attention to environmental issues since independence but lack the available resources and personnel to solve the cascading problems. There is an accumulation and duplication of functions in state institutions which hinders accountability and internal monitoring.

The interests of the population should be a key factor, and it seems possible for the authorities to articulate a vision that meets the interests of all stakeholders. Civil society should serve as a liaison between the public and the state, though this will require close cooperation. The authorities need to facilitate fruitful cooperation with civil groups and expert communities to study critical topics and formulate effective action plans. It is important to make communication and transparency the main components in any cooperation of this kind.



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