

TRANSBOUNDARY WATER COOPERATION IN CENTRAL ASIA AND REGIONAL SECURITY

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ABSTRACT

This is an attempt to answer the question about the growing water deficit in Central Asia, its impact on regional security, and the ways and means of ensuring it.

The authors have analyzed the contemporary state of regional water resources;

investigated the conceptual approaches to the studies of water cooperation; analyzed the contradictions between the Central Asian countries caused by the transboundary management of water resources; and outlined approaches to potentially efficient management of regional water resources.

KEYWORDS: *Central Asian region, water resources, transboundary water cooperation, regional security, water-related conflicts.*

Introduction

As close neighbors, the Central Asian countries are connected by common history, culture and identical economies, while the common water resources inevitably stir up disagreements. According to experts, Central Asia is one of the regions of our planet that are moving toward great water-related contradictions. Today the region is affected by the agrarian and urban water crisis.¹ Due to the post-Soviet economic, demographic and political realities, all big international rivers cause or effect international disagreements.

This fully applies to the region's two biggest rivers that empty into the Aral Sea—the Syr Darya (that runs from Kyrgyzstan and crosses Uzbekistan and Kazakhstan) and the Amu Darya (that begins in Tajikistan and reaches the sea via Uzbekistan and Turkmenistan). This means that Kyrgyzstan and Tajikistan control the rivers' sources; hence, there exist severe political disagreements between their own needs for water and those of the downstream riparians. Agriculture of the downstream countries needs much more water, while the economically weaker upstream republics are seeking wider control to get more water for power generation and their own agriculture.

At the turn of the twenty-first century, these problems attracted a lot of attention of the academic community. Much has been done by Arjen Hoekstra and Ashok Chapagain,² Marc Zeitoun³ and Stephen C. McCaffrey⁴ to clarify the problem. The main researches of Frederick Frey,⁵ Miriam Lowi,⁶ Sergey Zhiltsov and Igor Zonn,⁷ Waltina Scheumann and Manuel Schiffler,⁸ Nurit Kliot,⁹ Anabelle Houdret, Annika Kramer, Alexander Carius,¹⁰ have concentrated on determining the causes of international water-related conflicts.

Claudia W. Sadoff,¹¹ Joachim Blatter,¹² Meredith Giordano,¹³ Ines Dombrowsky,¹⁴ Jesse Hamner¹⁵ and other scholars have written a lot about international water cooperation. Anybody wishing to

¹ See: M. Augustin, "Agrarian and Urban Water Crisis in Central Asia: Responses and Potential Scenarios of Evolution," *Idées pour le débat*, No. 6, 2016, pp. 3-22.

² See: A.Y. Hoekstra, A.K. Chapagain, "Water Footprints of Nations: Water Use by People as a Function of Their Consumption Pattern," *Water Resources Management*, No. 1, 2012, pp. 35-48.

³ See: M. Zeitoun, "Applying Hegemony and Power Theory to Transboundary Water Analysis," *Water Policy*, No. 10, 2012, pp. 3-12.

⁴ See: S.C. McCaffrey, "Harmon Doctrine One Hundred Years Later: Buried, Not Praised," *The Natural Resources Journal*, No. 6, 1996, pp. 549-590.

⁵ See: F.W. Frey, "The Political Context of Conflict and Cooperation over International River Basins," *Water International*, No. 1, 1993, pp. 54-68.

⁶ See: M.R. Lowi, *Water and Power: The Politics of a Scarce Resource in the Jordan River Basin*, Cambridge University Press, Cambridge, 2005.

⁷ See: S. Zhiltsov, I. Zonn, "Bitva za vodu," *Index bezopanosti*, No. 8 (86), 2013, pp. 49-62.

⁸ See: W. Scheumann, M. Schiffler, *Water in the Middle East: Potential for Conflicts and Prospects for Cooperation*, Springer, Berlin, 1998.

⁹ See: N. Kliot, *Water Resources and Conflict in the Middle East*, Routledge, 2011.

¹⁰ See: A. Houdret, A. Kramer, A. Carius, *The Water Security Nexus: Challenges and Opportunities for Development Cooperation*, GTZ, 2010.

¹¹ See: C.W. Sadoff, "Beyond the River: The Benefits of Cooperation on International Rivers," *Water Policy*, No. 5, 2012, pp. 389-403.

¹² See: J. Blatter, *Reflections on Water: New Approaches to Transboundary Conflicts and Cooperation*, MIT Press, 2011.

¹³ See: M.A. Giordano, "Sharing Waters: Post-Rio International Water Management," *Natural Resources Forum*, No. 2, 2013, pp. 163-171.

¹⁴ See: I. Dombrowsky, "Integration in the Management of International Waters: Economic Perspectives on a Global Policy Discourse," *Global Governance: A Review of Multilateralism and International Organizations*, No. 4, 2008, pp. 455-477.

¹⁵ See: J.H. Hamner, *Until the Well is Dry: International Conflict and Cooperation over Scarce Water Resources*, Emory University, 2015.

analyze any of the water basins should take into account what has already been written about regional problems and the water problems in Central Asia, particularly by Nurgazy Mamataliev,¹⁶ Ksenia Borishpolets,¹⁷ Stanislav Chernyavsky,¹⁸ Azhdar Kurtov,¹⁹ David Smith²⁰ and others.

It should be said that certain aspects of water cooperation in Central Asia remain pending despite a large number of relevant scholarly publications.

This article is an attempt at a comprehensive analysis of the Central Asian water problem, its political and economic aspects and the extent to which the use of water resources as a regional problem affects regional security.

To achieve this we have

- (1) assessed the current state of the region's water resources;
- (2) revealed the theoretical substantiations and conceptual approaches to the studies of water cooperation in the region;
- (3) analyzed the contradictions between the Central Asian countries, caused by transboundary management of water resources of the Syr Darya and the Amu Darya rivers;
- (4) identified the set of joint measures needed to achieve efficient management of regional water resources through integration for the sake of regional security.

We relied on a set of mutually complementary theoretical methods of studies, systems approach and the theory of international relations within which we have selected the method of aggregate data, viz. analysis of official documents, and the problem-logical method of data analysis.

Assessment of the Current State of Central Asian Water Resources

Central Asia is a vast region of 3,882,000 sq. km. with the population of over 55 million that covers the territories of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

The density of the river network is about 2 m to 1 sq. km. The climate of the valley and the scanty rainfall that evaporates quickly interfere with the runoff generation. The surface runoff is negligible, which explains why there are no rivers with permanent runoff in the region's valley part. The much more frequent precipitation in the mountainous areas considerably increases the runoff. There the density of the river network is 600 m by 1 sq. km.

Two big river basins—the Syr Darya in the north and the Amu Darya in the south—belong to the Aral Sea basin. The Zaravshan River, a former tributary of the Amu Darya, runs between them.

The sources of the Syr Darya River (2,500 km long) are found in the Tien Shan Mountains, to the south of the Pamirs. Fed by melting glaciers, it runs from Kyrgyzstan to Uzbekistan via Tajikistan and then empties into the Aral Sea via Kazakhstan. This means that the three downstream republics

¹⁶ See: N.P. Mamataliev, "Problemy transgranichnogo rukovodstva Chu-Talas," available at [<http://www.eecca-water.net/file/mamataliev-present-kiev12.pdf>].

¹⁷ See: K.P. Borishpolets, "Vodno-energeticheskie problemy Tsentralnoy Azii i sravnitelnye vozmozhnosti EvrAzES i ShOS v dele ikh resheniia," *Vestnik MGIMO*, No. 2, 2011, pp. 31-37.

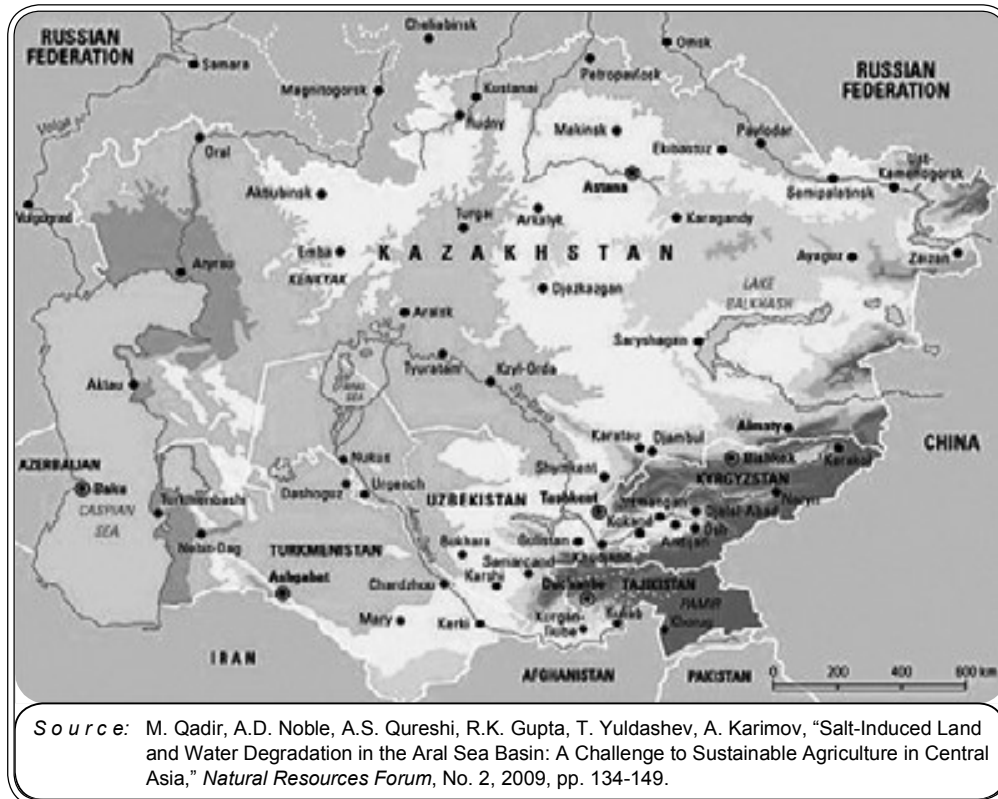
¹⁸ See: S.I. Chernyavsky, "Rossiyskie priority v Tsentralnoy Azii," in: *Tsentralnaia Azia: aktualnye aktsenty mezh-dunarodnogo sotrudnichestva*, MGIMO, Moscow, 2010.

¹⁹ See: A.A. Kurtov, "Vodnye resursy kak prichina konfliktov v Tsentralnoy Azii," *Svobodnaia mysl*, No. 3-4, 2013, pp. 16-39.

²⁰ See: D.R. Smith, "Environmental Security and Shared Water Resources in Post-Soviet Central Asia," *Post-Soviet Geography*, No. 6, 2015, pp. 351-370.

Figure 1

Map of Central Asia



(Kazakhstan, Uzbekistan and Turkmenistan) are the main users of the water resources of the Syr Darya basin. The biggest users of water for irrigation, in 2015 they used 83 percent of the basin's runoff for their own needs. In 2015, Uzbekistan used for its own purposes 52 percent of the total flow; the figure for Turkmenistan was 20 percent.²¹ It should be said that about 75.2 percent of the total runoff of the Syr Darya is formed in the territory of Kyrgyzstan; about 15.2 percent, in the territory of Uzbekistan, 6.9 percent in Kazakhstan and 2.7 percent, in Tajikistan. The river's average runoff is 37 cu km.

The Amu Darya River is one of the region's biggest: it is 2,540 km long with the basin of 309 thousand sq. km. In the mid-flow it receives three big tributaries—Kafirnigan, Surhan Darya and Sherabad—that flow into it on the right side and the Kunduz River on the left. The Amu Darya is fed mainly by melted waters, which explains the biggest water consumption in summers and the smallest in January-February. This is highly favorable for irrigation; a considerable part of the river's runoff in the valley is lost through evaporation, infiltration and irrigation between the city of Atamurat (before 1999 Kerki) and Nukus.

The main runoff of the Amu Darya (about 74 percent) is formed in Tajikistan. The river flows along the Afghan-Uzbek border, crosses Turkmenistan, returns to the territory of Uzbekistan and

²¹ See: B. Mosello, "Water in Central Asia: A Prospect of Conflict or Cooperation?," *Journal of Public and International Affairs*, No. 19, 2008, pp. 151-174.

empties into the Aral Sea. About 13.9 percent of its runoff is formed in Afghanistan and Iran, about 8.5 percent, in the territory of Uzbekistan.

The total average annual runoff of all rivers into the Aral Sea basin is 116 cu km: 79.4 cu km of the Amu Darya runoff and 36.6 cu km of the Syr Darya runoff.

Today, there are 100 storage reservoirs and 24,000 km of irrigation canals.

Table 1 shows the volumes of used water that differ greatly from country to country.

Table 1

**Dynamics of Water Requirement
in the Central Asian Countries (cu km a year)**

Country	Years	Branches of Economics						Total
		Potable Water Supply	Agricultural Water Supply	Industrial Water Supply	Fisheries	Irrigated Agriculture	Other	
Kazakhstan	2005	0.080	0.07	0.75	0.065	9.5	0.21	10
	2015	0.140	0.1	0.12	0.15	9.5	0.5	10.51
	2025	0.160	0.12	0.29	0.17	7.45	0.5	92.9
Kyrgyzstan	2005	0.080	0.09	0.15	0.03	5.54	0.01	5.9
	2015	0.1	0.11	0.2	0.04	6.02	0.03	6.5
	2025	0.140	0.15	0.3	0.05	6.8	0.06	7.5
Tajikistan	2005	0.5	0.75	0.65	0.1	11.9	0.4	14.3
	2015	0.7	0.9	0.8	0.15	13.15	0.3	16
	2025	1	1.1	1	0.2	14.5	0.2	18
Turkmenistan	2005	0.37	0.19	0.75	0.025	18	—	19.34
	2015	0.4	0.2	0.9	0.03	20	—	21.53
	2025	0.47	0.25	1.1	0.04	17.65	—	19.51
Uzbekistan	2005	2.65	1.39	1.35	1.05	56.56	—	63
	2015	2.7	1.4	1.39	1.32	52.4	—	59.2
	2025	5.85	1.63	1.46	2.24	48.02	—	59.2
Total in the Aral Sea basin	2005	3.68	2.490	2.975	1.27	101.5	0.62	112.54
	2015	4.04	2.71	3.41	1.69	101.07	0.83	113.8
	2025	7.62	3.25	4.15	2.7	94.42	0.76	112.9

S o u r c e: United Nations Special Program for the Economies of Central Asia (SPECA), available at <http://www.unece.org/speca/wer.html>.

The water resources of Central Asia are formed mainly in Tajikistan: there are 11 used storage reservoirs with the useful volume from 5 million cu m to 10.5 cu km; total water surface of 706.7 sq. km and the total capacity of 15.7 cu km. This amounts to 13.6 percent of the average long-term runoff of the rivers of the Aral Sea basin. Upon completion, the Rogun water storage

reservoir behind the Rogun Dam, the upper reservoir of the Vakhsh Cascade system, will bring this share to 25 percent.

To open up all irrigable lands (the total area of 835.3 thousand hectares), improve water supply and develop other economic sectors the region needs 21 more storage reservoirs to bring the useful volume of all the reservoirs to 34.4 cu km. In this way, 27.1 cu km will be added to the useful volume by 2050.²² The Amu Darya basin offers the main potential for water storage. Indeed, more than ten dam sites can be built on the Panj River for water storage facilities of hydroelectric power plants, their total volume being 38.05 cu km.

The issue of water resources and their use remains one of the main problems in the relationships between the Central Asian states. It has a long history; in the Soviet Union water use and management of the entire complex of irrigation facilities in the region were regulated within a single system, while the problems were promptly resolved at the state level. Independence plunged all the states into a water distribution crisis caused by the fact that only two states (Tajikistan and Kyrgyzstan) have the necessary water resources. This means that they should supply water to Kazakhstan, Uzbekistan and Turkmenistan, the downstream riparians of the two biggest Central Asian rivers.²³ Water and the use of water resources have become one of the most important items on the region's political agenda.

Conceptual Approaches to the Studies of Regional Water Cooperation

Frederick Frey explained the specifics of interaction between the states in regards to the water issues by the unique nature of water resources: "...water is the most vital human resource. It also is scarce, maldistributed and often shared internationally."²⁴

We should take into account the very special value of water and the fact that it has no substitutes. In extreme situations (drought, chemical poisoning of drinking water, the lower water level in the season of irrigation) its value skyrockets. Thomas Naff agrees with the above: scarcity makes water a symbolic, poisonous, aggregated, meaningful, very complicated issue with a zero-sum; it is related to power and prestige, stirs up conflicts that are hard to resolve.²⁵

In 2002, the United Nations registered the human right to water as a recommended international legal norm.²⁶ On 28 July, 2010, the U.N. GA officially recognized "the human right to water as indispensable for leading a life in human dignity" and specified: "Where such action is based on a person's failure to pay for water their capacity to pay must be taken into account. Under no circumstances shall an individual be deprived of the minimum essential level of water."

The human right to water access, the place of the water factor in ensuring national security and transboundary regulation of water resources are determined by the concepts of state policy in the sphere of managing water resources, international trade in hydrospheric products and control over the runoff of international rivers.

²² See: B. Mosello, op. cit.

²³ See, for instance: D. Bernard, *Societies in Transition*, UNICEF, Almaty, 2011.

²⁴ F.W. Frey, op. cit.

²⁵ See: T. Naff, "Sources of Political Conflict in the Persian Gulf: The Water Factor," in: *Powder Keg in the Middle East: The Struggle for Gulf Security*, ed. by G. Kemp, J.G. Stein, Rowman & Littlefield, 2012.

²⁶ See: *General Comment No. 15. The Human Right to Water adopted by the Committee on Economic, Social and Cultural Rights of United Nations Organization*, November 2002, available at [www.un.org/waterforlifedecade/human_right_to_water.shtml].

Back in the 1990s, the studies of regional water cooperation led to narrow specialized concepts: common-pool resources,²⁷ global governance theory,²⁸ epistemological concepts,²⁹ etc., designed to find the best possible method of settling international disagreements on the water issue. However, all the concepts, in one form or another, suggested delegating a part of sovereign powers to supranational structures, referring to the successful examples of European cooperation in the management of the Danube and Rhine rivers. All attempts to apply European experience in Central Asia or any other region invariably failed.

In small quantities trade in water increases interdependence of the states involved; bigger supplies are fraught with one-sided dependence and might threaten national security. This fully applies to trade in physical and virtual water and might lead to efficient intensive, rather than extensive, use of water at the national and international levels. The establishment and implementation of such a policy is considered in the context of the concept of environmental security, formulated by Jessica Matthews in 1989.³⁰

Over time, her idea gradually developed into the concept of sustainable biosphere needed for man's adequate existence and the two complementing approaches: the "green revolution"³¹ (further exploitation of natural resources by upgrading the efficiency of renewable resources) and the "planetary boundaries,"³² designed to arrive at the best possible account of the short- and long-term development indices through the prism of food and water security, as a priority.³³

The "virtual water" concept, formulated by John Anthony Allan,³⁴ and the "water footprints" of Arjen Hoekstra and Ashok Chapagain³⁵ stand apart from a fairly big number of all sorts of concepts,—they allow us to identify the water component in international trade and use it as an instrument of conflict settlement and tension reduction in water-deficit regions. The virtual water concept was suggested by the statistics of water consumption and the fact that the greater part of the water is not used directly but is a production resource. The authors of this concept define this resource as the amount of water used to produce food or other products.³⁶ Accordingly, the water-deficit countries can and should buy hydrospheric products from the countries, in which the relative value of water is lower; this will let them achieve maximum efficiency in the distribution and use of water resources.

Transboundary Water Cooperation in the Regional Security System

Today, transboundary water cooperation figures prominently in the context of Central Asian integration. According to prominent Tajik political scientist, Amirkul Azimov, exacerbated water-

²⁷ See: E. Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge University Press, 2010.

²⁸ See: O.N. Barabanov, *Globalnoe upravlenie*, MGIMO Press, Moscow, 2011.

²⁹ See: H. Bressers, L.J. O'Toole, L.M.W. Akkermans, J.J. Richardson, "Networks for Water Policy: A Comparative Perspective," *Environmental Politics*, No. 3 (4), 1994.

³⁰ See: J.T. Mathews, "Redefining Security," *Foreign Affairs*, No. 2, 1989.

³¹ O. De Schutter, "The New Green Revolution: How Twenty-First-Century Science Can Feed the World," *Solutions*, No. 2 (4), 2011, pp. 33-44.

³² J. Rockström, W. Steffen, K. Noone *et al.*, "Planetary Boundaries: Exploring the Safe Operating Space for Humanity," *Ecology and Society*, No. 2, 2009.

³³ See: M. Falkenmark, J. Rockström, *Balancing Water for Humans and Nature: The New Approach in Ecohydrology*, Routledge, New York, 2014.

³⁴ See: J.A. Allan, "The Middle East Water Question: Hydropolitics and the Global Economy," *The Arab Studies Journal*, No. 2 (1), 2002, pp. 160-164.

³⁵ See: A.Y. Hoekstra, A.K. Chapagain, *op. cit.*

³⁶ See: J.A. Allan, *Fortunately There are Substitutes for Water Otherwise Our Hydro-Political Futures Would Be Impossible*, ODA, London, 1993.

related contradictions are caused by the inability of the upstream (Tajikistan and Kyrgyzstan) and the downstream countries (Kazakhstan, Uzbekistan and Turkmenistan) to resolve conflicts of interest that flared up as soon as these countries got their independence. This can lead to serious confrontations, up to and including armed clashes.

The regional countries are demonstrating much more diplomatic activity, which means that the problem of water use strongly affects regional politics and, what is more important, regional security. This is further confirmed by the frantic efforts of international organizations to resolve the transboundary water-related crisis. USAID officials, for example, describe water scarcity as a serious potential for an even greater crisis in the region.³⁷

In Tokyo, the U.N. set up an international center for the studies of water-related problems in Central Asia that started functioning in December 1995. The UNDP initiated diversified dialog on the water problems of the Central Asian countries.³⁸

From the very first days of independence the Central Asian riparians have been trying to settle the water problem in their relationships. In February 1992, the five republics signed an Agreement on Management, Use and Protection of Transboundary Water Resources.

On 4 January, 1993, the International Fund for Saving the Aral Sea (IFAS) was created in Tashkent to promote joint efforts and projects designed to save the Aral Sea, taking into account the interests of all of the Central Asian states.³⁹

Later, in 1998, Kazakhstan, Uzbekistan, Kyrgyzstan and Tajikistan signed a water-energy agreement on the Syr Darya. Several bilateral agreements were concluded between 1998 and 2004. The unprecedentedly cold winter of 2007/2008 caused the deepest water and energy crisis⁴⁰ that revealed the inefficiency of the previously concluded agreements.

According to the expert community, the agreement between Kyrgyzstan and Kazakhstan on the use of waters of the rivers Chu and Talas, signed in 2000, was the only efficient attempt at regulating the transboundary water resources between the upstream and downstream countries.⁴¹ Under the terms of the agreement, Kazakhstan should compensate Kyrgyzstan for what the republic spends on the maintenance of its water infrastructure in accordance with the amount of water it uses. The efforts to apply the same instrument to the dialog between Uzbekistan and Tajikistan have failed so far.

Transboundary Water-Related Regional Security Risks

The intention of Tajikistan and Kyrgyzstan, the two upstream states, to complete the projects of the two hydropower plants—the Rogun and Kambarata— inherited from Soviet times, exacerbated the contradictions between the upstream and downstream Central Asian countries. To be efficient, they would need billions of cubic meters of water of the rivers Vakhsh and Naryn in their reservoir pools. Tajikistan has already completed the two small hydropower plants (Sangtuda-1 and Sangtu-

³⁷ See: *The Program of Specific Actions to Improve the Environmental Situation in the Aral Sea Basin (ASBP)*, Tajikistan, 2013.

³⁸ See: *Dialogue on Effective Water Governance*, UNDP, Japan, 2012.

³⁹ See: R.W. Ferguson, *The Devil and the Disappearing Sea: A True Story about the Aral Sea Catastrophe*, Raincoast Books, Vancouver, 2013.

⁴⁰ See: B. Libert, E. Orolbaev, Yu. Steklov, "Water and Energy Crisis in Central Asia," *China and Eurasia Forum Quarterly*, Vol. 6, No. 3, 2012, pp. 9-20.

⁴¹ See: N.P. Mamataliev, op. cit.

da-2). During the summers, Uzbekistan, Kazakhstan and Turkmenistan cannot get enough water to irrigate their cotton and rice fields and are dead set against building big hydropower plants.

On the other hand, these countries use the available water irrationally, while their irrigation systems need upgrading and reconstruction. The former President of Tajikistan, Saparmurad Niyazov, said at one time that his country was losing up to 10 bcm of water every year.⁴²

In the opinion of many scholars, the scarcity of water resources is caused by the growing population of the Central Asian countries, the rates being one of the world’s highest and increasing.⁴³

The water-related problem is further exacerbated by the still undeveloped international legislation related to the use of waters of transboundary rivers. An efficient water use system—reconstructed irrigation systems, canals, pumping stations, etc.—requires a lot of money and big investments.

Table 2 offers a SWOP analysis of the specific features of transboundary water cooperation, its debatable issues and threats that might end in so-called “water wars.”

Table 2

SWOT Analysis of Transboundary Water Cooperation in Central Asia

Strengths	Weaknesses
<p>Several international agreements on transboundary cooperation.</p> <p>Support of the international community (the U.N., ADB, EBRD, SDC, WB, GTZ, etc).</p> <p>Monitoring of the quality of water resources and hydrological regime of Central Asia.</p>	<p>The five post-Soviet states in Central Asia divided the hitherto homogenous hydropower system.</p> <p>The fairly complicated hierarchy and the partly doubling functions of departments in the Central Asian states related to the management and protection of water resources.</p> <p>The system of management of water resources mainly based on the administrative-territorial division.</p> <p>Involvement of the private sector (up to and including supplies of safe potable water) is so far inadequately developed at the interstate level.</p> <p>Inadequate methodological support for the introduction of the internationally recognized standards.</p> <p>The downstream countries reject the format of buying water in the form of quota payments, while the upstream countries are trying to move away from the water-energy barter.</p> <p>Nothing is done to arrive at joint monitoring by the neighboring states (sampling, duplicates of tests, comparison of results of the analyses) on the transboundary rivers and bodies of water.</p>
Opportunities	Threats
<p>Smooth transfer to systemic management within the hydrological basins, rather than administrative-territorial division.</p>	<p>Inadequate cooperation with parallel programs of neighboring states fraught with an inefficient use of allocated resources.</p>

⁴² See: Official site of the President of Turkmenistan [www.turkmenistan.gov.tm].

⁴³ See: NICI: “By the Year 2050, Population Strength in Central Asia will Reach the Figure of 96 Million,” available in Russian at [http://www.news-asia.ru/view/ks/society/9040].

Table 2 (continued)

Opportunities	Threats
<p>Reforms of the legal framework and institutional structures of administering water resources.</p> <p>Cooperation with specialists of different departments and organizations (lawmaking, meetings of experts and technical specialists, training).</p> <p>Switch to the distribution of water according to needs, differentiation of water-related tariffs according to specific conditions of each Central Asian country.</p> <p>Intention of the downstream countries to increase their water independence by practicing new water-saving technologies, drop irrigation and developing underground water horizons.</p> <p>The upstream countries' desire to develop construction technologies of small and medium hydropower plants.</p> <p>External contractors are invited to realize big projects.</p> <p>Development of trade in virtual water through hydropower engineering (for the upstream countries), food and cotton (for the downstream countries).</p> <p>Comprehensive approach to the problems of export-import of power generated by the regional hydropower plants.</p>	<p>Inadequate regional cooperation that might lead to inadequate water resources needed to carry out the already announced strategic reforms in adjacent branches, agriculture being one of the examples.</p> <p>Rejection of flexible mechanisms of financial and economic stimulation instead of the current total subsidies as leading to water-supply problems in agriculture.</p> <p>One-sided decisions on how the water resources of the basin should be used.</p> <p>State of emergency at hydroelectric power plants that might cause water and power collapse in the region if the neighboring states prefer not to render assistance.</p> <p>Construction of hydropower plants in Tajikistan and Kyrgyzstan.</p>

It should be said that so far the Central Asian countries have not arrived at common approaches to the water problem and have not yet set up an efficient supra-national structure intended to deal with the water conflict.

Kazakhstan and Uzbekistan are in better economic situations and have bigger populations than their neighbors, while Kyrgyzstan and Tajikistan profit from their much more advantageous geographic location.⁴⁴ Today, confrontation between Uzbekistan, on the one hand, and Tajikistan and Kyrgyzstan, on the other, can be described as the region's acutest water-related conflict⁴⁵ constantly heated up by Tashkent's ambitious desire to become the region's leader⁴⁶ thwarted by the policies of Kazakhstan and Turkmenistan.

The economy of Kazakhstan depends on agriculture to a much lesser extent than that of its neighbors, while the Irtysh River that runs across its territory partly solves its water-related problems. As for Turkmenistan, it has significant revenues from exports of hydrocarbons, has the smallest population of all the republics in the region and is less dependent on water runoff regulation.

⁴⁴ See: K. Wegerich, "Hydro-Hegemony in the Amu Darya Basin," *Water Policy*, No. 2, 2008, pp. 71-88.

⁴⁵ See: K.P. Borishpolets, op. cit.

⁴⁶ See: S. Smirnov, "Razorvat, nelzia ostavit," *Ekspert Kazakhstan*, No. 46 (237), 2009.

This looks like a dead end. The problem is further exacerbated by the very different interests of the countries when it comes to the distribution of the region's water resources in the absence of efficient international legal mechanisms of joint regulation of transboundary waters.

How to Prevent Water Conflicts in Central Asia

Today, the Central Asian countries cannot reach a consensus on the joint use of the region's transboundary water resources and the way of the use of the storage reservoirs that can and should be optimized. Overall, the contradictions at the political level are stirred up by the questions: who should manage water resources and how should water be distributed to balance out the interests of all countries?

Today, the regional agenda is dominated by the task to arrive at short- and long-term common strategies of regional water-related cooperation.

The fundamental measures should be taken to prevent water conflicts in the region. The Central Asian countries should:

- specify the legal irrigation-related norms. To overcome the water crisis the local countries should identify, on the basis of interstate agreements, the sizes of expanded cultivated areas and be ready to reduce them if needed;
- rely on scientific recommendations related to the management of water resources, take practical measures to save water resources and upgrade the irrigation infrastructure and canals;
- move away from the idea of huge hydro technical projects;
- discuss the problem with countries from other regions and international organizations;
- practice a multisided approach to the water problems;
- take all the necessary measures to prevent a crisis of water use.

The water problem might develop either into a serious security threat or show the road toward good-neighborly relations and peace in the region. This means that the international commission on the water problems can help reduce tension in all spheres of everyday life in the region's states and that the region needs new structures to address the water problems—an Interstate Council on the use of the potentials of transboundary rivers, etc.

External factors are as important as internal factors when it comes to settling the region's water problems: other states and influential international organizations should help disentangle the contradictions between the Central Asian states. Today, their leaders are very much concerned with the fact that many recommendations of the World Bank designed to help the Central Asian states achieve sustainable development remain unrealized. This should not discourage international institutions and organizations: they should work hard to bring closer the positions of the region's states on transboundary water cooperation.

Conclusion

In the last twenty years Central Asia has been living under the pressure of the grave consequences of decentralization of the systems that were set up as integrated and mutually complementing. Under the Soviet rule, the water system in Central Asia was rationally organized. The dams of

the hydropower plants made it possible to provide bigger amounts of water required during irrigation periods. In winter, when the upstream republics (Tajikistan and Kyrgyzstan) needed additional electric power, they received it from other regions thanks to the single energy system. The downfall of the Soviet Union not merely destroyed the system: it stirred up conflicts of interest among the Central Asian states that might develop into full-scale “water wars.”

Today, the Central Asian countries have not abandoned their efforts to settle the water crisis through bilateral, tripartite and five-sided agreements and agreements with third countries. They are concluded, first, because the huge water and energy resources, if used efficiently, might promote economic development of the entire region. Second, the two upstream states (Kyrgyzstan and Tajikistan) have monopolized the right to use the huge hydropower resources as they see it fit. Third, there are no developed mechanisms of the use of hydropower resources by independent Central Asian countries, which explains the nagging problems in interstate relationships: scarcity of water to be used in agriculture, lack of legal instruments of settling water problems of the transboundary rivers in the first place, etc.

For the reasons enumerated above, water resources, as the basic component of agricultural development, acquired strategic importance. On the other hand, the local states have no other options but cooperation and coordination of efforts designed to finally set up a unified system of water use, based on the rational use of water resources to which practice all five states should adhere.
