

**ҚАЗАҚСТАН РЕСПУБЛИКАСЫ ҒЫЛЫМ ЖӘНЕ ЖОҒАРЫ БІЛІМ МИНИСТРЛІГІ**

**«Л.Н. ГУМИЛЕВ АТЫНДАҒЫ ЕУРАЗИЯ ҰЛТТЫҚ УНИВЕРСИТЕТІ» КЕАҚ**

**Студенттер мен жас ғалымдардың  
«GYLYM JÁNE BILIM - 2023»  
XVIII Халықаралық ғылыми конференциясының  
БАЯНДАМАЛАР ЖИНАҒЫ**

**СБОРНИК МАТЕРИАЛОВ  
XVIII Международной научной конференции  
студентов и молодых ученых  
«GYLYM JÁNE BILIM - 2023»**

**PROCEEDINGS  
of the XVIII International Scientific Conference  
for students and young scholars  
«GYLYM JÁNE BILIM - 2023»**

**2023  
Астана**

**УДК 001+37**  
**ББК 72+74**  
**G99**

**«GYLYM JÁNE BILIM – 2023» студенттер мен жас ғалымдардың XVIII Халықаралық ғылыми конференциясы = XVIII Международная научная конференция студентов и молодых ученых «GYLYM JÁNE BILIM – 2023» = The XVIII International Scientific Conference for students and young scholars «GYLYM JÁNE BILIM – 2023». – Астана: – 6865 б. - қазақша, орысша, ағылшынша.**

**ISBN 978-601-337-871-8**

Жинаққа студенттердің, магистранттардың, докторанттардың және жас ғалымдардың жаратылыстану-техникалық және гуманитарлық ғылымдардың өзекті мәселелері бойынша баяндамалары енгізілген.

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**УДК 001+37**  
**ББК 72+74**

**ISBN 978-601-337-871-8**

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ұлттық университеті, 2023**

accounts now, it can be said that Donald Trump has regained access to voter outreach platforms ahead of his next attempt to run for President of the United States in 2024.

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UDC 327.8

## WATER MANAGEMENT SYSTEM IN CENTRAL ASIA: EFFECTIVENESS OF THE NEXUS APPROACH

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The issue of water resources sufficiency and depletion has been on the agenda since the mid-1980s. All climate models indicate a high probability of further deterioration of the situation. Water stress continues to strengthen and will increase by 2.8 times in some regions [1].

Central Asia is a global hotspot for long-term climate trends, having experienced a substantial increase in temperature over the last century. Today Central Asia's strong dependence

on water resources is one of the key reasons for its high sensitivity to climate change. Most parts of Turkmenistan, Uzbekistan, and southern Kazakhstan already face water stress, thus any further gap between water availability and demand would exacerbate water scarcity [2].

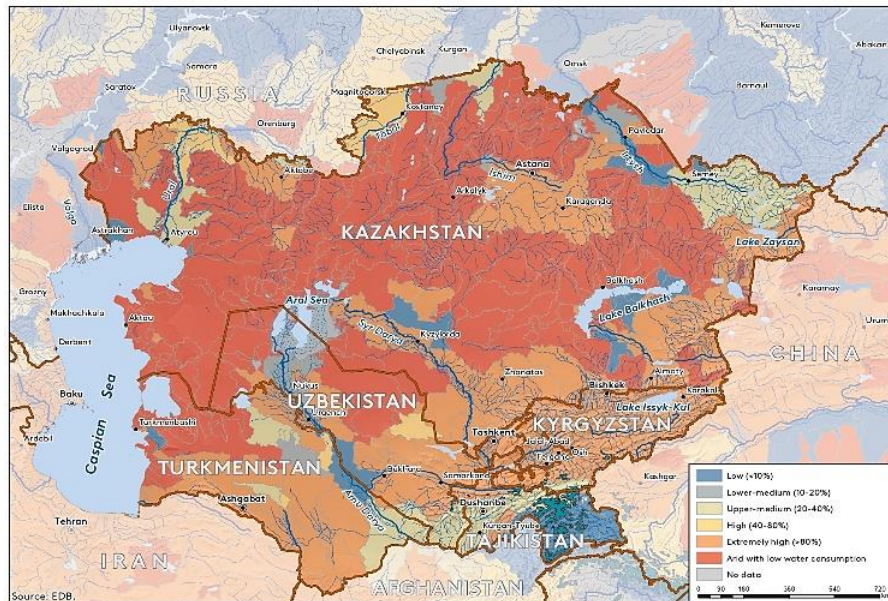


Figure 1 – Water stress in Central Asia by 2040 (baseline scenario) [1].

Transboundary river systems bind downstream countries to the streamflow of upstream countries. During the Soviet era, the Central Asian nations were connected by a shared water–power system, in which water and electricity supplies from upstream states were compensated for by energy supplies from downstream states during the vegetative season [2]. This cooperation has been largely interrupted in recent decades as countries pursued self-sufficiency strategies in water and energy, which eventually resulted in disagreements about equitable exchanges. While Central Asian countries formed the Interstate Coordinating Water Commission (ICWC) and signed the 1992 Almaty Agreement specifying water quotas, these frameworks have not effectively rallied participating countries around benefit-sharing in the face of substantial broader economic and political pressures [3].

In this context, despite aforementioned post-Soviet period’s disagreements, efficient water use becomes strategically important to the sustainable development of Central Asia and to reduce their sensitivity to the adverse impacts of climate change. Here, the nexus concept is a centerpiece of cooperation between Central Asian states that is the basis for finding compromises based on informed decision-making and interaction between various sectors of the economy: water, food, energy [4].

Due to the fact that water is an enabler for development, in Central Asia as elsewhere, be it to sustain life, provide food or generate energy, in the next SWOT analysis, the main positive and negative aspects with future possibilities of water management in the Central Asian region are provided.

### SWOT analysis on water management in Central Asia

Strengths	Weaknesses
<p>1. <b>Tuyamuyun hydroelectric complex (TGC).</b> The Tuyamuyun hydroelectric facility is a transboundary water and energy facility located along the Amu Darya River on the border of Uzbekistan and Turkmenistan. TGC is located in Turkmenistan, but is owned by Uzbekistan. The land is leased from Turkmenistan on the basis of interstate legal agreements. As a strategic object, the TGC regulates the lower reaches of the Amu Darya and ensures the distribution of water resources between countries.</p> <p>2. <b>A platform for CAREC cooperation in other sectors has been established.</b> The CAREC program is an 11-country collaboration (Afghanistan, Azerbaijan, Georgia, Kazakhstan, China, Kyrgyzstan, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan) supported by 6 multilateral institutions. Countries and institutions work together to promote development through cooperation leading to accelerated economic growth and poverty reduction. At the meeting, the countries discussed the possibilities of cooperation between the Central Asian countries in the field of water resources and energy and decided that under the new CAREC 2030 strategy, the direction of work has shifted towards the development of human resources, education. And this new direction opens up more opportunities for partnership with CAREC [5].</p> <p>3. <b>Construction of new hydroelectric power stations.</b> All HPPs in Central Asia that were built by the USSR are outdated and frequent accidents occurred. For example, thanks to programs and investments on the Charyn River in 2011, the Moinak HPP was built, which is considered the highest-pressure hydroelectric power plant in the CIS.</p> <p>4. <b>Well developed portfolio of ADB support for national water projects/programmes.</b> According to OECD2 during 2010–2019, countries in the region have received more than \$33.4 billion in official development assistance from various sources. The main volume - almost 12 billion dollars - fell on Uzbekistan, and annual investments increased over</p>	<p>1. <b>Soviet legacy.</b> Much of this situation is rooted in historical circumstances: Soviet era resource management in the region was centrally directed from Moscow. Following the collapse of the Soviet Union, existing governance arrangements broke down, setting the stage for persistent regional tensions over resource use and allocation. While Central Asian countries formed the Interstate Coordinating Water Commission (ICWC) and signed the 1992 Almaty Agreement specifying water quotas, these frameworks have not effectively rallied participating countries around benefit-sharing [3].</p> <p>2. <b>Ineffective use of water resources.</b> More than two thirds of the population of Tajikistan live in rural areas, where access to water is still an urgent problem. According to the World Bank, the only source of water for people in a number of rural Kyrgyzstan areas are irrigation systems. Additionally, more than half of the population of Uzbekistan does not have access to the country's main water supply networks [12].</p> <p>In addition, the Aral Sea, which was once the fourth-largest lake in the world, has been shrinking ever since Soviet irrigation projects diverted the rivers that fed it in the 1960s. By 1997, the Aral Sea had decreased to 10% of its previous extent and already by 2014, NASA satellite photographs showed that the eastern basin of the Aral Sea had totally dried up [13].</p> <p>3. <b>Conflict of interests.</b> Upstream Kyrgyzstan and Tajikistan have abundant water resources stored in reservoirs. They prefer to release this stored water during winter to generate electricity through hydropower to fulfill their energy needs.</p> <p>Downstream Uzbekistan, Turkmenistan and Kazakhstan, by contrast, have far less internal renewable water resources and prefer the water from transboundary rivers to be released primarily in summer in order to meet their irrigation needs and avoid uncontrolled winter flooding [14].</p> <p>4. <b>Ineffective technologies.</b> The countries of the region still use old technologies of water use, irrigation of farmland, irrigation of land,</p>

<p>this period by more than 13 times. Kazakhstan received a little more than \$7 billion. But since 2017, a net outflow of funds began as a result of the return of loans received. This is due to the adoption in 2014 of the Law of the Republic of Kazakhstan "On Official Development Assistance", in pursuance of which the Kazakhstan Agency for International Development was created to implement its own programs [6].</p> <p>Far more significant aid flows have been directed through foreign direct investment (FDI) channels. According to IBRD statistics, for the period 2010–2019. the Central Asian states received more than \$132 billion in direct investment, which is about 4 times the amount of official assistance recorded by the OECD.</p> <p>The potential of Central Asia in attracting FDI is estimated by the international consulting company "Boston Consulting Group" up to \$170 billion, including \$40-70 billion in non-primary industries over the next 10 years. Attractive sectors, in addition to infrastructure, are the processing of agricultural products, petrochemicals and tourism [7].</p>	<p>in which a huge amount of water is lost and does not reach its destination.</p> <p>5. <b>Soil salinization.</b> Water withdrawal for agriculture accounts for more than 90% of total water consumption, mainly for cotton fields in Uzbekistan and Turkmenistan. Due to water losses in irrigation channels and the cultivation of unstable monocultures, soil salinization increases, and huge water losses put a strain on the water supply [15].</p>
<p><b>Opportunities</b></p>	<p><b>Threats</b></p>
<p>1. <b>Water Infrastructure Improvement Projects in Central Asia.</b> In dialogues, countries often emphasize the need for investment in water management infrastructure, including wastewater treatment plants, irrigation systems and dams. As a result of the effort, several new projects were launched to improve water infrastructure in Central Asia and efforts were made to improve the collection and exchange of water data in the region, which can help decision-making and policy development. Also during the dialogue, the importance of collecting and analyzing data in water management is underlined.</p> <p>2. <b>Aral Sea Basin Program.</b> This program, launched by the International Fund for Saving the Aral Sea in 2019, aims to promote the practice of sustainable water management in the Aral Sea basin, which covers several countries of Central Asia. The program includes investments in water-saving irrigation systems, restoration of</p>	<p>1. <b>Climate change.</b> The Central Asian region is warming faster than the global average, and climate change will hit the region sooner and harder. 10–30% less water will be available in major rivers of Amu Darya and Syr Darya by 2050 [16]. Upstream glaciers are already experiencing an accelerating loss of ice due to warmer temperatures, and projected precipitation decreases will further aggravate conditions in the already water-stressed basin. Cyclical flooding and droughts already plague Central Asian countries, and are likely to increase with a changing climate [3].</p> <p>2. <b>Demand - supply dilemma.</b> A large gap between potential demand and available supply will arise if the region follows its current path without modernization and demand management in the water and agricultural sectors.</p> <p>3. <b>Threat to agriculture.</b> Agriculture is one of the key sectors of the Central Asian countries' economies. The region's</p>

degraded ecosystems, and promotion of alternative livelihoods for local communities [8].

3. **Amu Darya Basin Management Program.** This program, launched by the United Nations Development Program (UNDP) in 2019, aims to improve water management in the Amu Darya Basin, which also covers several Central Asian countries. The program includes investment in water-saving agriculture, promotion of renewable energy sources and development of a basin-wide water management plan [9].

4. **Solving the issues of delimitation and demarcation of borders.** Economist from Uzbekistan Abdulla Abdukadirov believes that, first of all, the governments of the countries need to solve the issues of delimitation and demarcation of borders. This will reduce tensions and improve cooperation on the supply of water, food and goods. According to him, border delimitation is important when it comes to water management [10].

5. **IUCN and CAREC.** The enormous importance of water resources and dependence on agriculture for food production and hydropower in Central Asia require long-term approaches to ensure the future water, energy and food security of the region. Through the Nexus Dialogue project in Central Asia, IUCN and CAREC support investment planning that allows profits for all sectors [5].

6. **Diversifying their energy mix.** Importing electricity from the upstream Central Asian states, which have a surplus of clean electricity in the summer, has allowed downstream countries to diversify their energy mix, allowing them to make better use of their fossil resources while reducing greenhouse gas emissions.

Restoring Intra-Regional Energy Trade Given Central Asia's hydropower potential, restoring intra-regional energy trade should be an integral part of the region's sustainable development initiatives.

Along with the development of intra-regional trade in energy resources, the countries of Central Asia should develop renewable energy sources [11].

countries range from 10 to 45% of their GDP being attributed to agriculture. In addition, it employs 20-50% of the working population. Irrigated agriculture, especially the growth of cotton and rice, may be threatened by a change in the timing of peak river flows. The yields of wheat and other crops can be decreased by heatwaves and fluctuating precipitation, which can also encourage the spread of pests and diseases.

4. **Problems for the energy sector.** In Tajikistan and Kyrgyzstan, where hydroelectric power plants supply the majority of the country's electricity, hydropower has a distinct place in the economies of both countries. Because rivers' hydrological cycles directly affect hydropower, seasonal water level drops or even the drying out of some small rivers might damage the work of hydropower facilities.

5. **Limited access and inefficient water use as a source of potential conflict in Central Asia.** Water problems, which are especially exacerbated during droughts, caused protests by farmers and residents of some villages in Kyrgyzstan and Kazakhstan in the summer of 2021 [12].

6. **Seismic vulnerability.** The countries of Central Asia are very susceptible to seismic hazards and seismic zones in the region cross national borders. Secondary consequences of seismic events can directly cause or accelerate landslides, mudslides, soil liquefaction, formation of glacial lakes and breakthrough floods [15].

To sum up, water issues in the region have been the centerpiece of the post-independence period of Central Asian history. Existing mode of water governance is more “water-centric” instead of integrative. Without a systemic and long-term solution to the water problem, Central Asia cannot develop sustainable solutions in water, energy, food, and environmental issues. These are interlinked and interdependent sectors.

The Post-Soviet period witnessed dismantling of pseudo-nexus arrangements on water-related sectors due to the difficulties in finding the balance between national and regional interests. The countries of the region have declared their commitments toward global climate change agreement and sustainable development goals. Yet, implementation of these commitments requires establishment of the intersectional coordination and the monitoring mechanisms. New challenges such as climate change require more coordinated policies and inter-sectoral approach in managing and governing water resources. Limited water resources, growing land degradation, and water quality degradation cannot be handled via sectoral improvements only [16].

It is necessary to develop political, legal, and economic measures to regulate relations in the water and energy sectors that would take into account the interests of each party and would be aimed at maintaining sustainable water use and efficient use of hydropower resources, while ensuring the environmental safety of transboundary rivers [17]. In general, Nexus' five final action plans included: knowing the interconnected issues between water, energy, and food/fiber production; an extensive and far-reaching menu of solutions to draw upon; lessons learned from previous and ongoing regional initiatives, and from both the upstream and downstream perspectives; and financing conditions necessary for the long-term success of the project [3]. Nexus approach could bring more opportunities and options if interlinkages are understood and efficient mechanisms for better coordination are installed.

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УДК 341

## **ЖАҒАНДЫҚ КОНТЕКСТТЕ ГИБРИДТІК СОҒЫСТАРДЫ АЛДЫН АЛУДА ХАЛЫҚАРАЛЫҚ-ҚҰҚЫҚТЫҚ АСПЕКТІЛЕР**

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