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WATER SECURITY IN THE SYR DARYA BASIN

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Abstract. Water and energy resources are crucial components in driving the economic development of the national economies in Central Asian countries. Economic growth in resource-rich countries is driven by energy, which acts as the primary engine for diversifying economic policies, while also serving as a resource base for overcoming geographical economic isolation. The state of the energy complex and the availability of water and energy resources are key factors contributing to the uneven economic development in the Central Asian republics. Some states, such as Kazakhstan, Uzbekistan, and Turkmenistan, serve as major energy exporters, while others, including Tajikistan and Kyrgyzstan, rely on importing energy resources.

Central Asian countries strive for cooperation in managing shared water resources is being thwarted by uncoordinated national strategies, whose conflicting objectives and prioritization of water security can be understood through the lens of the regional security complex theory in the context of the transboundary Syr Darya basin. Regional cooperation over transboundary water energy appears to be gaining momentum despite the geopolitical landscape, and the heads of state from Central Asia have once again adopted their traditional meeting format.

Even if some progress has been made in managing water resources in the Syr Darya basin, but unresolved issues continue, making cooperation more difficult between the Central Asian states. The research examines the features of transboundary collaboration in the Syr Darya river basin. Water management in the transboundary Syr Darya River basin is also being evaluated in terms of its associated challenges.

Key words: Syr Darya, transboundary river, water management, securitization, water issue, conflict, Central Asia, energy

Introduction

Recognition of water's distinctive role and its high social significance in relation to human rights to secure and uncontaminated water has become a basis for contemporary water principles. Water is a very scarce and precious natural resource, regarded as the heritage of both the present and future generations. Almost all of the territories in Central Asia are situated within the drainage basins of rivers that flow across international borders. Central Asia's scarce water supplies have resulted in significant challenges for the long-term development of

the countries within the area. Geopolitical landscape shifted after dissolution of the Soviet Union. The rivers shared by multiple republics acquired the status of international transboundary watercourses.

In Central Asia, the issue of shared water usage in transboundary river basins is a frequent problem that affects all countries worldwide with international waterways, yet it also varies among countries due to unique regional conditions such as natural, climatic, economic, and political factors. In regional integration processes, the matter of transboundary river water resources is a significant area for collaborative effort. According to international practice, the resolution of issues and contradictions that occur in this context is largely influenced by the dynamics of economic interaction, liberalization of trade and economic ties as well as the nature and degree of investment cooperation [1].

The Syr Darya River Basin ranks as the second-largest river basin in the area by water content. Syr Darya features water supplies stemming from the flow of the Naryn and Karadarya Rivers as well as the Fergana Valley's rivers. The primary inconsistency in the Syr Darya basin is that the majority of the region's water resources originate from the upper reaches, and the interests of water users who harness the energy potential of water dominate. While water is primarily utilized during winter months, downstream lands reliant on irrigation necessitate water supply during the summer season. The challenge of managing the Syr Darya River's water resources stems from its transboundary nature, characterized by the fact that for approximately 125 years the river traversed the territory of a single state, initially the Russian Empire and the Soviet Union. The Syr Darya crossed four separate territories after getting them independence in 1991.

Description of Materials and Methods

This issue of transboundary river regulation and management can be viewed through the lens of structural realism, enabling an examination of the circumstances under which states within a river basin can reach a consensus on river water management. The theory of regional security complexes, as proposed by the Copenhagen School's representatives Barry Buzan and Ole Wæver, provides a more comprehensive framework for examining the issue. At the heart of Buzan and Wæver's theory is the concept of "securitization". The central concept of the TCRS is that, despite globalisation, the majority of security threats in international relations remain territorially based, and their level of severity directly correlates with geographical distance [2]. Starting in the early 1990s, water management became linked to security matters, a development known as the "securitization of water management." Water issues are therefore tied to "national security concerns," which moves them out of regular technical oversight and instead places them under the control of security personnel operating in a private and inaccessible capacity. Transboundary rivers can be viewed through the lens of regional security complex theory, given that their water resources

are a critical component of national security for riparian countries, serving as a foundation for population survival, socio-economic prosperity, and political stability.

The primary question focuses on the degree to which access to water, as a fundamental component, is politicized and securitized within this complex entity. The formulated security language highlights the essential role of water as a security concern in the region, and identifies the specific security sectors where the process of making limited water access a priority issue is occurring in Central Asia. The research hypothesis posits that water securitization in Central Asia gives rise to new water conflicts, commonly referred to as "water disputes," primarily due to difficulties in accessing water resources, such as issues associated with ongoing or proposed dam projects, as well as inadequate management of transboundary water systems.

Results

Effective and peaceful management of the Syr Darya River's freshwater resources has been a major concern for the Central Asian states since they gained independence. Within the Soviet era, the management of water resources was achieved through a system of reservoirs and hydroelectric power plants located along both rivers. Reservoirs for storing water were constructed in upstream regions due to local terrain and environmental factors, and subsequently utilized for irrigation purposes in downstream areas. After the Soviet Union's dissolution, it became evident that transitioning to a market economy and shifts in global politics made the Soviet system for overseeing Central Asian rivers outdated.

The disparities in water usage between the states reliant on hydroelectricity upstream and those reliant on irrigation downstream grew more pronounced. The problems of food and energy security have become increasingly complex due to the lack of attention given to environmental concerns that were inherited from the Soviet era, during which the extensive use of natural resources took precedence over environmental conservation. The central issue of water management has become more pressing for Central Asian countries as a result of their independence, given that their economies are heavily reliant on water resources. Struggle over water resources started but has not escalated into a full-scale conflict since the 1990s. Kyrgyzstan and Tajikistan have opted to restart construction of hydroelectric power plants on the Syr Darya and Amudarya rivers, respectively [3]. Uzbekistan, situated in the lower reaches of these rivers, views these actions as a direct threat to its security, highlighting the high level of securitization of the water issue in Central Asia.

Water and energy sector is one of the most problematic sectors in Central Asia. The geopolitical environment has become more conducive to regional partnerships in water and energy issues since 2018 [3, p.240]. Meetings between the heads of state in Central Asia have recently recommenced, prompting debate

among scholars regarding a new initiative to foster a long-term economic growth plan for the area. These discussions are also fully supported by the official authorities in every Central Asian country. The motivation stemmed mainly from a requirement to showcase their "integrity" to external partners and to acknowledge the significant political relevance of this matter.

Regional integration is likely to enter a new phase if heads of state in the area demonstrate a strong political commitment and receive unwavering international backing, with a bias towards sustainable forms of Integrated Water Resources Management (IWRM) being implemented [4]. In reality, the outcomes rarely match what is anticipated. An examination of the outcomes from the "CA+" gatherings reveals that the objectives of such events are primarily of a broad political character rather than a practical one, focused on collaborative "moderation" of intricate regional development concerns. It is noteworthy that Central Asian states also tend to address pressing issues with their neighbors in a bilateral manner, exemplified by the ongoing cooperation between Kazakhstan and the Kyrgyz Republic along the Chu Talas River, Uzbekistan's relatively favorable stance on the expansion of the Rogun Dam in Tajikistan, and the expansion of bilateral dialogue on investments, such as the Zarafshan River project between Tajikistan and Uzbekistan, and the Kambatara-1 hydropower project between the Kyrgyz Republic and Uzbekistan. Central Asian states are seeking increased cooperation within their region, but have struggled to establish lasting forms of integration, a challenge that has persistently occurred since the 1990s and 2000s. Despite progress, significant measures are still required to achieve the goals outlined in declarations made over the past three decades and to re-establish the full involvement of all five Central Asian countries in the governance structures of intergovernmental organizations.

Discussion

Water issues in Central Asia are primarily caused by a combination of factors.

1. Central Asian countries claim adherence to international law in their legislative acts, but in reality, they disregard regional collaboration. According to Article 4 of Tajikistan's Water Code, Article 8 of Kazakhstan's Water Code, Article 3 of Uzbekistan's "Law on Water and Water Use, Article 4 of the Water Code in the Kyrgyz Republic, and Article 5 of Turkmenistan's Water Code, water resources are owned by the state, thereby granting the state the authority to manage transboundary river basins through legal frameworks [5,6,7,8,9]. Certain aspects of national laws are seen as hindering cooperation between nations, such as the matter of being reimbursed for water resource utilisation. The actions comprise repeated breaches of the agreed water allocation terms between republics, Kyrgyzstan's refusal to adhere to the long-standing irrigation regime of the Lower Naryn hydroelectric power plant reservoirs, and disruptions by its opponents to the agreed energy supply terms. The actions involve repeated breaches of the

agreed-upon water allocation terms between republics, Kyrgyzstan's refusal to adhere to the conventional irrigation schedule for the Lower Naryn cascade of hydroelectric power plants, and counter-obstructions by its opponents, who are disrupting the agreed-upon terms of energy supplies for a second time.

Previous efforts spanning a decade to restore order to these complex processes through high-level political statements or framework agreements have thus far been unsuccessful. The requirement is to create new agreements that outline the specific responsibilities of each participant and provide a comprehensive framework for their implementation. A particularly concerning indicator is the varying approaches of countries within the region to different legal frameworks for managing water resources, with Kyrgyzstan and Tajikistan placing greater emphasis on the provisions of the 1992 Dublin Convention in contrast to the "basin" principle adopted at the regional level, which Uzbekistan strongly advocates. Countries situated at the lower ends of transboundary rivers are unwilling or unprepared to acknowledge water as a commodity and assume the expenses related to operating hydraulic systems in Kyrgyzstan and Tajikistan. International agreements are being used to implement the practice of water allocation, which has already been adopted in other global regions, such as the UN Convention on the Law of Non-Navigational Uses of International Watercourses, which was signed in New York on May 21, 1997 and the principles and guidelines established in the use of transboundary watercourses and international lakes, such as those outlined in the Helsinki agreement of March 17, 1992. These documents lack provisions addressing crucial issues like international state water allocation, water usage, and environmental conservation, which are vital in Central Asia where water scarcity is a common issue [10].

The legal framework governing transboundary water resources in Central Asia does not encompass all facets of international water cooperation. Inter-country disputes in the CA region have led to an increased level of competition for access to shared water resources [11]. Cooperation among CA countries within the Syr Darya transboundary river basin is facilitated through the Agreement dated February 18, 1992, between Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, and Turkmenistan, known as the "Cooperation Agreement," which deals with joint water resource management [Note*1]. However, the current water distribution schemes no longer align with the changing national interests of the independent republics.

Clearly, the current inter-republican regional agreements are no longer aligned with the current state of regional water and energy relations, and the commitments made, which raises doubts about their legitimacy [12]. The joint use of the region's water and energy resources is becoming increasingly entangled in contradictions that are being politicized due to the growing perception of water security as a major concern in Central Asia. Failing to engage in regional cooperation can result in a universal loss for countries in the region, as noted by

Dukhovny [12]. The region currently incurs an annual loss of 5% of its regional GDP, as stated by Kimsanov [13].

Kyrgyzstan maintains that agreements concerning transboundary water resources signed between nations impinge on the country's interests. The Kyrgyz side is dissatisfied with the agreements reached after 1992 because they committed to managing transboundary rivers under the Soviet system, which prioritized the needs of all parties and focused reservoir operations on irrigation. It is no accident that Kyrgyzstan passed the law "On the interstate use of water resources, water bodies and water management structures" in June 2011. Kyrgyzstan is considering changes to the systems it uses to settle mutual issues with neighboring countries regarding the operation of hydroelectric power plants in irrigation systems. Several suggestions have been made to implement a fee for water as a distinct resource with economic value or compensation for water infrastructure maintenance [13]. Neighboring countries in a unified water and energy system with Kyrgyzstan are unwilling to bear the full expense of maintaining their hydraulic infrastructure.

Tajikistan continues to support and advocate for the construction of new major hydroelectric power plants along international rivers. Tajikistan is persisting in its endeavor to construct the Rogun hydroelectric power station, a project strongly opposed by Uzbekistan. Upon completion of the project, Tajikistan anticipates resolving the issue of fully powering its entire territory and simultaneously exporting electricity to Afghanistan and Pakistan. The adoption of Tajik plans has been hindered by the absence of an investor and available finances [14]. Originally, large hydroelectric complexes like Toktogul, Andijan, Kayrakum, Orto-Tokoy, and other reservoirs situated in the upper parts of rivers were intended to be inter-republican systems. These hydroelectric complexes have been financially supported by their respective owner countries since 1992. Rivers that form international borders in lower-lying areas of Kyrgyzstan and Tajikistan do not wish or are not prepared to acknowledge water as a marketable resource and accept the expenses linked to maintaining hydraulic infrastructure. Efforts are being made to formalize the practice of water allocation, a method employed in various global regions, via international treaties. The discussion revolves around established principles and guidelines for the use of transboundary rivers, as set out in agreements such as the Helsinki Convention, and the UN watercourses Convention. These documents lack provisions addressing critical regional concerns such as international state water allocation, water usage, and environmental conservation in the context of water resource shortages, a common issue in Central Asia.

Countries located downstream of a river must respond to the policies implemented by their neighboring countries, which have control over the river's transboundary flows. Uzbekistan's agricultural sector plays a substantial role in influencing the country's stance on managing shared water resources. The volume

of water entering Uzbekistan has a direct impact on the amount of cotton that is cultivated. In 2008, Uzbekistan was compelled to reduce the area under cotton cultivation due to severe water shortages. Soil degradation is also linked to the deterioration of irrigation networks. The absence of water-saving technologies and insufficient funds to upgrade irrigation systems has resulted in a water shortage for irrigation purposes [3, p.9].

2. Disagreements over the cost of using water.

Pursuant to Article 8 of the "Use Agreement", state-to-state agreements were formalized every year through Intergovernmental Protocols [15]. This procedure facilitated the establishment of an optimal operating regime for the Toktogul Reservoir within the framework of the water management year, thereby ensuring the successful progression of the vegetation period. The "Use Agreement" provisions did not align with the interests of upstream countries, failing to incentivize cooperation [Note*2]. Upstream countries wanted reimbursement for the water stored during winter, and they proposed that both upstream and downstream countries share the expenses for maintaining hydraulic infrastructure in the upper reaches of the river basin. This approach is not suitable for downstream countries, particularly Uzbekistan. According to their viewpoint, this implies treating water as a commodity. Since 2002, Uzbekistan has essentially taken no part in receiving the electricity generated by the Naryn-Syr Darya hydroelectric power station cascade in order to allow for additional water discharge. In this regard, since 2002, Uzbekistan has taken virtually no part in receiving electricity generated by the Naryn-Syr Darya hydroelectric power station cascade to ensure additional water discharge. Discharge from the Toktogul reservoir fell short of the planned volume of water. During the vegetation periods of 2004 and 2005, water was released from the Toktogul reservoir in the necessary quantities, with the Naryn-Syr Darya hydroelectric power stations also exporting electricity to the Russian Federation.

Between 2006 and 2014, Kazakhstan made a series of separate commercial purchases of Kyrgyz electricity, which were facilitated by JSC KEGOC through the conclusion of bilateral Intergovernmental Protocols. The bilateral agreements specified the quantities of irrigation water and electricity supplied by Kyrgyzstan during the growing seasons to Kazakhstan, along with the operating procedures for the Toktogul reservoir during the non-growing seasons. The Kazakh side facilitated the supply of fuel resources (coal products and fuel oil) to the Bishkek Thermal Power Plant at reduced prices in return for the electricity received from the Kyrgyz Republic during the peak growing season. The terms and cost of payment for the energy resources provided to the Kazakh side were agreed upon. Agreement was reached by the parties to split quadripartite intergovernmental agreements, which specifically involve Kyrgyzstan, Uzbekistan, Kazakhstan and Tajikistan, regarding the use of energy and water resources from the Syr Darya River for a particular year and the first quarter of the following year.

A four-party agreement was reached between Kazakhstan and Kyrgyzstan regarding the amounts of irrigation releases and electricity supplied to the Kazakh side during the growing season, along with the operational plan for the Toktogul reservoir during the upcoming off-season. Agreements with the Tajik side regarding the operation of the Kairakkum reservoir were also approved at the meeting of the ICWC. The Uzbek side was required to allow unrestricted passage through its territory of the water volumes released from the Toktogul reservoir for the Republic of Kazakhstan's needs, including the inflow of water to the Akzhar hydropost (June-August), water supply to the Kazakh section of the Dostyk canal, and water inflow to the Shardara reservoir.

Cooperation under the current arrangement has become impractical: following economic changes in Kazakhstan, coal reserves and industrial facilities have been privatized, resulting in difficulties for the Kyrgyz side in securing preferential treatment for fuel purchases; the Kyrgyz side's overestimation of electricity costs from the Naryn-Syr Darya hydroelectric power station cascade led to Kazakh energy companies declining purchases due to a lack of commercial viability; the Uzbek side's failure to meet its obligations to transport through its territory the required volumes of water from the Toktogul reservoir to meet Kazakhstan's needs; and failure to adhere to water supply schedules for the Kazakh portion of the Dostyk canal.

A mechanism was established in 2015 to govern the purchase of electricity from Tajikistan. Following this, Kazakhstan, Kyrgyzstan and Tajikistan came to an agreement on the terms for exchanging electricity between them in equal amounts. The Government of Kazakhstan passed Resolution No. 839 on October 23, 2015, which set prices for electricity with the Kyrgyz Republic and the Republic of Tajikistan, and designated the organizations accountable for signing the tripartite agreement [Note*3].

As per the mentioned resolution, Almatyenergosbyt LLP and Samga Development secured electricity from the Kyrgyz Republic, while Energopotok LLP sourced it from the Republic of Tajikistan. The electricity price was fixed at 0.0000001 US dollars per kilowatt-hour (1 kWh). Furthermore, similar to the commercial purchase of electricity from the Toktogul HPP, the organisations responsible for the parties themselves covered the costs incurred due to electricity flowing through the networks (losses) and customs duties. Uzbekistan refrained from participating in trade exchange events between 2019 and 2020. Concurrently, Uzbekistan extends material and technical aid to Tajikistan via bilateral agreements, consisting of the delivery of fuels and lubricants, along with mechanical maintenance of the supply pipes within the Kairakkum reservoir. In 2019 and 2020, an additional 635 and 600 million m3 of water was discharged from the Toktogul and Kairakkum reservoirs to meet Kazakhstan's requirements.

In reality, Kazakhstan conducted a parallel trade exchange of electricity with the Kyrgyz, while also transferring the same volume of water between two

reservoirs, resulting in double the financial expenses. An examination of the materials involved in the negotiation process revealed that the Uzbek party had a significant impact on Kazakhstan's decision to engage in a parallel trade exchange with the Tajik party. The Republic of Uzbekistan successfully maintained water supply to the irrigated lands in the Fergana Valley without increasing the water discharge from the Toktogul reservoir, achieving the goal through enhanced water intake at the Uch-Kurgan hydroelectric facility, albeit in excess of the established limit. Forcing Kazakhstan to engage in a trade exchange of electricity with the Tajik side, Uzbekistan was able to resolve the issue of irrigation water shortage at the Farkhad hydroelectric complex, where water is simultaneously drawn off to fill the Sardoba reservoir. An examination of the signed agreements and factual data regarding water discharge from the Toktogul and Kairakkum reservoirs for the period of June-August 2018-2020 revealed the ineffectiveness of the chosen cooperation mechanism for Kazakhstan, as indicated.

In 2016, the Kyrgyz Republic's budget allocated 454,934,366 tenge for electricity exchange services; by 2019, this figure had risen to 1,652,430,099 tenge [Note*3]. In the current water management circumstances, Kazakhstan has the least favorable position. Kazakhstan is compelled to deploy inefficient methods for managing its water and energy resources due to its geographical position, resulting in significant annual expenditures to implement these measures. It only receives the full amount of approved limits to which it is entitled. Kazakhstan's difficult circumstances can be attributed in part to the country's own misguided actions. Initially, Kazakhstan is without a specialized scientific research entity to investigate the national water management situation and the respective transboundary river basins. Previous research on water management, particularly in transboundary river basins, indicates that the advantages and drawbacks of undertaking water management projects need to be determined.

In 2017, the machine feed channel supplied 14.54 million m3 of water, at a total cost of 468.3 million tenge, even though the water level was at its highest point. A visual representation of this idea can be seen in the construction of a machine lift canal, namely the 20th Anniversary of Kazakhstan Independence Canal, which extends from the Shardara Reservoir to support the Dostyk Canal [16, p.58]. The construction of this canal undermined Kazakhstan's negotiating leverage in discussions about the yearly distribution of water to the Dostyk Canal during the peak agricultural season. The Uzbek side turned down an increase in the water volume supplied to the Kazakh section of the Dostyk Canal, citing a severe water shortage and the availability of an alternative water source. In Uzbekistan's Maktaraal district, rice farmers using the machine lift canal plant rice on tens of thousands of hectares every year, which makes the water shortage even worse due to an annual shortage of irrigation water. In 2017, the machine feed channel delivered 14.54 million m3 of water, with the expenditure totaling 468.3 million tenge, despite the water level being at a high point. The Dostyk canal's 2017 target was fully met, as reported by Saparova in 2023 [16, p.64].

In recent years, the inability of delegation leaders, particularly ICWC members, to grasp the repercussions of their choices on crucial issues related to cross-border rivers has led to a lack of persistence in advocating for their viewpoints during the talks. Kazakhstan's foreign water policy also lacks a coordinated approach to set medium-term and long-term goals that guarantee water security. At the 2018 IFAS summit, which has since been duplicated at various regional meetings every year, Kazakhstan launched the International Water and Energy Consortium (IWEC). There is no unified stance on this matter among the relevant parties concerned. Furthermore, in Kazakhstan, there is a legislative prohibition on importing electricity when there is an excess supply on the domestic market.

Furthermore, none of the countries within the basin are in favor of establishing the IWEC, primarily due to the fact that two basin countries, namely Kyrgyzstan and Tajikistan, are involved in the CASA-1000 project, a Central Asia - South Asia energy initiative, which is being financially supported by the USAID project. Uzbekistan is pleased overall with the current setup for utilizing its water and energy resources. Nevertheless, the idea of a consortium continues to hang in the air, and regional leaders, with the exception of the head of Turkmenistan, publish joint declarations at almost every summit about their desire to bring the matter to practical results. In our view, the slow pace of the negotiation processes is attributed, once more, to the objective disparities in the interests of the parties. International consortiums on the territories of Kyrgyzstan and Tajikistan may become more appealing only when substantial foreign investments flow in, enabling the completion of water management projects stalled since the early 1990s, with a focus on hydropower. In the published project "Water Strategy of the Kyrgyz Republic" for instance, it is evident that the country plans to maintain control over its existing water management infrastructure, which was developed through its own efforts to this point. Consortiums are best suited for their own territory as joint mechanisms for implementing construction projects and overseeing the operation of both new and unfinished complexes.

It can also should be noted that Kazakhstan and Uzbekistan would like to use consortia's organizational structures to gain access to the management of key facilities along transboundary waterways [1, p. 242]. Analysis of certain wording in the draft agreements, which have already been rejected or are still being negotiated, appears to support the latter consideration. The documents suggest that the authors have lost confidence in the existing interstate frameworks, specifically the ICWC and the basin organizations. In this context, the counter-reaction makes sense, namely the unified cooperation of all ICWC supporters, irrespective of their nationality, to prevent the formation of consortia or other rival entities. As long as regional water relations are governed by an incomplete set of vague framework agreements, and water allocation conditions are formulated by a closed group of water management agency heads within the framework of

the ICWC, any reasonable decisions will likely be viewed with skepticism. The attitude may shift if the same group of participants transitions to a meticulous enforcement of the detailed, multi-faceted agreements that have been carefully crafted to balance national, industrial, and demographic interests and have undergone all required procedures for coordination and endorsement.

Considering the current state of regional cooperation on water and energy resource use, including the Kyrgyz Republic's and the Republic of Tajikistan's obligations under the CASA-1OOO project and the Kyrgyz Republic's refusal to attend ICWC meetings since 2016, Kazakhstan needs to make efforts to create a revised version of the "Agreement on Use". The ICWC Research Center created a draft agreement in a revised form on behalf of the ICWC in 2008. The ICWC's declining activities led to an indefinite postponement of the draft agreement's consideration in subsequent years. The Kyrgyz side has also expressed interest in restarting their cooperation through the channels established by the "Agreement on Use", with a focus on enhancing these mechanisms [Note*2].

For the past twenty years, countries in the basin have prioritized a water management policy aimed at securing their national water and energy security, as stated by Pulatov [16]. This approach disregards the interdependence of the interests of all nations sharing the Syr Darya River basin, resulting in considerable expenses in the continuing use of established systems for integrated and collaborative utilization of water and energy resources. Discrepancies in the volumes of runoff were identified across all water management areas through the analysis of water intake data for individual years by countries in the basin and the operating modes of reservoirs. In this context, it is essential to establish a channel balance for the Syr Darya River basin. Failure to engage in discussions and solidify agreements at the government level between countries in the basin on the annual shared utilization of water and energy resources has become a significant factor hindering cooperation. This is due to an inconsistent approach in implementing agreements made by relevant authorities, resulting in a decline in trust between the countries.

Integrated water resource management recommendations are required in the Aral-Syr Darya basin, specifically starting with the following:

1. Organize one-on-one meetings with the countries surrounding the basin to review and discuss the draft of the 4-party Agreement regarding the use of water and energy resources in the Syr Darya River basin.

2. An interstate working group should be established to facilitate discussions and coordinate the resumption of the draft agreement. The governing body responsible for water resource usage and protection should collaborate with relevant government departments to establish a unified stance on providing electricity, materials, technical assistance, and fuel resources to the Kyrgyz Republic and the Republic of Tajikistan, encompassing aid from third-party countries, and subsequently develop guidelines for reimbursing costs and losses

incurred in conjunction with the utilisation of the basin's water and energy resources.

3. The designated authority responsible for safeguarding water resources must collaborate with relevant government agencies to initiate the development of a unified stance on providing electric power, materials, technical assistance, and fuel resources to both the Kyrgyz Republic and the Republic of Tajikistan, which may also involve sourcing from external countries. Furthermore, proposals should be formulated outlining the methodology for reimbursing costs and losses associated with the utilization of energy and water resources within the basin. The authorized body in the field of use and protection of water resources must, together with interested government agencies, begin work on developing a coordinated position on issues of supplying electricity, material and technical and fuel resources to Tajikistan and Kyrgyzstan, including from third countries, and also prepare proposals on the methodology for compensating costs and damages associated with the use of water and energy resources in the basin.

4. Viewing participation in regional energy integration as a prerequisite is crucial for the growth and development of the national economies of the respective countries in the region. The integration of energy systems, specifically the merging of disparate energy systems, should be viewed as a viable solution to potential future crises in the local fuel and energy sectors, with a priority focus placed on hydropower and streamlining the operation of reservoirs. Examining economic integration as a potential approach can shed light on viable solutions for addressing water and energy challenges. To effectively advance regional cooperation, it is essential to adhere to the international commitments that Uzbekistan and other Central Asian nations have undertaken, particularly with regards to maintaining the quality of river flow.

5. A transition to enhanced regional cooperation is necessary, grounded in international commitments that Uzbekistan and other Central Asian nations have ratified, particularly concerning the maintenance of river water quality. It is necessary to make a transition to expanding regional cooperation, based on the adopted international obligations, to which Uzbekistan and other Central Asian countries are parties, especially in matters of river flow quality.

6. Establish a working group comprising qualified hydrologists, power engineers, ecologists, and water specialists to conduct a comprehensive examination of the proposed hydropower projects in the Chirchik River watershed above the Charvak reservoir within the Republic of Uzbekistan, as well as in Tajikistan, Kyrgyzstan, and Kazakhstan. The integrity and unity of the Syr Darya River basin must be respected, with the responsible authority overseeing water management and protection ensuring that water withdrawal limits are considered and approved at ICWC meetings. Separate approval of limits for each water management district is also required.

7. The governing body responsible for managing the water use and

protection in the Syr Darya River basin must verify and ratify water withdrawal limits in river basins at the ICWC's meetings, taking into consideration the basin's integrity and unity. Approval of limits for each water management district must be secured individually.

8. To assess the mechanism for parallel trade in electric power effectively, it is essential to engage the expertise of qualified water specialists, power engineers, and economists. Kazakhstan should restart efforts in reviewing and aligning the draft agreement.

9. Currently, it can be noted that there are a minimum of two versions that are already under discussion and review. The first concept relies on the notion that achieving a compromise on contentious matters is significantly simpler when the number of individuals involved in negotiations is minimized, specifically to two, as this inherently decreases the number of opposing viewpoints.

Conclusion

Reliability of the water sector is a vital component in Central Asian countries' economic and social growth and development. The region has a vast potential for water and energy, which can be harnessed sustainably with the right combination of legal, financial, scientific, technical, and personnel backing, enabling efficient use of water resources. Rivers and streams that flow across international borders shape the water-dependent relationship between the countries in their respective drainage areas. In contemporary circumstances, a transboundary river basin is a managed water system, serving as the foundation for collaboration in multiple sectors of the economy, including water distribution, irrigation, hydropower, transportation, tourism, and additional areas. The most major rivers in Central Asian countries are shared across international borders and have implications for multiple countries. The flow of rivers in the catchments of transboundary rivers is primarily generated and employed within the geographical boundaries of the respective countries in the region. Geopolitical and natural factors objectively necessitate regional integration and the joint management of river basins according to the principles of international law. This approach serves as a means of attaining key strategic goals including the efficient utilization of water resources, their equitable allocation and enhancing the sustainability of aquatic ecosystems.

Despite recent improvements in the geopolitical conditions conducive to regional cooperation, such as Kazakhstan and the Kyrgyz Republic collaborating on the Chu Talas River, Uzbekistan becoming more supportive of the expansion of the Rogun Dam in Tajikistan, and enhanced bilateral investment discussions, for example, between Tajikistan and Uzbekistan concerning the Zarafshan River, and the Kyrgyz Republic and Uzbekistan on the Kambatara-1 hydropower project, there remain significant obstacles to establishing a cohesive water relations framework among Central Asian nations. Ineffective water management

has severe repercussions globally, with significant impacts on politics, the economy, society, and the environment for all countries within the basin, thereby undermining regional cooperation and international diplomacy. Conflict over shared water resources on such rivers can substantially decrease the potential for economic cooperation in the region - encompassing trade, transportation, and labor markets.

Situation in Central Asia, where each country in the region independently implements a water management policy within a shared water management basin is highly undesirable, as it may lead to tensions between countries in the region. Initially, this relates to the development of new water management infrastructure. On the IFAS platform, persistent consideration is given to water management issues, in addition to environmental and economic concerns, with regular ICWC meetings taking place. Concerns regarding the shared utilization of water resources are intensifying annually, with problems escalating accordingly. Coordination among public administration institutions responsible for water resources in Central Asian countries is inadequate, with minimal interaction between them, and a prevalence of self-interest among departments, which hinders effective cooperation in transboundary river basins.

In Central Asian countries, national laws lack or inadequately address regulations for managing the shared water resources and the operation of basin authorities in cross-border situations. Sharing information about both the quantity and quality of aquatic environment metrics between state and government departments is quite challenging; existing databases are strictly limited to internal use within these departments. A unified framework for managing water use and protecting water quality is lacking, which is necessary to ensure uniformity and consistency in the creation of departmental regulations and to provide timely access to regulatory and legal information for water users. Access to information about the quality of water bodies is restricted for the general public.

In this context, sustainable and safe water use in transboundary river basins should be grounded in established principles of water management, guaranteeing the coherence to development, use, and conservation within the parameters of equitable and equal access to water, as well as the preservation of river ecosystems. The current situation with water allocation appears to defy the principles of formal logic. There exists a significant issue affecting everyone, and the methods for addressing it along with the negative repercussions of procrastination are well documented. A genuine determination to reach a mutually acceptable agreement has now been expressed, in essence, all the necessary conditions for collaboration have been established. Few parties are eager to take the initiative and begin negotiations. It's essential to revisit and confirm the estimated water reserves, as recent climate changes and human activities have altered the river flow, underground water reservoirs, and return water, necessitating a new assessment. Agreement on updated water reserves will necessitate the involvement of all

regional countries, with no anticipated challenges in terms of methodology, technology, or politics. Obstacles to reaching an agreement can be anticipated during the process of evaluating the water requirements of each state and the subsequent reallocation of their percentage allocations. This topic has been clearly outlined, with opposing viewpoints already evident

REFERENCES

[1] Petrov G. Water allocation and flow regulation in the joint use of water and energy resources of transboundary rivers of Central Asia//Water Resources. -2015.- 42 (2). – P. 240-246.

[2] Buzan B., Weaver O. and de Wilde J. Security – A New Framework for Analysis. – Colorado: Lynne Rinner Publishers, Inc., Boulder, 1998. – 239 p.

[3] Zhiltcov S.S. Politics of Central Asian states: water-energy aspect//Bulletin of Russian university of friendship of nations // Series of politics. - 2016.- № 3. - P.7-18.

[4] Sievers E. Water, conflict, and regional security in Central Asia // N.Y.U. Environmental Law Journal. - 2018. - №10(3). – P. 356 – 402.

[5] Law of the Republic of Uzbekistan on Water and Water Use: approved. 1993, June 12 (with amendments and additions as of July 24, 2018). https://www.cawater-info.net/bk/water_law/pdf/uzbek1993.pdf

[6] Water Code of the Republic of Kazakhstan: approved. 2003, July 9 (with amendments and additions as of June 29, 2018). https://adilet.zan.kz/eng/docs/K030000481_

[7] Water Code of the Kyrgyz Republic: approved. 2004, December 9 (with amendments and additions as of November 23, 2017). https://www.cawater-info.net/bk/water_law/pdf/water_code_kyrgyz_en.pdf

[8] Water Code of the Republic of Tajikistan. Approved 2000, November 20 (with amendments and additions as of 04/16/2018) https://greencentralasia.org/wp-content/uploads/2024/04/New-Water-Code-Tajikistan_ENG.pdf

[9] Water Code of Turkmenistan: approved. 2016, October 15. https://cis-legislation.com/document.fwx?rgn=89883

[10] Janusz-Pawletta B., Gubaidullina M. Transboundary Water Management in Central Asia // Cahiers d'Asie centrale. – 2015. – N 25. – P. 195-215. https://journals.openedition.org/asiecentrale/3180

[11] Pikulina M.L. The problem of transbpundary water resources in Central Asia// Kazakhstan spectr. - 2013.- № 1.- P.31-42.

[12] Dukhovny V., Sokolov V. Lessons on Cooperation Building to Manage Water Conflicts in the Aral Sea Basin. – Paris: UNESCO. - 2003. https://unesdoc.unesco.org/ark:/48223/pf0000133291

[13] Kimsanov U.O. Ecological and resource-saving aspects of ensuring water and energy security of the country // Bulletin of the Technological University of Tajikistan. - 2013. - No. 1 (20). - P. 72-76

[14] Faskhutdinov G. Tajikistan Bets on “Water Diplomacy”// Deutche Welle. - 2013.- T.21

[15] Saparova A. River flow resources of Kazakhstan in the conditions of future climatic and anthropogenic changes / Proceed. of the Intern.l Sc.-Pract. Conf. of Young Scientists, held within the framework of the “International Summer School KazNARU. – 2022. – Part 1. – P. 57–69. https://doi.org/10.54668/2789-6323-2021-100-1-57-69

[16]. Pulatov Ya., Mukhabbatov H. Water resources of the Aral Sea basin, water allocation, and ways to solve water deficit // Central Asian Journal of Geographical Research. - 2021.- N 1(2). - P. 55-65.

Notes

[*1] Agreement between the Republic of Kazakhstan, the Republic of Kyrgyzstan, the Republic of Uzbekistan, the Republic of Tajikistan and Turkmenistan “On cooperation in the field of joint management of the use and protection of water resources of interstate sources.” (Alma-Ata, 1992, February 18). http://www.icwc-aral.uz/statute1.htm

[*2] Agreement between the Government of the Republic of Kazakhstan, the Government of the Kyrgyz Republic and the Government of the Republic of Uzbekistan on the use of water and energy resources of the Syr Darya River basin (Bishkek. March 17, 1998). https://cis-legislation.com/document.fwx?rgn=4041

[*3] Resolution “On establishing the price of a transaction for the exchange of electricity with the Kyrgyz Republic and the Republic of Tajikistan” dated October 23, 2015 No. 839. https://adilet.zan.kz/rus/docs/P1500000839

СЫРДАРИЯ ӨЗЕНІ АЛАБЫНДАҒЫ СУ ҚАУІПСІЗДІГІ

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Аңдатпа. Су және энергетикалық ресурстар Орталық Азия елдерінің ұлттық экономикаларының экономикалық дамуын айқындайтын аса маңызды факторлар болып табылады. Ресурстарға бай елдердегі экономикалық өсім энергетика саласымен тығыз байланысты, ол экономикалық саясатты әртараптандырудың негізгі қозғаушы күші ретінде әрекет етіп қана қоймай, географиялық-экономикалық оқшауланудың еңсерудің ресурстық базасы қызметін де атқарады. Энергетикалық кешеннің жай-күйі мен су және энергетикалық ресурстардың қолжетімділігі Орталық Азия республикаларының экономикалық дамуының біркелкі еместігін айқындайтын негізгі факторлар болып табылады. Қазақстан, Өзбекстан және Түрікменстан сияқты кейбір мемлекеттер энергияның ірі экспорттаушылары болса, Тәжікстан мен Қырғызстанды қоса алғанда, басқа елдер энергетикалық ресурстар импортына тәуелді.

Орталық Азия елдерінің ортақ су ресурстарын басқарудағы ынтымақтастыққа ұмтылысы үйлестірілмеген ұлттық стратегияларға тіреледі. Олардың қарама-қайшы мақсаттары мен су қауіпсіздігіне берілетін басымдықты Сырдарияның трансшекаралық алабы контексінде аймақтық қауіпсіздік кешені теориясы тұрғысынан түсіндіруге болады. Сырдария алабында су ресурстарын басқаруда белгілі бір ілгерілеу болғанына қарамастан, Орталық Азия мемлекеттері арасындағы ынтымақтастықты қиындататын шешілмеген мәселелер сақталуда. Зерттеуде Сырдария өзені алабындағы трансшекаралық ынтымақтастықтың ерекшеліктері қарастырылады. Сондай-ақ Сырдария өзенінің трансшекаралық алабындағы су ресурстарын басқару оған ілеспе проблемалар тұрғысынан бағаланады.

Тірек сөздер: Сырдария, трансшекаралық өзен, су ресурстарын басқару, секьюритизация, су мәселесі, қақтығыс, Орталық Азия, энергия

ВОДНАЯ БЕЗОПАСНОСТЬ В БАССЕЙНЕ СЫРДАРИИ

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Аннотация. Водные и энергетические ресурсы являются важнейшими факторами экономического развития национальных экономик стран Центральной Азии. Экономический рост в странах, богатых ресурсами, обусловлен энергетикой, которая выступает основным двигателем диверсификации экономической политики, а также служит ресурсной базой для преодоления географической экономической изоляции. Состояние энергетического комплекса и доступность водных и энергетических ресурсов являются ключевыми факторами, обусловливающими неравномерное экономическое развитие республик Центральной Азии. Некоторые государства, такие как Казахстан, Узбекистан и Туркменистан, являются крупными экспортерами энергии, в то время как другие, включая Таджикистан и Кыргызстан, зависят от импорта энергоресурсов.

Стремление стран Центральной Азии к сотрудничеству в управлении общими водными ресурсами наталкивается на нескоординированные национальные стратегии, противоречивые цели которых и приоритетность водной безопасности можно понять через призму теории регионального комплекса безопасности в контексте трансграничного бассейна Сырдарьи. Несмотря на определенный прогресс в управлении водными ресурсами в бассейне Сырдарьи, сохраняются нерешенные вопросы, затрудняющие сотрудничество между государствами Центральной Азии. В исследовании рассматриваются особенности трансграничного сотрудничества в бассейне реки Сырдарья. Управление водными ресурсами в трансграничном бассейне реки Сырдарья также оценивается с точки зрения сопутствующих проблем.

Ключевые слова: Сырдарья, трансграничная река, управление водными ресурсами, секьюритизация, водная проблема, конфликт, Центральная Азия, энергия

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