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Securitization of Water in Central Asia: Insights from the Regional Water Security Complex

Abstract: Central Asia is revealing itself as an area where the problem of access to water and its current regional dynamics are almost at a radically critical level, where the potential risk of water disputes is still one of the highest in the world. Therefore, water scarcity issues and challenges triggered by the Aral Sea syndrome, the existing water mismanagement system, infrastructural and investment projects of dams and water reservoirs (Rogun, Naryn, Kamarata, Toktogul, etc.) and their transformation towards an existential threat will be analyzed within the securitization prism through the selected speech acts. This article will contribute to developing a new analytical framework of Regional Security Complex Theory (RSCT) and the securitization theory in water stress. The efforts undertaken in this article will ultimately lead to the development of a new approach to issues of water security and hydro politics within the concept of the Regional Water Security Complex (RWSC) on the example of the Central Asian region. The main research question will be to what extent water, as an immanent feature of this complex, is politicized and securitized. An important question will also be how the formulated security language indicates the existential nature of water as a security problem in the region.

Keywords: *water security, water stress, water scarcity, Regional Water Security Complex, securitization, Central Asia*

Introduction and methodological framework

In recent decades, water security has become a vital issue of analysis and publications at the regional and global level (see Lankford et al., 2013; Pahl-Wostl et al., 2016; Brears, 2021; Biswas & Tortajada, 2022; Bhuiyan et al., 2022). One of the reasons for this situation is undoubtedly the existential nature of the threat of a lack of water in the world, which, in this article, is coined as the syndrome of a lack of access to water. The global nature of the problem is evidenced by the fact that the issue of access to water has been framed into Sustainable

Development Goals (Sustainable Development Goals, 2015)¹. Moreover, according to UN data, by 2050, at least one person in four is likely to live in a country suffering from chronic or recurrent shortages of fresh water, which accounts for just 3% of all water resources on Earth. Therefore, in 2010, the UN General Assembly adopted a resolution recognizing the right to drinkable, clean water and sanitation as an essential human right to live life (Barlow, 2012, p. 23). In this context, there are similar multifaceted problems with limited access to water in Central Asia due to anthropogenic activity during the Cold War.

The scientific aim of this article is to analyze the securitization process (Buzan et al., 1998; Buzan & Waever, 2003)² of limited access to water resources in the world, including the analysis of regions at the global level (e.g., Central Asia). The essence will be to create a new and revised division of regional security complexes (Buzan et al., 1998; Buzan & Waever, 2003)³ as Regional Water Security Complexes – RWSCs. The basis of such separated regional orders will be the securitization of limited access to water resources (see also Octavio, 2018) and tensions around existing and planned dams. The problem to be solved is to show how limited access to resources is and that physical and economic water scarcity is shifting from everyday politics and public debate to a security discourse in Central Asia. The main research question is to what extent water and its access as an immanent feature are politicized and securitized in this complex. An important question will also be how the formulated security language indicates the existential nature of water as a security problem in the region and in which security sectors are the securitization processes of limited access to water occurring in Central Asia. Thus, the research hypothesis was formulated as follows: the securitization of water in Central Asia causes new water conflicts (so-called “water disputes”) to break out as a result of problems with access to water, including current or planned dam projects and improper management of transboundary water networks. Therefore, this region is an RWSC as an integrated security problem area on the grounds of water scarcity and water stress.

My article assumes a comprehensive and comparative critical application of Regional Security Complex Theory (RSCT), the securitization theory, and the concept of security sectors (multi-sectoral approach to security) to research issues related to water resources. Currently, there are not many specialists in Poland dealing with water security issues in the field of social sciences. There are only a few current publications on water resources in

¹ It was stated as Goal 6: To ensure access to water and sanitation for all.

² “The essence of the theory is the idea that something becomes a security problem, not only because it constitutes an objective threat to the state, but also because it becomes a matter of security when the securitizing actor (often the state) argues that something is an existential threat to a reference object and must be dealt with immediately as soon as its purpose is to survive”.

³ The revision of B. Buzan and O. Waever’s concept from 2003 in the Regional Security Complex Theory comes down to the emphasis on the subject aspect – limited access to water resources – not the geographical and historical aspects

Poland. In the realm of literature, there is a lack of comprehensive regional studies on water scarcity as a significant threat to existence and a possible trigger for conflicts. In extreme cases, it can even lead to armed confrontations due to dividing the world into regions with volatile water security conditions. This division increases the likelihood of extraordinary measures being employed in relationships between states and between the state and its citizens. Therefore, the author intends to lay the foundations and initiate research directions in water security, which will be referenced in social sciences in Poland and the world to a greater extent than before.

World literature offers limited references to the use of the Copenhagen School's methodological workshop in addressing a significant existential security issue, as I propose. The current scientific elaborations, which there are only a few of, refer directly to the Regional Security Complex Theory (RSCT) assumptions. They consider water problems in hydro-political terms (emphasizing cross-border management of water resources) as hydro-political security complexes (Schulz, 1995)⁴ or use the RSCT in its original sense. Essentially, hydro-political security complexes here are still considered as a part of a larger regional structure, namely regional security complexes (Ribeiro & Sant'Anna, 2014; see also Schulz, 1995; Ohlsson, 1995; Klare, 2001; Turton, 2001; Turton, 2005; Kehl, 2011; Marton & Szálkai, 2017; Albergaria et al., 2017). All the proposed regional orders have in common the assumption that "water scarcity is a salient feature of regional political dynamics" (Turton, 2001).

Water security research is conducted worldwide in countries such as Italy, the United States, Turkey, Germany, and Malta⁵. Generally, scientific literature tends to consist of studies that are limited in scope geographically and thematically when it comes to examining water security. However, none of these studies have comprehensively adopted Regional Security Complex Theory and securitization (as my article proposed). This innovative approach, known as the RWSC, offers a holistic framework to address water security issues. The conducted research related to limited access to water is of a narrow and sectoral nature. The lack of water, mainly drinking water, can serve as a basis for speech acts of an existential nature, which, in this case, allows for applying the theory of securitization and the regional security complex theory⁶. For this purpose, the geographical and geopolitical research areas will be constructed and re-structured as Regional Water Security Complexes based on the

⁴ M. Schulz defines a hydro-political security complex as "a set of states that are geographically part-owners and technically users of shared rivers start to consider this water body to be a major security issue as a consequence".

⁵ Malta is among the three EU countries (including Cyprus and the Czech Republic) with the worst water resources per capita situation.

⁶ However, this analysis of constructed speech acts and reference objects will verify whether the securitization of water for consumption and economic purposes is accepted by the audience (states, societies, individuals) or whether it is a securitization movement of political significance.

criterion of access to water owing to a revision of the regional security complexes proposed by Buzan and Wæver in 2003.

Finally, the applicant will use the Copenhagen School approach and Critical Security studies as the project's theoretical framework. The selected research techniques and methods include an anonymous focus group of Central Asian citizens from Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan, and the analysis of available scientific literature, comparative analysis, and historical analysis. By employing the chosen methodology, it becomes feasible to understand the transformation process of water resources better and identify the specific elements involved in constructing this significant and existential threat. As was previously mentioned, the application of the critical framework of security studies, or more specifically, the analytical tools from the Copenhagen School – including the Regional Security Complex Theory, the theory of securitization, and the security sectors concept – will serve as the fundamental and integral foundation of the methodological workshop. Such an approach will allow us to approximate the transformation process of water resources in Central Asia.

The temporary or permanent lack of water access is a valuable approach within the water security regime and the Regional Water Security Complex (RWSC)

The temporary or permanent lack of water access can be a helpful approach within the water security regime and the RWSC. However, before I proceed with the exact case study, terms such as 'water security' and the 'Regional Water Security Complex' should be brought closer at this stage. The level of water security is drastically declining in many countries around the world in the Anthropocene (Crutzen & Stoermer, 2000)⁷. In this context, water security means a given population's ability to provide access to drinking water sources. In extreme situations, when the water demand exceeds the quantity available in each period, or poor quality limits its use, we are dealing with water stress (Global Water Security, 2010). Water stress is related to "per capita availability of water between 1,000 and 1,600 cubic meters/year" and "absolute water scarcity" (less than 500 cubic meters/year) (Queiroz & Tiburcio, 2017). In this context, Wouters proposed a more comprehensive definition that "goes beyond availability to issues of access. Access involves issues that range from a discussion of fundamental individual rights to national sovereignty rights over water. It also involves equity and affordability and the role of states and markets in water allocation, pricing, distribution, and regulation. Water security also implies social and political decision-making on use – the priority to be accorded to competing household, agricultural, or industrial demands on the

⁷ Paul J. Crutzen popularized the term in 2000, emphasizing human influence on the Earth's atmosphere.

resource” (Wouters, 2005). Hence, the existing definitions accentuate aspects such as limiting risks of water scarcity, human access to health, economic and political stability, access to water resources and relevant infrastructure, sustainable development, and protection of ecosystems (Gutierrez, 1999; Grey & Sadoff, 2007; Zeitoun, 2010; Lopez-Gunn et al., 2012; UN Water, 2013; Thai, 2015). Some authors even assert that water security should be integrally included in human and environmental security because it is significantly associated with food security (Lopez-Gunn et al., 2012; Thai, 2015).

The following factors affect the availability of the amount of water in each period and, consequently, the level of water security:

- economic development and increasing water demand for consumption and production;
- drought;
- climate change;
- increasing pollution of existing water sources (i.e., fertilizers, chemicals, etc.);
- unnecessary water consumption by industry;
- population growth in regions (South Asia, MENA, etc.);
- excessive use of groundwater;
- the gradual process of water privatization.

In this respect, states and the regions at risk in the world include North Africa, the Middle East, India, China, Central Asia, Chile, Australia, the USA, Spain and Italy. In this context, “data from the United Nations Educational, Scientific and Cultural Organization (UNESCO), the entity responsible for the World Water Assessment Program (WWAP), account for the existence of 263 transboundary water basins, thirteen of which are shared by five or more countries” (Queiroz & Tiburcio, 2017; UNESCO, 2003).

Water availability in terms of consumption and industry may become the basis for stimulating tensions and creating new security problems. Therefore, it is now worth referring to the Regional Water Security Complex I proposed. This complex is historically determined by Buzan and Wæver’s components to be revised by me uniquely for this purpose and additional structural elements such as:

- a) Distinct borders – borders of countries that share transboundary river basins are separated from other regions and strongly securitized by the specificity of problems related to water resources and their management or mismanagement;
- b) Water vulnerable anarchic structure and interdependent area – each complex consists of at least two or more riparian states or at least vulnerable to river streams. This is an area whose problems in the securitization process, and thus security problems, are defined around the current and potential deficit of water resources. Water scarcity can be an existential threat⁸ to individuals, countries, and entire ecosystems. These

⁸ Another factor contributing to the problems with the availability of drinking water in RWSC is, undoubtedly, the existential nature of these threats. On April 12, 2018, Zero Day came to Cape Town,

threats directly affect individual societies and can be called human securitization of water (Burgess et al., 2013). There is a deficit when this indicator reaches 1,700 m³ per inhabitant. When it decreases below 1,000 m³ per capita per year, it is regarded as ‘chronic water scarcity’ and, below 500 m³ per capita per year, ‘absolute scarcity.’ We should also address the fact that the Earth holds more than 1.3 billion cubic kilometers of water. “The oceans hold about 97%, and the remaining 3% occurs in glaciers and ice below the ground, rivers and lakes, and the atmosphere. About 70% of the world’s surface is covered by water, but only 2.5% of it is fresh, and less than 1% is easily accessible” (Pereira & Freitas, 2017; see also NOAA, 2015; FAO, 2014);

- c) Polarization and distribution of power – the regional dynamics of water interdependence consider the presence of countries that are relatively more and less favorable in terms of the availability of water resources;
- d) Social structure and water-related patterns of amity and enmity change over time and depend on the current state of transboundary water relations centered around the water resources management system. In addition to that, dam projects in Central Asia increase the potential risk of water disputes or conflicts;
- e) The Aqueduct WRI indicator is a very significant component of the RWSC. It considers the primary indicator of water stress (the amount of water discharged each year from rivers, streams, and other surface waters for domestic, agricultural, and industrial use) and the frequency of floods, droughts, and permanent or seasonal weather events in a given region. For each of these parameters, countries were given a score of 0 to 5 – the higher the score, the greater the exposure to that water-related risk. In this context, it is also helpful to apply the Water Stress Index or the so-called “Falkenmark Indicator” (Gleick, 1996). Kam Chun Ding and Ghosh define this indicator as “a ratio of a country’s water footprint to its total renewable water resources, which are a measure of both ground and surface water (blue water) and moisture stored in soil strata (green water). The higher the index, the more pressure a country faces on its water resources” (Kam Chun Ding & Ghosh, 2017).

The securitization in the Regional Water Security Complex, however, does not simply result from a situation where one actor declares an existential threat – it is only a securitization movement (Buzan et al., 1998, pp. 24–26; see also: Stoddard, 2012, pp. 343–344). Securitization only exists when a designated audience accepts a given speech act (Buzan et al., 1998; see also Munster, 2005, p. 3). According to securitization theory, a securitization movement only progresses towards total securitization when the designated recipients accept the given speech act by accepting the assertion made by powerful political elites that an existential threat exists and then approve the response with extraordinary measures (Floyd, 2010, p. 1; see also Bonacker et al., 2009, pp. 3–4).

South Africa, and the city’s water supply stopped flowing. This situation shows how a lack of water can cause a global economic and social crisis.

The existential nature of water scarcity in Central Asia. More politicized or securitized?

The Central Asian Regional Water Security Complex (CA RWSC) requires the separation of a new regional structure beyond the post-Soviet Regional Security Complex as proposed by Buzan and Wæver in 2003. The Regional Water Security Complex in Central Asia is a new regional structure. It should also be emphasized that this RWSC is currently between a conflict formation and a security regime, with a tendency to transform into a conflict formation gradually. The Central Asian region meets the criteria of being the Regional Water Security Complex. It can be defined through highly securitized and distinct borders: Russia in the north, China in the east, the Middle East – Afghanistan and Iran in the south, and the Caspian Sea in the west. This complex is entirely vulnerable and interdependent to a transboundary water management system and problems of five post-Soviet republics triggered by significantly growing water stress. Furthermore, Central Asian RWSC is considerably polarized. On the one hand, upstream river states with water potential, such as Kyrgyzstan and Tajikistan, manage the inflow of two significant rivers, the Amu Darya and Syr Darya, through a series of dam projects, among other things. On the other hand, the downstream rivers countries depend on significant water supplies due to the transformation of their economies and agriculture – which requires irrigation to grow cotton, rice, and maize. This resulted from USSR policy during the Cold War (Cieślowska & Makowska, 2012). These countries include Turkmenistan, Uzbekistan, and Kazakhstan. Such an anarchic and polarized structure is under the influence of water-oriented patterns of amity and enmity, which are determined by the post-Soviet legacy, Central Asian regional specificity (democratic façade, new national politics, new national identity, creating new historical patterns, multi-vector politics, political and economic systems) and border disputes as a ramification of Joseph Stalin's vision to avoid the revival of a sense of regional unity. Finally, considering the Aqueduct WRI indicator, Central Asia is undoubtedly characterized by at least a medium-high level of water stress. Guided by the Water Stress Index, some RWSC countries are already approaching high water stress (i.e., below 1,700 m³ per capita per year). The situation in this regard is volatile. "Analysts predict that a moderate development scenario could move the region closer to the 'scarcity' threshold of 1,000 m³ by 2050 and conclude that achievement of the region's sustainable socio-economic development goals will be largely dependent on the state of water resources" (The Water Diplomat, 2021). The precise data can be found below in Table 1.

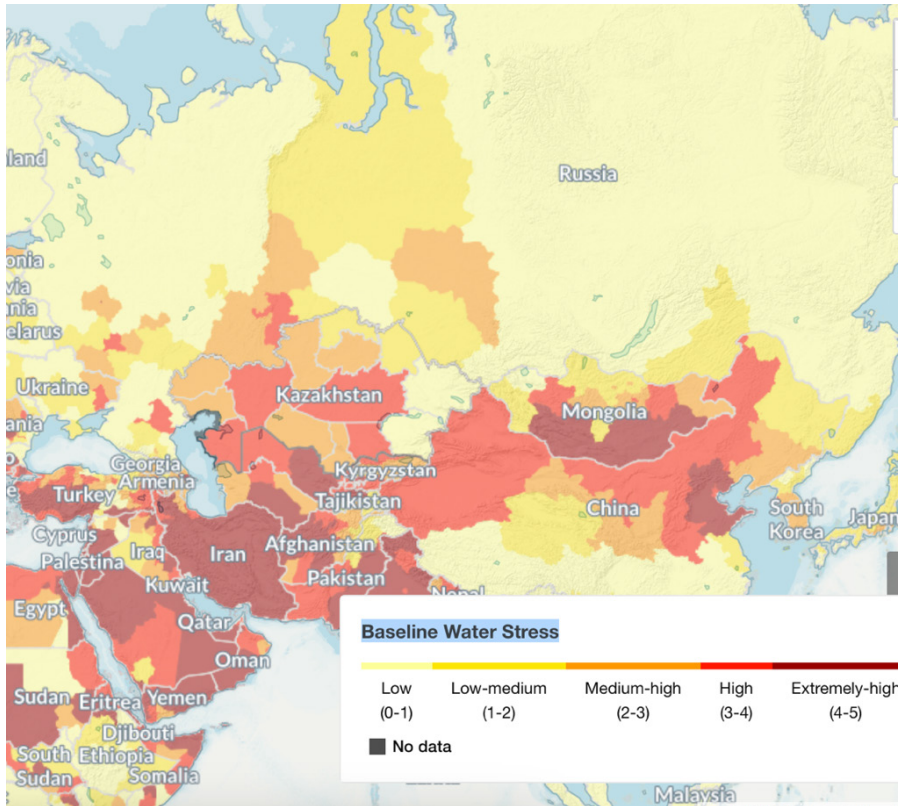
Table 1. Central Asian republics and their water stress indicators among 189 states in the world

Central Asian state	Rank	Label	A score of 0 to 5
Turkmenistan	15	Extremely high	4.04
Uzbekistan	25	High	3.82
Kyrgyzstan	38	High	3.31
Tajikistan	51	Medium-High	2.65
Kazakhstan	60	Medium-High	2.16

Source: Aqeduct. Country Rankings, 2023.

According to the World Resources Institute, four of the 33 Central Asian countries included in the forecast, such as Kyrgyzstan, Kazakhstan, Turkmenistan, and Uzbekistan, will be among the countries most affected by water scarcity in the world in 2040 (Maddocks et al., 2015).

Map 1. Central Asian Regional Water Security Complex and its water stress indicators



Source: Aqeduct. Country Rankings, 2023.

Regarding the concept of security sectors, it is important to stipulate that water and its access are not only part of the economic security sector; it can also be transferred to other sectors, such as the environment or the military. Therefore, an essential aspect of the analysis of the RWSC in Central Asia is to take into consideration the combination of military and non-military conditions of water security (i.e., access to water sources, the level of pollution, proportional distribution or disputed infrastructure projects affecting the increase and decrease in the level of water security).

The availability of water in the Regional Water Security Complex in Central Asia is becoming not only a politicized issue (water as a problem in the political debate, going beyond the scope of activity of the sectoral ministries⁹ responsible for these matters) but also a securitized one (a cross-border dispute between Uzbekistan and Kazakhstan over the future of the Aral Sea and a cross-border dispute between Uzbekistan and Tajikistan over the Rogun Dam). In the latter case, the problem of limited access to water was formulated to citizens and the international community (on the UN forum) as a potential audience, either as a condition for further survival and economic development (Uzbekistan and the Rogun Dam) or as an integral manifestation of sovereignty and free self-determination (Tajikistan and the Rogun Dam).

As my analysis of literature, speech acts, and the role and position of the actors (mainly states, political leaders, elites, and officials) involved in this regional dynamics shows, it is evident that in Central Asia, the availability of water becomes not only the subject of the political process and public debate but also an essential element of transferring water as a reference object into the discourse of security and giving it the status of an existential threat to the survival of the RWSC states in Central Asia. Such actions may potentially require extraordinary measures. Table 2 exposes some examples of this direction of security language.

⁹ For this purpose, Central Asia states created sectoral ministries responsible for water-oriented affairs, such as the Ministry of Ecology, Geology, and Natural Resources in Kazakhstan, the Ministry of Water Resources in Uzbekistan, the Ministry of Energy and Water Resources in Tajikistan; the Ministry of Agriculture, Water Resources and Regional Development in Kyrgyzstan; The Ministry of Agriculture and Environmental Protection and The State Committee for Water Management in Turkmenistan.

Table 2. Selected examples of politicization and securitization of the problem of access to water in the Central Asia Regional Water Security Complex (CA RWSC)

States of CA RWSC	Selected speech acts	Other securitizing actors of water stress in CA RWSC
Kazakhstan	<p>2022: In the address, President Tokayev highlighted the lack of water resources as “<i>a serious barrier to the sustainable economic development of the country and a matter of national security</i>” (Satubaldina, 2022).</p> <p>2022: Kazakh Energy Minister Bolat Akchulakov told journalists, „(...) the difficulty in filling the Toktogul reservoir had arisen as a result of water discharges and because ‘natural conditions’ made it impossible to collect the amount of water required” (Asia-Plus, 2022).</p>	<p>UN, UN-Water, UNESCO, UNECE, UNICEF, UNDP, UNEP, FAO, WRI, World Bank, OECD, EU, ADB, SCO, CIS, CAREC, IFAS</p>
Kyrgyzstan	<p>2021: Kyrgyz Deputy Energy Minister Taalaibek Ibrayev addresses water problems in Uzbekistan, Tajikistan, and Kazakhstan – „Expect less water next year” (Imanaliyeva, 2021).</p> <p>2020: SDG 6 Reference – General Debate 75th Session of the United Nations General Assembly: Statement by the President of the Kyrgyz Republic – Sooronbai Jeenbekov – „Climate change is reducing glaciers and water resources in Kyrgyzstan. This will lead to a shortage of clean water, a threat to the population’s health, land degradation, and economic risks. In this regard, we advocate for implementing projects to study the problem of melting glaciers and their protection. We also consider preserving mountain ecosystems in glacier formation zones extremely important” (Jeenbekov, 2020).</p>	
Tajikistan	<p>2020: Marufjon Abdujabborov – a researcher at the Centre for Strategic Studies of Tajikistan – „Only 51.4% of the country’s population have access to clean water. (...) In cities and towns, only 68% of the existing drinking water infrastructure is in working order, 7% is partially operational, and 25% is completely inoperative. As for rural areas, only 40% of the existing infrastructure is in working order, 44% is not working at full capacity, and 16% is inoperative” (Aybek, 2020).</p> <p>2010: Statement by the President of the Republic of Tajikistan – Emomali Rahmon – at the 64th Session of the UN General Assembly on the Rogun Dam – „Ensuring Tajiks energy self-sufficiency and economic development through water are existential challenges” (Rahmon, 2010).</p>	
Turkmenistan	<p>2023: Statement by Durdy Genjiyev – the Minister, Chairmen for the State Committee for Water Management of Turkmenistan – „The Turkmen government has offered new opportunities to address these issues (climate change, the rational use of water resources), such as the establishment of a center in Ashgabat to develop United Nations</p>	

States of CA RWSC	Selected speech acts	Other securitizing actors of water stress in CA RWSC
	<p>water strategies and special programs for the Aral Sea Basin. These are essential elements for water issues in Central Asia. More efforts are needed to bolster partnerships to use water resources properly and increase environmental security, calling for joint efforts to protect water resources for current and future generations” (Genjiyev, 2023).</p> <p>2022: Since tap water supplies have been rationed in Turkmenistan’s capital – Ashgabat – for the last few years, Turkmen President Serdar Berdymukhammedov „suggested the creation of a system to desalinate water from the Caspian Sea and directly deliver it via pipeline to Ashgabat” (Radio Free Europe, 2022).</p>	
Uzbekistan	<p>2023: Statement by Saida Mirziyoyeva – the Head of the Communications and Information Policy Sector of the Executive Office of the Administration of the President of Uzbekistan – „This crisis of the Aral Sea is a devastating reminder of the consequences of human environmental neglect, adding that people only understood its value when it disappeared” (Mirziyoyeva, 2023).</p> <p>2022: „According to Anvar Muhammadaliyev, chief specialist of Uzsvtaminot JSC (the Center of Hydrometeorological Service), the shortage of water in the country, in turn, leads to a shortage of clean drinking water. In the last 15 years, the annual volume of water per capita has decreased from 3,048 cubic meters to 1,589 cubic meters” (KUN.UZ, 2022).</p> <p>2012: Statement by the President of Uzbekistan – Islam Karimov, in Astana, Kazakhstan – „Uzbekistan’s President Islam Karimov has sharpened rhetoric against Kyrgyzstan and Tajikistan, warning that their efforts to build hydroelectric power plants on the Amu Darya and Syr Darya rivers could trigger war” (Nurshayeva, 2012).</p>	

Source: Own elaboration.

Moreover, the research carried out as part of the focus group shows that the indicated speech acts impact the audience in Central Asian countries (a focus group, 2023). Among the answers, some indicated solutions to problems with access to water only on the side of neighboring countries – for example, relations between Uzbekistan, Kyrgyzstan, and Tajikistan. This study also highlighted that in public perception, the areas most at risk in terms of water stress include Batken and the southern regions of Kyrgyzstan, Karakapalastan, and Uzbekistan, the area of the Aral Sea on the side of Kazakhstan and Uzbekistan, and the region of the Fergana Valley in the zone of Tajikistan, Kyrgyzstan, and Uzbekistan.

Summary

My article shows that it is reasonable to separate the new Regional Water Security Complexes by their nature and distinct character from the traditional Regional Security Complexes or Hydro-political Security Complexes proposed after the end of the Cold War. Indeed, water and its importance for survival is a beneficial and effective instrument of securitization. Its importance affects the dynamics of regional processes and facilitates the politicization and securitization of water-related problems for the region's security. As the researched speech acts showed, their message was easily reproduced and disseminated to a broad audience in many ways.

Although securitization is carried out in the undemocratic and authoritarian CA RWSC, the audience's awareness shows that the water problem is a real threat (a focus group, 2023). The process of politicization and securitization is close to the perception of the citizens of the countries of the region (a focus group, 2023) because they even potentially consider the weaponization of water – which was proposed in the speech acts of such leaders as Islam Karimov, where existing and future dam projects may become a key factor of tension. Nevertheless, the research shows that the very existential nature of the water problem and its impact on average residents significantly facilitates politicization and securitization in such a complex by mobilizing the audience of formulated speech acts. For this purpose, forums of international organizations (UN, EU, CAREC, SCO) and traditional and electronic state and non-state media are used.

Finally, the conclusions drawn and the adopted structure of the new regional orders also allow the separation of the Regional Water Security Complex in Central Asia, where factors worsening the situation in RWSC include insufficient hydro-technical and water and sewage infrastructure and inappropriate economic and environmental policy.

References:

- Albergaria de Queiroz, F., & Tiburcio, J. (2017). *The effectiveness of governance mechanisms in scenarios of water scarcity: the cases of Southern Africa Hydropolitical Complex and the Jordan Basin Hydropolitical Security Complex*. <https://www.researchgate.net/publication/321080919>
- Aqueduct. Country Rankings. <https://www.wri.org/applications/aqueduct/country-rankings/?country=KAZ>
- Aybek, A. (2020). *Tajikistan, "House of Water", Where Half of The Population Lacks Access to Water*. WaterNews. Circle Blue. <https://www.circleofblue.org/2020/world/tajikistan-house-of-water-where-half-of-the-population-lacks-access-to-water/>
- Barlow, M. (2008). *Blue Covenant: The Global Water Crisis and the Coming Battle for the Right to Water*. The New Press.
- Beek, E., & Arriens, W. L. (2014). *Water Security: Putting the Concept into Practice*. Global Water Partnership. Elanders.

- Bhuiyan, Ch., Flügel, W.-A., & Kumar Jain, Sh. (2022). *Water Security and Sustainability*. Springer.
- Biswas, A. K., & Tortajada, C. (2022). *Water Security Under Climate Change*. Springer.
- Bonacker, T., Braun, Ch., & Groth, J. (2009). The Impact of Civil Society's Human Rights Articulations on Securitization in Ethno-Political Conflicts. *A Qualitative Comparative Analysis. SHUR Working Paper Series*, 2(9), 3–4.
- Brears, R. C. (2021). *Regional Water Security*. Wiley-Blackwell.
- Burgess, J. P., Taylor, O., & Sinha, U. (2013). Human securitisation of water? A case study of the Indus Basin Waters. *Cambridge Review of International Affairs*, 29(2).
- Buzan, B., & Wæver, O. (2003). *Regions and Powers. The Structure of International Security*. Cambridge Studies in International Relations. Cambridge University Press.
- Buzan, B., Wæver, O., & de Wilde, J. (1998). *Security: a new framework for analysis*. Boulder, CO: Lynne Rienner Publishers.
- Chamberlain, J. F., & Sabatini, D. A. (2022). *Fundamentals of Water Security: Quantity, Quality, and Equity in a Changing Climate*. Wiley.
- Chartres, J., & Varma, S. (2010). *Out of Water: From Abundance to Scarcity and How to Solve the World's Water Problems*. Ft Pr.
- Cieślowska, A., & Makowska, A. (2012). *Gdzie jest ta woda? Dostęp do wody w kontekście problematyki rozwojowej regionu Azji Centralnej*. Stowarzyszenie Wchodnioeuropejskie Centrum Demokratyczne.
- Crutzen, P. J., & Stoermer, E. F. (2000). *The 'Anthropocene'*. De Gruyter.
- Dinar, S., & Dinar, A. (2016). *International Water Scarcity and Variability: Managing Resource Use Across Political Boundaries*. University of California Press.
- Ding, G. K. C., & Ghosh, S. (2017). *Sustainable Water Management – A Strategy for Maintaining Future Water Resources*. Elsevier Inc. <https://reader.elsevier.com/reader/sd/pii/B97801240954891-0171X?token=AA1ED93B231EA3167487F52EF0A4B758B958D4B9D0E2317CC0863A2A6BC380B0E45BC4C2F4BE7DA97B783601739E823C&originRegion=eu-west-1&originCreation=20230507002639>
- Eslamian, S., & Eslamian, F. A. (2016). *Handbook of Drought and Water Scarcity. Environmental Impacts and Analysis of Drought and Water Scarcity*. Routledge.
- FAO, AQUASTAT – FAO's Global Information System on Water and Agriculture. (2014). Food and Agriculture Organization. <https://www.fao.org/aquastat/en/>
- Genjiyev, D. (2023). Statement by the Minister, Chairmen for the State Committee for Water Management of Turkmenistan, Highlighting Rise in Water Scarcity, Climate-Induced Disasters, Speakers at Global Conference Call for Transformational Change to Better Manage Aqua Resources. WATER CONFERENCE. <https://press.un.org/en/2023/envdev2054.doc.htm>
- Gleick, P. H. (1996). Basic water requirements for human activities: Meeting basic needs. *Water International (IWRA)*, 21.
- Global Water Security – an engineering perspective*. (2010, April). The Royal Academy of Engineering.
- Grey, D., & Sadoff, C. W. (2007). Sink or Swim? Water security for growth and development. *Water Policy*, 9.
- Gutierrez, E. (1999). *Boiling point: issues and problems in water security and sanitation*. WaterAid Briefing Paper.
- Imanaliyeva, A. (2021). 'Expect less water next year', *Kyrgyzstan warns downstream neighbors*. Eurasianet. <https://eurasianet.org/expect-less-water-next-year-kyrgyzstan-warns-downstream-neighbors>
- Jeenbekov, S. (2020). Statement by His Excellency Mr Sooronbai Jeenbekov, President of the Kyrgyz Republic, SDG 6 Reference – General Debate 75th Session of the United Nations General Assembly. <https://sdgs.un.org/ga75-statement/kyrgyzstan>

- Kehl, J. R. (2011). Hydropolitical complexes and asymmetrical power: conflict, cooperation, and governance of international river systems. *American Sociological Association*, 17(1).
- Klare, M. T. (2001). *Resource wars: The New Landscape of global conflict*. Metropolitan Books.
- Asia-Plus. (2022). *Kyrgyzstan struggling to refill Toktogul reservoir*. <https://asiaplustj.info/en/news/centralasia/20220215/kyrgyzstan-struggling-to-refill-toktogul-reservoir>
- Lankford, B., Bakker, K., Zeitoun, M., & Conway, D. (Eds.) (2013). *Water Security Principles, Perspectives and Practices*. 1st Edition. Routledge.
- Lopez-Gunn, E., De Stefano, L., & Llamas, M. R. (2012). The role of ethics in water and food security: balancing utilitarian and intangible values. *Water Policy*, 14.
- Maddocks, A., Samuel Young, R., & Reig, P. (2015). *Ranking the World's Most Water-Stressed Countries in 2040*. World Resources Institute. <https://www.wri.org/insights/ranking-worlds-most-water-stressed-countries-2040>
- Marton, P., & Szálkai K. (2017). Against the Current: Deconstructing the Upstream/Downstream Binary in Hydropolitical Security Complexes. *New Perspectives*, 25(3). Sage Publications.
- Mason, N., & Calow, R. (2012). *Water security: from abstract concept to meaningful metrics. An initial overview of options*. Working Paper 357. ODI.
- Mirziyoyeva, S. (2023). Statement by the Head of the Communications and Information Policy Sector of the Executive Office of the Administration of the President of Uzbekistan, Highlighting Rise in Water Scarcity, Climate-Induced Disasters, Speakers at Global Conference Call for Transformational Change to Better Manage Aqua Resources. WATER CONFERENCE. <https://press.un.org/en/2023/envdev2054.doc.htm>
- The Water Diplomat. (2021). *Multiple Causes of Central Asia Water Stress. Population Growth, Mismanagement, Climate Change*. <https://www.waterdiplomat.org/story/2021/09/multiple-causes-central-asia-water-stress>
- Munster van, R. (2005). Logics of Security: The Copenhagen School, Risk Management and the War on Terror. *University of Southern Denmark, Political Science Publications*, 10.
- NOAA. (2015). *Where is all of the Earth's water?* National Oceanic and Atmospheric Administration. <https://oceanservice.noaa.gov/facts/wherewater.html>
- Nurshayeva, R. (2012). *Uzbek leader sounds warning over Central Asia water disputes*. Reuters. <https://www.reuters.com/article/centralasia-water-idUSL6E8K793I20120907>,
- Octavio, M. (2018). *Water Securitization Reconsidered: Intrastate Water Disputes in India*. The Yale Review of International Studies. <http://yris.yira.org/essays/2115>
- Ohlsson, L. (1995). *Water and security in Southern Africa*. Stockholm: Department for Natural Resources and the Environment, SIDA.
- Pahl-Wostl, C., Bhaduri, A., & Gupta, J. (2016). *Handbook on Water Security*. Edward Elgar Publishing.
- Pereira, J. C., & Freitas, M. R. (2017). Cities and Water Security in the Anthropocene: Research Challenges and Opportunities for International Relations. *Contexto Internacional*, 39(3).
- Rahmon, E. (2010). Statement by the President of the Republic of Tajikistan at the 64th Session of the United Nations General Assembly, New York.
- Ravnborg, H. M. (2016). *Territories of water (in)security: The political economy of water governance reform for irrigation and its implications for territorial inequality*. Territorial Cohesion for Development Working Group. Document No. 197, Rimisp.
- Ribeiro, W. C., & Sant'Anna, F. M. (2014). Water security and interstate conflict and cooperation. *Documents d'Anàlisi Geogràfica*, 60(3).
- Satubaldina, A. (2022, September 15). *Water issues need urgent action in Kazakhstan and Central*

- Asia. Kazinform. https://www.inform.kz/en/water-issues-need-urgent-action-in-kazakhstan-and-central-asia_a3979238
- Schulz, M. (1995). Turkey, Syria, and Iraq: A hydropolitical security complex. In L. Ohlsson (Ed.), *Hydropolitics: Conflicts over water as a development constraint*. Zed Books.
- Stoddard, E. (2012). A shared vision of energy risk? Energy securitization and company perceptions of risk in the EU. *Journal of Contemporary European Research*, 8(3), 343–344.
- Sustainable Development Goals: Do you know all 17 SDGs? United Nations. Department of Economic and Social Affairs. Sustainable Development. <https://sdgs.un.org/goals>
- Radio Free Europe. (2022). *Tap Water Rationed in Turkmen Capital; President Looks Toward Caspian Sea For Supplies*. RFE/RLs Turkmen Service. <https://www.rferl.org/a/ashgabat-tap-water-rationing-water-shortage-caspian-sea/31892322.html>
- Thai, T. V. (2015). ASEAN-Japan Cooperation to Enhance Food and Water Security. In R. Sukma, & Y. Soeya (Eds.), *Navigating Change: ASEAN-Japan Strategic Partnership in East Asia and in Global Governance*. Japan Center for International Exchange.
- The focus group, the anonymous study based on interviews and research questionnaires in cooperation with citizens from Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. (2023).
- Trondalen, J. M. (2009). *Climate Changes, Water Security and Possible Remedies for the Middle East*. The United Nations Water Development Report 3. Water in a Changing World. UNESCO.
- Turton, A. (2005). *Basins at Risk in the Southern African Hydropolitical Complex?* Workshop on the Management of International Rivers and Lakes. Third World Centre for Water Management.
- Turton, A. (2001). *Hydropolitics and Security Complex Theory: An African Perspective*. Paper presented at the 4th Pan-European International Relations Conference. University of Kent, Canterbury (UK): 8–10 September.
- UN Water. (2013). *Water Security, and the Global Agenda: A UN Analytical Brief*. United Nations University. http://www.unwater.org/UNW_ABWS_launch.html
- UNESCO. (2003). *Water for people, water for life: UN World Water Development Report*.
- Wouters, P. (2005). Water Security: What Role for International Water Law? In F. Dodds, & T. Pippard (Eds.), *Human and Environmental Security: An Agenda for Change*. Earthscan.
- Zeitoun, M. (2010). *Transboundary Aquifers and International Law: The Experience of the Guarani Aquifer System*. University of Surrey.