

TRANSBOUNDARY WATER RESOURCES MANAGEMENT IN CENTRAL ASIA AND ITS ROLE IN THE EMERGENCE OF CONFLICTS AFFECTING REGIONAL STABILITY



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Abstract: This paper draws from the situation of imbalance in the use of water resources among the Central Asian States, in a context marked by a deep dichotomy between two competing uses of water -irrigation and the production of hydroelectric energy. From the perspective of water resources management, the hydrographic and geopolitical complexity of the region is unquestionable and has been found in the cause of several interstate conflicts, which are frequently aggravated by important environmental challenges. From there, this paper discusses the adequacy of the international regulatory framework to guarantee the sustainable governance of water resources in the region. The impact of multilateral conventions in the region is analysed, as well as the development of a series of bilateral agreements that have actually maintained the status quo. This situation has worsened due to the low consistency and effectiveness of the regional institutions created by these same agreements. From a regional perspective, the situation in the countries of Central Asia offers an exceptional case for analysis. It is an area with significant security risks due to the widespread lack of governance over the use of water resources, which are unevenly distributed between the Central Asian States, and have undergone alarming environmental degradation in recent years. Although this situation could represent a major opportunity for the development of interstate cooperation, the upshot will depend to a large extent on the capacity of political institutions in the region to manage these resources in a way that is both environmentally and politically sustainable.

Keywords: Central Asia, international waters, international security, energy.

Resumen: Este trabajo parte de la situación de desequilibrio en el uso de los recursos hídricos entre los Estados de Asia Central, en un contexto marcado por una profunda dicotomía entre dos usos competitivos del agua: el riego y la producción de energía hidroeléctrica. Desde la perspectiva de la gestión de los recursos hídricos, la complejidad hidrográfica y geopolítica de la región es incuestionable y constituye de hecho, la causa de varios conflictos interestatales que, con frecuencia, se ven agravados por importantes desafíos ambientales. A partir de ahí, el trabajo analiza la idoneidad del marco jurídico internacional para garantizar la gobernanza sostenible de los recursos hídricos en la región. Se analiza el impacto de los convenios multilaterales en la región, así como el desarrollo de una serie de acuerdos

bilaterales que, en esencia, se han limitado a mantener el status quo. Esta situación se agudiza debido a la poca consolidación y efectividad de las instituciones regionales creadas por estos mismos acuerdos. Desde una perspectiva regional, la situación en los países de Asia Central ofrece un caso excepcional para el análisis. Es un área con importantes riesgos securitarios debido a la debilidad generalizada de los mecanismos de gobernanza sobre el uso de los recursos hídricos, distribuidos de manera desigual entre los Estados de Asia Central y sujetos a un proceso de degradación ambiental alarmante en los últimos años. Si bien esta situación podría presentar una gran oportunidad para el desarrollo de la cooperación interestatal, el resultado dependerá en gran medida de la capacidad de las instituciones políticas de la región para administrar estos recursos de una manera ambiental y políticamente sostenible.

Palabras clave: Asia central, aguas internacionales, seguridad internacional, energía.

I. INTRODUCTORY REMARKS

The management of transboundary river basins is an area that has traditionally underlined the link between situations of environmental stress and the emergence of new threats to international peace and security.³ This relationship, already noted in the Brundtland Commission's 1987 report⁴ and brought under the broader scope of human security a few years later by the United Nations Development Programme,⁵ is illustrated by the Central Asian countries commonly known as the "five Stans": Kazakhstan, Turkmenistan, Uzbekistan, Tajikistan and Kyrgyzstan.

From a regional perspective, the situation in the countries of Central Asia offers an exceptional case for analysis. It is an area with significant security risks⁶ due to (among other factors) the widespread lack of governance over the use of a series of natural resources, which are unevenly distributed between the States in question, and have undergone alarming environmental degradation in recent years. At the same time, this situation could represent a major opportunity for the development of interstate cooperation. The upshot will depend to a large extent on the capacity of political institutions to

manage these resources in a way that is both environmentally and politically sustainable.

II. THE MANAGEMENT OF WATER RESOURCES: A PRIORITY FOR CENTRAL ASIAN COUNTRIES

In contrast to other regions of the planet, the disagreements between the five countries of Central Asia are not the result of the scarcity or unavailability of shared water resources. Rather, they revolve around how to ensure the necessary balance for sustainable use between the easternmost part of the region (the upstream countries of Kyrgyzstan and Tajikistan), which produces 75% of the resource, and the area of the alluvial plains (the downstream countries of Uzbekistan, Turkmenistan and Kazakhstan), which consumes

almost the same amount. The situation also reflects a common problem in many parts of the planet, that is, the growing demand for water to satisfy different competing uses: in this case, agriculture, energy and food security. Those uses of water are interrelated and, in the absence of any coordination, these sectors compete fiercely with each other over access to the resource. This competition is exacerbated by the phenomenon of climate change. In this context, the transboundary basins of this region are extremely complex systems, in which economic, social, environmental and political aspects intersect and to a large extent define the relationship between the Central Asian States.

From an ecological point of view, the geographical situation of Central Asia is extremely complex. The local water system is unusual, since most of its rivers end in closed drainage basins and only the two main rivers, the Amu Darya and the Syr Darya, terminate in the Aral Sea. The Zeravshan and the Murghab rivers disappear in the deserts of Karakum and Kyzylkum, while the Ili drains into Lake Balkhash. From the environmental perspective, the region is highly sensitive to the water infrastructures along the Amu Darya and the Syr Darya, mainly located in Kyrgyzstan and Tajikistan. The complex renewable groundwater resources in the Aral Sea Basin also need to be taken into account. There are at least four primary aquifers and about 340 local aquifers, with total reserves of 43.5 km³, highly affected by intensive extraction and salinization.⁷

Kyrgyzstan, Uzbekistan, Tajikistan and Kazakhstan share the Syr Darya river basin. This river is 3,019 km long, with a basin of 219,000 km² and an annual flow of 37.2 km³. Throughout its basin, where there are five large reservoirs, 80% of the territory is still irrigated land.⁸ The irrigation system covers 300,000 ha in Tajikistan,⁹ 1,021,000 ha in Kyrgyzstan,¹⁰ 1,350,000 ha in Kazakhstan¹¹ (but the government plans to increase the irrigated land area to 3,500,000 ha),¹² and 1,900,000 ha in Uzbekistan.¹³ Along with Afghanistan and Iran, Tajikistan, Turkmenistan, Uzbekistan, Kazakhstan and Kyrgyzstan also share the Amu Darya basin, which has more than 35 artificial reservoirs along its course. The Amu Darya is 2,540 km long, with a basin of 309,000

km² and an annual flow of 73.6 km³.¹⁴ The irrigation system in the Amu Darya basin covers 469,000 ha in Tajikistan,¹⁵ 2,000,000 ha in Turkmenistan¹⁶ and 2,321,000 ha in Uzbekistan.¹⁷

In total figures,¹⁸ of about 770,000 ha of irrigated land in Tajikistan, approximately 400,000 ha are served by gravity irrigation,¹⁹ while there are about 384 pumping stations.²⁰ In Uzbekistan, the irrigation system covers 4,300,000 ha with 1,600 pumping stations and 140,000 km of collectors, the use of water in the agricultural sector counting for around 90% of total consumption.²¹ In Kazakhstan agriculture is still the largest user of water resources (70% to 100% depending on the year),²² with around 1,283 pumping stations. In Turkmenistan almost 90% of water resources are used for the irrigation of arable lands, with 16 reservoirs for irrigation purposes alone.²³ Water is still crucial in Kyrgyzstan for irrigation purposes for about 1,020,000 ha, which consume 93% of the water used.²⁴ As a result, both basins today present major ecological deterioration and have already suffered reductions in water availability of 30% and 40% respectively. The situation is especially serious in the Ferghana Valley, whose waters and land Kyrgyz and Uzbeks dispute.

In the 1960s, the indiscriminate consumption of water for agriculture and above all for cotton production and cereal crops in Uzbekistan and Turkmenistan through large-scale irrigation systems caused the drying of the Aral Sea, one of the essential elements for the maintenance and regulation of the natural and climatic balance of the region. This situation, added to the absence of crop rotation and the inadequate maintenance of the channel systems, eventually led to a major alteration of the water balance, which culminated in the 1990s with the transformation of 95% of the wetlands into desert. Since then, the Aral Sea has been biologically dead; more than 40,000 km² of its bed is uncovered, forming vast plains of salts contaminated by pesticides, which the wind can transport over distances of up to 250 km. This has caused an irreversible loss of biodiversity and has ultimately led to the desertification of more than half of the region, a process which only adds to the other dramatic environmental challenges in the area such as waste management, the abandonment of old nuclear sites and uranium mines, and air pollution²⁵.

1. HYDROGRAPHY AND GEOPOLITICS IN CENTRAL ASIA. THE EMERGENCE OF INTERSTATE CONFLICTS OVER SHARED WATER RESOURCES

From the perspective of the management of water resources, the hydrographic and geopolitical complexity of the area is evident.²⁶ The three

downstream States have large reserves of gas, oil and uranium, but are in dire need of water because they consume large quantities in crop irrigation.²⁷ By contrast, the two upstream States, Kyrgyzstan and Tajikistan, in addition to being extremely poor, have no gas or oil and suffer a major energy deficit; however, they have significant water reserves and a high capacity for the production of hydroelectric energy.²⁸

During the Soviet period, the management of the region's water resources was traditionally regarded as a purely technical problem, and its complex political consequences were not discussed. The hydraulic infrastructures built in this period were historically conditioned to the sole objective of irrigating as much land in the region as possible. Under the framework of centralized management from Moscow, this distribution was carried out in the 1980s through a series of protocols that allocated the flows of the Amu Darya and the Syr Darya to the five Soviet States.²⁹

The dams and reservoirs located upstream were used to meet the demand for water in Kazakhstan, Uzbekistan and Turkmenistan, which were expected to provide raw materials to the old USSR. Today, Kyrgyzstan and Tajikistan consider that the current system of allocation of water resources is inequitable and harmful because it does not allow them to develop an irrigation

system inside their territory capable of guaranteeing food security, or to use the hydroelectric infrastructures in an optimal manner for energy production. Although markedly asymmetrical, this allocation remains in place thirty years later³⁰ and has become a source of major tensions between the five Central Asian States. The situation is aggravated by the persistence of dominant political and economic clans and widespread corruption at the various levels of decision-making in a group of countries which rank 124th (Kazakhstan),

132nd (Kyrgyzstan), 152nd (Tajikistan), 161st (Turkmenistan) and 158th (Uzbekistan) in the list of 180 States included in the 2018 Corruption Perceptions Index.³¹

The main risk today remains the conflict of interests between downstream and upstream countries with respect to the use of water resources and the allocation of flows. The upstream countries need water during the winter to produce electricity, while the downstream countries need it to irrigate croplands during the summer. In practice, the downstream States' need for water for irrigation during the summer months is not met, because the upstream States have less need for energy and so release minimal flows from the reservoirs. During the winter, the downstream countries have very little need for water, but they often suffer from floods and other adverse events caused by the release of large amounts of water from the reservoirs in the upstream States, which need this water to satisfy their high energy demand at this time of year. Historically this situation has generated a series of conflicts³² that

remain unresolved today and have a clear impact on the balance of power among the countries of Central Asia.³³

In general, tensions have run high among the populations of the Fergana Valley, which, in addition to Uzbekistan, extends to Kyrgyzstan and Tajikistan. The valley is the meeting point of the three countries and the most densely populated region of Central Asia, where claims about land rights and water resources generate frequent border incidents. The ethnic conflicts between the two States, which date back to 1990, are constant, particularly at the Uzbek enclaves of Shon and Shohimardon, located in Kyrgyzstan, and at the Kyrgyz enclave of Barack located in Uzbekistan; they reached their climax in June 2010, when more than 400 people were killed in the city of Osh in violent clashes between Uzbeks and Kyrgyz.³⁴

The Toktogul dam, which is located in Kyrgyzstan and provides almost 90% of the country's electricity, has been a major flashpoint. Kyrgyzstan's management of the dam has led to clashes with Uzbekistan on several occasions, the last in March 2016 with the stationing of Uzbek troops along its border with Kyrgyzstan. The construction of the Kambarata-3 hydroelectric plant on the River Naryn, a tributary of the Syr Darya in Kyrgyzstan, has added fuel to the fire, as it will give Kyrgyzstan a significant advantage in its

dealings with Uzbekistan; the Uzbeks are strongly opposed to this project because it will limit the flow of water that is essential for the irrigation of their cotton fields.³⁵

Another site where the management of the water resources is a particularly delicate issue is the Rogun dam on the River Vakhsh in Tajikistan. The construction of the dam began in 1982 but, with the collapse of the USSR and the civil war in Tajikistan, it was suspended in 1991. Construction plans were resumed in 2004 following President Putin's visit to Dushanbe, but were cancelled once again in 2007 due to lack of funds and the strained relations with Uzbekistan until the death of Uzbek President Karimov in 2016. The dam currently produces 40% of Tajikistan's electricity and accounts for almost half of the country's foreign exchange earnings. When it is fully operational, Tajikistan will be able to control the flow of water to Uzbekistan, but Uzbekistan will continue to control almost all the transport and energy ne-

networks connected to Tajikistan. In response to the reactivation of the project, Uzbekistan, which continues to be Tajikistan's main gas supplier, periodically suspends gas distribution to its neighbour.³⁶

Among the downstream countries, relations between Turkmenistan and Uzbekistan remain particularly fraught because of the Karakum Canal, built in the 1950s by the Soviets, and the opening of the "Golden Age" reservoir in 2009, both of them on Turkmen soil. In addition to the environmental risk posed by the evaporation of water on a vast scale in an extremely arid climate, for years Uzbekistan has protested about the action of the Turkmen government in diverting and pumping water from the Amu Darya to these hydraulic infrastructures, accusing it of repeatedly failing to comply with the regulations for the distribution and allocation of water in the area.³⁷

Situations of potential conflict are not limited to these five States. Often, neighbouring countries are involved.³⁸ Following the sale of energy by Uzbekistan to Afghanistan in 2009, Tajikistan and Kyrgyzstan began to suffer chronic gas cuts that left their populations without gas supplies in the face of winter frosts and also slowed down the country's economic output. In response, Tajikistan and Kyrgyzstan decided to devote more water to the production of electricity for the winter, reducing the water supply available for irrigation in Kazakhstan and Uzbekistan. To the west, there have also been conflicts in the Caspian Sea basin, which Kazakhstan and Turkmenistan border along with Azerbaijan, Iran and the Russian Federation. Until the 1990s, the former USSR exerted tight control over what it traditionally considered its "Turkestan". Since then, this region has become a kind of no-man's-land in which the Russian Federation continues to control the logistical network of roads, railways, and oil and gas pipelines (as well as military installations) and maintains the region's countries to a large extent as dependent States. To complete this picture, Kazakhstan, Kyrgyzstan and Tajikistan also share a border to the east with China, a country that in turn is home to a large part of the ethnic population of these three countries. China is capitalizing on its geostrategic advantage in the region to further the construction of the Silk Road Economic Belt (SREB) and has made significant investments in large-scale civil infrastructure projects in exchange for a share of the Central Asian energy market. One of the main sources of tension is now on its border with Kazakhstan, which has repeatedly contested Chinese projects to divert the flow of two rivers, the Irtysh (an essential source of drinking water for Astana, the Kazakh capital) and the Ili (which feeds Lake Balkhash) in order to supply water for its province of Xinjiang.³⁹

2. THE MAIN ENVIRONMENTAL CHALLENGES IN THE MANAGEMENT OF SHARED WATER RESOURCES IN CENTRAL ASIA

The Central Asian region faces several essential environmental challenges in terms of water resources management. On the one hand, the agricultural sector accounts for a significant segment of the GDP of these countries and employs a large number of people. In Kazakhstan, with a population of

18.27 million inhabitants, agriculture accounts only for 4.3% of GDP despite huge agricultural potential and employs 15.13% of the population.⁴⁰ Uzbekistan is the most populous state in the region, with around 32.95 million

inhabitants. It obtains 28.79% of its GDP from agriculture (mainly cotton production) which employs 33.36% of the population.⁴¹ In Turkmenistan, with less than 6 million inhabitants, 80% of the territory is now desert; even so, 9.3% of its GDP continues to be derived directly from agriculture, which employs 22.76% of the population.⁴² Tajikistan has around 9.10 million inhabitants, of whom more than 51% live in rural areas and work in agriculture, and obtains the 21.21% of its GDP from agriculture.⁴³ In Kyrgyzstan, with a

population of 6 million inhabitants, 26.51% of the population is engaged in agriculture, which accounts for 11.64% of its GDP.⁴⁴

However, downstream countries depend on the water policies of their upstream neighbours and have a water dependency high ratio (Kazakhstan: 31%, Uzbekistan: 77% and Turkmenistan: 97%) and consumption in irrigation and demand for water either for direct consumption or for food production is increasing rapidly, especially in the areas downstream of the Amu Darya due to population growth.⁴⁵ At the same time, the states of Central Asia have a ratio of water use per capita that is much less efficient than other countries with the same level of human development.⁴⁶ This waste of water at all levels of usage can be explained not only by the deterioration and technological shortcomings of the supply systems, but also in part by the low cost of water.⁴⁷ All this means that the water-energy nexus is crucial in the region and influences decisions regarding the value of water and the adaptation of the region to climate change, thus affecting national security, regional stability and economic growth at one and the same time.

Although the nature and the extent of exposure to climate change varies according to country, the phenomenon poses a significant threat to the region as a whole. With a projected rise in temperature of + 1.6° to + 2.6° by the middle of the century, with fewer days of frost and more heat waves, the melting of glaciers in Kyrgyzstan and Tajikistan (which currently contribute

between 10% and 20% of the runoff of the region's rivers, and up to 70% during the dry season) is bound to intensify.⁴⁸ In parallel, the increase in temperature is likely to raise the demand for irrigation and electricity, in a region whose energy production is still based on the large reserves of coal, gas and oil in Kazakhstan, Turkmenistan and Uzbekistan. To make matters worse, Central Asia is also extremely vulnerable to natural disasters, which will also increase as a consequence of climate change – and for which the governments of the Central Asian countries are notably underprepared.

The environmental effects of this situation should not be underestimated. The unsustainable water management in the recent past has contributed to the disappearance of the Aral Sea; what was once the fourth largest lake in the world now holds some 27,216 km² of water, down from 68,042 km² a few decades ago. Of the 178 species that originally inhabited the Aral region, fewer than forty survive today. The increase in temperatures will worsen this situation since salinization, fertilizers, agrochemicals and uranium residues seriously affect the quality of its waters. In addition, the Amu Darya and the Syr Darya accumulate agricultural runoff such as pesticides, fertilizers, industrial waste and other pollutants that can cause serious health problems for the population downstream, along with the untreated waste from the populations along its course. The presence of low-level radioactive contamination caused by uranium

mining and waste in Kyrgyzstan, Tajikistan and Uzbekistan, abandoned after the breakup of the former USSR, poses another grave problem.⁴⁹

III. AN UNSTATISFACTORY REGULATION AND A WEAKENED INSTITUTIONAL FRAMEWORK CHALLENGING THE SUSTAINABLE MANAGEMENT OF SHARED WATER RESOURCES

Contemporary international law has developed and codified the obligations of States that share international watercourses, and imposes on them the duty to cooperate with each other via the drawing up of international agreements.

The basin of the Aral Sea comprises mainly the hydrographic basins of the Sir Darya and the Amu Darya. These watersheds, with all their tributaries, extend for more than 500,000 km² throughout the five States of the region, though some tributaries and part of the Amu Darya basin are located in Afghanistan and Iran. The demise of the former USSR introduced an international dimension that had not previously existed and has obliged the Central Asian States to resort to international cooperation in order to manage and decide on the different uses of shared water resources. In this regard, the principles that underpin the main international standards in the field of international watercourses must also be the basis for action and cooperation among these countries.

However, the shift from a strictly national regulatory framework to a multilateral one does not seem to have aided the adoption of sustainable management measures; nor has it helped to reduce interstate tensions.⁵⁰ The lack of political will on the part of these States to create an effective cooperation framework, the scarce economic and financial resources, the limited technical capacities for resource management and the low participation of the citizenry are additional challenges. The present circumstances have reduced the possibilities of a joint approach to water management, at least in the short term, and the geopolitical and economic interests of each of the five States continue to prevail in terms of the priorities they set for its exploitation. In addition, the absence of an effective legal framework on which to base interstate cooperation, which is absolutely necessary for the future, only highlights the

inability of the political authorities to effectively integrate the management of transboundary water resources at the regional level.

1. THE APPLICATION OF UNIVERSAL CONVENTIONS TO CENTRAL ASIA AND THE ADOPTION OF REGIONAL OR BILATERAL AGREEMENTS BETWEEN CENTRAL ASIAN STATES

At an international level, the frame of reference for the management of shared watercourses in Central Asia should be the two main conventions that cover the matter, that is, the Convention on the Protection and Use of Watercourses, Transboundary and International Lakes adopted on 17 March 1992 by the United Nations Economic Commission for Europe (UNECE), in force since 1996,⁵¹ and the Convention on the Law of Non-Navigational Uses of International Watercourses adopted in New York on 21 May 1997, in force

since 2014.⁵² Both texts define the rights and obligations of downstream and upstream States⁵³ and should provide an answer to the issues raised by the joint management of the Aral Sea basin and its main tributary rivers, the Amu Darya and the Syr Darya.

On the one hand, the first of these treaties is designed to facilitate cross-border cooperation through the establishment of a suitable legal basis and an active institutional framework in the region⁵⁴. By virtue of the amendment in 2003 (in force since 2013) it extended its scope to all UN member States,⁵⁵ although this expansion did not become effective until 2018 with the ratifications of the treaty by Chad and Senegal.⁵⁶ Its priority objective is to protect and guarantee the quantity, quality and sustainable use of transboundary water resources, facilitating international cooperation through the implementation of principles of prevention and the reasonable and equitable use of water. Particularly relevant in the context of the Central Asian region are the general obligations of the prevention, control and reduction of transboundary impacts; ensuring that transboundary waters are reasonably and equitably used; and cooperation through the establishment of agreements and joint institutions. Also important are the references that the Convention makes to the obligation of the exchange of information and consultation, as well as to monitor and jointly assess the state of the waters, and the obligation to conclude specific agreements and establish joint cooperation units. On the other hand, the 1997 United Nations Convention is based on three pillars: the principle of prevention, the principle of the reasonable and equitable use of water resources, and the principle of cooperation. In particular, in addition to establishing the obligation of States to protect and preserve the ecosystems of international watercourses and in order to prevent, reduce and control pollution and to avoid significant damage to the territory of other States, the Convention defines the parameters that constitute this fair and reasonable use of international water courses: geographical, hydrographic, climatic, and ecological conditions; socioeconomic conditions; the population; the effects of the use of the watercourse in one State on other States; and the conser-

vation, protection and economy of use of the resource.⁵⁷ It is a model for later agreements both in general and specifically for agreements concluded by watercourse States, and provides a universal framework for negotiation.

However, Kazakhstan, Turkmenistan, Uzbekistan, Tajikistan and Kyrgyzstan have shown little commitment to the development of these environmental regimes, and their reluctance is a clear indicator of the length of the road ahead. Although these States responded promptly and positively regarding their participation in some of the main environmental treaties,⁵⁸ they have been much more reticent in relation to international instruments for the protection of water resources, which undoubtedly shows how political concerns shape and influence the position of the parties as far as water management is concerned.⁵⁹ For example, the 1992 Convention was only ratified by Kazakhstan on 11 January 2001, by Uzbekistan on 4 September 2007 and by Turkmenistan on 22 August 2012.⁶⁰ No State in the region has signed or ratified any of its protocols or the 2004 amendment, and only Uz-

zbekistan has ratified the 2003 amendment. With respect to the 1997 Convention, only Uzbekistan ratified it, on 4 September 2007,⁶¹ in what seems to be

more an internal promotion strategy than the expression of a genuine desire to cooperate in solving the water problems of the area. Another significant international treaty in this area, the Espoo Convention on the assessment of the transboundary environmental impact of 1997, was ratified only by Kazakhstan and Kyrgyzstan, on 11 January and 1 May 2001 respectively.⁶²

All Central Asian countries are participating in an increasing number of regional and bilateral agreements on the regulation of the use and protection of transboundary waters.⁶³ In practice, however, the legal framework offered by these agreements maintains the validity of the principles and the continuity of allocation quotas of the water flows established in the former Soviet model, which the five Central Asian States expressly confirmed through the Joint Declaration of 12 October 1991⁶⁴ and which has been reproduced in the various regional and bilateral agreements signed until now.

In that context, on 18 February 1992, in Almaty, the five States signed an Agreement for the joint management of the use and protection of interstate water resources,⁶⁵ applicable to the basins of the Syr Darya, the Amu Darya⁶⁶

as well as to the Aral Sea. The Agreement created the Interstate Committee for Water Coordination (ICWC) to regulate the management of these water resources. Under this Agreement, the States undertook to refrain from carrying out any activity in their territory that might entail a deviation from the distribution of agreed quotas or produce an increase in water pollution that might affect the interests of, or cause damage to, the other States. This prevents, for example, upstream States from unilaterally cutting off the flow of water to the downstream States in the winter periods, an obligation that has been systematically breached. The Agreement pays special attention to, but does not solve, the situations in which the availability of the resource varies according to the season or climate, since the only provision it includes establishes that, in extremely dry years, measures may be taken regarding the supply of water to the regions particularly affected by drought.

In 1993, another Agreement was signed in order to find a joint response to the Aral Sea crisis.⁶⁷ It established various measures for the conservation of the basin's limited water and land resources, among them the guarantee of a sufficient volume of water in the Aral Sea to preserve environmentally acceptable levels and to restore the balance of the ecosystem in the region. The Agreement also created the Interstate Council for the Aral Sea (ICAS, later the IFAS) and the Interstate Commission for Sustainable Development (ICSD), in accordance with principle 2 of the Declaration of Almaty of 1992. At regional level, the Agreement of 17 March 1998 on the use of water and energy resources of the Syr Darya basin,⁶⁸ signed by Kazakhstan, Uzbekistan and Kyrgyzstan, is particularly interesting. The Agreement regulates decision-making regarding the supply of water for irrigation, discharges from

reservoirs, energy generation and transport, and compensation in case of energy losses. First, it prohibits parties from taking measures that disrupt the agreed regime on the allocation of water and energy production. Next, it establishes mechanisms for the redistribution of the energy generated by Kyrgyzstan and sent to Kazakhstan and Uzbekistan, and the compensation mechanisms. It specifies the transfer to both States from Kyrgyzstan of the extra electricity generated during the seasons in which the river floods, and the

compensation in terms of gas and oil equivalent to this additional energy bonus. It is illustrative to see how Article 4 of the Agreement provides compensation for water from the Toktogul dam in the summer period:

The Naryn-Syr Darya excess power emanating from the release mode utilized on the Naryn-Syr Darya during the growing season, and the Toktogul multi-year regulated flows that exceed the needs of the Kyrgyz Republic, will be transferred to the republics of Kazakhstan and Uzbekistan in equal portions. Compensation shall be made in equivalent amounts of energy resources, such as coal, gas, electricity and fuel oil, and the rendering of other types of products (labour, services), or in monetary terms as agreed upon, for annual and multi-year water irrigation storage in the reservoirs.

However, the success of the Agreement has been limited; it has not served to alleviate the tension regarding the use of water, since it does not provide any mechanisms that guarantee its application. The hydrographic conditions, and in particular the changes in the rain regimes, have also prevented 100% compliance with the water transfers initially planned and, consequently, have affected oil and gas transfers because the Agreement does not include mechanisms to compensate the parties in especially dry or especially rainy years. In the years of increased rainfall, downstream States have asked for reductions in the water they receive during the summer season, which in turn would enable them to reduce the supply of gas and oil to Kyrgyzstan during the winter months. On the other hand, in the dry years, the downstream States have claimed a larger volume of water during the summer than originally planned, and are thus obliged to make additional transfers of gas and oil during the winter months to Kyrgyzstan. In short, this framework agreement did not achieve one of its key objectives: namely, the sustainable exploitation of hydroelectric power plants along the course of the Naryn-Syr Darya in a way that is in the interests of all participating countries. Although

it has helped to provide a structure for water-energy exchanges between the countries of the Syr Darya basin, its implementation has amply demonstrated the limitations of these mechanisms.

A wide range of bilateral agreements have also been signed by the countries in the region. For the most part, these are agreements between upstream and downstream countries: examples are the Agreement of 16 March 2000 between Uzbekistan and Kyrgyzstan,⁶⁹ or the Agreement between Kazakhstan and Kyrgyzstan of 23 May 2000,⁷⁰ both related to the use of water and energy resources of the hydroelectric stations of the River Naryn, in the Syr Darya basin. Also, on 14 January 2000 Uzbekistan and Tajikistan signed another bilateral Agreement prohibiting both governments from adopting unilateral measures that might prevent the normal operation of industrial activity, hydraulic infrastructures, or transport and communication infrastructures.⁷¹

Agreements of this type have also been signed between the States of the alluvial plains. For example, in Chartzjou on 16 January 1996, Turkmenistan and Uzbekistan signed a specific Agreement for the management of the waters of the Amu Darya basin, ⁷² under which Uzbekistan made a rental payment to Turkmenistan in an attempt to resolve the differences regarding the use of the pumping facilities and the Tujamujun reservoir, which is located in Turkmenistan but which irrigates Uzbek territory.

One of the few agreements that has turned out to be an example of successful bilateral cooperation in the region is the Agreement signed in Astana on 21 January 2000 between Kyrgyzstan and Kazakhstan on the use of hydraulic facilities for the use of the waters of the River Chu and the River Talas.⁷³ In this Agreement, both States recognize that the exploitation of water resources and the maintenance of water infrastructures destined for interstate use should pursue mutual benefit on an equitable and reasonable basis, and for this reason they undertake to create several joint commissions “to determine the working regimes and the range of necessary expenses for exploitation and maintenance” and to carry out joint activities “to protect water management facilities of intergovernmental status and adjacent territories from adverse effects of floods, mudflows and other natural disasters”.⁷⁴ The Agreement obliges both States to share the cost of maintenance operations of the cross-border facilities, and established the joint management (and the participation of Kazakhstan) in the maintenance costs of the numerous water infrastructures in Kyrgyzstan. The Agreement highlights the creation of the joint Chu-Talas Commission, which is mentioned in the following section as a sample of good practice at institutional level.⁷⁵

In general, however, the current management model for these resources in Kazakhstan, Uzbekistan, Turkmenistan, Tajikistan and Kyrgyzstan continues to be based on an asymmetrical and inequitable design dating from the former Soviet era, adapted slightly to the priorities of the new States, which has failed to promote a coordinated and cooperative approach. The model intensifies the extreme dichotomy between the two main competing uses of water in the region, irrigation and the production of hydroelectric energy, and continues to ignore the population’s most immediate needs – namely,

the availability of drinking water and control of its quality, which are hardly mentioned at all in the debate.⁷⁶

The sustainable management of water and energy resources in the countries of Central Asia requires greater coordination and the implementation of multi-sectoral strategies through the action of regional organizations. For now, however, there is no comprehensive approach that takes into account all the technical, economic, legal and social aspects and avoids an excessive focus on specific uses of water. In this regard, the agreements adopted by the Central Asian States have not included measures to guarantee their application, but more importantly have been unable to propose new answers involving more than just the exchange of water for energy, and have limited their plans for resolving the problems of water supply to the use of ever larger infrastructures.

2. THE RELATIVE EFFECTIVENESS OF THE INTERSTATE INSTITUTIONS IN CENTRAL ASIA

Several specialized interstate bodies in the Central Asian region⁷⁷ have focused on the management of shared water resources. However, their action has been characterized by the lack of definition and duplication of objectives, the systematic failure to comply with their decisions, and the prioritization

of national interests in order to maintain particular balances of power to the detriment of broader regional interests.

The Agreement signed in Almaty in 1992 created the Interstate Committee for Water Coordination (ICWC) to promote the rational use, protection and control of transboundary waters, although its operating regulations could not be approved until 2008.⁷⁸ The ICWC was one of the first regional institutions of the post-Soviet period, but although its main aim was to replace the system inherited from the former USSR, it kept the old regime's structures in place. The main task of the ICWC today consists in the development and coordination of the use and exploitation of water resources in the Syr Darya and the Amu Darya basins; it distributes the annual allocation of water flows between the five States and supervises the operation and maintenance of the infrastructures controlled by the associations of the two river basins.

However, in common with other organizations in the region, the ICWC presents a number of significant contradictions that greatly limit its capacity, and have prevented the only entity with a truly regional scope from effectively controlling the vitally important structures of the basins.⁷⁹ On the one hand, in spite of its interstate status, it seems that its operation is largely controlled by Uzbekistan, the country where it is based and the only one that has in fact begun to transfer the national structures of transboundary water management. On the other hand, it lacks the competences to force States to comply with agreements, and the implementation of its decisions often suffers due to the absence of a solid legal basis and the lack of mechanisms to guarantee the exchange of information. In addition, its operation is overly sectorial, as it focuses on exchanges of water for energy and merely guarantees the management principles and exchange structures established in the Soviet era.

For its part, the International Fund for the Aral Sea (IFAS) is formally the only sub-regional organization where all the States in the region created after the breakup of the former USSR are represented. With an observer status at the UN since January 2009,⁸⁰ it has the specific objective of managing the regional system of improvement, monitoring and supervision of the Aral Sea basin and its tributary rivers. The origin of this organization is found in the agreements signed by the five Central Asian States on 4 January 1993 and 26 March 1993, cited above, by which the Interstate Council for the Aral Sea (ICAS) was established as an advisory body, together with an executive committee and a secretariat to manage regional programmes. Subsequently, on 20 September 1995 the Nuku Declaration on the sustainable development of the Aral Sea⁸¹ adopted a programme of specific action for the recovery of the Aral Sea and created IFAS, whose scope was initially limited to financing ICAS activities and programmes. Two years later, IFAS and ICAS merged under the Agreements signed on 27 February 1997, 20 March 1997 and 30 May 1997,⁸² and IFAS was granted international legal status.

However, as in the above case, IFAS also suffers from significant operational problems and from its limited capacity for action. This is due partly to a lack of funding, and partly to the absence of a clear mandate to supervise the multiple dimensions of a genuinely regional strategy for the management of water resources because of the overlapping of its competencies with those of the ICWC. This is reflected in their limited success in negotiating regional agreements on water and energy, and in the difficulties they encounter in forcing States to comply with the agreements in force.

Although these organizations have played an important role in water management in the region, their involvement has not brought about significant changes in the positions of the national governments. They have not managed to capitalize on the political dialogue generated so far, and they have not become consolidated as regional institutions. In practice, the current role

of IFAS seems to be restricted to developing programmes aimed to achieve minimally acceptable conditions for the maintenance of life around the Aral Sea region.

In comparison with other regional initiatives, the role of the Chu-Talas Commission⁸³ in the promotion of bilateral cooperation for the management of water resources is one of the few successful examples of collaboration in the region. Created in 2006 as part of the 2000 agreement between Kyrgyzstan and Kazakhstan (under the aegis of the UNECE) on the use of hydraulic facilities for the use of the waters of the Chu and Talas rivers,⁸⁴ the Commission holds meetings at least twice a year, alternating between the two countries. The Commission oversees the administrative and organizational management, the preparation of annual reports and the coordination of functions such as the activities of the sub-working groups. In February 2018, the establishment of this coordination structure as well as the effort of the parties and their Joint Commission allowed the first developments towards the future adoption of a Strategic Action Programme for the Chu and Talas river basins.

Its success is probably due to the large-scale involvement of international

important organizations since its early days, especially the UNECE, the United Nations Development Programme (UNDP) and the Organization for Security and Cooperation in Europe (OSCE).⁸⁵ These organizations, together with some

European countries, have supported their activities through the execution of multiple projects related to cross-border cooperation, comprehensive watershed management and the establishment of good practices in the face of water-related disasters and climate change. This has allowed the Commission to implement its plans, in particular the allocation of the water resources from the basins of the two rivers between Kazakhstan and Kyrgyzstan, the introduction of measures for the maintenance of water facilities for interstate use, and the establishment of a financing mechanism.

IV. FINAL REMARKS

The management model of water resources in Central Asian states still harks back to the Soviet era. It is asymmetrical and unbalanced, favouring the unilateral priorities of the new states while hindering the establishment of a regional focus for co-ordination. The model fosters an extreme dichotomy between the two competing uses of water in the region—irrigation and the production of hydroelectric energy—and ignores the most urgent needs of the population, such as food security, the availability of safe drinking water, and health issues. The malfunctioning of the exchanges of gas and oil for water aggravated the mistrust among the states in the region.

Thus far, the cooperation between the five countries of Central Asia has been insufficient to ensure the environmentally sustainable management of the water

resources they share. Clearly the political fragmentation of the region has had an extremely negative impact on the management of such a highly integrated ecological system. The difficulty has been compounded by the weakness of the existing international legal instruments for supporting an authentic regional policy of shared resource management and by the problems of duplication, fragmentation and inefficiency that seem endemic in the region's institutions.

What is more, the legal-institutional framework for managing the urgently needed changes in the river basins shared by these States is still insufficient and the balance of powers in the region is precarious. Unlike what happened in other regions—the Danube, the Rhine, the Mekong, or the Nile basins—the lack of leadership and political will, and the fact that water management is considered a highly sensitive domestic issue have resulted in poor water

governance which is hardly compatible with a model of equitable and reasonable use of water resources widely promoted by international agreements.

In Central Asia there is as yet no effective framework for institutional cooperation in the areas of the environment and energy resources, based on the concept of a shared watershed that considers all these issues in a multi-sectoral and comprehensive manner. For now, the creation of such a framework seems to depend on the channelling of the political will of the States towards the concerted management of the river basins that they share.

BIBLIOGRAPHICAL REFERENCES

– BAECHLER, G.- SPILLMAN, K., *Environment and Conflict Project: International project on Violence and Conflicts Caused by Environmental Degradation and Peaceful Conflict Resolution*, Center for Security Studies, 1995, pp. 1-185.

– BAKER, E., “The hydrosocial empire: The Karakum River and the Soviet conquest of Central Asia in the 20th century”, *Journal of Anthropological*, Vol. 52, 2018, pp. 123-136.

– BERNAUER, T.; SIEGFRIED, T. (2008), “Compliance and performance in international water agreements: The case of the Naryn/Syr Darya basin”, *Global Governance*, Vol. 14, 2008, pp. 479-502.

– BORTHAKUR, A., “An Analysis of the Conflict in the Ferghana Valley”, *Journal of Asian Affairs*, Vol.48, 2017, pp. 334-350.

– CAMPANER, N.-YENIKEYEFF, SH., “The Kashagan Field: A Test Case for Kazakhstan's Governance of Its Oil and Gas Sector”, *IFRI Papers*, 2008, available online at <http://www.ifri.org>.

– CAMPINS ERITJA, M. and MAÑÉ ESTRADA, A., (Ed.), *Building a Regional Framework in Central Asia: Between Cooperation and Conflict*, ICIP Research 02, Institut Català Internacional per la Pau, 2014.

– CHAZOURNEZ DE BOISSON, L., MBENGUE, M., TIGNINO, M. and SANGBANA,

R. (Eds.), *The UN Convention on the Law of the Non Navigational Uses of International Watercourses. A*

Commentary, Oxford University Press, 2018.

- DALY, J. C. K. “Central Asian Water and Russia”, *Eurasia Daily Monitor*, Vol. 5, n°113, 13/6/2008, available online at http://www.jamestown.org/programs/edm/single/?tx_tt-news%5Btt_news%5D=33718&tx_ttnews%5BbackPid%5D=166&no_cache=1.
- DINAR, S. “Scarcity and Cooperation Along International Rivers”, *Global Environmental Politics*, Vol. 9, n° 1, 2009, pp. 109-135.
- DRNAS DE CLÉMENT, Z., “Principios generales aplicables a los cursos de agua y acuíferos internacionales”, in Hinojosa, M. and Peláez, J.M. (Coord.), *Liber Amicorum profesor José Manuel Peláez Marón: Derecho Internacional y Derecho de la Unión Europea*, 2012, pp. 297-320.
- ESHCHANOV, B. et al., “Rogun Dam. Path to Energy Independence or Security Threat?”, *Sustainability*, Vol. 3, pp. 1573-1592.
- GADAEV, A. and YSAKOV, Z. “An Overview of the Aral Sea Disaster”, in Edelstein, M.- Cerny, A.-Gadaev, A. (Ed.) *Disaster by Design: The Aral Sea and its Lessons for Sustainability*, Emerald, 2012, pp. 5-15.
- GONZÁLEZ, A.- CLAUDÍN, C., *Asia Central y la seguridad energética global. Nuevos actores y dinámicas en Eurasia*, Fundació CIDOB, Barcelona 2008.
- HANKS, R., “Crisis in Kyrgyzstan: conundrums of ethnic conflict, national identity and state cohesion”, *Journal of Balkan and Near Eastern Studies*, Vol. 13, 2011, pp. 177-187.
- HOMER, TH., “On the Threshold: Environmental Changes as Causes of Conflict”, *International Security*, Vol. 16, n° 2, 1991, pp. 76-116.
- IZQUIERDO, F., “El agua como factor de hostilidad y de cooperación en el ámbito internacional” in Gutiérrez Espada, C.- Riquelme Cortado, R. - Orihuela Calatayud, E.- Sánchez Jiménez, M.A.- Cervell Hortal, M.J.- Rubio Fernández, E.M., (Coord.), *El Agua como factor de cooperación y de conflicto en las relaciones internacionales contemporáneas*, Instituto Euromediterráneo del Agua, Murcia, 2009, pp. 139-170.
- JANUSZ-PAWLETTA, B., “Current legal challenges to institutional governance of trans-boundary water resources in Central Asia and joint management arrangements”, *Environmental, Earth, Science*, Vol. 73, 2015, pp. 887-896.
- JANUSZ-PAWLETTA, B., GUBAIDULLINA, M., “Transboundary Water Management in Central Asia”, *Cahiers de l’Asie Centrale*, Vol. 25, 2015, pp. 195-215.
- KEMELOVA, D. and ZHALKUBAEV, G., “Water, Conflict, and Regional Security in Central Asia Revisited”, *New York University Environmental Law Journal*, Vol. 11, 2003, pp. 479-502.
- KHAMIDOV, M.K., “Characteristic features of integrated water resources management in the Syrdarya River Basin”, in Wouters, P.-Duchovny, V.-Allan, A. (Ed.), *Implementing Integrated Water Resources in Central Asia*, Springer, Dordrecht, 2007, pp. 25-34.
- KHAMZAYEVA, A., “Water resources management in Central Asia: Security implications and prospects for regional cooperation”, *Documentos CIDOB. Asia*, Vol. 25, 2009, pp. 9-32, p. 19.

- KUZMITS, B., “Cross-bordering Water Management in Central Asia”, Conflict Constellations and Ways to a Sustainable Resource Use”, ZEF Workig Paper series, Amu Darya Series Paper No 2, April 2006.
- LIM, M., “Is water different from biodiversity: Governance criteria for the effective management of transboundary resources”, Review of European, Comparative International Environmental Law, Vol. 23, 2014, pp. 96-110.
- MAÑÉ, A., “Territorios ricos en hidrocarburos de Asia Central ¿Países productores, enclaves exportadores o países de tránsito?”, Revista CIDOB d’Afers Internacionals, Vol. 70-71, 2005, pp. 87-113.
- MCCAFFREY, S., The Law of International Watercourses, 3rd ed., Oxford University Press, 2019, pp. 414-421.
- MEGORAN, N., “The critical geopolitics of the Uzbekistan–Kyrgyzstan Ferghana Valley boundary dispute, 1999–2000”, Political Geography, Vol. 23, 2004, pp. 731-764.
- MEGORAN, N., “The critical geopolitics of the Uzbekistan–Kyrgyzstan Ferghana Valley boundary dispute, 1999–2000”, Political Geography, Vol. 23, 2004, pp. 731-764.
- MENGA, F., “Building a nation through a dam: the case of Rogun in Tajikistan”, Nationalities Papers, Vol. 43, 2015, pp. 479-494.
- MICKLIN, PH., “Water in the Aral Sea Basin of Central Asia: Cause of Conflict or Cooperation?”, Eurasian Geography and Economics, Vol. 43, n. 7, 2002, pp. 505-528.
- MIRIMANOVA, N., “Water and Energy Disputes of Central Asia: In search of regional solutions?”, EUCAM-EU Central Asia Monitoring, February 2009, available online at [http:// www.eucentralasia.eu](http://www.eucentralasia.eu).
- MOSELLO, B., “Water in Central Asia: A Prospect of Conflict or Cooperation?”, Journal of Public and International Affairs, Vol. 19, 2008, pp. 151-174.
- MOVILLA PATEIRO, L., “La entrada en vigor de la Convención sobre el derecho de los usos de los cursos de agua internacionales para fines distintos de la navegación”, Revista Española de Derecho Internacional, Vol. 66, 2014, pp. 312-316.
- NAGHEEBY, M.- PIRI D., M.- FAURE, M., “The Legitimacy of Dam Development in International Watercourses: A Case Study of the Harirud River Basin”, Transnational Environmental Law, Vol. 8, 2019, pp. 247–278.
- O’HARA, S. and HANNAN, T., “Irrigation and Water Management in Turkmenistan: Past Systems, Present Problems and Future Scenarios.”, Europe-Asia Studies, Vol. 15, 1999, pp. 21-41.
- PEYROUSE, S., “The Hydroelectric Sector in Central Asia and the Growing Role of China”, China and Eurasia Forum Quarterly, Vol. 5, n. 2, 2007, pp. 131-148, p. 133.
- PONTE IGLESIAS, M.T., “La convención sobre el derecho de los usos de los cursos de agua internacionales para fines distintos de la navegación” in AURA, A.M (Coord.), La política comunitaria de aguas: marco de la acción estatal y autonómica: I Jornadas sobre el agua en España, cuestiones jurídicas y económicas, 2012, pp. 217-234.

- RAHAMAN, M., “Principles of Transboundary Water Resources Management and Water-related Agreements in Central Asia: An Analysis”, *International Journal of Water Resources Development*, Vol. 28, 2012, pp. 475-49.
- RASIZADE, A., “Entering the Old “Great Game” in Central Asia”, *Orbis*, Vol. 47, 2003, pp. 41-58, available online at http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6W5V-479VGG4-2&_user=145085&_coverDate=03%2F31%2F2003&_alid=1246340288&_rdoc=41&_fmt=high&_orig=mlkt&_cdi=6580&_sort=v&_st=178&docanchor=&view=c&_ct=1951&_acct=C000012098&_version=1&_urlVersion=0&_userid=145085&md5=b3312fec6a6942d7a1e7f01115a3f63b.
- RIEU-CLARKE, A. and KINNA, R., “Can two global UN water conventions effectively co-exist: Making the case for package approach to support institutional coordination”, *Review of European, Comparative International Environmental Law*, Vol. 23, 2014, pp. 15-31.
- SAINZ, N., et al., *Gobierno, regionalismo y recursos estratégicos en las repúblicas de Asia Central*, Observatorio Asia Central-Fundació CIDOB, Ponencias del Curso de verano Eurasia emergente: ¿Un nuevo ‘gran juego’ en torno a Asia Central?, Universidad Internacional Menéndez y Pelayo, Barcelona, 9 y 10 de julio de 2007, Doc_AC_CUIMPB_des08.pdf;
- SAKEIV, B., “Land and Water Management Patterns in Ferghana Valley” in Khamzayeva, A. et al, *Water Resources Management in Central Asia: Regional and International Issues at Stake* (Barcelona: CIDOB ASIA, 2009), p. 77.
- SANDOLE, D.J.D., “Central Asia: Managing the delicate balance between the “discourse of danger,” the “Great Game,” and regional problem solving”, *Communist and Post-Communist Studies*, Vol. 40, 2007, pp. 257-267, <http://www.elsevier.com/locate/postcomstud>.
- SCOVAZZI, T., “L’acqua come causa di controversie internazionale”, in Gutiérrez Espada, C.- Riquelme Cortado, R. - Orihuela Calatayud, E.- Sánchez Jiménez, M.A.- Cervell Hortal, M.J.- Rubio Fernández, E.M., (Coord.), *El Agua como factor de cooperación y de conflicto en las relaciones internacionales contemporáneas*, Instituto Euromediterráneo del Agua, Murcia, 2009, pp. 305-316.
- SIEVERS, E.W., “The Caspian, Regional Seas, and the Case for a Cultural Study of Law”, *Georgetown International Environmental Law Review*, Vol. 13, n° 2, 2001, pp. 361-415.
- SIEVERS, E.W., “Transboundary Jurisdiction and Watercourse Law: China, Kazakhstan, and the Irtysh”, *Texas International Law Journal*, Vol. 37, n° 1, 2002, pp. 1-42.
- SIEVERS, E.W., “Water, Conflict and Regional Security in Central Asia”, *New York University Environmental Law Journal*, Vol. 10, 2002, pp 356-40.
- TANZI, A., “Regional contributions to international water cooperation: The UNECE contribution”, in Boisson de Chazournes, L., Leb, Ch. And Tignio, M., *International Law and Freshwater. The Multiple Changes*, Edward Elgar, 2013, pp. 155-178.

- TORRES CAZORLA, M.I., “Otra vuelta de tuerca del Derecho Internacional para regular los cursos de agua internacionales: el Convenio de Helsinki de 17 de marzo de 1992”, *Anuario Español de Derecho Internacional*, Vol. 16, 2000, pp. 225-262.
- VARIS, O. and RAHAMAN, M.M., “The Aral Sea Keeps Drying out bit is Central Asia Short of Water?” in Rahaman, M.M.- Varis, O. (Eds.), *Central Asian Waters: Social, Economic, Environmental and Governance Puzzle* (Helsinki: Water & Development Publications, 2008), pp. 3-10.
- VEA RODRIGUEZ, L., “La opción hidráulica en Asia Central ex soviética: Perspectiva histórica y situación actual”, *Revista CIDOB d’Afers Internacionals*, n. 70-71, 2005, pp. 143-167.
- WEGERICH, K., “Hydro-hegemony in the Amu Darya basin”, *Water Policy*, Vol. 10 Supplement 2, 2008, pp. 71-88.
- WEGERICH, K., “Passing Over the Conflict. The Chu Talas Basin Agreement as a Model for Central Asia?”, in Rahaman, M.M. & Varis, O. (Eds.), *Central Asian Waters*, Helsinki University of Technology, pp. 117-131, 2008, p. 126.
- WEGERICH, K., “The New Great Game: water allocation in post-Soviet Central Asia”, *Georgetown Journal of International Affairs*, Vol. 10, n° 2, 2009, pp. 117-123.
- WOLF, A., YOFFE, S. and GIORDANO, M., “International waters: Identifying basins at risk”, *Water Policy*, Vol. 5, 2003, pp. 29-60, <http://www.environmental-expert.com/Files%5C5302%5Carticles%5C5877%5C2.pdf>.

References

- BAECHLER, G.- SPILLMAN, K., *Environment and Conflict Project: International project on Violence and Conflicts Caused by Environmental Degradation and Peaceful Conflict Resolution*, Center for Security Studies, 1995, pp. 1-185.
- BAKER, E., “The hydrosocial empire: The Karakum River and the Soviet conquest of Central Asia in the 20th century”, *Journal of Anthropological*, Vol. 52, 2018, pp. 123-136.
- BERNAUER, T.; SIEGFRIED, T. (2008), “Compliance and performance in international water agreements: The case of the Naryn/Syr Darya basin”, *Global Governance*, Vol. 14, 2008, pp. 479-502.
- BORTHAKUR, A., “An Analysis of the Conflict in the Ferghana Valley”, *Journal of Asian Affairs*, Vol.48, 2017, pp. 334-350.
- CAMPANER, N.-YENIKEYEFF, SH., “The Kashagan Field: A Test Case for Kazakhstan’s Governance of Its Oil and Gas Sector”, *IFRI Papers*, 2008, available online at <http://www.ifri.org>.
- CAMPINS ERITJA, M. and MAÑÉ ESTRADA, A., (Ed.), *Building a Regional Framework in Central Asia: Between Cooperation and Conflict*, ICIP Research 02, Institut Català Internacional per la Pau, 2014.
- CHAZOURNEZ DE BOISSON, L., MBENGUE, M., TIGNINO, M. and SANGBANA,

R. (Eds.), *The UN Convention on the Law of the Non Navigational Uses of International Watercourses*. A

Commentary, Oxford University Press, 2018.

– DALY, J. C. K. “Central Asian Water and Russia”, *Eurasia Daily Monitor*, Vol. 5, n°113, 13/6/2008, available online at http://www.jamestown.org/programs/edm/single/?tx_tt-news%5Btt_news%5D=33718&tx_ttnews%5BbackPid%5D=166&no_cache=1.

– DINAR, S. “Scarcity and Cooperation Along International Rivers”, *Global Environmental Politics*, Vol. 9, n° 1, 2009, pp. 109-135.

– DRNAS DE CLÉMENT, Z., “Principios generales aplicables a los cursos de agua y acuíferos internacionales”, in Hinojosa, M. and Peláez, J.M. (Coord.), *Liber Amicorum profesor José Manuel Peláez Marón: Derecho Internacional y Derecho de la Unión Europea*, 2012, pp. 297-320.

Environmental Performance Reviews

Environmental Performance Reviews, Kyrgyzstan... cit.; UNECE, Environmental Performance Reviews, Tajikistan... cit.

Improvement of the Scheme on Complex Use and Protection of Amu-Darya Water Resources by Scientific & Technical Council, Ministry of Land Reclamation and Water Management of the USSR, September 10, 1987; Protocol 413: Improvement of Scheme of Complex Use and Protection of Water Resources of Syr-Darya Basin, February 7, 1984; in WeGeRiCH, K., “Hydro-hegemony in the Amu Darya basin”

In the Syr Darya’s basin, 1.7% for Kyrgyzstan, 9.2% for Tajikistan, 38.1% for Kazakhstan and 51.0% for Uzbekistan; in the Amu Darya basin, 0.4% for Kyrgyzstan, 13.6% for Tajikistan, 43.0% for Turkmenistan and 43.0% for Uzbekistan. See., UNECE, Environmental Performance Reviews, Uzbekistan... cit., pp. 57 et seq.; UNECE, Environmental Performance Reviews, Tajikistan, op. cit., pp. 107 et seq.; UNECE, Environmental Performance Reviews, Kazakhstan, op. cit., pp. 141 et seq.; UNECE, Environmental Performance Reviews, Kyrgyzstan... cit., pp. 101. See, also, WeGeRiCH, K., “The New Great Game: water allocation in post-Soviet Central Asia”

e echoed by the local media, See, HOGAn, B., “Decreased Water Flow Threatens Cotton Crop, Peace in Region” (1 August 2000), *Eurasia News* available online at ; lilliS, J., J., “Central Asia: Water Woes Stoke Economic Worries” (27 April 2008),

“The critical geopolitics of the Uzbekistan–Kyrgyzstan Ferghana Valley boundary dispute, 1999–2000”, *Political Geography*, Vol. 23, 2004, pp. 731-764; BORtHAKuR, A., “An Analysis of the Conflict in the Ferghana Valley”, *Journal of Asian Affairs*, Vol.48, 2017, pp. 334-350; HAnkS, R., “Crisis in Kyrgyzstan: conundrums of ethnic conflict, national identity and state cohesion”

Water in Central Asia: A Prospect of Conflict or Cooperation?

Rogun Dam. Path to Energy Independence or Security Threat?

Irrigation and Water Management in Turkmenistan: Past Systems, Present Problems and Future Scenarios.

UNECE, Environmental Performance Reviews, Turkmenistan... cit., pp. 3 and 102 (agriculture employment in 2009: 11.5%); World Bank Data, Employment in Agriculture

UNECE, Environmental Performance Reviews, Tajikistan... cit., p. xxxiii (agriculture employment in 2014: 25%); WORLD BANK dAtA, Employment in Agriculture,

UNECE, Environmental Performance Reviews, Kyrgyzstan, op. cit., pp. 9 and 11 (agriculture employment in 2007: 55%); World Bank Data, Employment in Agriculture

Land and Water Management Patterns in Ferghana Valley” in Khamzayeva, A. et al, Water Resources Management in Central Asia: Regional and International Issues at Stake (Barcelona: CIDOB ASIA, 2009), p. 77; VARiS, O.- RAHAMAn, M.M., “The Aral Sea Keeps Drying out bit is Central Asia Short of Water?” in RAHAMAn, M.M.- VARiS, O. (Eds.),

WORLD BANK, CentRAL ASiA eneRGY-WAtER deVelOpMent pROGRAM (CAEWDP), Strengthening analysis for integrated water resources management in Central Asia: a road map for ac- tion (Vol. 2): Annexes, 2013

“An Overview of the Aral Sea Disaster”, in edelStein, M.- CeRnY, A.-GAdAeV, A. (Ed.) Disaster by Design: The Aral Sea and its Lessons for Sustainability, Emerald, 2012, pp. 5-15; WORld BANk, CentRAL ASiA eneRGY-WAtER deVelOpMent pROGRAM (CAEWDP), Strengthening Analysis for Integrated Water Resources Management in Central Asia: A Road Map for Action, Final Report, 2013

Resolution of the UN General Assembly, Doc. A/51/229, 21 May 1997. See, CHAzOuRnez de BOiSSOn, l.-MBenGue, M.- tiGninO, M.- SAnGBAnA, R. (Eds.), The UN Convention on the Law of the Non Navigational Uses of International Watercourses. A Commentary, Oxford University Press, 2018; MCCAffReY, S., The Law of International Watercourses... cit., pp. 409-441; MOVILLA pAteiRO, L., “La entrada en vigor de la Convención sobre el derecho de los usos de los cursos de agua internacionales para fines distintos de la navegación”, Revista Española de Derecho Internacional, Vol. 66, 2014, pp. 312-316; pOnte iGleSiAS, M.T., “La convención sobre el dere- cho de los usos de los cursos de agua internacionales para fines distintos de la navegación” in AuRA, A.M (Coord.),

for a comparative analysis, Rieu-ClARke, A.- kinnA, R., “Can two global UN water con- ventions effectively co-exist: Making the case for package approach to support institutional coordination”

Principios generales aplicables a los cursos de agua y acuíferos internacionales

“Is water different from biodiversity: Governance criteria for the effective man- agement of transboundary resources

Overview of Regional Transboundary Water Agreements, Institutions and Relevant Legal/Policy Activities in Central Asia, EU-UNDP, 2011; Janusz-Pawletta, B., “Current legal challenges to institutional governance of transboundary water resources in Central Asia and joint management arrangements”, Environmental, Earth, Science, Vol. 73, 2015, pp. 887- 896; Rahaman, M., “Principles of Transboundary Water Resources Management and Wa- ter-related Agreements in Central Asia: An Analysis”

the English version can be found at ICWC website, Agreement between the Republic of Ka- zakhstan, the Kyrgyz Republic, the Republic of Tajikistan, Turkmenistan and the Republic of Uzbekistan on co-operation in interstate sources’ water resources use and protection common management

The English version can be found on the CAWATER website, Agreement on joint activities in addressing the Aral Sea and the zone around the Sea crisis, improving the environment, and ensuring the social and economic development of the Aral Sea region, 1993

The English version can be found on the CAWATER website, Agreement Between the Governments of the Republic of Kazakhstan, the Kyrgyz Republic, and the

Republic of Uzbekistan on the Use of Water and Energy Resources of the Syr Darya Basin,

At the level of the international organizations, one of the most important actions, for the resources and capacities that it includes, is the ENVESEC (Environment & Security) initiative, developed since 2003 in the framework of the UNECE, together with the United Nations Environment Programme (UNEP), the United Nations Development Program (UNDP), the Organization for Security and Cooperation in Europe (OSCE) and the North Atlantic Treaty Organization (NATO). More indirectly, other international organizations created after the dissolution of the USSR have dealt with issues related to the management of water resources in this region, such as the Economic Community of Central Asia (ECCA), created in 1998 and since 2006 integrated in the Eurasian Economic Community (EURASEC) or the Shanghai Cooperation Organization (SCO), created in 2001 under the leadership of China with the objective of stabilizing Central Asia through the development of political, economic and scientific cooperation and constituting currently one of the most significant multilateral initiatives from the point of view of regional security

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Cross-bordering Water Management in Central Asia”, Conflict Constellations and Ways to a Sustainable Resource Use

“Support for the Creation of a Transboundary Water Commission on the Chu and Talas Rivers between Kazakhstan and Kyrgyzstan” (Chu-Talas I, 2003-2006); UNECE/OSCE, “Developing cooperation on the Chu and Talas Rivers” (Chu-Talas II, 2009-2011); “Promoting Cooperation to Adapt to Climate Change in the Chu and Talas Transboundary Basin” (2010-2014); UNECE/UNDP, “Enabling Transboundary Cooperation and Integrated Water Resources Management in the Chu and Talas River Basin” (2014-2017); UNECE/UNESCAP/OSCE, “Enhancing climate resilience and adaptive capacity in the transboundary Chu-Talas basin” (2015-2018).