INTERNATIONAL COOPERATION OVER WATER USE IN CENTRAL ASIA

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Map of the Aral Sea Basin

Source: [http://www.karakalpak.com](http://www.karakalpak.com) and Royal Haskoning DHV
INTERNATIONAL COOPERATION OVER WATER USE IN CENTRAL ASIA

The aim of this paper is to analyse one of the key factors for understanding the region of Central Asia: its distinctive relationship to water resources. The first section examines the management of water resources in the region from the viewpoint of the obligation of cooperation established in general international law. Then, we explore the implications of water management in terms of the rights of citizens, regional cooperation in the management, conservation and sustainable development of the inland fisheries of Central Asia, and cooperation in the generation and distribution of hydroelectric power in the region.

1. INTERNATIONAL COOPERATION OVER WATER MANAGEMENT IN CENTRAL ASIA: GENERAL ASPECTS

1.1 Management of water resources, a priority for the states of Central Asia

The core issue with water in Central Asia is the need to balance its sustainable use between the easternmost area of the region (Kyrgyzstan, Tajikistan, upstream), which produces 75% of these water resources, and the area of the floodplains (Uzbekistan, Turkmenistan and Kazakhstan, downstream), which consumes roughly the same percentage. This situation has led the five states to give special attention to the management of water resources in the region’s two principal river basins around the Syr Darya and Amu Darya rivers. Today, the stability of these river basins has a direct relationship to the potential escalation of conflict and it poses a significant concern for the power relations among the states involved in their management.

The five states share the resources of the Syr Darya and Amu Darya river basins. In particular, Kyrgyzstan, Uzbekistan, Tajikistan and Kazakhstan share the Syr Darya Basin, which has a length of 3,019 km, a catchment area of 219,000 km² and an annual volume of 37.2 km³. There are five large reservoirs in the catchment area and 80% of the land is under cultivation, using irrigation. The irrigation system covers 300,000 ha in Tajikistan (with a projected addition of 500,000 ha, not all within the same watershed), 400,000 ha in Kyrgyzstan (with a projected addition of 230,000 ha), 800,000 ha in Kazakhstan, and 1,900,000 ha in Uzbekistan. Similarly, the Amu Darya Basin is shared by Tajikistan, Turkmenistan, Uzbekistan, Kazakhstan and Kyrgyzstan, as well as by Afghanistan and Iran. The basin of the Amu Darya, whose source is in Vakjdjir (Afghanistan), contains over 35 man-made reservoirs along its route. It has a length of 2,540 km with a catchment area of 309,000 km² and an annual volume of 73.6 km³. The irrigation system covers 22,000 ha in Kyrgyzstan, 469,000 ha in

Tajikistan, 1,735,000 ha in Turkmenistan (with a projected addition of 450,000 ha) and 2,321,000 ha in Uzbekistan (with a projected addition of 634,400 ha), as well as 460,000 ha in Afghanistan\(^3\).

As indicated above, Kazakhstan, Uzbekistan and Turkmenistan are located downstream, while Kyrgyzstan and Tajikistan are upstream. **Kazakhstan** has a population of 15 million inhabitants and only 10% of its GDP comes from agricultural activity, while 23% of the population works in the sector. Because the country is dependent on the water resources of its upstream neighbours, the government of Kazakhstan identifies transboundary management of waterways as a question of national security and it seeks to promote a strategy based on cooperation with the countries in the region. This has led the government to take an active part in the development of various initiatives with its neighbours, for example, investing heavily in hydroelectric infrastructure. At the same time, however, Kazakhstan has also pursued specific unilateral measures, such as the construction of the Koksaray Dam to combat floodwaters that arrive from Kyrgyzstan and Tajikistan, or the construction of a series of dykes and canals to restore the water level and address the degradation in the part of Kazakhstan in the vicinity of the Aral Sea\(^4\). **Uzbekistan** is the most populous state in the region, with roughly 27 million inhabitants. Agriculture, primarily the cultivation of cotton, accounts for 25% of GDP, while 44% of the population works in the sector. Of the country’s territory, 60% is desert, making the joint management of transboundary water one of Uzbekistan’s chief priorities as well. However, this objective often runs into difficulties arising from the country’s complex relations with its neighbours. In **Turkmenistan**, which has only 5 million inhabitants, 80% of the territory is affected by desertification, although 25% of the country’s GDP comes directly from agriculture and 44% of the population work in agriculture. The greatest tensions in the Amu Darya Basin, which are between Turkmenistan and Uzbekistan, stem from the Turkmen construction of a man-made lake in the Karakum Desert. Yet in spite of the need to maintain good relations with Uzbekistan, the Turkmen government puts less emphasis on regional cooperation and focuses principally on its neighbours in the Caucasus and the Middle East\(^5\).

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\(^3\) *Ibid.*

\(^4\) For more information on this project undertaken by the “Aral Tenizi Society”, see http://www.aralsea.net/en/.

By contrast, Tajikistan and Kyrgyzstan are located upstream. The mountains of Tajikistan contain the headwaters of the Amu Darya River and the country has roughly 7 million inhabitants, with 50% living in rural areas and working in agriculture. In the wake of the serious economic crisis that followed the breaking-off of relations with Russia, the state has needed to devote considerable resources to ensuring food security for its population in one of the poorest countries in the area. This, in turn, has given rise to a need for more efficient management of water resources. Kyrgyzstan, which has a population of 5.2 million inhabitants, has a significant diversity of ecosystems and abundant natural resources. The mountain ranges of the country contain the headwaters of the Naryn River, which is the main tributary of the Syr Darya and an important source of the country’s hydroelectric power. Agriculture accounts for 39% of Kyrgyzstan’s GDP, and 55% of the population is employed in the sector. Energy security issues are one of the country’s top priorities.

The indiscriminate consumption of water in agricultural activity and particularly in the monoculture of cotton in Uzbekistan, Turkmenistan and Tajikistan, to which we will return, required the establishment of large-scale irrigation systems and, in the nineteen-sixties, it resulted in the drying-up of the Aral Sea, one of the elements essential to the maintenance and regulation of the region’s natural and climatic balance. This situation, together with the complete lack of crop rotation and the inadequate upkeep of the network of irrigation channels, eventually caused in the Aral Sea Basin what water resource experts call a “disruption in the prevailing water balance” by 1990, more than 95% of the marshlands and wetlands had turned into desert, and more than 50 delta lakes, covering an area of 60,000 ha, had dried up. Since then, the ecological situation of the Aral Sea has been classified as biologically dead, with over 33,000 km² of its seabed exposed in vast salt flats contaminated by pesticides carried by the wind up to distances of 250 km. At the same time, as a consequence of climate change, there has been a drastic imbalance in the formation areas at the headwaters of the rivers, primarily in the mountain ranges of Pamir, Tian Shan and Altai, where evidence points to a 25% loss in glaciers between 1957 and 2000. In addition, the watersheds of the region’s two chief rivers, the Amu Darya and the Syr Darya, are considered especially compromised. The two watersheds have suffered a reduction in water availability of 40% and 30%, respectively, as have the Karakum Canal in Turkmenistan and the Irtys in Kazakhstan, the reservoirs of Vilef

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6 Ibid.  
and Sogdiyskaya in Tajikistan and, broadly the Ferghana Valley, whose waters and lands are a source of dispute between Kyrgyzstan and Uzbekistan.

1.2 Key hydrographic and geopolitical factors affecting Central Asia in the post-Soviet era

In the Soviet period, the management of the region’s water resources was an issue restricted solely to technical aspects. Discussion of the complex political consequences was not on the table. With the break-up of the USSR came independence for the former Soviet republics and the management of transboundary water became a source of major tensions among the five new states of Central Asia.

Seen from the standpoint of water resource management, the hydrographic and geopolitical complexity of the region is clear. The three downstream states have large reserves of gas, petroleum and uranium, but they are lacking in water resources. However, they are major consumers of water for crop irrigation, particularly cotton, and this use, which is a priority for them, has historically characterized the region of Central Asia in its function of a supplier of raw materials for the now defunct Soviet Union. By contrast, the upstream states of Kyrgyzstan and Tajikistan are extremely impoverished, energy-deficient, without any gas or petroleum, but they have large water reserves and a high capacity for hydropower production that could, if developed, lead to a radical change in the waterways.

Historically, the dams and reservoirs in upstream territories met the demand of downstream states for water. Today, Kyrgyzstan and Tajikistan take the view that the

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current allocation system for water resources is unfair and detrimental, because it does not allow them to develop an irrigation system in their lands able to ensure food security or to use hydroelectric infrastructure optimally for energy production.

Now as in the past, the main risk lies in the existing conflict of interests among the downstream and upstream countries over the use of water resources and the allocation of volumes. The upstream countries need water during the winter for the production of electrical power, while the downstream countries need water for crop irrigation during the summer. In practice, the downstream states do not see their needs satisfied in the summer months because the volumes of water released from the reservoirs are minimal as a result of the low demand for energy in the upstream states. During the winter, the downstream states have a very low demand for water, but they frequently suffer flooding and other adverse effects from the large amounts of water that are released from upstream reservoirs in order for the two upstream states to satisfy their high demand for energy.\textsuperscript{13}

With the collapse of the Soviet Union, the new independent states each adopted a national system of planning and management that reflected the view that these water resources were an irreplaceable tool for their future economic development\textsuperscript{14}. None seized the opportunity to promote an economic, political and environmentally sustainable approach to water resource management at a regional level. To the contrary, the unilateral component gained strength and regional conflicts began to escalate over how to settle the allocation and prioritization of competing water uses.

In practice, the legal framework for these states is what ensures the ongoing application of the water allocation principles and quotas set under the Soviet model, which is structurally unsatisfactory from an environmental standpoint, but which the five Central Asian states expressly endorsed in a joint declaration of 12 October 1991\textsuperscript{15}. This is the model that has continued to be reproduced in various regional and bilateral agreements and it is the criterion that has dominated the creation of specific transboundary institutions addressing this question. Along these lines, the five states signed an agreement on 18 February 1992\textsuperscript{16}, in Almaty, on the joint management of the use and protection of interstate water resources, applicable to all watercourses in the Syr Darya, Amu Darya\textsuperscript{17} and Aral Sea Basins. The accord also regulated the


\textsuperscript{14} For a historical perspective, see Vea Rodríguez, L., “La opción hidráulica en Asia Central ex soviética. Perspectiva histórica y situación actual”, op.cit., pp. 152 ff.

\textsuperscript{15} The English version is available at the ICWC website: \url{http://www.icwc-aral.uz/statute2.htm}.

\textsuperscript{16} The English version of these agreements is available at the ICWC website: \url{http://www.icwc-aral.uz/statute1.htm}.

\textsuperscript{17} In the same year, the five states also signed two additional accords on 6 April 1992 in Ashgabat, relating to the legal statute of the organisms “Amu Darya” and “Syr Darya” for the joint management of the waters
qualitative and quantitative protection of water resources and the distribution of water for the supply of the population and crop irrigation. In accordance with the agreement, the region’s water resources were to be considered a shared and comprehensive resource and the parties made a commitment to undertake joint steps to resolve the problems of the drying-up of the Aral Sea and to annually determine the uptakes of water, an obligation that has been systematically broken.

1.3 Obligations of international cooperation among states sharing a water basin and the specific forms of such obligations in Central Asia

Contemporary international law has developed and codified the obligations of cooperation for states that share international waterways, which is the de facto case of Central Asia and particularly of the Aral Sea Basin. From this standpoint, two general considerations need to be formulated: the first regarding the development of international cooperation and its specific forms in recent international legal instruments that are multilateral in nature, specifically in Central Asia, and the second in relation to the very concept of international waterways and their connection to the concept of a water basin, which is more useful when addressing the difficulties of international cooperation and water management in Central Asia, particularly in the Aral Sea Basin.

With respect to the first consideration, it should be remembered that cooperation among states sharing watercourses began in the nineteenth century. The aim was to facilitate the management of common interests, fundamentally international shipping and trade. In some instances, this initial cooperation led to the establishment of permanent institutional mechanisms. In any event, however, more recent economic and social progress has shown the importance of other uses of international waterways, such as energy production, industrial consumption, fisheries and agricultural irrigation, as well as the problems generated by water pollution and the depletion arising from these uses. In other words, the scope of international concern over international waterways has multiplied to the same extent that the evolution of international law and of international society has led to an appreciation of shared natural resources requiring the cooperation of affected states in order to ensure their management, conservation and sustainable development.

For the purposes that presently interest us, and leaving aside the many bilateral or multilateral agreements at the regional level, there are currently two main multilateral international tools on international waterways: one is the Convention on the Protection and Use of Transboundary and International Lakes, drafted in Helsinki on 17 March 1992, which has been in force since 6 October 1996\(^\text{18}\); the other is the UN Convention of both watersheds. The English versions of the two agreements are available on the ICWC website: http://www.icwc-aral.uz/statute9.htm and http://www.icwc-aral.uz/statute10.htm, respectively.\(^\text{18}\) United Nations Treaty Series, Vol. 1996, No. 33207, p. 269. The Spanish version appears in the BOE of 4 April 2000.
on the Law of the Non-Navigational Uses of International Watercourses, of 21 May 1997, which has not yet entered into force.\(^1\)

The aim of the Helsinki convention is to foster international cooperation in the prevention, control and reduction of the pollution of transboundary waters and the sustainable use of such waters. To this end, the convention establishes obligations of cooperation among the states that are parties to it for the purposes of protecting and using transboundary waters.\(^2\) Therefore, it is a general environmental convention addressing the negative consequences of pollution from human activity in relation to international waterways. At present, only three of the five states of Central Asia are signatories to the convention: Kazakhstan (since 2001), Uzbekistan (since 2007) and Turkmenistan (since 29 August 2012).\(^3\) The UN Convention of 1997, for its part, is a general framework convention that seeks to ensure the use, exploitation, conservation, management and protection of international waterways, as well as the promotion of their optimal and sustainable utilization for current and future generations.\(^4\) However, this convention has not yet come into force and, in Central Asia, it has only received ratification by Uzbekistan, in 2007.

More specifically, the states in the region have adopted a number of conventions on the joint management of interstate water resources\(^5\) and they have established, among other institutional frameworks, the Interstate Commission for Water Coordination (ICWC) in order to promote the rational use, protection and control of transboundary waters. However, as established by doctrine, the legal system surrounding the ICWC poses contradictions: first, it is excessively sector-specific, focusing on terms of exchange in the trade of water for energy; second, it essentially guarantees the management principles and the exchange structures put in place during

\(^1\) Resolution 51/229 of the General Assembly, of 21 May 1997.

\(^2\) In this respect, the aim of the convention is to avoid negative transboundary impacts, i.e., adverse environmental effects in an area under the jurisdiction of one of the signatory states caused by a modification to the conditions of transboundary waters resulting from human activity whose physical origin is wholly or partially located in an area under the jurisdiction of another signatory state. The environmental effects envisaged in the convention include effects on human health and safety, on flora and fauna, on soil, air, water, climate, and landscape, and on historical monuments and other physical structures. The convention also covers effects from the interaction of these factors and effects on cultural heritage or socioeconomic conditions arising from any alterations in these factors.

\(^3\) None of the five states of Central Asia has signed or ratified the 1999 Protocol to the Helsinki Convention on Water and Health, and only Uzbekistan has ratified the 2003 amendments to the convention that seek to extend its range of territorial application beyond the member states and consultative members of the Economic Commission for Europe.


\(^5\) Basically, for our purposes, the convention of 18 February 1992, on the joint management of the use and protection of interstate water resources, and the convention of 26 March 1993, on joint activities regarding the crisis of the Aral Sea and its area of influence, promoting the improvement of the environment and the economic and social development of the region around the Aral Sea (see the corresponding texts available at [http://www.icwc-aral.uz/legal_framework.htm](http://www.icwc-aral.uz/legal_framework.htm), consulted in April 2013).

\(^6\) This also responds to the competing interests of states in the region, including in seasonal terms. Let it suffice to note that 80% of all water use goes to agricultural irrigation in the downstream states and that the upstream states make use of the water for hydropower production, establishing dams and opening them as needed.
the Soviet era, which are structurally unsatisfactory from an environmental viewpoint, but accepted by the region’s five states.  

With respect to the second consideration, there is some dispute over the very concept of international or transboundary watercourses and its subsumption within the concept of international water basin, which is broader and geographically and biologically much more rational. The question, in other words, is whether international watercourses are only rivers that cross borders between two states and rivers whose waters flow through two or more states, or whether they must be understood in relation to an entire water or drainage basin to the extent that it is located in two or more states, treating it as an entire coherent hydrological system. The use of either of these concepts also responds to competing interests and obviously the downstream states typically push for the broader concept of a water basin.

In this respect, the Helsinki convention sets out a more limited definition of “transboundary waters”, stating that they are “any surface or ground waters which mark, cross or are located on boundaries between two or more States”. By contrast, the UN convention of 1997 establishes a fuller definition, defining “watercourse” as “a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus”. In other words, these notions are not exactly the same and it is apparent that the UN Convention of 1997 much more clearly incorporates the idea of the connection between surface waters and groundwaters in a “unitary whole”, from which it is possible to deduce a much broader view of the concept of international water basin.

These considerations are useful in relation to the Aral Sea Basin, which as noted earlier is basically made up of the river basins of the Syr Darya and the Amu Darya. These river basins, with all of their tributaries, extend over more than 500,000 km² throughout the five states of the region, although a number of the tributaries within the Amu Darya Basin are located in Afghanistan and Iran. Beyond this last connection, it is clear that, as already indicated, the demise of the Soviet Union has given rise to an international dimension that did not previously exist and it has created the need for the new states of Central Asia to give attention also to management and international cooperation relating to water resources and their various uses. In this respect, we hold the view that the principles that have inspired the main existing international rules on international watercourses must have their place, inspiring action and cooperation among the states of Central Asia.

2. THE RIGHT TO WATER AND SANITATION IN THE NATIONS OF CENTRAL ASIA

25 On this and other aspects, see M. Campins Eritja, “La gestión de los cursos de agua internacionales en Asia Central: ¿amenaza u oportunidad?” Elcano Royal Institute, ARI 77/2009.
In the context of the Asian continent, the access to improved water sources has consistently increased in recent years. The percentage of the populace with access to safe drinking water has risen from 72% to 87% in little more than 15 years. For the five states of Central Asia, the lack of transparency characterizing their political systems is an enormous obstacle to reliable information on their citizens’ ability to gain access to safe drinking water. From second-hand sources, we do know that all of the states of Central Asia acknowledge that water is one of the most important factors for their economic and social development and that, as a consequence, they have all adopted legislation and codes that establish water unequivocally as property of the state. However, in one case (i.e., Kyrgyzstan), this also comes with the view that water should be treated as a commodity with a market price. Moreover, in nearly all cases, their declarations on the importance of water are exceedingly rhetorical in nature. In any case, the public ownership of water puts the responsibility for water management squarely on the state in each of these countries, leaving no room for privatization of the resource or of its management.

In addition, all the region’s states are parties to the International Covenant on Economic, Social and Cultural Rights (ICESCR) and to other relevant treaties on human rights, which legally bind states to show respect for the right of their citizens to clean water and sanitation. However, there is no evidence that the provision of this service has been formulated as a “right” in any of the five states, much less that there exist adequate procedural remedies to enforce the provision of such a benefit in cases of non-compliance by the public authorities.

2.1. Water availability and usage in Central Asia

As made clear earlier, the region does not suffer from an overall shortage of water. Although the region’s downstream countries do not directly “generate” the better part of this resource and are, therefore, theoretically more vulnerable in this respect, “we find a situation in this area in which there are theoretically enough of the existing resources...”

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27 The only exception, which is fragile and too recent to have had any practical effect on our object of study, is Kyrgyzstan. See Saura Estapà, J.: “Asia Central. Regímenes políticos y contexto socioeconómico”, in Observatorio de Asia Central, www.asiacentral.es, February 2012.


29 A 2001 law in Kyrgyzstan on the use of water among states not only asserts public ownership of this resource, but also calls it a “commodity” with an international market price and establishes the right of the state to obtain compensation for the use of water by downstream inhabitants. See Mackay, J.: “Running dry: international law and the management of Aral Sea depletion”, Central Asian Survey, Vol. 28, No. 1, 2009, p. 17


for agriculture and for human consumption”\textsuperscript{32}. Specifically, the average amount available in each of these states, per person and per year, is more than sufficient in terms of availability\textsuperscript{33}. Kazakhstan, 7,368 m\textsuperscript{3}; Kyrgyzstan, 9,293 m\textsuperscript{3}; Tajikistan, 12,706 m\textsuperscript{3}; Turkmenistan, 12,706 m\textsuperscript{3}; and Uzbekistan, 4,527 m\textsuperscript{3}.

The same is not true of the uses to which this resource is put. More than 90\% of the available water per capita goes to agricultural uses and almost all the rest, which is not much, goes to industrial uses. The exception is Kazakhstan, whose averages are more in line with global averages for current water use and where agriculture “only” represents 81\% of these uses, while industry accounts for 17\%. One way or another, the domestic use of water in these states stands at percentages that range from 1\% in Turkmenistan to 4\% in Uzbekistan. Clearly, with proper management, this should provide a supply of safe drinking water to all inhabitants of these countries.

That said, 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, such as the states of North Africa and the Middle East, and even than higher-income states like Turkey and Mexico. Nearly 50\% of channelled water is lost throughout the system, although a portion can be recovered when it returns to natural waterways.\textsuperscript{34} According to a number of authors, the supply of water required by one unit of production is at least three times greater than international standards (and in some cases, ten times greater), because of antiquated farming methods, which cause serious losses of water.\textsuperscript{35} Water is also squandered in the industrial and domestic spheres. 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. At first glance, this low cost is a positive piece of data, because it does not exceed 3\% of household income as recommended by the UNDP. However, it also detracts from the social value of the resource, and most alarming of all, the level of malnutrition in Central Asia, despite the enormous quantities of water poured into agriculture, remains very high\textsuperscript{36}.

2.2. Consequences in the enjoyment of the right to water

According to recent reports, the water supply systems of Kazakhstan cover an average of 78\% of the urban population, and 80\% of the population have water supply for 24 hours a day. By contrast, in 68 cities and villages, the supply follows a schedule of specific times or is available only during daylight hours. In Kyrgyzstan, the centralized system of water reaches 81\% of the population, but the supply systems and facilities

\textsuperscript{32} See Vea Rodríguez, L.: “La opción hidráulica...”, cit.
\textsuperscript{34} Stockholm International Water Institute (SIWI) (2010), Regional Water Intelligence Report Central Asia, SIWI Paper 15, Stockholm.
\textsuperscript{35} Sakiev, B.: “Land and Water Management patterns...”, cit.
are in a very poor state of repair: 206 supply systems (nearly 20% of the total) do not meet minimum safety standards and 24 of those lack water treatment facilities. In 59 supply systems, there is no disinfection of the water delivered to the population. More than 600,000 people do not have access to treated sources of drinking water and they use water drawn directly from irrigation channels, etc. In Tajikistan, 93% of the urban population has access to safe drinking water, but only 49% of the rural population (Tajikistan is the most rural country in the region, with nearly 75% of population in rural areas). Of this rural population, 80% use sources of water that do not have adequate sanitation and hygiene. In Turkmenistan, only 60% of the urban population has access to quality centralized water for 24 hours a day. At the other extreme, there are some built-up areas where most of the population has access to water only for two hours a day, twice a week. Lastly, there are provinces in Uzbekistan where the water supply only reaches 25% of the populace and the water infrastructure is in a deplorable state.\(^\text{37}\)

If we link the right to water with the right to health and look at illness and death caused by the lack of clean water for domestic use, the nations of the region stand midway between the developed countries and the developing countries, with Kazakhstan closer to the former and Tajikistan and Turkmenistan closer to the latter.\(^\text{38}\) According to the World Bank, the inadequate functioning of water treatment plants across the entire region has made drinking water unsafe in many urban centres, leading to a worrying rise in illnesses such as typhus and diarrhoea.\(^\text{39}\) In addition, the services of water provisioning have declined dramatically outside the capitals, and they have practically collapsed in many small cities and rural areas. The capacity to mobilize resources for the sector is severely constrained by shrinking national budgets and low household incomes.\(^\text{40}\) All in all, the access to safe drinking water and sanitation facilities is far from being a universal guarantee and it is manifestly poor among the rural population in all countries in the region.

3. REGIONAL COOPERATION IN THE MANAGEMENT, CONSERVATION AND SUSTAINABLE DEVELOPMENT OF INLAND FISHERIES IN CENTRAL ASIA

Turning to cooperation and the question of Central Asia’s inland fisheries, several aspects must be raised. These include, first, the general international rules on cooperation and the sustainable development of inland fisheries; second, the relative importance of this type of fisheries in the region and the need for coordinated management among the various states of Central Asia; and third, the institutional mechanism established in the context of the UN Food and Agriculture Organization


\(^{38}\) See SIWI, *Regional Water Intelligence Report Central Asia*, cit.


\(^{40}\) World Bank: [http://go.worldbank.org/8DWA7P22L0](http://go.worldbank.org/8DWA7P22L0) (consulted in September 2010).
(FAO) for international cooperation, including a summary analysis of the Central Asian and Caucasus Regional Fisheries and Aquaculture Commission (CACFish).

3.1. Management, conservation and sustainable development of inland fisheries under international law

Since the mid-twentieth century, marine fisheries have been a major concern on the international agenda. By examining the most recent developments of such international concern over this question, the aim here is to ascertain how this concern has spread and expanded in relation to freshwater or inland fisheries, particularly in inland waters shared by more than one state, which is of greatest interest in this paper.

In recent decades, international fishing activity has witnessed an ongoing process of increasing limitations from two perspectives: first, limitations on fishing on the high seas, marked by the enlargement of fishing areas under the jurisdiction of states, and second, the introduction of the principle of sustainability when considering fish stocks, which gives rise to a pressing need for states to moderate their fishing activity. The key milestone of this process occurred in 1982, when the United Nations adopted the Convention on the Law of the Sea and recognized exclusive economic zones as well as the unquestionable importance of conservation, management and sustainable use in the long term of the living marine resources in the world’s seas and oceans.

In this context, and specifically with respect to the second dimension, two major international treaties have been adopted: the UN agreement on the implementation of the provisions of the UN Convention on the Law of the Sea, of 10 December 1982, relating to the conservation and management of straddling fish stocks and highly migratory fish stocks, of 4 August 1995, and the FAO agreement to promote compliance with international conservation and management measures by fishing vessels on the high seas, of 24 November 1993. Similarly, a new principle of responsible fisheries in international law has been under development within, basically, the framework of the FAO, leading to the creation of an important non-

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41 Of note in this regard is the adoption, in 1958, of the Convention on Fishing and Conservation of Living Resources of the High Seas.

42 For a complete overview of inland capture fisheries and their threats and strengths in various regions of the world, see R.L. Welcomme et al., “Inland capture fisheries”, Philosophical Transactions of The Royal Society, 2010, 365, pp. 2881-2896.

43 This principle begins to appear at the International Conference on Responsible Fisheries, held in Cancun in May 1992 (see the Cancun declaration in the documents COFI/93/Inf.7 and CL102/19 presented at the 102nd session of the FAO Council, which unanimously endorsed the Cancun declaration) and the contents of section 17 of Agenda 21 adopted at the Rio Conference on Environment and Development in June 1992 [see the resolutions of the Rio conference in the previously cited document A/CONF.151/26/Rev.1 (Vol. I)].
binding instrument: the Code of Conduct for Responsible Fisheries, adopted by the FAO Conference of 1995\textsuperscript{44}.

Although the main focus of international interest in these legal instruments has been aimed at the needs and problems of marine fisheries\textsuperscript{45}, there is no doubt that the guiding principles for management, conservation and sustainable development of fisheries also apply to inland waters, particularly in cases involving international waterways. In this context, it is clear that the general principles and objectives of fisheries management established in the Code of Conduct apply to inland fisheries as well. Let it suffice to spell out a few of these principles, which are indisputably applicable and valid: “[T]he right to fish carries with it the obligation to do so in a responsible manner so as to ensure effective conservation and management of the living aquatic resources” and “[F]isheries management should promote the maintenance of the quality, diversity and availability of fishery resources in sufficient quantities for present and future generations in the context of food security, poverty alleviation and sustainable development”\textsuperscript{46}. These and other general principles of sustainability of fish stocks are, therefore, clearly applicable to inland fisheries.

This approach also means that, in the cases of international waterways, the affected nations must reach agreements to ensure the sustainable management of fish stocks. An obligation, therefore, follows for states to cooperate on a regional level and, where relevant, to establish organizations to manage fisheries, reach other international agreements and undertake other suitable arrangements for their conservation and sustainable management, as set out in article 6.12 of the Code of Conduct. As we shall see, this obligation is fully applicable to the region of Central Asia and to the initiative to set up CACFish\textsuperscript{47}. In this same context, the conservation and management measures that can be adopted at a regional level “should be based on the best scientific evidence available and be designed to ensure the long-term sustainability of fishery resources at levels which promote the objective of their optimum utilization and maintain their availability for present and future generations” and they should also be based on application of “the precautionary approach widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment”\textsuperscript{48}. This focus on the obligations of conservation of diversity and


\textsuperscript{45} In many cases, the domestic legislation of states fails to distinguish between marine fisheries and inland fisheries and it even regulates the latter within the framework of rules governing marine fisheries, creating still greater problems.

\textsuperscript{46} Articles 6.1 and 6.2 of the Code of Conduct.

\textsuperscript{47} Article 6.12 of the Code of Conduct establishes that “[s]tates should, within their respective competences and in accordance with international law, cooperate at sub-regional, regional and global levels through fisheries management organizations, other international agreements or other arrangements to promote conservation and management, ensure responsible fishing and ensure effective conservation and protection of living aquatic resources throughout their range of distribution, taking into account the need for compatible measures in areas within and beyond national jurisdiction”.

\textsuperscript{48} Articles 7.1.1 and 7.5.1 of the Code of Conduct.
sustainability of living aquatic resources can similarly also reside in other international legal frameworks and conventional treaty regimes. On the basis of the above analysis, we can conclude that current international rules and regulations establish obligations for states – both in general and, for our purposes, in the specific cases of states that share water resources – with respect to the sustainable management of aquatic ecosystems, the conservation of the diversity of living aquatic resources, the sustainability of fishing activities and the equitable distribution of benefits derived from these natural resources. These obligations, as far as we are interested here, can be applied to the states of Central Asia and involve international regulation and cooperation in the matter of fisheries. We can also state that the general consideration of fishery issues based on approaches that look fundamentally or basically at marine fisheries make urgent the need to establish other conceptual frameworks specific to inland fisheries – frameworks that are also legal and political in nature.

3.2. Fishing activity in the Aral Sea Basin

In relation to fishing activities in the Aral Sea Basin, we must first note that the large-scale harnessing of the two chief rivers in the region, basically for agricultural irrigation and hydropower production, has had a significant negative impact on living aquatic resources and it has brought about a sharp reduction in fish production both in inland capture fisheries and in aquaculture. As we shall see, the fundamental problem lies in the incompatibility of fish capture and aquaculture programmes with competing demands (basically from energy and agricultural irrigation) on limited water resources.

In the watersheds of the Syr Darya and Amu Darya, there are 55 reservoirs, with fishing activity taking place in a number of them. The total surface area of water in the reservoirs of importance to fishing covers $3,310 \text{ km}^2$. However, the construction of dams also has a significant impact on fish populations. For example, it causes a

49 In general, see R.L. Welcomme, *Inland Fisheries. Ecology and Management*, FAO/Blackwell Science, 2001. For example, sections 18.40.f) and 18.67 in chapter 18 of Agenda 21; the framework of the Convention on Biological Diversity, to which all states in Central Asia are parties (Decisions X/28 and XI/23 adopted in the last two COPs, held in 2010 and 2012, respectively); and the Ramsar Convention, or Convention on Wetlands, to which all the states are parties as well and have designated sites.


51 In recent years, this trend appears to have experienced a limited reversal (see, in general, the complete report by Thorpe; R. Van Anrooy, *Inland fisheries livelihoods in Central Asia. Policy interventions and opportunities*, FAO Fisheries and Aquaculture Technical Paper No. 526, Rome 2009).

decline in the number of autochthonous species of freshwater fish and leads to their replacement naturally or artificially by species acclimatized to standing water.\textsuperscript{53}

### Major fishery reservoirs in the Aral Sea Basin

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Number of reservoirs</th>
<th>Area (in km(^2))</th>
<th>Volume (in km(^3))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syr Darya</td>
<td>22</td>
<td>1,850</td>
<td>34.5</td>
</tr>
<tr>
<td>Amu Darya</td>
<td>17</td>
<td>1,460</td>
<td>23.3</td>
</tr>
</tbody>
</table>


In addition, a large number of natural lakes and man-made lakes created for water storage are also important for fishing.\textsuperscript{54} Specifically, these lakes cover a surface area of 7,000 km\(^2\), more than twice the area covered by the reservoirs that are important to fishing.\textsuperscript{55}

As for the competing demands on water resources, a few examples serve to illustrate the issue. In Kazakhstan, for instance, 70% of water resources go to irrigate more than 3.3 million agricultural hectares by means of a complex network of irrigation and drainage channels, which has been one of the causes of the Aral Sea’s drying up, its salinization and the collapse of its fisheries. Similarly, in Turkmenistan, the greater part of the water resources are allocated to agricultural irrigation, even more since the demise of the Soviet Union. Both Tajikistan and Kyrgyzstan, for their part, have a wide-ranging system of man-made reservoirs and lakes that are used not only for agricultural irrigation and hydropower production, but also for significant fishing activity, although this has declined dramatically in recent years.\textsuperscript{56} However, the promotion of rural sustainability and food security has prompted these two upstream states to promote and regulate fishing activity and, indeed, they are two of the four states that so far make up the Central Asian and Caucasus Regional Fisheries and Aquaculture Commission.

Broadly speaking, the situation of the inland fisheries in Central Asia has suffered the consequences of two deep-seated systemic crises in recent years. The first is environmental and stems from the accelerated drying-up of the Aral Sea and the destruction of its major inland fishing grounds, and the second is political and concerns

\textsuperscript{53} In this respect, see T. Petr, “Fisheries in irrigated areas of Central Asia”, in Inland Fisheries under the impact of irrigated agriculture: Central Asia, FAO Fisheries Circular, No. 894, Rome 1995.

\textsuperscript{54} For example, the Aidar-Arnasay is a man-made system of lakes in Uzbekistan that covers an area of 4,000 km\(^2\) and was created by draining the Chardara reservoir. Subsequently, fish species were introduced in the resulting lakes. Outside the Aral Sea Basin, Lake Balkhash, in Kazakhstan, covers an area of over 18,000 km\(^2\) and is also of great importance to fishing.


\textsuperscript{56} For more on this subject, see the previously cited study by A. Thorpe; R. Van Anrooy, Inland fisheries livelihoods in Central Asia ....
the aftermath of the Soviet Union’s collapse and the break-up of an effective and centralized management system governing fishing in the region’s rivers, lakes and reservoirs. These two crises have brought with them a decline in fishing activity and in available fish stocks, as well as a fall in agricultural production. The economic and social consequences of these crises are plain to see. With respect to the issues raised here, they have caused a decline in inland fisheries and fishing communities, along with rising levels of poverty and a growing lack of food security. The deterioration of infrastructure, even in the case of agricultural irrigation, and the lack of official support and financial assistance, have had disastrous economic consequences for the region’s states, which have only recently begun to turn the corner.

In effect, the total catch from the inland fisheries of the five states of Central Asia, which was never sizeable, has plummeted since the fall of the Soviet Union. Nonetheless, the three downstream nations, Kazakhstan, Uzbekistan and Turkmenistan, still have a strong potential to develop fishing activity and aquaculture. In the Aral Sea Basin, the estimate for the fishing potential of the rivers, lakes and reservoirs runs as high as 200,000 tonnes of annual fish for market, that is, practically four times current production levels.

The table below, which compares the total capture in 1989 and 2006, shows that, even though industrial aquaculture procedures have increased everywhere in recent years as a result of technological development, they have not increased in Central Asia, and the region’s five states have seen a sharp decline in their total tonnage of fish production: the declines for Kazakhstan, Turkmenistan and Uzbekistan are roughly 60%-72%, while the declines for Tajikistan and Kyrgyzstan range from 94% to 98%. Clearly, water-rich countries like Kyrgyzstan and Tajikistan have always had their own biological and geographical constraints in relation to fishing.

<table>
<thead>
<tr>
<th>Nation</th>
<th>1989 (in tonnes)</th>
<th>2006 (in tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kazakhstan</td>
<td>89,508</td>
<td>35,676</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>1,447</td>
<td>27</td>
</tr>
</tbody>
</table>

A centralized system like the Soviet one benefited from well-organized networks for gathering statistics and monitoring fish stocks. This assisted in evaluating the management strategies for fishing activity and made fine-tuning possible. Independence caused this entire water management system to break down. (ibid., p. 232).

In the Soviet era, the recommendation was to eat fish once a week and during these “fish days” restaurants served many varieties of fish. This tradition disappeared with the collapse of the Soviet Union and fish became less available and less common in the diet (see R. Welcomme, Review of the State of the World Fishery Resources: Inland Fisheries, FAO Fisheries and Aquaculture Circular, No. 942, FIRF/C942, Rev. 2, FAO Rome 2011, p. 41, available at http://www.fao.org/docrep/015/i2484e/i2484e.pdf, consulted in March 2013).

This constitutes “one of the – if not the – greatest output declines of any productive sector” in the region (see A. Thorpe; R. Van Anrooy, Inland fisheries livelihoods in Central Asia., op. cit., p. 11).

T. Petr et al., “Irrigation systems and their fisheries ...”, op. cit., p. 239.
This phenomenon can be explained from several angles. One, clearly, is the drying-up of the Aral Sea and the deterioration of the Aral Sea Basin, which has led to reduced fishing activity, bringing drastic changes to the way of life and endangered the survival of several villages and communities. Another centres on the growth or persistence of other uses of water resources, particularly water for agricultural irrigation, and this has had consequences on falling water quality and the attendant biological ramifications. Yet another relates to the lack of government initiatives and structures to promote the additional use of irrigation systems for fish production, while a further issue is that this situation has clearly been brought about, to a large extent, by mismanagement of fisheries in the area.

In this last respect, evidence also shows that the international legal and institutional instruments to coordinate the joint management of existing water resources in Central Asia have barely taken fishing activities into account specifically. The ICWC has only recently begun to pay attention to the interests of other water users, such as fishermen. To a large extent, this lack of interest can be attributed to a general problem of undervaluing inland fisheries in water management at the local, region and basin-wide level. Generally, little account is taken in water management decision-making of the impact that such decisions will have on fishing, fisheries and the rural population dependent on them. In addition to the component of animal protein in the diet, however, it must also be noted that inland fisheries in developing countries have an even greater economic impact than marine fisheries because of their direct impact on the rural population, on employment for men and women and, to a more limited extent, on the inland fisheries industry.

Hence the benefit of a comprehensive, ecosystemic approach to the internationalized coordinated management of the waters in the Aral Sea Basin. Such an approach needs to take into account the practices of land use, both for agriculture and forestry, as well as other energy and industrial needs, the needs of urban areas and of fishing activity. This is because all of these issues interactively affect the processes in the basin and the quality and quantity of available water.

3.3. Central Asian and Caucasus Regional Fisheries and Aquaculture Commission (CACFish)

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61 T. Petr et al., “Irrigation systems and their fisheries . . .”, op. cit., p. 239.
In addition to international rules and regulations on the management, conservation and sustainable development of inland and marine fisheries and the activity of international organizations, particularly the FAO, numerous and varied regional agreements and organizations have also been created to address fisheries management. These regional fisheries management organizations (RFMOs) have been created as an ideal way to internationalize fisheries management, that is, to pave the way for the adoption of international measures aimed at the conservation and management of fish stocks at regional and sub-regional levels. RFMOs reflect institutional developments that operate in relation to inland fisheries and waterways, basins and lakes that are international in different regions of the world. One example within the framework of the FAO is the recent establishment of the Central Asian and Caucasus Regional Fisheries and Aquaculture Commission (CACFish).

A) CACFish forerunners and creation

More than forty RFMOs exist. Some fall under the auspices of the FAO, while some have been created by affected states with FAO sponsorship. There are RFMOs with a clear institutional dimension subject or not subject to international law, while others are management bodies that have administrative functions and establish fisheries conservation and management measures and still others are strictly scientific advisory bodies. Lastly, a number of RFMOs have been set up as FAO subsidiary bodies or through an international agreement overseen by the FAO. Whatever the case may be, there is a wide range of RFMOs, and prior to exploring the objectives and functions of CACFish, we will examine both inland RFMOs and the provisions of the FAO constitution governing their creation.

Although most RFMOs address a specific marine region or sub-region and specialize in a given species, particularly some of the many species of tuna, CACFish was preceded by six other regional or sub-regional RFMOs focused specifically on inland fisheries, with competences over inland waters, rivers, reservoirs and lakes.

### Regional Inland Fisheries Management Organizations

<table>
<thead>
<tr>
<th>Name</th>
<th>Acronym</th>
<th>Creation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia-Pacific Fishery Commission</td>
<td>APFIC</td>
<td>1948</td>
</tr>
<tr>
<td>European Inland Fisheries and Aquaculture Advisory</td>
<td>EIFAAC</td>
<td>1957</td>
</tr>
</tbody>
</table>

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63 For a general analysis of RFMOs, see the Spanish language text, E. Vázquez Gómez, *Las Organizaciones Internacionales de ordenación pesquera. La cooperación para la conservación y la gestión de los recursos vivos del alta mar*, Regional Government of Andalusia, Seville 2002.

64 Historically, however, the oldest regional fisheries organization pertains to Lake Constance. Created in the nineteenth century, its specific task has been to manage fishing in the lake. Other organizations and commissions governing international waterways, which focus their activities on other uses, principally shipping, could also play a potential role in the protection of fisheries (see R.L. Welcomme, *Inland Fisheries ..*, op. cit., p. 324).

65 APFIC has competence on questions of living aquatic resources, marine and inland.
Two legal avenues exist within the framework of the FAO constitution to create such an organization: one avenue makes use of article VI of the FAO constitution, which enables the Conference or Council to create subsidiary bodies directly dependent on one of these two main bodies of the FAO, while the other avenue makes use of article XIV, which enables the Conference or Council to adopt international agreements on matters within their competence, including the protection of fish stocks, although the consent of the affected states is required for such agreements and their range of territorial application to come into effect. In both cases, the established mechanism can have the same level of competence, but in the second case a more explicit, legally binding commitment is required from participating states, giving greater legal weight to the recommendations and measures that may be adopted.

In this context, the process to create CACFish began in December 2007 at a workshop held by the FAO sub-regional office for Central Asia for experts from the region’s states. At the workshop, the call was to establish a regional cooperation mechanism to promote sustainable fisheries and aquaculture in Central Asia. From the outset, it was clear that the territorial reach of the proposal was broader than the five states of Central Asia. It was also clear that the future regional agreement was intended to be open to all concerned states, given the transboundary nature of the region’s waters and fish stocks. By unanimous vote, the FAO Council passed resolution 1/137, of 30 September 2009, approving the agreement in accordance with article XIV of the FAO constitution. This article provides that the Council, by at least a two-thirds vote of its members, may approve and submit to member nations “agreements concerning questions relating to food and agriculture which are of particular interest to Member Nations of geographical areas specified in such agreements and are designed to apply only to such areas”, which was the case with this agreement.

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66 LVFO was set up by agreement among the affected states, not under FAO sponsorship.
67 MRS, which was also created without FAO sponsorship, came out of an international agreement reached by the affected states in 1995, replacing the Committee for Coordination of Investigations of the Lower Mekong Basin (the Mekong Committee), founded in 1957.
68 In addition to the five regional offices (for Africa, Asia and the Pacific, Europe and Central Asia, Latin America and the Caribbean, and the Near East), the FAO has various sub-regional offices, including one for Central Asia, which has its headquarters in Ankara, Turkey.
Once the agreement received approval from the FAO Council, it was submitted to member nations of the geographical region concerned so that they could give their consent and facilitate its entry into force. This entry into force, in accordance with article XIV of the same agreement, occurred from the date of the reception of the third instrument of acceptance by the FAO Director-General on 3 December 2010. At present, only four of the states are party to the agreement. Notably, two of the four states that have ratified the agreement are Kyrgyzstan and Tajikistan, the two upstream countries in the Aral Sea Basin and the two that have the lowest total catch from inland fisheries and aquaculture in the area.

### States participating in the agreement to establish CACFish

<table>
<thead>
<tr>
<th>Participants</th>
<th>Acceptance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenia</td>
<td>3 December 2010</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>3 May 2010</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>9 March 2010</td>
</tr>
<tr>
<td>Turkey</td>
<td>19 December 2011</td>
</tr>
</tbody>
</table>


Again, it is important to underscore that an international agreement adopted by the FAO requires the consent of affected states, because this highlights the commitment and cooperation between the FAO and its member nations in the affected region. On one hand, this model enables states in the region to benefit from the technical merits and synergies of FAO services. On the other hand, it obliges them to assume financial commitments for the implementation and application of the Commission’s work programmes.

In this same vein, for example, article XII of the agreement envisages the possibility of amendments and provides that such amendments must be submitted to the FAO Council – and even that the amendments can be referred to the FAO Conference – and that these bodies can invalidate them if they consider that they are “incompatible with the objectives and purpose of the Organization”. In spite of this privileged role for the FAO, it is clear that, to the extent that this involves an international treaty, any amendment must be formally accepted by two-thirds of the states who are party to the agreement for the amendment to take effect, and, if such an amendment entails new obligations for these states, it will take effect only for those that have accepted it.

Once the agreement had been adopted, other preparatory intergovernmental meetings took place to implement the new fisheries organization. At these meetings, the future operating rules and the proposal for the Commission’s five-year work plan were

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drafted. Finally, from 19-21 December 2011, the inaugural meeting of CACFish took place and the first session of the Commission approved the rules of procedure, the financial regulations, the administrative budget for the initial period, the scheme and scale of contributions to the administrative budget, the five-year work programme (2011-2015), the acronym and logo of the Commission, and other scientific and technical advice 71.

The agreement requires that all participating states will have representation and will take part in the Commission’s meetings, at which each member state will be entitled to one vote and decisions will require a majority of the votes cast, except where the agreement envisages a different majority, such as in the case of adopting recommendations. The agreement calls for regular (annual) meetings of the Commission, whose initial headquarters will be located in the same headquarters as the FAO sub-regional office for Central Asia in Ankara, and the FAO will also provide the secretariat for the Commission. The agreement also establishes a Technical Advisory Committee and allows for the creation, as needed, of subsidiary bodies, such as temporary, special or standing committees, and working groups.

B) CACFish objectives and functions

In keeping with the approaches outlined in this paper, the aim of CACFish is to contribute to the conservation, management and sustainable, long-term use of living aquatic resources in inland waters, by means of responsible fisheries and aquaculture achieved through closer regional cooperation. More specifically, article III of the agreement establishes the specific functions and responsibilities of the Commission in terms of maintaining constant vigilance over the condition of fish stocks and the status of other economic and social dimensions relating to fishing activity; contributing to the generation of knowledge, to its dissemination and to the general promotion of cooperation in these questions; fostering research and development projects and cooperation projects; and formulating and recommending measures suitable for the

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CACFish Organization Chart

B) CACFish objectives and functions

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conservation and rational management of living resources in the agreement’s area of competence and in the application of these recommendations.

The regulatory footing of this last area – formulating recommendations on measures for the management and conservation of fish stocks – constitutes one of the focal points of future CACFish action, in our judgment. As provided in article III.3 of the agreement, CACFish’s regulatory actions relating to conservation and management must apply the criterion of a precautionary and systematic approach, taking into account the best scientific data available. It should be underlined that, while this is about formulating recommendations, the agreement envisages that these recommendations will be binding once they have been approved by two-thirds of the parties present and voting, but only with effect from the date set by the Commission itself and upon completion of a “period of objection”, which is provided for in the agreement. In effect, article V.3 of the agreement establishes that any party will have a period of 120 days from notification of a recommendation to formulate any objection to it, in which case there will be no obligation to implement the said recommendation. The agreement also provides that any party can, at any time, withdraw its objection and decide to implement a recommendation. In short, recommendations on measures for fisheries development and management are binding, provided that no objection is raised by signatory states, which therefore can, in this sense, not only take part in decision-making and oppose a recommendation, but also reserve the possibility of opting out of the application of adopted recommendations.\(^{72}\)

With the objectives and function of CACFish established, special consideration must be given to the agreement’s area of competence or, in other words, to the states that can become CACFish members. In our view, this represents one of the organization’s unique features. It also serves to highlight specific spheres of international influence and, at least for the moment, hampers the complete viability of the Commission. First, as already underscored, Central Asia is conceived as a region not only in a wider sense than the one strictly employed in this paper, but also includes the Caucasus. This approach was partly a response to the original initiative of the FAO’s sub-regional office, but it was also, doubtless, a reflection of geopolitical aspects worthy of examination.

Under article IV of the agreement, its area of competence includes the inland waters and areas within the territorial boundaries of the states of Central Asia (i.e., Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan), as well as the Caucasus (i.e., Armenia, Azerbaijan, Georgia and Turkey) and, “with respect to inland fisheries, other waters included in the transboundary water basins that border the territories of Central Asia and the Caucasus”. This definition, which uses only geographical terms and not political ones, expands the possibility of membership in the Commission and clearly raises the transboundary aspect of watersheds. In the case of

\(^{72}\) These decision-making mechanisms are widespread in RFMOs and other international organizations.
the Aral Sea Basin, this approach, as noted earlier, opens up CACFish participation to Afghanistan and Iran (which both share the watershed of the Amu Darya). In both watersheds, however, the number of states that could become party to the agreement rises among the nations of Central Asia and the Caucasus.

In effect, under article I.2 of the agreement, any FAO member nations can become signatories to the agreement, provided that their territories are wholly or partially located within the area defined in article IV. In this way, the provisions of the agreement are sufficiently broad so that, in addition to the states specifically listed in article IV, it can also include other states, such as China, Iran, Russia, Afghanistan, Mongolia and Ukraine, all of which have been officially invited to become members of the Commission.

As noted earlier, however, only four nations are currently parties to the agreement and sit on the Commission. To reinforce the strength of today’s weakened CACFish, it is necessary not only for more states to join, but also to look in broad terms at the provisions of the Code of Conduct for Responsible Fisheries examined previously. Specifically, article 7.1.4 of the code establishes that “[w]here a sub-regional or regional fisheries management organization or arrangement exists and has the competence to establish conservation and management measures, those States should cooperate by becoming a member of such organization or a participant in such arrangement, and actively participate in its work”. This provision has given rise to appeals voiced at CACFish and FAO meetings for other invited states to become formal participants in the agreement.

Lastly, with regard to the subject of financial operation, it was agreed that CACFish would have an autonomous budget, although the FAO was to provide secretariat and support services, at least during the initial period of establishment. In this respect, the proposal set out a funding methodology that reflects the usual practices of RFMOs. Devised at the meeting of the Steering Committee in Istanbul in February 2010 and later approved at the first meeting of the Commission, the model features three components: a first portion (20%) to be shared equally among all members (the base fee); a second portion (35%) to be paid on the basis of each member nation’s per capita GDP (the wealth component); and a third portion (45%), which is a percentage of the total tonnage from inland fisheries and aquaculture of each CACFish member nation (the production component). To this end, the table below provides a useful snapshot of production levels in 2007.

| Inland fisheries and aquaculture production in 2007 in the Central Asian and Caucasus region |

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73 Notwithstanding article I.3 of the agreement itself, which provides that any other FAO or UN member nation can request observer status in the meetings of the Commission and of the Technical Advisory Committee.

74 See the previously cited report SEC/R935 (Bi), paragraphs 25-43.
The data in the table above, which are used to determine the budgetary allocations and funding of the Commission, clearly show the limited share of total inland capture and aquaculture pertinent to the five nations of Central Asia. More specifically, the shares of Tajikistan and Kyrgyzstan (the two states in the region who are already party to the agreement) are 0% in relation to total production in Central Asia and the Caucasus. By contrast, the three largest-producing states, both in inland capture and in aquaculture, are the Russian Federation, Iran and Turkey. These facts and the territorial range of the Commission, or what we have referred to as its area of influence, together lead to the following conclusion: in relation to inland fisheries, there is a certain dilution in the regional character of Central Asia within a broader context in which the influences and interests of major and emerging powers are unavoidable. In fact, Turkey’s interests and regional influence are taking the lead and, amid a lack of participation by other major regional powers, are pulling the other nations of Central Asia in Ankara’s wake.

<table>
<thead>
<tr>
<th>Country</th>
<th>2007 inland fish capture in tonnes</th>
<th>2007 aquaculture production in tonnes</th>
<th>Total production (inland capture and inland aquaculture) in tonnes</th>
<th>National production as percentage of production of all listed countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>1000</td>
<td>0</td>
<td>1000</td>
<td>0.1%</td>
</tr>
<tr>
<td>Armenia</td>
<td>3000</td>
<td>1566</td>
<td>4566</td>
<td>0.6%</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>2943</td>
<td>113</td>
<td>3056</td>
<td>0.4%</td>
</tr>
<tr>
<td>Georgia</td>
<td>50</td>
<td>180</td>
<td>230</td>
<td>0.0%</td>
</tr>
<tr>
<td>Iran</td>
<td>74064</td>
<td>156281</td>
<td>230345</td>
<td>30.9%</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>49251</td>
<td>300</td>
<td>49551</td>
<td>6.6%</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>34</td>
<td>107</td>
<td>141</td>
<td>0.0%</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>228583</td>
<td>105275</td>
<td>333858</td>
<td>44.7%</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>146</td>
<td>26</td>
<td>172</td>
<td>0.0%</td>
</tr>
<tr>
<td>Turkey</td>
<td>43321</td>
<td>59033</td>
<td>102354</td>
<td>13.7%</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>15000</td>
<td>16</td>
<td>15016</td>
<td>2.0%</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>2802</td>
<td>3424</td>
<td>6226</td>
<td>0.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>420194</strong></td>
<td><strong>326321</strong></td>
<td><strong>746515</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Source: FAO Fisheries and Aquaculture Report No 935.
4. INTERNATIONAL COOPERATION AND HYDROELECTRIC ENERGY IN CENTRAL ASIA

The consolidation of the use of renewable energies requires a high degree of intergovernmental cooperation in order to create and manage a solid and stable legal international framework. At regional level, a framework of this kind would aid the transition towards an economy based less on traditional sources of energy and more on a sustainable model of energy management, and would help to respond to three primary concerns. The first is economic, since the gap between the world’s oil reserves and demand is closing rapidly with the growth of the economies of China and India. The second is environmental, given the severity of the consequences of climate change; and the third is social, reflected for example in the fact that, at the start of the twenty-first century, more than 1.6 bn people still have no access to electricity. In the states of Central Asia the main objective is to promote the sustainable use of water resources. Water has a considerable potential for mitigating the impact of climate change, but, for obvious reasons, it requires efficient cross-border management.

4.1. The international legal framework for the promotion of the use of renewable energies

International law has only recently begun to take an interest in the promotion of renewable sources of energy. In one way or another, several multilateral actions have attempted to bring the question to the attention of the international community.

At the United Nations, the first actions were framed inside the context of economic development and cooperation. The starting point was the UN Conference on New and

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75 The Intergovernmental Panel on Climate Change (IPCC) highlighted the role of renewable energies in its Fourth Assessment Report. It is estimated that in 2008 renewable energies represented 12.9% of the world’s total raw energy supply. In that year, hydroelectric energy accounted for 2.3%, and other sources of renewable energy only 0.4%. In the same year, renewable energy contributed approximately 19% of the worldwide electricity supply (16% hydroelectric, 3% other energies). In spite of the economic recession, the use of renewable energies continued to grow in 2009, with significant increases in the presence of wind energy (a 32% increase), hydroelectricity (3%), photovoltaic energy (53%), geothermal energy (4%), and solar energy (21%). The REN21’s *Renewables 2011 Global Status Report* has confirmed the growing penetration and consolidation of renewable energies. In 2010, renewable energy accounted for approximately 16% of global final energy consumption and supplied almost 20% of world electricity production, but only in the hydroelectric sector did renewable energy represent approximately 50% of the total energy generation capacity (IPCC, 2011: Summary for Policymakers, in Edenhofer, O. et al. (Eds), *IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation*, Cambridge University Press, Cambridge, 2011, available online at [http://srren.ipcc-wg3.de/report/IPCC_SRREN_SPM.pdf](http://srren.ipcc-wg3.de/report/IPCC_SRREN_SPM.pdf); REN21, *Renewables 2011 Global Status Report*, available online at [http://www.un-energy.org/sites/default/files/share/une/ren21_gsr2011.pdf](http://www.un-energy.org/sites/default/files/share/une/ren21_gsr2011.pdf).


Renewable Sources of Energy, held in Nairobi in December 1981.\textsuperscript{78} The scope of the conference was limited and the main result was the approval of an Action programme for the development and utilization of alternative sources of energy.\textsuperscript{79} After the approval of the Nairobi Programme, the General Assembly set up the Committee on the Development and Utilization of Renewable Sources of Energy, which continued its work under a variety of names until 2001, when its responsibilities were transferred to the Commission of Sustainable Development.\textsuperscript{80} Over the last ten years, however, the growing impression is that the Commission of Sustainable Development has failed in its mission to consolidate the implementation and sustainable use of sources of renewable energy;\textsuperscript{81} even though energy has been under its jurisdiction since 2006, the Commission has not been able to adopt any decisions regarding its development.\textsuperscript{82}

Among the few actions currently being implemented is the UN-Energy initiative,\textsuperscript{83} a mechanism for interinstitutional cooperation in the area of energy, created in 2004. The institution is involved in three areas: “Energy access”, led by the UN’s Department of Economic and Social Affairs (UNDESA) and the UN Development Programme (UNDP) in cooperation with the World Bank; b) “Renewable energy”, led by the Food and Agriculture Organization (FAO) and the United Nations Environment Programme for the (UNEP); and c) “Energy efficiency”, run by the United Nations Industrial Development Organization (UNIDO). Essentially, its objective is to support States in their transition towards sustainable energy use and to set in motion a process of cooperation between the various bodies in the UN system that have responsibility in this field.

Another important instrument developed under the aegis of the United Nations is the programme Sustainable Energy for All,\textsuperscript{84} promoted by the UN Secretary General with the aim of making the programme’s title a reality by 2030. It has three aims that must be fulfilled by this date: to guarantee universal access to energy services, to double the global rate of energy efficiency, and to double the quota of renewable energies in the global energy mix. In December 2010 the General Assembly adopted Resolution 65/151 which proclaimed 2012 as the International Year of Sustainable Energy, and acknowledged that “(...) access to modern affordable energy services in developing countries is essential for the achievement of the internationally agreed development goals, including the Millennium Development Goals, and sustainable development, which would help to reduce poverty and to improve the conditions and standard of life of the population.”

\textsuperscript{81} Goldemberg, J. (Ed.), World Energy Assessment: Energy and the Challenge of Sustainability, UNDP-UNDESA-WEC, 2000
\textsuperscript{82} Commission on Sustainable Development, Report on the fourteenth session, 22.4.2005-1/2.5.2006, Doc. E/2006/29,
\textsuperscript{83} Website: http://www.un-energy.org/
living for the majority of the world’s population.”

The growth of renewable energies has spurred the creation of new bodies of international cooperation outside the United Nations – all of them, surprisingly, based in Abu Dhabi – which, nonetheless, contribute relatively little of substance to the existing structures.

The foundation of the International Renewable Energy Agency (IRENA), for example, should have represented an important landmark in the deployment of the renewable energies. Created in Bonn on 26 January 2009 and currently comprising 116 members, it was destined to be a key actor in international energy governance and the driving force for exploiting the potential of sustainable energy worldwide. IRENA recently launched the programme REMAP 2030 to accelerate the implementation of renewable energies and to double their presence in the energy mix by 2030. Nonetheless, it has yet to make an impact in the global energy landscape and it remains to be seen what it can achieve alongside the International Energy Agency (IEA).

Two other recently created forums have failed to make their mark in the public management of renewable energy sources. These are the World Future Energy Summit (WFES) and the International Renewable Energy Conference (IREC). Since its inception in 2008, the WFES has become the renewable energy sector’s most important annual event, but its recent meetings seem to have been little more than opportunities for businesses to sell their products to public and private operators. The IREC, a ministerial conference created on German initiative in 2004, which led to the publication of the *Renewable Energy Policy Network for the 21st Century* (REN21), has been slightly more active. In 2005, the IREC adopted the Beijing Declaration, which included some thirty commitments for participating States and organizations. The 2010 Conference reaffirmed the importance of investment and international cooperation, research, the development of profitable technologies and planning. Finally, the IREC’s conference, held in 2013 in Abu Dhabi, stressed the need for greater intergovernmental cooperation and highlighted the important role of the Middle Eastern countries in this sector.

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85 *International Year for Sustainable Energy for All, Doc. A/RES/65/151*
86 Foundational text at BOE nº, 75, 29.3.2011.
88 Website: http://www.worldfutureenergysummit.com/
89 Website: http://www.ren21.net/REN21Activities/IRECs/ADIREC2013.aspx
Although they lack an environmental dimension, we should also mention other organizations which, for different reasons, have shown an interest in renewable energies: the International Energy Agency (IEA), the World Bank, and the World Trade Organization (WTO). In the area of renewable energies, the IEA mainly promotes cooperation in the research and technological development, and encourages states that have developed specific technologies to reach agreements regarding their implementation via multilateral forums. The IEA also plays an important role in the creation of indicators and criteria for the development of public policies. As for the World Bank, it recognizes the potential role of renewable energies in raising quality of life in developing countries encourages the participation in this market of private operators and promotes financial and non-financial instruments to support private investment in renewable energy. Finally, inside the WTO, the promotion of renewable energies raises certain questions regarding the compatibility of some of the measures applied – especially when they include incentives for energy producers – with the General Agreement on Tariffs and Trade (GATT), the General Agreement on Trade in Services (GATS) and the Agreement on Subsidies and Countervailing Measures (SCM).

In such a framework, the European Union (EU) should also be mentioned. The EU energy policy is grounded on two main principles: the obligations assumed in the framework of the Kyoto Protocol, and its concern for the security of Member States’ energy supply. With regard to the first of these two aspects, it should be borne in mind that the EU imports 60% of its natural gas and 80% of its oil from third party States, primarily from the Russian Federation. In view of these figures it seems clear that the success of the EU’s energy policy is dependent on its establishment of a sound, credible policy with regard to its relations with the large-scale producers and distributors. The second issue is particularly linked to the will of the EU to promote the

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93 In this context, for example, the WTO’s Appellate Body has recently condemned the green energy programme of the Canadian province of Ontario, on the grounds that a system of regulated tariffs which requires electricity producers to obtain up to 60% from facilities in Ontario contravenes WTO law. Report of the Appellate Body of 6 May 2013, Canada — Certain Measures Affecting the Renewable Energy Generation Sector - AB-201 [...] Report of the Appellate Body, WT/DS412/AB/R ; WT/DS426/AB/R


95 The Lisbon Treaty should facilitate this, in so far as it allows the EU to act in these and other areas on the international scene with a single voice. In September 2012 the EU adopted the Decision 994/2012/EU to facilitate the execution of bilateral agreements on energy with non EU States (according to the European Commission’s estimations, there are some thirty agreements on oil in place and almost twice as many on gas), and to ensure that the European Commission is informed of all the intergovernmental proposals that may have an impact on the internal energy market or on the security of the energy supply. See Decision 994/2012/EU of 25 October 2012 establishing an information exchange mechanism with regard to the intergovernmental agreements between Member States and third countries in the field of
use of renewable sources of energy, stressed early on by the European Commission in its White Book "Energy for the future: renewable sources of energy",\textsuperscript{96} and in the following Directive 77/2001/EC on the promotion of electricity from renewable energy sources.\textsuperscript{97}

The fight against climate change has given this approach added impetus, and the actions of the EU are now carried out inside the framework of the Kyoto Protocol. In relation to these objectives a particularly important instrument was Directive 2009/28/EC of 23 April 2009, which established a common framework for the promotion of energy proceeding from renewable sources.\textsuperscript{98} The Directive sets the following goals for the year 2020: 20% of the gross final energy consumption in the EU, and 10% of energy consumption in the transport sector in each Member State, should come from renewable sources. It also establishes specific targets for each Member State, which range from 50% for Sweden to 10% for Malta.\textsuperscript{99}

However, all these objectives have the year 2020 as their deadline. What will happen after that? The European Commission's "Energy Roadmap 2050" merely stresses that renewable energies should have a central role in the energy mix of the EU. The European Commission’s latest Communication\textsuperscript{100} does not offer a clear outline of how this energy option should be reinforced, but presents three possible alternatives: trusting in the cap and trade systems included in international instruments for climate change and establishing more demanding quantified objectives for reducing greenhouse gas emissions; working towards the creating of legally binding objectives for renewable energies and greater coordination of the actions for their promotion; or continuing with the current objectives, standardizing the regimes for promoting the use of renewable energies.

4.3. The importance of energy change in Central Asian states: the promotion of hydroelectric energy

For more than half a century, the production of hydroelectric energy has been a key
factor in the relations between the states of Central Asia. The connection between water and energy, however, has never been a simple matter. The reasons for this are straightforward: a balance must be found between the energy needs of the upstream countries Kyrgyzstan and Tajikistan, and the irrigation needs of the downstream countries Kazakhstan and Uzbekistan, and to a lesser extent Turkmenistan. The hydroelectric energy sector in Central Asia is not yet fully developed, but it is raising high expectations. Due to the economic crisis the internal electricity demand is currently weak, but electricity exports are growing fast.

From an ecological point of view, the geographical situation of Central Asia is extremely complex. The local hydraulic 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 hydroelectric infrastructures along the Amu Darya and the Syr Darya, mainly located in Kyrgyzstan and Tajikistan.

Other factors of a technical nature have a direct influence on the development of hydraulic energy. Altitude, rainfall and the drainage area all affect the potential of this energy source. There are three different kinds of hydroelectric facilities in the region: the installations in high mountain areas, characterized often by small flows and major changes in the elevation of the terrain; installations at medium altitudes, in rivers with abundant flows, with mean differences in level of around a hundred metres; and installations in low-lying areas, mainly along the large rivers, with very high yields and low vertical height. However, although the potential of these water courses is very high, they are underexploited: at present, only 10% of the region’s economic hydropower potential, estimated at 450 GWh per year, is currently being used. The situation in each of the five states in the region is as follows.

Tajikistan, with a hydropower potential of almost 317 GWh per year is the second highest producer of hydroelectric energy in the Commonwealth of Independent States, after Russia. In fact, it produces more than half of the hydroelectric resources of Central Asia. In addition to the country’s large infrastructures, which provide 98% of the energy it uses, small hydroelectric plants could generate up to 100 MWh per year, and around 1,000 small hydroelectric energy stations with a capacity from 10 to 3000 kWh.

per year could be constructed. However, at present Tajikistan’s hydroelectric stations produce only 15.8 GWh per year, and the country is obliged to import energy from Uzbekistan. In fact, the stations in operation are working at barely 10% of their real capacity.

Kyrgyzstan\(^{104}\), which has the fourth largest water supply of the countries of the Commonwealth of Independent States and has an estimated hydropower potential of 99 GWh per year, produces only 10.3 GWh per year. Hydroelectric energy represents 80% of the country’s total energy production, and 91% of the total energy used. Currently, the development of new hydroelectric stations is being promoted in order to resolve the major energy crisis which has affected the country for years. For example, a pilot project is underway to construct 13 small hydroelectric stations in remote towns and villages.

The situation is quite different in the countries downstream. Kazakhstan\(^{105}\) could provide almost 27 GWh per year, but at present it generates no more than 8 GWh per year. Kazakhstan’s three large hydroelectric stations alone produce 10% of the country’s electricity needs. Four hundred small hydroelectric stations have been abandoned, and new, large capacity stations are currently being built together with other large-scale projects carried out in cooperation with China.

In Uzbekistan\(^{106}\) hydroelectric energy remains a major resource and the State’s hydroelectric production represents the highest proportion in the region. Nevertheless it is the country that produces the least hydroelectric energy in absolute terms – 10.8 GWh per year, and does not constitute more than 15% of its overall energy production. Several hydroelectric stations of varying capacities are under construction.

Finally, the data for Turkmenistan\(^{107}\) are insufficient to draw conclusions, but the use of


renewable energies appears to be practically nothing. The use of hydroelectric energy, with a hydropower potential of 2 GWh per year, also appears to be insignificant (3 MWh per year).

Hydropower is one of the largest renewable sources of energy. Given the hydrogeological characteristics of these countries, then, what are the main problems facing the attempts to increase the use of renewable energies, especially hydroelectric power, in the energy mix of the Central Asian States?

Among the major obstacles are the weakness of the legal, social and economic framework for the promotion of renewable energies and the high level of tension that persists between the states of the region. These tensions led to Uzbekistan’s withdrawal from the Central Asian electricity distribution network of in 2009.

On the one hand, the management model of water resources in these states still harks back to the Soviet era. It is asymmetrical and unbalanced, favouring the unilateral priorities of the new States and hindering the establishment of a regional focus for coordination. The model fosters the 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.

On the other hand, the promotion and the use of renewable energies have the potential to play an important part in the modernization of these states. But the political and institutional capacity and the leadership required to oversee the changes needed in the collective management of the river basins shared by these States appear to be non-existent, and the balance of powers in the region is relative. Indeed, the traditional option has been to promote unilateral large-scale hydroelectric facilities and infrastructures rather than multilateral cooperation small projects which could operate on a more equitable basis.

Large hydroelectric facilities are closely related with energy demands through renewable sources. Certainly, this kind of large facilities might lead to a decreased use of fossil fuels, but this does not automatically mean that they result in an environmentally or socially sustainable development. On the contrary, many of these initiatives generate significant negative impacts on local populations, while also significant economic benefits to their promoters. For example, large dams usually cause submergence of arable land, reduce biodiversity and hinder the migration of species, alter river navigation, change the flow of rivers and groundwater level, provoke the displacement and forced relocation of villages, etc.

One strategy that might aid the process of modernization is the promotion of small-scale community projects for the management of water resources. Small and micro hydroelectric facilities are usually built in isolated areas and are used for the production of electricity to satisfy the needs of small communities or isolated complexes. This would improve the socioeconomic conditions of these states with relatively few resources and would have a positive effect in reinforcing transborder cooperation in this highly complex and occasionally conflictive area.

Hydroelectric stations of this kind would permit the electrification of isolated areas – an issue of great importance in a region with so many rural settlements – and at the same time could provide the country with additional energy resources when consumption demands are particularly high. Furthermore, given their small size and their limited capacity, the activity of these power plants would not significantly affect the flow of water in the states downriver and would not represent a threat to the region’s stability. Finally, the implementation of projects of this kind would allow a more flexible approach to the management of water resources. They might help to introduce a number of much-needed changes: for example, the adaptation of the hydroelectric stations to multiple uses (combining the production of hydroelectric energy with other applications such as drinking water supply systems, irrigation canals, flood control or waste water plants); the redevelopment of hydroelectric stations from the Soviet era abandoned during the 1990s, through the creation of recreational areas to generate income for the local economy; the design of joint projects to divert the supply of water to the areas where it is most needed, thus reducing the effects of drought and increasing flood control; and the installation of stations at the base of dams to exploit the water flow more fully, thus generating more power.

Given the nature of the region, the implementation of these changes requires the leadership of international organizations. In Kyrgyzstan, for example, the United Nations took part in the drafting of the Winter Response Plan which aimed to strengthen the capacity of the government to protect the most vulnerable sectors of the population against the increases in the price of energy, food, and water. The Global Environment Facility (GEF) granted Uzbekistan the sum of $10 million to finance projects stimulating market approaches in renewable energy. Other international

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109 The data of the European Association of Small Hydropower Producers (EASHP) show that in the European Union small hydroelectric stations of up to 10 megawatts produce around 46 TWh (Terrawatthours) of electricity per year, which represents nearly 1.5% of the total production of energy and 9% of the production of renewable energy – enough to supply 13 million homes: EASHP, *Current status of Small Hydropower development in the EU-27. Raising Awareness of Small Hydropower sector, Stream Map project*, available online at http://www.streammap.esho.be/fileadmin/documents/Raising_awareness_doc___press_release/FINAL_SHP_Awareness_2011.pdf
bodies, both governmental and non-governmental, are working together on the
development of management projects for hydroelectric energy.\footnote{110} One such project is
financed by Central Asia’s Eco-Energy Alliance, which, in cooperation with the
Carnegie Endowment for International Peace,\footnote{111} is creating small community centres in
remote rural areas that are not connected to national electricity networks.

The investment in these projects is likely to have a considerable impact on the socio-
economic development of the population and will also help to protect the environment.
In the long term it will probably have a beneficial effect on security and political stability
as well, since it represents a break with the philosophy that has traditionally done little
to balance the need for electricity production with the population’s need for food
security.\footnote{112}

However, these projects do not seem to be a priority for the states in the region, which
see the exploitation of these resources as a means of obtaining foreign currency rather
than as a way to alleviate local problems. An example is the continuing existence of the
Central Asian Power System inherited from the Soviet Union, which remains in charge
of the distribution of electricity in these States.\footnote{113} Its gross inefficiency has meant that
the states with potential for exporting electricity, Tajikistan and Kyrgyzstan, have looked
southwards and have preferred to sell to their neighbours in the south and west – Iran,
Pakistan and Turkey – rather than to their immediate neighbours inside the region. At
the same time they have ignored the possibilities offered by the small stations, which
operate at lower costs and provide affordable short-term solutions for the local
population.

The scenario is also complicated by the involvement of two key regional stakeholders,
Russia and China, and the need for the states in the region to strike a balance between
the inflow of western investment and the constant presence of these two major States.
Russia, for instance, imports cheap hydroelectric energy from Kyrgyzstan and
Kazakhstan to supply areas in Siberia, and at the same time it sells electricity to
regions in northern Kazakhstan. In order to strengthen its position, Russia is also
working on the development of transmission lines connecting north and south
Kazakhstan and some interconnecting lines between the networks of Tajikistan and
Kyrgyzstan.\footnote{114} As for China, its influence in the region is increasing rapidly. The
opening of the new gas pipeline linking the gas fields of Kazakhstan, Uzbekistan and
Turkmenistan in 2009 allows approximately two thirds of the volume that is currently

sent to Russia to be sent to China, a move that will have major economic and above all geopolitical consequences.\textsuperscript{115} China has also substantially increased its market quota in Kyrgyzstan and Tajikistan, and is funding many of the main hydroelectric infrastructures in the region.

Another of the obstacles to the consolidation of renewable energies in the states of Central Asia is the current global expansion of practices of decarbonization via the promotion of unconventional gas exploitation. The falling cost of gas extraction and the foreseeable economic profit may persuade the governments in the region to choose unconventional gas over renewable energies. Significantly, in recent years IEA has shown increasing interest in the extraction of unconventional gas: it recently published its “seven golden rules”, the main environmental guidelines for the large-scale production of shale gas.\textsuperscript{116}

Once again it is important to bear in mind the region’s geopolitical situation.\textsuperscript{117} Russia has the largest reserves of natural gas in the world, but it is losing influence in the world energy market because of the increasing availability of shale gas and liquefied natural gas. This situation favours the states of Central Asia, both economically and geostategically; in fact, these countries are paying close attention to the evolution of this energy source and see its exploitation as an essential element for overcoming the energy crises that they repeatedly face. Kazakhstan, for instance, has begun geological explorations in its shale gas fields and is considering the use of this gas as a principle source of energy; and Uzbekistan has also announced the launch of the extraction of shale gas in an attempt to compensate for the fall in its oil production, and thus reduce its dependence on oil imported from Kazakhstan.\textsuperscript{118}

5. FINAL REMARKS

The above findings lead us to a number of conclusions in the different fields related to water cooperation in Central Asia that we have discussed. First and foremost, we

\textsuperscript{117} See the Communication from the Commission: Second Strategic Energy Review: a EU Energy Security and Solidarity Action Plan (COM(2008) 781 final. It should be recalled that the support being offered by the European Union is to firms that connect the entire region, principally in order to reduce Russia’s influence and to diversify the region’s gas supply. Under the Energy Security and Solidarity Action Plan, these initiatives include the regions of the Caspian Sea and the East which supply gas to Europe via the Southern Gas Corridor. For this reason, Central Asia is fundamental to guaranteeing the interconnectedness of the gas supplies to Europe. Gas exports towards the markets of the European Union are likely to increase with the projected pipeline between Turkey and Azerbaijan, part of the Southern Gas Corridor, which includes the Nabucco gas pipeline promoted by the European Union, the Trans Adriatic oil pipeline (TAP), the White Stream, and the ITGI pipeline between Turkey, Greece and Italy. The principal challenge will be to persuade the gas-producing countries to export directly to Europe; for many of them, given their geopolitical situation, this may entail accepting major political risks.
believe that an adequate management of water in the region advises all Central Asian states that have not done so to ratify promptly the existing global and regional instruments on water cooperation. This is a step that would facilitate international cooperation and integrated management of their shared water resources, in a context where cooperation can no longer be considered a possibility in contemporary international law, but an actual must.

Second, the limited capacity of the Central Asian states to manage collectively their fishing resources has led to FAO’s initiative to establish a regional fisheries management organization, CACFish. This implies a certain dilution in the regional character of Central Asia within a broader context in which the influences and interests of major and emerging powers are unavoidable. In spite of the fact that only four states in the wider region have become members of the Commission, we believe that this is the right path for them to take in order to face, in a collective and institutional manner, and with the technical support of FAO, the challenges of management and conservation of continental fisheries in the region.

Third, the high potential of water courses in the region for the development of hydraulic energy remains low in most countries. At the same time, the projects that the largest states (Kazakhstan and Uzbekistan) are currently planning and developing may result in serious negative environmental and social impacts in their territory. Instead of large facilities, the promotion of small-scale community projects for water management would improve the socioeconomic conditions of these states and their populations.

Finally, this improved national and international water management would in its turn allow these states to use water at home in a more sound way, giving full priority to the achievement of the right to safe water (and sanitation), particularly in rural areas, where it is most needed.