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WATER IN CENTRAL ASIA: A PROSPECT OF CONFLICT OR COOPERATION?

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Water is the central resource involved in one of the world's greatest human-induced ecological disasters: the desiccation of the Aral Sea in Central Asia. Increasing demand and declining supplies of water have been compounded by rising nationalism and competition among the five Central Asian states, which, in turn, has hampered the possibility of finding a viable regional approach to replace the Soviet system of water management. This paper analyses the root causes of this issue and argues that tensions over water have "spilled-over" in Central Asia, creating an uneasy political climate that has slowed down cooperation. In particular, Central Asian states have tended to securitize water-related issues, motivated by national concerns over economic development, the need to control ethnic tensions and social uprisings, as well as the desire to manage environmental degradation and population growth. This work also explores the reasons why regional institutions and agreements, typically proposed as useful instruments for inducing cooperation, have not been successful in the Central Asian case. In conclusion, some recommendations for improving water management policy in the region are suggested, including the possibility of using the legacy of the Aral Sea problem to reverse classical upstream/downstream dynamics.

INTRODUCTION

Water takes on special importance in Central Asia. At over four million square kilometres, the post-Soviet states of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan cover an area larger in size than India, Pakistan, and Bangladesh combined, and are home to roughly 60 million people. The majority of fresh water comes from run-off from the high mountain ranges of Pamir and Tien Shan in the Eastern part of Central Asia, which feed the two main rivers of the region, the Amur Darya and Syr Darya, flowing west and north towards the Aral Sea.

As the region is within arid and semi-arid global vegetation zones, agriculture is made possible only by irrigation, which demands sophisticated water distribution systems. More than 3500 years ago, the “Mesopotamia” of Central Asia was populated by developed hydraulic societies with refined irrigation systems that provided water for millions of hectares. At the end of the 19th century, after the Russian conquest, new irrigation technologies were introduced in order to cultivate cotton on a larger scale. The once seemingly inexhaustible Central Asian water resources started diminishing in the 1960s, when a rapid increase in the demand for water resources caused the dramatic depletion of river flows and ground water reserves, as well as the degradation of water and soil quality. The desiccation of the Aral Sea, one of the major human-induced ecological catastrophes in the world, is the most tangible result of dysfunctional water management policies.

After the demise of the Soviet Union in 1991 and the consequent change in the management of natural resources in Central Asian states, competition for water began to increase at an alarming rate, adding tension to what continues to be an uneasy political region. Agriculture is the mainstay of the region’s economy, and thirsty crops such as cotton and rice require intensive irrigation. Moreover, irrigation systems have decayed so severely that half of the water never reaches the fields, and several years of drought have further cut available water by a fifth even as demand continues to soar. The problems related to increasing water demand and declining water supply have been further compounded by rising nationalism, as well as political and economic competition among the five Central Asian states. As a result, they have been unable to find a viable regional approach to replace the Soviet system of water management.

This paper analyses the causes and possible implications of such a failure. After a brief review of the existing literature on water as a source of conflict and/or cooperation, it is argued that tensions over water have “spilled-over” in Central Asia, thus creating an uneasy political climate that

hampers further steps towards cooperation. In particular, Central Asian states have tended to securitize water-related issues, often motivated by national concerns over economic development, the need to control ethnic tensions and social uprisings, and the need to manage environmental degradation and population growth. Securitization, in turn, has dissipated the 'cooperation-inducing' potential of water resources. The reasons why regional institutions and agreements have not been successful in the Central Asian context are also explored. In conclusion, some recommendations for improving water resource management in the Amur Darya and Syr Darya basins are presented, including the possibility of using the legacy of the Aral Sea problem to reverse the classic upstream/downstream dynamics.

WATER AS A SOURCE OF CONFLICT OR COOPERATION?

Water is a fugitive resource, one which crosses political boundaries without a passport in the form of rivers, lakes and aquifers. Trans-boundary waters extend hydrological interdependence across national frontiers, linking users in different countries within a shared system. Water has increasingly been perceived as a global common, thus starting a debate over the need for collective action in order to avoid a so-called 'tragedy of the commons'.

In the early 1990s, largely as a result of the end of the Cold War and the consequent decay of "traditional security threats," concerns about water shortage have gradually risen on the global policy agenda, causing some alarmist responses worldwide as well as lively debate about the implications of this problem in terms of conflict resolution strategies. Water management became associated with security concerns, a phenomenon that has been labeled as the "securitization of water resource management" (Phillips et al. 2006, 20). This means that water issues are linked to "national security concerns, thereby taking them out of the normal domain of technical management and placing them in the secret and closed domain of security officials" (Buzan et al. 1998, 24). It is important to stress that "something is designated as an international security issue because it can be argued that this issue is more important than others and should take absolute priority (...), as [it is] an existential threat" (Buzan et al. 1998, 24). Moreover, an issue is securitized only if and when the audience accepts it as such, so that the process of securitization is essentially a "speech act" (Buzan et al. 1998, 24-27).

The spectre of growing competition for water between states has generated a polarised public debate. A specialised literature has emerged, which describes water both as a historic and as a future cause of interstate warfare.

Gleick, for example, argues that “water and water-supply systems are increasingly likely to be both objectives of military action and instruments of war” (Gleick 1993, 79). Similarly, Homer-Dixon, citing the Jordan and other water disputes, comes to the conclusion that “the renewable resource most likely to stimulate interstate resource war is water” (Homer-Dixon 1994, 19). Conflicts over water resources emerge when “riparian states feel constrained in their ability to realise their national goals and objectives, generally as a result of one or more co-riparians unilaterally using the resource” (Phillips et al. 2006, 19). Turton further suggests that “a key element in understanding the dynamics of water conflict is the presence of a prevailing threat perception that acts as an interceding variable, informing decision-making and thereby linking perceptions to reality” (Turton 2003, 75). Securitization of water-related issues would hence appear to augment the risk and perception of conflict. The International Peace Research Institute of Oslo (PRIO) has recently produced some research confirming the link between scarcity and conflict. The probability of military conflict increases when “rivers cross borders rather than form borders, as this creates an upstream/downstream dynamics” (Toset et al. 2000, 971).

In contrast, other authors have denied this ‘conflict-inducing’ characteristic of water, claiming that historical evidence demonstrates that governments have always found innovative and cooperative solutions to manage tensions derived from transboundary water management. Wolf and Hamner, in their “Transboundary Freshwater Dispute Database,” discuss the “cooperation-inducing characteristics of transboundary waters” (Wolf and Hamner 2000, 124).

If securitization triggers conflict over water resources, “de-securitization” may be the optimal long-range option. De-securitization, in fact, implies that issues are moved out of the aforementioned threat-defence sequence, in which they are phrased as threats against which countermeasures are needed, and back into the ordinary public sphere. On this point, Daoudy contends that “de-securitization of water resource management opens the way to negotiated agreements between and among States, and the consequent sharing of benefits” (Daoudy 2007, 25). The concept of benefit sharing has been presented as a policy tool in international conferences and workshops. Although references to benefit sharing are numerous, it has been argued that “little substance is discernible beyond the catchphrase level” and, therefore, “the concept of benefit sharing needs to be significantly developed” (Phillips et al. 2006, 23). According to Daoudy, “the simplest and most useful general framework to date divides benefits from cooperation over a shared river basin into environmental, economic,

political, and catalytic categories. From there, levels of conflict or cooperation are largely determined by the incentives co-riparians face” (Daoudy 2007, 26). The same author further suggests that “when environmental protection becomes a specific management objective, it can start to drive the type of cooperative spirit needed for any form of benefit-sharing” (Daoudy 2007, 26). Cooperation over water resources is hence likely to have a “spill-over” effect: it can encourage cooperation in other areas, eventually leading to economic development. In this sense, water sharing may encourage broader conflict prevention.

Different authors have suggested various means for the actualisation of this ‘cooperation-inducing’ potential of water resources. In order to provide the infrastructure that is necessary for the promotion and coordination of benefit-sharing, for example, Daoudy highlights the need for “establishment of regional and international institutions” (Daoudy 2007, 30). Waterbury, more suspicious about the possibility of voluntary cooperation between co-riparians in international river basins, suggests that some “modest steps starting at the national level can nevertheless be attempted, (...) such as water pricing and technological innovation aimed at the achievement of more efficient water uses” (Waterbury 1997, 286). At the same time, the creation of joint independent monitoring and assessment units can help to “monitor the process of harmonisation of regulatory regimes within riparian states and the actual application of such rules” (Waterbury 1997, 287). Wolf and Hamner further recommend agreements and treaties as solutions for information gathering and sharing, which, in turn, are useful ways of enhancing mutual confidence between the parties (Wolf and Hamner 2000, 126). As a general framework, the 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses establishes that the principles of equitable and reasonable utilisation, no significant harm, and prior notification of works should serve as guiding criteria for the management of international and trans-boundary waters.

All of these analyses suggest that water has the potential to fuel wider conflicts, but also to act as a bridge for cooperation. Cross-border waters almost always create some tensions between the societies they bind. These tensions cannot be considered in isolation, as they are tied up in factors larger than relations between States, including concerns over national security, economic opportunity, environmental sustainability and fairness. The 2006 UNDP Human Development Report contends that “one problem with the polarized debate generated by the water war rhetoric is that it has diverted attention from more pressing and more relevant human

security concerns” (UNDP 2006, 204). Indeed, the human dimension is fundamental when speaking about water-related issues, as “water is not necessary for life, it is life” (De St. Exupéry 1939). In this sense, water sharing should never be understood as a zero-sum game, in which one country’s gain is another’s loss. Just as interdependence through trade can expand the economic benefits for all, so can cooperative interdependence in water. However, the opposite is also true. Where cooperation fails to develop or breaks down, all countries stand to lose: social and ecological disasters are the inevitable consequences of this scenario. The case of the Aral Sea is the most visible and dramatic example of non-cooperation over water resource management.

WHAT HAS IMPEDED COOPERATION IN CENTRAL ASIA?

The purpose of this work is to look at the causes that have impeded cooperation between the Central Asian Republics of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan over the Syr Darya and Amur Darya river basins. My hypothesis is that cooperation has been hampered by the regional states’ perception of water resources as a zero-sum game, in which one’s gain is achieved at the expense of another’s loss. This dynamic, in turn, is determined by three major factors, namely: 1) the political context (the recent independence of the five Central Asian republics and their weak leaderships at the governmental level); 2) the social context (increasing population growth and tensions between different ethnic groups); and 3) the economic context (political economy directed towards self-sufficiency and tensions between the agricultural and energy sectors within the region). States have therefore tended to “securitize” water-related issues, thus elevating them to the status of national security concerns. As the literature suggests, securitization of water resource management increases the prospects for conflict and, as a consequence, diminishes the likelihood of regional cooperation. This is reflected in the weakness and inefficiency of existing institutions and treaties for shared water management in the Central Asian region.

A more specific explanation that accounts for the failure of institutions and treaties in the context under analysis needs to be identified. In the next section, I will discuss the weakness of institutional structures for water management in Central Asia as a consequence of their limited mandates, constrained autonomy, insufficient funding, lack of implementation mechanisms and non-neutrality. These inefficiencies have led experts to evaluate as high the risk of a ‘water war’ in the region. The final section of this paper contains some recommendations as well as a suggested solutions

that would help to reverse the classic upstream/downstream dynamic, leading to de-securitization of water-related issues and increased cooperation among co-riparians in the Syr Darya and Amur Darya river basins.

THE CAUSES OF NON-COOPERATION IN CENTRAL ASIA: SECURITIZATION OF WATER RESOURCE MANAGEMENT

The demise of the Soviet Union in 1991 brought a fundamental change to the management of water in Central Asian countries at the international as well as at the sub-national level. It also caused a sudden power vacuum and the breakdown of the state-controlled, subsidised provision system. The most difficult Soviet legacy faced by governments in the region, in the wake of independence, was deliberately tight linkage between regional water management systems; these links ignored the new political borders. At the same time, the one-sided economic development of the Soviet Union had produced environmental depletion and degradation, a phenomenon that is commonly known as the “Aral Sea syndrome” (Klötzli 1997). The shrunken Aral Sea, in fact, is the starkest symbol of the Soviet Union’s poor water resource management. Under the Soviet regime, nature was viewed as something to be marshalled and directed by elaborate engineering. Moscow spent billions of rubles building dams and canals across Central Asia to increase the area of irrigated land without concern about environmental damage. However, despite the fact that water was delivered in a wasteful manner with little consideration for long term environmental impacts, the system did work within its own logic. Quotas were set and respected under the firm guidance of the Ministry of Land Reclamation and Water Management in Moscow, in close coordination with the Ministry of Energy. These quotas favoured the downstream cotton-producers (Uzbekistan, Turkmenistan and Kazakhstan) at the expense of mountainous and less developed Kyrgyzstan and Tajikistan, which had only limited gas and coal deposits and were more willing to develop their hydropower potential. The centralised nature of the Soviet water management scheme caused the regional States to be highly dependent on water for economic activities.

If Gleick’s model for evaluating a nation’s vulnerability to water conflicts is applied to Central Asia, there is a clear distinction between the water-rich republics of Kyrgyzstan and Tajikistan, and those republics that are not in control of the sources of their water courses like Uzbekistan and Turkmenistan. This difference is accentuated by an uneven control over the storage capacity of the reservoirs that are situated along the main rivers. The vulnerability indices should reflect different access and pollution control opportunities, as well as different goals for water utilization (hy-

dropover vs. agriculture). The results indicate a high potential for conflict over water-related issues in the area.

After independence, the introduction of private land holding, coupled with the decentralization of water allocation, led to a multiplication of water users and to unclear responsibilities concerning water allocation and the maintenance of related infrastructure. The creation of the new states resulted in the emergence of differing national interests, with each country developing its own discourse over water and water resources. With regards to the management of the two largest river basins in the region, the Syr Darya and the Amur Darya, disputes between Kyrgyzstan, Kazakhstan, Uzbekistan, Turkmenistan and Tajikistan began after 1991 and were mainly focused upon the quantity and seasonability of water release, the maintenance of related infrastructure, and the economic value of water.

In the Amur Darya basin, the greatest tensions are currently between Turkmenistan and Uzbekistan. Over the years, there have been persistent reports of Uzbekistan troops taking control by force of water installations on the Turkmenistan bank of the river, and in 2001, there were even rumours about the massacre of a large number of Uzbekistan troops in Turkmenistan (Klötzli 1997). While these reports are largely unsubstantiated, they show simmering tensions between these two states. Another factor in the area is Turkmenistan's construction of the "Golden Lake," a large artificial lake with an area of 2,000 square kilometres in the Karakum desert, which would be established through a massive diversion of the Amur Darya waters. As of the summer of 2000 and continuing into 2001, levels in the lower reaches of the Amur Darya had dropped noticeably as a consequence of the "Golden Lake" project. In 2001, an increasing number of people in both Karakalpakstan and Khorezm lacked both irrigation and drinking water, driving a large number of the region's residents to flee to the neighbouring regions of Turkmenistan and Kazakhstan (Sievers 2002, 370). These dynamics contribute to a rising threat perception among the populations of the respective countries, thus justifying the "securitization" of the water discourse at the national level.

In the Syr Darya basin, the potential for conflict is also tremendously high. The river embraces the Ferghana Valley, which is the most sensitive part of modern Central Asia, given the fact that it is divided between Uzbekistan, Kyrgyzstan, and Tajikistan. Its ethnically mixed demographic composition led to episodes of violence in 1989. Tension also derives from conflict over the Toktogul reservoir. This is a massive hydroelectric facility, built in the 1970s by the Soviets in the Kyrgyz part of the Syr Darya and linked to a massive set of water control installations on the same river.

Toktogul is now a major point of contention between Kyrgyzstan and the downstream states. Kyrgyzstan would prefer to release water from this reservoir during the winter season so as to provide for the country's heating and other needs. However, Kazakhstan and Uzbekistan rely on that water to irrigate cotton and other crops during the summer. This controversy has led Uzbekistan to enact policies aimed at increasing self-reliance and reducing dependence on the Toktogul Reservoir, which include the construction of a reservoir capable of storing 2.5 billion cubic metres of water. Kyrgyzstan is also pursuing a strategy of greater energy self-sufficiency. At present, authorities are exploring the construction of two new dams and hydropower plans that would generate enough electricity for national self-reliance plus a surplus for export; the problem is that the \$2.3 billion price tag is 1.2 times the country's GNI. An alternative strategy is developing a lower cost thermal power plant to meet winter energy needs; this, however, would increase Kyrgyz dependence on natural gas supplies from Uzbekistan, which are periodically suspended. Finally, Kazakhstan is exploring the unilateral option of building a 3 billion cubic metre reservoir at Koserai. These ambitious projects are explicable by taking into consideration that the five Central Asian republics are newly independent and sovereign states. Consequently, they are planning for economic and resource self-sufficiency, allowing them to respond to emergent internal demands while decreasing reliance on unfriendly neighbours.

The question becomes even more complicated when ethnic considerations are introduced. The nature of the conflict between Turkmenistan and Uzbekistan along the Amur Darya is essentially rooted in a zero-sum struggle between two governments. In the Ferghana Valley, on the other hand, the states involved cannot as handily manipulate the reactions of their citizens, nor do their citizens act primarily out of loyalty to or reflect the concerns of their titular national states. The ethnic variety of Central Asian states, an artificial creation of the Soviet period, accounts for the fact that most of the republics rank the ethno-territorial issue as a top priority. As the borders became international, large alien populations were left in areas adjacent to their home republics. This incongruence is likely to produce territorial conflicts, especially when economic, demographic and ecological pressures exacerbate already existing tensions.

The potential for conflict in the region is enhanced by other factors, such as high population growth rates. The population of Central Asia more than tripled between 1951 and 1989, reaching 35 million. The growth rate is about 2.5% per year, much higher than the Soviet average of 0.87% in the period of 1979-1989 (Micklin 2000). In addition, Central Asia is

still facing a process of nation-building, often characterised by a violent search for national, religious and sub-national identities. Water resource relations between the conflicting parties depend on their internal political power structure and their readiness for social and economic reforms. Kazakhstan and Kyrgyzstan have chosen moderate democratization and a market-oriented economy, whereas in Uzbekistan and Turkmenistan political power remains in the hands of traditional clans. In Tajikistan, the old organizations regained power after a short interim of nationalistic-islamistic opposition between 1992 and 1997.

Water is thus perceived as a 'national concern' in Central Asia and, because of its potential to fuel conflicts between and within regional states, the five republics include it into their national security agendas. National leaderships have used water-related alarms as a 'scapegoat' towards which they have directed their domestic constituencies' economic and social concerns. In this way, they have been able to avert the need to concretely address complex domestic problems. In general, securitization of the water discourse discourages cooperation between states at the regional level and increases the potential for national leaders to blame economic and social woes on water-related disagreements in the region.

INSTITUTIONAL STRUCTURES AND TREATIES AT THE REGIONAL LEVEL

Even though independence from the centralised water management system of the former Soviet Union has been formally achieved by the five Central Asian republics, the current organization still includes some major weaknesses. Moscow tolerated no independent water management, thus depriving local authorities of the experience that is required for effective management and for resolving water conflicts. At the same time, the Soviet imperative of economic growth continues to effect the policy-making of the five republics, which are all desperately striving for self-sufficiency in food and energy production. The region is also affected by contradictory administrative competencies and indecisiveness, and by insufficient resources for monitoring and control, which give rise to widespread corruption and mismanagement problems.

The literature suggests that regional and international institutions (Daoudy 2007), together with the establishment of independent monitoring and assessment units (Waterbury 1997) can help to promote cooperation in shared river basins. Moreover, agreements and treaties are strongly recommended, as they lay down specific provisions, rules, and mechanisms that all signatory parties are legally bound to follow (Wolf and Hamner

2000). With independence and the emergence of issues that are typical for international river basins, there is also a need to implement internationally approved law principles, such as those in the 1997 UN Watercourses Convention, for the Central Asian context.

On 12 October 1991, the water ministers of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan agreed that they would maintain the Soviet allocations of water, an accord that was formalised in February 1992 within the framework of the Almaty Agreement. The Almaty Agreement has as a primary goal cooperation in the field of water management to use and protect water resources. The first article of the agreement determines the equitable use of water resources, as well as the mutual responsibility for a rational utilisation and protection based on the region's water resources (Klötzli 1997, 64). Moreover, it establishes that "each of the Parties (...) is obliged to prevent actions on its territory which can infringe on the interests of the other Parties and cause damage to them" (Art.3), thus reflecting the principles of the Helsinki Rules of 1966 and then the 1992 UN/EC Helsinki Convention on the Protection and Use of Transboundary Watercourses and International Lakes.

The Interstate Commission for Water Coordination (ICWC), a joint committee consisting of the water ministers of the five republics, was established to facilitate the implementation of quotas and to control the activities of the river basin enterprises (BVO). The ICWC also runs a Scientific Information Centre (SIC), trains water officials, and operates a comprehensive database that can be assessed by its member countries. The ICWC's executive bodies, the Basin Water-Management Association (BWA) Amur Darya and the BWA Syr Darya, monitor the implementation of quotas, with the right to adjust them up or down by as much as fifteen percent. The Interstate Council for the Aral Sea Basin (ICAB) and the International Fund to Save the Aral Sea (IFAS) were set up in 1993 and then merged in 1997, and aim to address the problems of the Aral Sea and to provide social, economic and other assistance to people living in the area. These organizations were created with the expectation that they would coordinate their activities closely with the ministries that are responsible for water management in each Central Asian country. However, it proved impossible to establish water quotas that were acceptable to all, and, as a result, a number of bilateral and multilateral agreements regulating the water flow had to be negotiated.

The imposition of a half-hearted version of Soviet central planning on the fractious Central Asian states has not proven a recipe for success. The current management system has failed to deal with rising tensions

over water resources. In particular, the incapacity to recognise that the new nations were not satisfied with the economic roles that Moscow had previously assigned to them has thwarted the drafting and implementation of a concrete regional approach to water-related issues. Another impediment has been the lack of reliable data on water flow in the Syr Darya and Amur Darya basins. The average annual flow of water of Amur Darya is seventy-five cubic kilometres. The Syr Darya has an average flow of thirty-six cubic kilometres. However, these flows vary significantly from year to year and from season to season; additionally, data collection has become more difficult with the disappearance or decay of many hydrological posts as a consequence of the civil war in Tajikistan and a lack of funds in both Tajikistan and Kyrgyzstan. It is therefore very difficult for hydrologists to produce precise estimates on water flows.

In summary, it is possible to identify five main causes for the failure of institutions and agreements in dealing with water resources in the Central Asian region.

Limited mandates

River basin organizations in Central Asia were historically expected to work on specific technical areas, such as collecting data or monitoring flows across the border. The narrow scope of their activities greatly limited their ability to develop broader systems of benefit sharing that are necessary to cope with basin-wide socio-economic and environmental challenges. The Interstate Commission for Water Coordination (ICWC), for example, is merely entitled to focus on water division, and thus cannot deal with agriculture and energy, which are the sectors that consume most of the water.

Constrained autonomy

The Interstate Coordination Water Commission (ICWC) and the International Fund for the Aral Sea (IFAS) have become a locus for interstate rivalry, as constant disputes about staffing patterns and country representation demonstrate. The two institutions have been accused of lacking transparency and under-involving NGOs, Water Users' Associations (WUAs), and other interested parties in the decision-making process. The ICWC has even been dubbed "a club for water officials that makes no real decisions" (ICG 2002, 9). The fact that both the IFAS and ICWC are located in Uzbekistan, moreover, raises concerns about a bias in favour of their host country.

Weak institutional capacity

Lack of technical expertise, poor staffing and poor executive direction in designing programme objectives and projects characterise the water management institutions in Central Asia. As a legacy from the days of control by Moscow, which tolerated no independent water management, local authorities today still lack the experience that is necessary for resolving water-related conflicts. Moreover, in both the IFAS and the ICWC, decisions are made by consensus, which results in a state of paralysis when the interests of countries conflict.

Insufficient financing

The process of negotiation for the development of effective water management can be as important as the outcome. But balanced negotiations are costly, as they often stretch over long periods and require technical data and expertise. The IFAS, for example, was intended to serve as a funding mechanism for the implementation of Aral Sea programmes. However, it failed to elicit adequate contributions from the five Central Asian states, mainly as a consequence of their precarious economic situations, and has achieved little since its creation. Member states have not politically committed themselves to the water organisations: according to the ICWC, only Turkmenistan and Uzbekistan keep up their payments to the two bodies. The funding problem is worsened by the failure to recognise the need for collaborative maintenance arrangements. Moreover, funding from external actors has prominently been concentrated around the 'Aral Sea catastrophe' and neglected better management of the two contentious river basins in the region.

Lack of enforcement

The ability of institutions to enforce agreements is important, as enforcement failures weaken their credibility and create disincentives for compliance with negotiated agreements. In 1996 and 1997, after years of dispute, two treaties were signed to reach equitable water-sharing solutions and to exploit energy resources on the Syr Darya. Implementation, however, has suffered from non-compliance and the absence of enforcement. The institutions face a number of administrative problems, including a lack of unfettered access to all countries. Although they have staff everywhere, some countries require visas for visits by senior officials, which prevents surprise inspections. Moreover, there are not sufficient funds for equipment and monitoring, and no powers designated to close facilities or impose fines when quotas are exceeded.

CONCLUSION

Water will probably not be a cause of armed conflict in the near future for Central Asia. But water is an increasingly important factor in the strained relations between the five states and an important contributor to local conflicts. Water shortages are already inhibiting economic growth and limiting opportunities in rural areas. Greater effort is needed to manage and use water more efficiently in Central Asian or the five republics will find themselves struggling to survive.

Some fundamental policy recommendations arise from the analysis in the present work. First and foremost, to manage reciprocal relations, and in accordance with international water law, Central Asian states need to work out an equitable sharing agreement for water and to avoid doing appreciable harm to others. Ideally, the five states would create an inclusive decision-making and dispute resolution systems, recognised by all the parties. Best practices from other international river basins will be useful in order to illustrate how to achieve a similar result in the Central Asian context.

Ideally, the first steps towards a cooperative framework will start at the national level. In establishing domestic water regimes, states should consider their inevitable intersection with all the other systems in the region. For example, the 2000 revised Southern African Development Community (SADC) protocol had a main objective to “foster closer cooperation for judicious, sustainable and co-ordinated management, protection and utilisation of shared watercourses and advance the SADC agenda of regional integration and poverty alleviation” (SADC 2000). In order to be in accordance with the requirements of the protocol, member states adopted watercourse agreements and institutions, which, in turn, encouraged coordination and harmonisation of legislation and policies and promoted research and information exchange. Several programmes were also initiated towards these aims, including professional training in integrated water management, joint work on data collection, and changes to centralise management. If applied to the case under analysis, such a scheme would serve as a confidence-building measure between the Central Asian states, and help increase the institutional capacity of the two existing regional organisations, the IFAS and the ICWC.

The involvement of the civil society will prove to be important to take into account when envisaging plans for regional cooperation. The case of the Mekong River Commission illustrates a successful attempt in this sense: since 2002, selected civil society representatives have been invited to attend

joint committee and council meetings, thus providing their perspective to the decision-making process. Similarly, the Nile International Discourse Desk has been created with the aim of promoting the participation of civil society groups in the context of the Nile Basin Initiative. These models could be used by the ICWC and the IFAS to encourage sincere involvement of NGOs and Water Users' Associations, giving voice to the concerns of all interested parties in water management in the region.

The Senegal River Development Organisation represents a good example of a regional institution entrusted with a complete mandate. Established in 1972 between Mali, Mauritania, Senegal, and Guinea, it has benefited from a well-framed institutional structure, consisting of a conference of heads of states, a council of ministers, a high commissioner, three advisory bodies and respective national offices. A Permanent Water Commission meets thrice a year to determine the best use of water from two jointly owned dams, which are managed by separate companies. The dams supply electricity as well as irrigation water to all countries in the river basin. Moreover, efforts are being made to address adverse environmental impacts such as increasing soil salinity (Lindermann 2005).

In the same way, the 2005-10 Regional Strategic Action Plan in the SADC region represents best practices for giving regional water organisations a broad mandate. The Plan, in fact, adopts a dual-track approach: on one side, it aims at increasing energy and food security through infrastructure development; on the other side, it strengthens the capacity of river basin organisations in the region by implementing measures aimed at capacity building (SADC 2005). Similar approaches would greatly enhance the capacity of river basin organisations in Central Asia by shifting their traditional focus on specific technical areas towards broader socio-economic and environmental challenges, which are very much needed given the complexity of the hydrological situation of the region. Projects of a mere technical nature have already been attempted in Central Asia with meager results. Regional cooperation can only be envisaged by illustrating the benefits of participation in the development of joint, coordinated projects and policies that bring benefits or reduce damages to multiple participants. Technical investments do help to empower regional organisations, but only when supported by appropriate national policy and institutional reforms.

A fundamental problem that hampers the current regime of regional cooperation on water-related issues in Central Asia is the limited capacity and autonomy of existing institutions, and namely the Interstate Coordination Water Commission in the Aral Sea Basin and the International Fund for the Aral Sea. The case of the Binational Autonomous Authority

of Lake Titicaca set up by Bolivia and Peru in 1996 shows that full autonomy over technical, administrative and financial decisions can make institutions more effective. The said authority, in fact, has prepared a 20-year strategy to manage water availability and monitor water quality. While not independent of the governments, the institution looks beyond competing national interests and is seen by both parties as a source of credible advice on lake management (UNESCO 1992).

River basin organisations often suffer also from a lack of technical expertise, poor staffing and poor executive direction in programme objectives and project design. An illustration of this unfortunate scenario comes from the Niger Basin Authority; created in 1980, it remained largely ineffective through several rounds of restructuring. Lacking financial or political support, it was unable to develop strategies for integrated socioeconomic development and environmental conservation. Only recently have basin countries begun to acknowledge their interdependence and to contribute their financial shares to the authority (UNDP 2006, 228). Long term support from external donors may be the only available solution for strengthening river basin organisations and fostering regional cooperation. Despite persistent problems in the Aral Sea basin, interventions by international organisations since the early 1990s averted a potentially acute conflict over water resources. However, such support needs to be carefully coordinated and based on a real participatory approach.

These recommendations can only be implemented once Central Asian states recognise the necessity of cooperating to efficiently use water resources that they share. To this aim, a resort to an “issue-linkage” device could be successful in tempering the classical upstream/downstream dynamic in the region. If Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan recognised the Aral Sea as a common regional resource, whose degradation affects them all to the same extent, the water discourse in the region could finally be “de-securitized”, thus creating a sound prospect for cooperation. Already in March 1993, the heads of state of the five republics convened in the Kazakh town of Kysyl Orda to sign a non-binding agreement on common actions to solve the problems of the Aral Sea and the adjacent territories on the sanitary recovery and the socioeconomic development of the Aral Sea region. The arrangement recognises common tasks such as the rational utilisation of limited water resources to assure the socioeconomic development in the Aral region, the renaturation of complex ecosystems on the deltas of Amur Darya and Syr Darya, and the improvement of water quality and the health situation of the local population. To coordinate the activities, an Inter-republican Council for the

Problems of the Aral Sea Basin was created, with the Russian Federation as observer and eventual provider of technical and scientific assistance. The degradation of the environment in the region is too serious to continue to delay action; cooperation is the only viable strategy towards sustainable and effective solutions, which are even more urgent in the view of the serious health impacts that pollution is having on the population. The legacy of the Aral Sea could then serve as a confidence-building measure for resolving other contentious questions.

For these solutions to become reality, it is not simply a question of know-how and finance, but also one of political will. This work has not explicitly addressed questions related to the distribution of power in the region, or the role that Russia may play in driving the political imperatives and alignments of the ex-Soviet republics and in shaping their economic agendas. However, these factors remain important when analysing patterns of conflict and cooperation in the region. In conclusion, stepping back to the long-standing debate about whether 'water wars' are a real prospect for the future, the Central Asian case seems to support the view that: "managing shared water can be a force for peace or for conflict, but in the end it is politics that will decide which course is chosen" (UNDP 2006, 203).

NOTES

- ¹ The Aral Sea was once the world's fourth largest inland sea. Its problems began in the 1960s and 1970s with the diversion of the main rivers that fed it, aimed at providing water for cotton cultivation. The surface of the Aral Sea once measured 66,100 km² (25,521 square miles). By 1987, about sixty per cent of the Aral Sea's volume was lost; its depth declined by fourteen metres; and its salt concentration doubled, killing the commercial fishing trade. Windstorms became toxic, carrying fine grains of clay and salts deposited on exposed sea floor. Life expectancy in the districts near the sea is significantly lower than in the surrounding area. Data from: UNDP (2006). Satellite pictures available at: http://na.unep.net/digital_atlas2/webatlas.php?id=11 for a descriptive vision of the phenomenon.
- ² Because of dislocations during the transition period and the severe economic crises in the majority of Central Asian states, internal threats to the stability of these republics have been growing in recent years. Separatist movements, ethnic conflict, foreign aid, non-democratic oligarchies, geopolitical maneuvering, global flows of goods and capital, oil politics, and religious fundamentalism are a few of the forces in the region that impact internal stability (Sievers 2002, 357). Moreover, with Semipalatinsk (the main Soviet nuclear test site), Baike-

nour (the principal Soviet space launch site), uranium and other metal mines, a booming hydrocarbons industry, many chemical plants, immense smelters, one of the world's largest aluminium factories, and alarmingly high morbidity rates for a range of environmentally-linked maladies, Central Asia can be defined as an environmental disaster. Likewise, with the rapidly shrinking Aral Sea, an immense cotton industry, huge deserts, advancing desertification, concerns over potable water, a piece of the dying Caspian caviar trade, one of the world's longest rivers, and the fourth deepest lake in the world, Central Asia's water and environment problems are complex and compelling, and are likely to represent a real challenge in terms of security for the states of the region.

³The 'tragedy of the commons' is a type of social trap, often economic, that involves conflict between individual interests and the common good over finite resources. The expression derives from Garrett Hardin's essay "The Tragedy of the Commons", published in 1968 in *Science*. Hardin uses the metaphor of a pasture shared by local herdsmen as a way to illustrate how free access and unrestricted demand for a finite resource ultimately dooms the resource through over-exploitation. This occurs because the benefits of exploitation accrue to individuals or groups, each of whom is motivated to maximize the use of the resource, while the costs of the exploitation are distributed among all of those for whom the resource is available. The demand for the resource increases to the point in which the resource is exhausted.

⁴In the 1990s, critical or non-traditional security studies have introduced a new perspective on threats to national security, broadening the agenda from traditional threats (military, economic) to new security threats, which, for example, can be linked to the environment or to energy. See Buzan et al. (1998).

⁵See also the concept of "environmental security", proposed by the Toronto Group (Homer-Dixon 1994). Accordingly, environmental scarcity is linked to very high risks of violent conflict because of acute change or stress in resources (such as water scarcity and extreme pollution), often accompanied by high population growth and socially inequitable distribution of resources (Homer-Dixon 1994, 6-8).

⁶The "Transboundary Freshwater Dispute Database", a project of the Oregon State University Department of Geosciences, in collaboration with the Northwest Alliance for Computational Science and Engineering, attempts to compile a data set covering every reported interaction over water going back of fifty years. The conclusion is that in all, 1228 cooperative events were reported, compared with 507 conflict events, more than two-thirds of which were only low-level verbal hostility. The Database is available at: <http://www.transboundarywaters.orst.edu/>. It is interesting to compare it with Gleick's "Water Conflict Chronology", available at: <http://worldwater.org/conflictchronology.pdf> (October 2006 version).

- ⁷ In order to further develop the concept, Phillips et al. have elaborated the Inter-SEDE model, analysing political security, economic development, and environmental-related benefits of sharing international river basins for the cases of the Jordan, Kagera, and Mekong river basins (Phillips et al. 2006) and the Euphrates and Tigris river basins (Daoudy 2007).
- ⁸ The 1997 UN Watercourses Convention, was adopted by the UN General Assembly on 21 May 1997 (annexed to UN GA Res.51/229, 21 May 1997, adopted by a vote of 103 for and 3 against, with 27 abstentions).
- ⁹ A study by Kolossov, Glezer and Petrov (1992) has defined 26 potential ethno-territorial conflicts in the territory of Central Asia.
- ¹⁰ In order to take into account different orientations towards national development strategies, Gleason has divided the five states into “pro-reform” countries - Kazakhstan, Kyrgyzstan and Tajikistan- and “statist-oriented” countries - Turkmenistan and Uzbekistan (Gleason 2001, 1082).
- ¹¹ Available at: www.unece.org.
- ¹² All of these bodies are located in Urgench, Uzbekistan. The SIC is also in Tashkent, although the ICWC secretariat is based in Khojand (Tajikistan).
- ¹³ Each country has two representatives on the executive committee that implements IFAS Board decisions through national branches. The major task of IFAS is to generate funding for and implement the “Program of Concrete Actions to Improve the Ecological Situation in the Aral Sea Basin over the next 3-5 Years in Conjunction with the Socio-Ecological Development of the Region”, endorsed by the General Asian leaders in Nukus in January 1994.
- ¹⁴ According to the Atlas of International Freshwater Agreements, six treaties have been signed since 1993: three of them over the Syr Darya alone (in 1998 between Kazakhstan, Kyrgyzstan, and Uzbekistan, and in 1999 between Kazakhstan, Kyrgyzstan, Uzbekistan, and Tajikistan); one not specified (in 1998 between Kazakhstan, Kyrgyzstan and Uzbekistan); and two of them over the Amur Darya, Aral Sea, and Syr Darya (in 1993 and 1995 between all the five states).
- ¹⁵ For example, the maintenance of the Toktogul Reservoir cost U.S.\$25 million a year in the early 1990s, a sum that Kyrgyzstan could not afford, and yet it received no help from the downstream beneficiaries.
- ¹⁶ Generally speaking, interventions by foreign donors have not proved particularly efficient. In most cases, they fell short of defining clear and consistent objectives, their economic and strategic goals were too often in contradiction with policies aimed at encouraging collective regional behaviour, and there was confusion and competition between different initiatives. Moreover, citizens perceived with scepticism the presence of foreigners; in particular, the World Bank did not enjoy much popularity among the public.
- ¹⁷ The Southern African Development Community (SADC) protocol on Shared

Watercourses was first signed in 1995, drawing on the Helsinki Rules and hence characterised by a strong focus on state sovereignty. When both Mozambique and South Africa signed the 1997 UN Convention for the Non-Navigable Use of Shared Watercourses, Mozambique pushed for further revisions. A revised protocol was finally released in 2000, establishing formal procedures for notification, negotiation and conflict resolution, and giving greater influence to downstream states and to environmental needs (UNDP 2006, 227). The full text of the revised protocol is available at: http://www.sadc.int/english/documents/legal/protocols/shared_watercourse_revised.php.

¹⁸The Mekong River Commission was formed in 1995 as an intergovernmental agency of the four countries of the lower Mekong Basin: Cambodia, Lao PDR, Thailand and Viet Nam. The Commission replaced the Mekong Committee (1957-76) and the Interim Mekong Committee (1978-92), setting a new stage for cooperation in the Mekong Basin.

¹⁹The Nile Basin Initiative, launched in February 1999, is a regional partnership of Nile basin countries (Burundi, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda) for the long-term development and management of Nile waters. In January 2001, the World Conservation Union (IUCN), WWF and the World Bank hosted a workshop to investigate the establishment of an International Discourse on the Nile. The workshop, held at the IUCN Headquarters in Gland, Switzerland, was financed by the Rockefeller Foundation. The idea was to involve civil society in what had become a largely government-driven process of planning and development in order to ensure that the developments coincide with the wishes of the Nile Basin peoples and to ensure the sustainability of the products and services provided by the great Nile River. Subsequent meetings underscored the need for the international discourse to continue for several years. For further information, see: http://www.iucn.org/places/earo/prog_links/projects/nile_basin.htm.

²⁰For further information on the Binational Autonomous Authority of Lake Titicaca, see: http://www.unesco.org/water/wwap/case_studies/titicaca_lake/old_index.shtml.

²¹For example, in 1993 the World Bank and other donors launched the Aral Sea Basin Programme to stabilize the environment, rehabilitate the disaster zone and improve management capacity. A year later the European Union's Technical Assistance for the Commonwealth of Independent States initiated the Water Resources Management and Agricultural Production project to support the International Commission for the Aral Sea. The UNDP has since launched the Aral Sea Basin Capacity Development project and the US Agency for International Development was crucial in linking water and energy concerns in the Syr Darya agreements.

- ²² Indeed, it appears that the programs implemented by development agencies have made foreign experts and political interests the most important constituencies for local water and environmental projects. According to Sievers, "Given the internal shortcomings of the Central Asian states, unless development agencies and donor states begin to relinquish the territory of influence they have usurped from local constituencies, abandon practices that exacerbate the region's existing problems with accountability, [and] differentiate between substance and symbol (...), their current activities in the region are a certain recipe for conflict" (Sievers 2002, 402).
- ²³ According to Wolf and Hamner, "negotiators may facilitate success by enlarging the scope of water disputes to include non-water issues" (Wolf and Hamner 2000, 141).

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