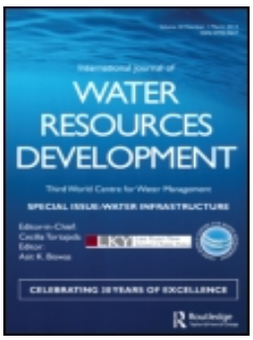

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Re-examining conflict and cooperation in Central Asia: a case study from the Isfara River, Ferghana Valley

Mariya Pak[a], Kai Wegerich[b]* and Jusipbek Kazbekov[b]

[a]*College of Earth, Ocean, and Atmospheric Sciences, Oregon State University, Corvallis, OR, USA;* [b]*International Water Management Institute, Central Asia Office, Tashkent, Uzbekistan*

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While conflict and cooperation in Central Asia are mainly focused on the larger basins (Amu and Syr Darya) and the implementation of the agreement reached directly after independence (1991), here an analysis of the history of water-sharing agreements in the Isfara Basin is presented. The paper reveals that there have been fierce negotiations and renegotiations even during the Soviet Union period between the Central Asian riparian republics; agreement was reached mainly though engineering solutions that brought more water to the basin. The paper highlights that although water-sharing agreements were reached early on, the technical capability of implementing these agreements was lacking. Similarly, even after independence, agreements had been reached but lack of water control hindered their implementation.

Keywords: small transboundary tributaries; conflict; cooperation; water management; Isfara River; Big Ferghana Canal; Ferghana Valley

Introduction

In the realm of conflict and cooperation, researchers often raise the issue of the potential for water conflict in Central Asia (Human Development Report, 2006; Intelligence Community Assessment, 2012). Others, however, state that there is a low probability of conflict, and there are precedents for both conflict and cooperation over water resources management in Central Asia (Sojamo, 2008). Despite this ongoing debate, scientists talk mainly about the main stem rivers – the Amu Darya and Syr Darya. Recent case studies on conflict and cooperation in Central Asia (Sojamo, 2008; Wegerich, 2004, 2008) have utilized internationally discussed conflict-and-cooperation frameworks (Zeitoun & Mirumachi, 2008; Zeitoun & Warner, 2006). Analysis of agreements in Central Asia focusing on cooperation in large, basin-wide agreements is also widely available (Rahaman, 2012). However, no research has been undertaken on conflict and cooperation on small tributaries. Such research is needed to understand the relationship between conflict and cooperation on both small and large rivers in Central Asia.

This paper focuses on the Isfara River, a tributary of the Syr Darya, within the Ferghana Valley of Central Asia. The Isfara Basin is shared by Kyrgyzstan, Tajikistan and Uzbekistan. Different projects and water authorities in the riparian states reference different water-sharing agreements for their water allocations, and all of them claim that these agreements are still valid. A UNDP report (2011) makes reference to water-sharing principles of the mid-1950s; a GIZ (2011) report makes reference to a protocol of April 1980; the Tajik Sugd Province Water Management Department (WMD) makes reference

* Corresponding author. Email: k.wegerich@cgiar.org

to a sharing principle of 1982; and the Uzbek Ferghana Basin Irrigation System Authority makes reference to principles of June 1980. Hence, there seems to be a mismatch of what international and national organizations claim are the official riparian water allocations. Through the International Water Management Institute (IWMI) database on small transboundary tributaries in the Ferghana Valley it was possible to access all these agreements, protocols and statements on sharing the water resources of the Isfara. It appears that there have been rapid changes in water-allocation principles since the first agreement in 1946 (Table 1).[1] While having a long history of agreements and constantly updated agreements on water sharing is a great sign of cooperation, it also raises questions as to what triggered the changes and whether and how the riparian states adapted.

The paper continues with a short framework section looking at different approaches to conflict and cooperation. The next section provides the background to the Ferghana Valley and the Isfara Basin. This is followed by a historical overview of the agreements as well as the causes and consequences of changes in the agreements from the former Soviet Union up to independence in 1991. The historical overview is structured into three subsections: agreements under high uncertainty; getting more water to compensate for the new user; and from borderland cooperation to riparian exclusion. The last section concludes that early sharing agreements on the Isfara and the Big Ferghana Canal (BFC) were made without the technical ability to actually deliver the agreed water resources and that agreements on the BFC did not take into consideration the BFC's dependence on the operation regime of Toktogul Reservoir in upstream Kyrgyzstan. In addition, the case study on Isfara reveals that Tajikistan has so far not been correctly seen as a downstream riparian that is dependent on Toktogul operations. Furthermore, by highlighting the costly compensations to downstream riparian states to facilitate irrigation expansion in the midstream riparian, Kyrgyzstan, the case study also puts into question the current focus on benefit sharing on the Syr Darya.

Framework

Water conflict and cooperation have been extensively studied, mainly from two different angles: large-scale evaluation of international water treaties and case studies on individual basins. Wolf, Nathanus, Danielson, Ward, and Pender (1999) identified 261 international basins. Wolf, Yoffe, and Giordano (2003) examined these international watersheds and contributed greatly to understanding conflict and cooperation on the global scale. Whereas large-scale document analysis reveals broad and general trends in international water management practices, the case-study approach provides very detailed analysis of a specific watershed. Case studies highlight the existence of both conflicts and cooperation (Alam, 2002; Iyob, 2010; Wegerich, 2008; Wolf & Newton, 2008). Zeitoun and Warner

Table 1. June–September water allocations (average of 10-day periods) in protocols regarding Isfara River from 1946 to 1991.

Republic	1946 protocol	1958 protocol	April 1980 protocol	June 1980 protocol	1982 protocol	1991 protocol
Kyrgyzstan	2%	2%	37%	17%	22%	33%
Tajikistan	50%	57%	55%	48%	40%	34%
Uzbekistan	48%	41%	8%	35%	38%	33%

Source: IWMI database.

(2006) introduced the concept of hydro-hegemony. They reasoned that treaties can be the outcome of exertion of power and that a hegemonic state could use different strategies to gain water control. The hydro-hegemony concept envisions the possibility of conflict and cooperation coexisting.

Mirumachi and Allan (2007), building on the concept of hydro-hegemony, developed the Transboundary Freshwater Interaction NexuS (TWINS) framework to analyze water policy in a three-dimensional matrix of conflict intensity, cooperation intensity and robustness of political economy. According to them (2007, p. 9), since the focus is on agreements alone, there is "incomplete information on negotiations"; hence the matrix provides approximations only. Mirumachi and Allan (2007, p. 14) make reference to the "robustness of political economy" as a 3rd dimension and explain this dimension with "resource capture, resource sharing and resource alternatives". This seems to be an ambitious interpretation of Ohlsson and Turton (1999, p. 3), who distinguish between "engineering efforts (more water), end-use efficiency (more use per drop) and allocative efficiency (more value per drop)", which supposedly could explain the resource basis of the brokered agreement.

These different approaches have one thing in common: they focus on national solutions. Recently, Wegerich, Kazbekov, Kabilov and Mukhamedova (2012a), utilizing the concept of border communities, showed that cooperation at the intermediate level, between border communities and water management organizations, continues, even though on the national levels there is a lack of cooperation. In addition, looking at agreements only implies an underlying assumption that what has been agreed upon is technically implementable. Although this has already been contested for the local level, pointing to appropriateness and the ability of technology to control water resources and the interaction between the technology at the outlet and system levels affecting water rights and water markets (Kazbekov, Wegerich, & Musayev, forthcoming; Wegerich, 2010), this debate is rarely extended to the national transboundary setting.

Geographical setting of the Ferghana Valley and the case-study area

The Ferghana Valley is located within Central Asia. It is shared between Kyrgyzstan, Tajikistan and Uzbekistan, with Uzbekistan mainly in the valley and Kyrgyzstan and Tajikistan on the mountain slopes. The Ferghana Valley is in the south-western part of the Tien-Shan mountain range. This range is the main source of all rivers in Central Asia. The Syr Darya River is formed at the confluence of the Naryn and Karadarya Rivers in Uzbekistan. These two rivers originate in mountainous Kyrgyzstan. Similar to these two main tributaries, more than 30 small mountain rivers are transboundary tributaries to the Syr Darya, most of them within the Ferghana Valley (Figure 1). Overall, the small transboundary tributaries in the Ferghana Valley contribute 7.8 km^3 per year to the flow of the Syr Darya, whose total flow is 37 km^3 per year.

The Isfara (average annual flow 0.4 km^3) is one of these small transboundary tributaries, located on the western slope of the valley (Figure 2). The Isfara is shared between Kyrgyzstan, Tajikistan and Uzbekistan. Its formation zone is located in Kyrgyzstan. On its way towards the Syr Darya, the Isfara River passes through a Tajik enclave, Vorukh, before re-entering Kyrgyz territory (Batken District). Tangi Vorukh is located within the Vorukh enclave (part of Tajikistan within Kyrgyzstan). Constructed in 1909, strengthened with concrete in 1956 and partly renovated in 1980, it is the main metering station for water allocation within the basin. After the Vorukh enclave in Batken District, the area in direct proximity to the river is disputed between Tajikistan and

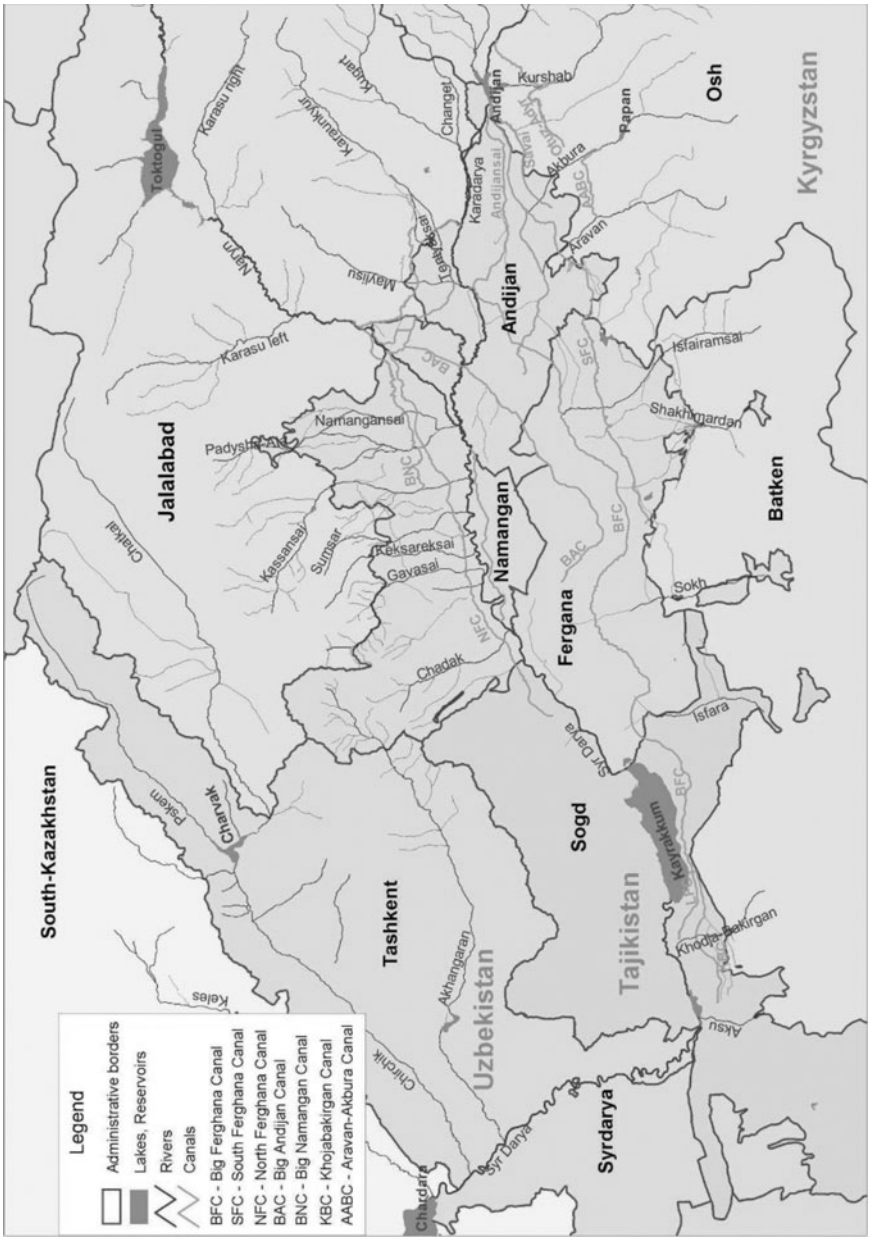

Figure 1. Small transboundary tributaries in the Ferghana Valley.

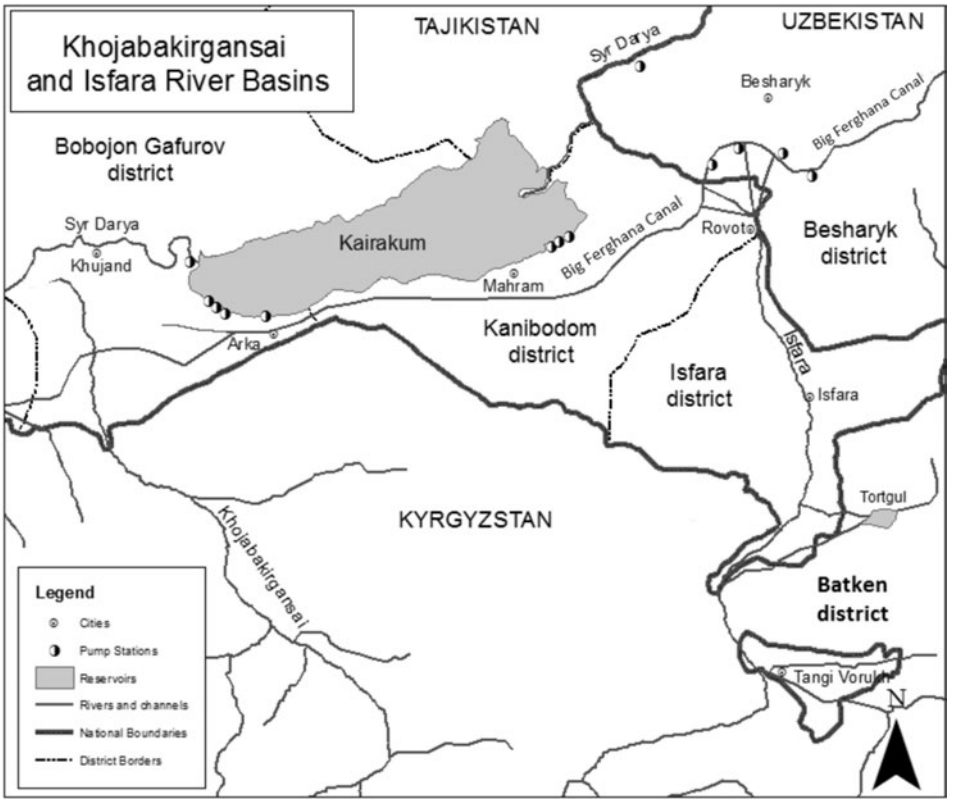

Figure 2. The Isfara River Basin.

Kyrgyzstan. After Batken District, the river re-enters Tajikistan (Isfara District). Directly at the boundary, the main flow (during the non-vegetation season: October to March) of the Isfara is diverted into the Tortgul Reservoir (constructed in 1971, began operation 1975), located in Kyrgyzstan. Here, the exact boundary demarcation is contested between the states. The Tortgul Reservoir has two outflow canals. One diverts water to Kyrgyzstan (Batken District), and the other diverts water back to the Isfara (during the early vegetation season: April to September) within the Isfara District to compensate for possible water shortages. The Isfara River continues within Isfara District until it reaches the Rovot water-control facility (constructed in 1910), located at the administrative boundary of two Tajik districts. The facility allocates water to Tajikistan (Kanibodom District) and Uzbekistan (Besharyk District). For these two districts, water is mainly diverted from the Isfara into the BFC, which flows through Uzbek as well as Tajik territory; however, some of the water is utilized before entering the BFC. The 270 km BFC (constructed 1939) diverts water from the Naryn and Karadarya Rivers. The main source of the BFC is the Naryn. This transboundary canal originally supplied 311,000 ha in the Kyrgyz SSR (Osh Province), Uzbek SSR (Andijan, Namangan and Ferghana Provinces) and Tajik SSR (then Leninabad Province, now Sugd Province) (Benjaminovich & Tersitskiy, 1975). On its way, the BFC is fed from different transboundary tributaries (Wegerich, Kazbekov, Mukhamedova, & Musayev, 2012b). The Isfara is the last tributary contributing to flow in the BFC, the implication being that some of the flow of the Isfara River will re-enter Tajikistan through the BFC channel.

Historical development of the sharing agreement for the Isfara up to independence

Agreements under high uncertainty

The first Isfara River water-allocation protocol dates from April 1946 (Protocol, 1946). The main emphasis within the protocol is on water sharing from April to June, when water is more scarce. However, the protocol also mentions that if it becomes necessary, water should be shared from July to September according to the allocation for the third decade (10 days) of June (which gives Uzbekistan a 49% share). According to this protocol, Isfara shares were allocated as follows: Kyrgyz SSR 2%; Tajik SSR 50%; Uzbek SSR 48% (June–September).

Between 1953 and 1962, the BFC went through major reconstruction, which increased the water intake in the upper Naryn section from 98 to 150 m^3/s, and increased constant flow from the BFC to Tajikistan from 8 to 13 m^3/s (Benjaminovich & Tersitskiy, 1975). It should be noted that during this period the rivers were still uncontrolled, because major dams had not yet been constructed. The reason for the upgrade was the expansion of irrigated area within all parts of the Ferghana Valley. However, it is not clear whether the increase to the Tajik SSR through the BFC described by Benjaminovich and Tersitskiy (1975) actually materialized. A protocol of 1957 (Protocol, 1957) reveals that the water in the Isfara and the BFC was already contested, and that both downstream riparian states, the Tajik SSR and the Uzbek SRR, took water from either the BFC or the Isfara if the water allocation from one of these sources was not delivered from the other source as agreed. The Tajik SSR was to receive 13 m^3/sec from the BFC during the whole vegetation period (Protocol, 1957), and Uzbekistan was to receive water allocation from the Isfara according to the 1946 protocol.

Only one year later, a new protocol established water allocations in the Isfara for the whole vegetation period (Protocol, 1958). According to this protocol, Isfara shares were allocated as follows: Kyrgyz SSR 2%; Tajik SSR 57%; Uzbek SSR 41%. In the 1958 Protocol, reference is made to the June–September months of the vegetation season.

Although the first agreement on the Isfara Basin mentions only percentages, one has to remember that the Isfara River was at that time uncontrolled. In addition, although the expansion of BFC started at the end of the 1930s it is highly questionable whether during the time of the First World War, the Russian Civil War and Second World War data were always collected from Tangi Vorukh which could have been used for accurate predictions or even 10-day estimates. That the structure was strengthened in 1956 implies that it may have been damaged over the years or may not have been accurate. Furthermore, it is highly unlikely that at that time accurate water withdrawals at different points would have been possible to implement. In this respect, it is even more astonishing that after the reconstruction of the BFC, but without appropriate control on the main river and only some control on the canal, itself an agreement was reached which specified delivery in to m^3/s to the Tajik SSR.

Already in these early days, the situation of not being in control of the water resources either on the canal or on the Isfara River led to compensation mechanisms. Arguably, Uzbekistan was in a better situation, having access to two sources (the BFC and the Isfara). The increase in water allocation to the Tajik SSR from the Isfara appears to be directly linked to the inability of the Uzbek SSR to deliver the agreed limit of 13 m^3/s from the BFC. Arguably, the increased share of the Isfara for the Tajik SSR was based on the Uzbek SSR's getting more water from the BFC. It is not evident whether more water from the Isfara implied less water from the BFC for the Tajik SSR, that is whether a change in the priority of supply for irrigated areas took place – supplying the upstream Tajik SSR from

the Isfara compared to the downstream Tajik SSR from the BFC. Nevertheless, we may assume that the irrigated area in the Tajik SSR (downstream BFC) was at that time not yet developed, since the improvement started only in 1953. Since neither the Uzbek nor the Tajik SSR had to pay for the additional water (funding was provided from Moscow), it appears that the solution was in the interest of both riparian states.

Getting more water to compensate for the new user

During the 1960s and 1970s, numerous reservoirs were constructed in the Ferghana Valley to combat water shortages as well as to further increase the irrigated area (Matveev, 1988). Toktogul (start of operation 1974), Andijan (1978), Tortgul (1975) and other reservoirs were built during that period. Arguably, it was only with the construction of these reservoirs that water control within the large transboundary canals, including the BFC, could be achieved.

The construction and operation of the Tortgul Reservoir was planned by the Soviet Water Planning Institute (Giprovodhoz) and the Kyrgyz Water Planning Institute in 1968 and approved in 1969 by the USSR Ministry of Water Resources. According to the plan, the Kyrgyz SSR's share of the Isfara would increase from 2% (Protocol, 1958) to 26.7% (Letter, 1998). Neither the Tajik nor the Uzbek SSR was involved in the planning; they therefore had not agreed to this increase in the Kyrgyz SSR's share. Despite the disagreement of the other riparian states, the construction of the reservoir went ahead, and consequently Isfara water allocation started changing (Figure 3).

Possibly to compensate for the increase in the share of the Isfara allocated to the Kyrgyz SSR, the Tajik and Uzbek SSRs constructed numerous pump stations. In the Kirov (now Besharyk) District of the Uzbek SSR, four pump stations – Uzbekistan (completed 1972, lift 35 m, irrigated area 250 ha), Rapkon-2 (1974, 20 m, 290 ha), Rapkon-1 (1980, 200 m, 1000 ha) and Bahmal (1984, 85 m, 820 ha) – were constructed to lift water from the BFC towards the Isfara. In addition, a larger pump station was constructed in Besharyk District to lift water from the Syr Darya towards, but not reaching, the BFC (1978, 54 m,

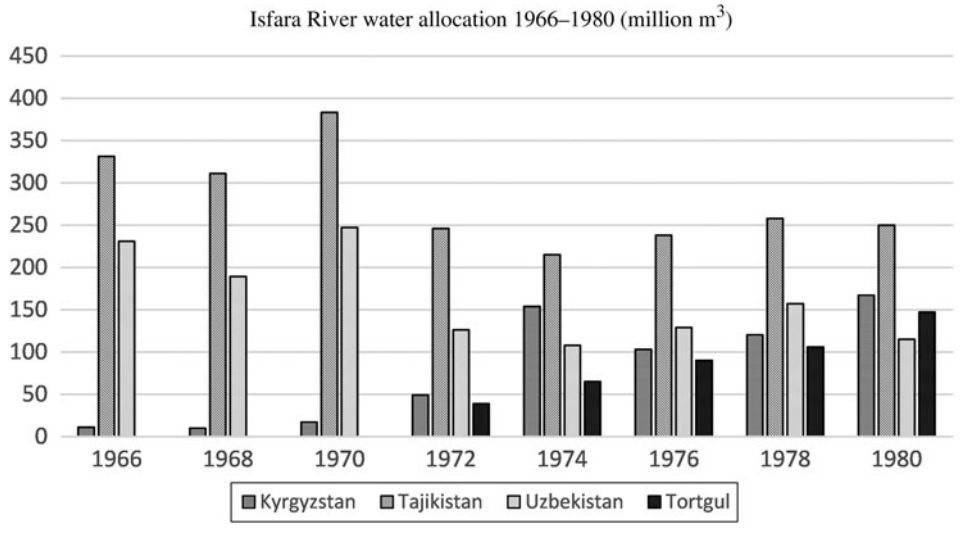

Figure 3. Changes in Isfara water allocation, 1967 to 1980. Source: data provided by the Sogd Water Management Department.

5020 ha). In the Tajik Kanibodom District, three pump stations were constructed: Mahram (1975, 69 m), to lift water from the Kairakum Reservoir into the BFC; Shurkul (1980, 22 m, 400 ha); and Poymennaya (1983, 22 m, 1400 ha).

In 1980, at the request of Osh Province (Kyrgyz SSR), the USSR Ministry of Water Resources facilitated a meeting between the Kyrgyz SSR and the Uzbek SSR to address water allocations of small rivers within the Ferghana Valley. The meeting was held in Moscow on 11 April, 1980 (Protocol, 1980a). The Tajik SSR did not take part in this meeting; however, of the different tributaries discussed, only one (the Isfara) is shared by Tajikistan. The participants at the meeting took into consideration all the water sources (mainly between the Kyrgyz and Uzbek SSRs), including new reservoirs, water from the main canals adjacent to the Naryn and Karadarya, groundwater and the small rivers themselves, and proposed to the USSR Ministry of Water Resources that they approve the following water allocations for the Isfara: Kyrgyz SSR 37%; Tajik SSR 55%; Uzbek SSR 8%.

The Uzbek SSR did not approve the April 1980 protocol regarding the allocation of the flow of the Isfara River. Therefore, a new meeting between all the riparian republics was held in Isfara City (12 June 1980b). A new water allocation for the Isfara was proposed: Kyrgyz SSR 17%; Tajik SSR 48%; Uzbek SSR 35%. In addition, the riparian states requested the "USSR Ministry of Water Resources to ask the Design Institute to develop a proposal on Isfara River flow redistribution for 1981 and the following years, also identify objectives (based on years and volumes) to cut off from the Isfara River these areas, which are below the BFC: the Kirov [Besharyk] and Kanibodom Districts (of the Uzbek and Tajik SSR, respectively)" (Protocol, 1980b). Hence, it appears that the proposed allocation was temporary until other sources for the Uzbek SSR and Tajik SSR could be determined and utilized. It is important to emphasize that this protocol only made reference to irrigated areas below the BFC. This implies that the BFC was identified as one of the alternative sources of Isfara water supply. It was decided that on an annual basis, starting in 1980, the USSR Ministry of Water Resources would define the Kyrgyz share of the Isfara and the rest of the flow would be divided between the Uzbek and Tajik SSRs according to the 1958 Protocol (Kohirov, no date).

In 1982, the USSR Ministry of Water Resources defined the Isfara shares as follows: Kyrgyz SSR 22%; Tajik SSR 40%; Uzbek SSR 38%. These allocations were accepted by all the riparian states. After 1985, the USSR Ministry of Water Resources stopped calculating the Kyrgyz share of the Isfara (Kohirov, no date). Starting in 1986, the water from Isfara River was allocated "according to the 1982 principle" (Letter, 2008).

Just before the USSR collapsed, a new protocol was signed between the Tajik and Uzbek SSRs in which the Basin Water Organization (BWO) Syr Darya was also involved. This protocol (Protocol, 1991a) divides the Isfara shares as follows: Kyrgyz SSR 22%; Tajik SSR 46%; Uzbek SSR 32%. In the protocol, it is explicitly stated that new water allocations take into consideration additional water resources delivered to the Isfara downstream from the Syr Darya River. Just one month later, in May 1991, the USSR Ministry of Water Resources issued a new protocol. The new protocol used the 1982 Protocol provisions as a guiding tool to allocate water among the Isfara riparians. This way, the Kyrgyz per cent of water share from Isfara increased to 33%. The remaining water flow was shared between downstream Tajik and Uzbek SSR in the same proportions as in the 1982 Protocol (Protocol, 1991b). This was the last agreement made in the Soviet Union on the Isfara allocations.

This period is characterized by facilitating the rising share of the Kyrgyz SSR within the already closed Isfara Basin through engineering solutions which would provide additional water sources for the other riparians, the Tajik as well as Uzbek SSRs. Again, since the

budget for construction as well as operation and maintenance was facilitated in Moscow (the hegemon), it is clear that the Tajik and Uzbek SSRs complied, if hesitantly. In addition, given that during this period other reservoirs (the Toktogul and Andijan, but also the downstream Kaikakum) started to operate, there was more control of water – and at the same time cheap electricity available – which facilitated compensation infrastructure.

Nevertheless, the rising involvement of Moscow in determining annual water allocations on the Isfara as well as the proposal to hand over the operations to the BWO Syr Darya highlights that the water resources on the Isfara had become more contested. The strong emphasis on changing allocations with the completion of compensation mechanisms further underlines that the Isfara Basin as well as BFC water was closed.

From borderland cooperation to riparian exclusion

According to the Ferghana Province representative (personal communication, 2012), the 1982 protocol's water allocations "worked" for some time after independence (1991a), but later they became irrelevant. In the past (but after 1991), there were informal agreements to discharge all the Isfara water allocated to Kanibodom District to the BFC in Besharyk. In return, Besharyk provided a constant flow in the BFC from Uzbekistan to Tajikistan (Figure 2). These allocations were negotiated and agreed between the two downstream districts and worked quite well. The administration at the province level in both republics was aware of the informal gentlemen's agreements between the districts, and in a way was satisfied with their solution. The Ferghana Province representative stated that they "are happy that they [districts] are resolving the issue among themselves". According to a key informant from the Ferghana WMD, the amount Uzbekistan received from the Isfara could have been anywhere between 60 million m^3 and 150 million m^3 (informal discussion, 2012). This would have been between 12% and 30% of the annual average runoff of the Isfara (502 million m^3, 1955–1984). It appears that the gentlemen's agreement stopped working after the 1998 Syr Darya Basin Agreement stopped working (Figures 4 and 5). In the period from 2001 to 2010, Uzbekistan officially received from 10 million to 40 million m^3 (2–8%) of the Isfara's annual average runoff.

The Syr Darya Basin Agreement (1998) focuses on use of the water and energy resources of the Naryn River below Toktogul Reservoir and was adopted on 17 March 1998 by the governments of Kazakhstan, Kyrgyzstan and Uzbekistan. An amendment to include Tajikistan was adopted on 19 June 1998. According to the agreement, the downstream riparian states agreed to purchase Kyrgyzstan's hydro-electric power during the summer and sell other energy resources to Kyrgyzstan in the winter. How much energy the downstream riparian states were to purchase, and therefore how much water they should receive, was to be determined annually. The amendment incorporated the operation of the Kairakum Reservoir into the agreement, stating that electrical energy would be supplied to Tajikistan when the reservoir was filling and that amounts of energy equal to these supplies would be repayable by Tajikistan during the summer.

Isfara River is closely linked to the operation of Toktogul Reservoir through water deliveries into the BFC. The BFC takes mainly water from the Naryn, and the Naryn water is influenced by the releases from Toktogul Reservoir in Kyrgyzstan. Since Uzbekistan and Kyrgyzstan do not cooperate regarding the operation of Toktogul, the water received in the BFC is unstable. It should be noted that Tajikistan had never been (and still is not) considered to be a downstream riparian dependent on Toktogul Reservoir. The implication is that Tajikistan never purchased electricity from Kyrgyzstan to guarantee its water supply in the transboundary canals fed from the Naryn (including the BFC). Hence, strictly speaking, since

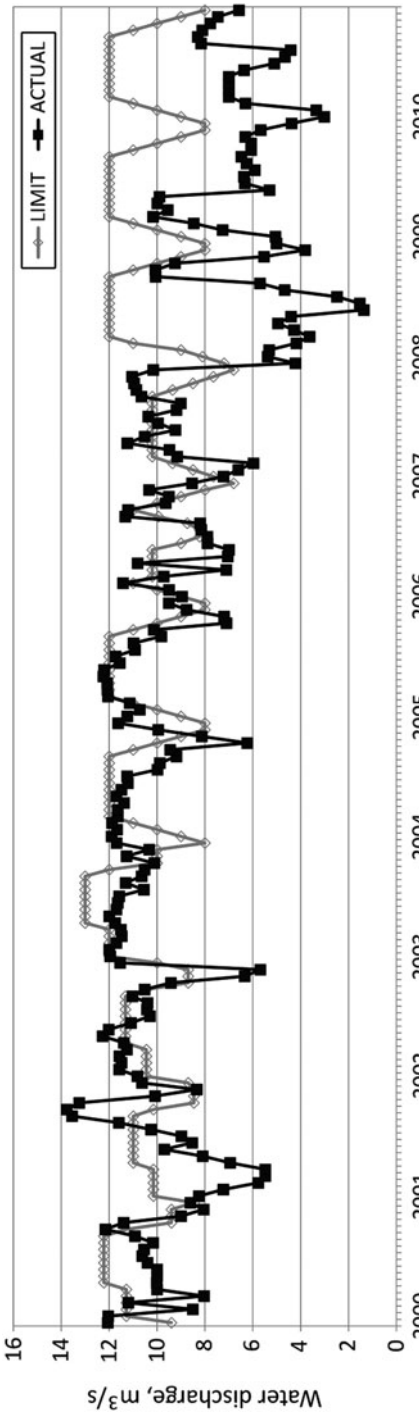

Figure 4. Water allocation limits of and actual delivery to Kanibodom during the vegetation period – Tajikistan's share from the BFC (m^3/s). Source: adapted from CAREWIB (2011).

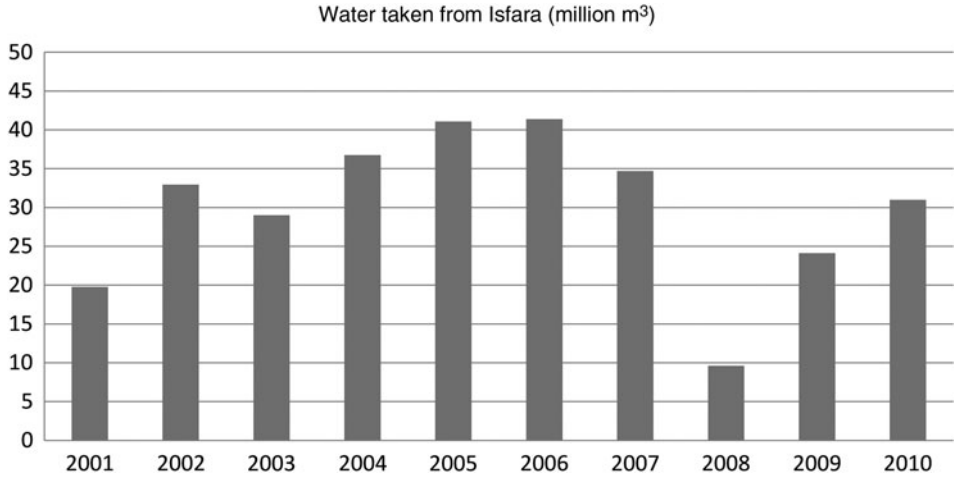

Figure 5. Isfara contribution (million m^3) to Besharyk District (was Kirov District), 2001–2010. Source: data provided by the Ferghana Province Water Management Department.

Tajikistan does not buy electricity from Kyrgyzstan, Tajikistan officially is not entitled to water delivery from Toktogul through the BFC. This puts into question whether there can be limits for Kanibodom District from the BFC in the first place, and more broadly, given that Uzbekistan and Kyrgyzstan do not cooperate on the Toktogul Reservoir, whether planned limits for individual districts from the BFC are deliverable and make sense.

It also worth noting that water sharing between Uzbekistan and Tajikistan on the BFC was specifically mentioned in the Kairakum Reservoir operation agreements (2001, 2008, 2009 and 2010) (2000, 2001 and 2008 were dry years). Indeed, in the usual debate, water allocations from the Isfara and the BFC are addressed separately, but in some of the annual agreements (dry years) the BFC–Isfara water-compensation mechanism was officially acknowledged. For example, at the meeting between Kazakhstan, Tajikistan and Uzbekistan on Kairakum Reservoir water use in 2008, the parties agreed that "Uzbekistan, according to the agreed volumes, and if water from the Rovot water regulating unit [on the Isfara River] is allocated 50%/50%, shall deliver from the BFC 5 m^3/s … to the Republic of Tajikistan" (Protocol, 2008). The content and implementation of the annual Tortgul and Kairakum Reservoir operation agreements make it clear that there is not enough water in the BFC.

Very recently, Tajikistan has constructed a timber dam on the Isfara and now diverts about 23 m^3/s to Kanibodom Canal in Tajikistan (with excess flow of about 3–4 m^3/sec diverted into Kairakum). According to the key informant from the Ferghana Province WMD, the Uzbek part of the Isfara receives only 500 L/s. Hence, it appears that Tajikistan compensated for the reduced flow from the BFC by blocking the Isfara and diverting most of the water to the Kanibodom Canal feeding the BFC. The Tajik key informant from the Sugd Province WMD described the situation as "peaceful silence as Uzbeks do not provide our limits in the BFC – we do not complain, we do not provide their share from Isfara – they do not complain" (informal interview, 2012).

Overall, the water protocols are very specific about water allocations, not just annually but even averages for 10-day periods. This raises questions about the water authorities' ability to determine the flow. As mentioned above, the flow-measuring units are at Tangi Vorukh (within the Tajik enclave) and Rovot (near the Uzbek–Tajik border). There is evidence from protocols and from the interviews that Tangi Vorukh has not been

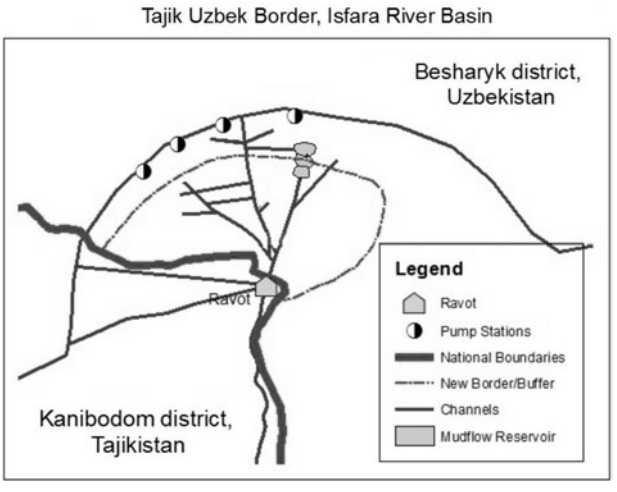

Figure 6. Recent consequences of Tajik–Uzbek border disputes.

functioning properly, if at all, for more than 20 years (Protocol, 1980a, 1980b, 2010). In addition, the current political situation and tensions about border demarcation make it impossible to have joint measurement. It had already been impossible for some time for Uzbek water authorities to go to Tangi Vorukh, but recently (since June 2011), due to the border demarcation issues, they have not been able to go to Rovot, which is now located in a buffer zone between the two riparian republics (Figure 6).

After independence and therefore the fall of the hegemon, Moscow, the borderland water communities of the Isfara and the BFC continued their cooperation for some time, although the brokered agreement was not renewed and no hegemon enforced sharing. But the situation of unstable Toktogul water releases and therefore unstable water supply to the BFC, particularly in drought years, has caused the collapse of local cooperation and the need first for national-level brokered agreements (the inclusion of water allocation from the BFC for Tajikistan) and later on even the physical exclusion of Uzbekistan from the Isfara basin. Again, the physical exclusion of Uzbekistan is a sign that national brokered agreements might not be implementable because of the lack of technical and organizational control mechanisms for enforcing them.

While the exclusion of Tajikistan from the BFC and the exclusion of Uzbekistan from the Isfara could be seen as a worst-case scenario in a conflict-and-cooperation matrix, in fact this scenario seems to be the most stable solution, given the dependence on alternative water resources from "third parties" (the operation of Toktogul Reservoir) and the political costs of brokering annual agreements.

Conclusion

First of all, the paper has highlighted the rich history of water agreements in the Isfara Basin and therefore provides a detailed overview of the long-term cooperation on water resources within Central Asia. The paper has highlighted that during the Soviet Union era, water resources were contested and there were intensive negotiations between the riparian states. Nevertheless, because of the hegemon, Moscow, and its budget provisions for implementing engineering solutions to get more water, agreements were reached within the Isfara Basin.

Of the three distinct periods of water sharing along the Isfara identified here, there were at least two periods in which water agreements were reached without the possibility of guaranteeing their implementation. This was due to either the inability to measure percentages of allocations or the absence of existing water-control infrastructure at the main system level (during the first period) or control over that infrastructure (the last period) to guarantee that the agreed amount of water could be delivered. While, in the early years, agreements on specific amounts were made without dams having been built (the Toktogul and Andijan Reservoirs for controlling delivery on the BFC), it is doubtful that the metering station in the upstream Kyrgyz SSR was even fully functional at that time and for longer durations so that predictions could have been made. In the third period, specifically, the disintegration of the Soviet Union triggered disagreement over the operation of Tortogul Reservoir, and therefore water supply to the BFC was not guaranteed. Hence, it appears that from the start water agreements were set up to fail; therefore, in the end, they may have led to an increase in tension. This finding could be particularly relevant regarding the agreement reached between the Uzbek and Kyrgyz SSRs (Protocol, 1980a) on water allocation of small rivers within the Ferghana Valley. Already during the time of the Soviet Union, the Uzbek SSR had complained that it was not receiving its allocated share (agreed 10-day flow) for many of the rivers (Rysbekov, 2008). In this respect, the case study reveals that looking at agreements alone is not sufficient; rather, it is important to analyze the feasibility of implementing the agreements and the wider context.

The second period is characterized by new infrastructure to compensate for the new user, the Kyrgyz SSR. This particular point is very interesting when looking at the current debate on upstream–downstream benefit sharing within the Syr Darya. Until now the focus has been mainly on the large reservoir, Toktogul, and its summer or winter operation regime, as well as reimbursement for lost land. Given the case of the Isfara River and the costly building up of lift infrastructure in Uzbekistan and Tajikistan, as well as its operation and maintenance, to compensate for the expansion of irrigated area in Kyrgyzstan, one could raise questions as to whether the focus on Toktogul alone is justified and perhaps could even bring this into the irrigation-versus-hydropower debate between Kyrgyzstan and Uzbekistan.

One major finding is that for a long period after independence, the set limits on the transboundary canals were taken for granted by Tajikistan. The problems of receiving the specified amount, before independence but even more importantly after, triggered the drive to include these transboundary canals in the agreement for the larger Kairakum Reservoir, therefore delinking Tajikistan's BFC allocation from Uzbekistan's Isfara allocation.

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Note

1. The rest of the article uses the averages for the June–September months of the vegetation period. The protocols exclude percentage water allocations for April and May because these have not changed since the 1958 protocol.

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