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The Performance of Water Management Institutions in Syrdarya Basin

Abdurasul Kayumov
GFA Consulting Group GmbH

Abstract: *With the disintegration of the Soviet Union, the sharing of transboundary water resources in Central Asia became a regional sensitive issue. Whereas upstream countries are interested to use water resources in order to generate hydropower for domestic needs, downstream Uzbekistan, Kazakhstan and Turkmenistan insisted on water use for irrigation purposes. So far, the regional water institutions failed to find common solution for water usage. In this regard, this paper examines the performance of regional water management institutions from "insider" and "outsider" perspectives based on five institutional aspects: specificity, feasibility, flexibility, transparency and effectiveness in the organization as suggested by Frank Marty. The article concludes that the regional water management institutions do not perform well in many functional aspects and there is still much to be done on institutional structure and mandate.*

Keywords: Central Asia, cooperation and conflict, institutional performance, water management institutions, transboundary water resources.

Introduction

The Syrdarya river basin is part of the Aral Sea basin and in geographical terms is part of wider Central Asian region. Syrdarya, with its length of 3.019 km, is the longest and one of the most important transboundary rivers of the region. It rises in the Tian Shan mountain of Kyrgyzstan. After Kyrgyzstan, the river flows to Uzbekistan, crosses Tajikistan and flows again into Uzbekistan. By reaching the southern Kazakhstan it ends in the Aral Sea. About 75.2% of the flow of the Syrdarya originates in Kyrgyzstan, whereas the other 15.2% - in Uzbekistan, 6.9% - in Kazakhstan, and only 2.7% - in Tajikistan (See Figure 1).

Syrdarya river has several tributaries, among which Naryn and Karadarya are the most noteworthy (CAWater-Info 2014). These tributaries are regulated by a number of reservoirs built during the Soviet era. These are Chardara (with the total capacity of 5.4 km3), Kayrakum (with the total capacity of 4.03 km3), Andijan (with the total capacity of 1.9 km3), Charvak (with the total capacity of 2.05 km3) and Toktogul reservoirs (with the total capacity of 19.5 km3). The total usable storage of these reservoirs constitutes 26.6 km³, out of which the effective capacity of Toktogul reservoir that is one of the most important and biggest reservoirs along the Syrdarya, is 14.5 km³ (CAWater-Info 2014). This means that the total capacity of the Toktogul is more than the volume of the total annual runoff of the Naryn river (14.0 km³) and almost half of the total annual runoff of the Syrdarya river (37.2 км3).

After disintegration of the Soviet Union, the operational regime of the Toktogul became a subject for conflict among the Syrdarya riparian countries. During the Soviet period, the

reservoir allocated water in autumn and winter periods in order to irrigate cotton and wheat fields of the downstream Uzbekistan and Kazakhstan. Discharge of water from the reservoir in the growing season made up approximately 75% of the active capacity of the Toktogul (Baurjanov 2008). The discharge of water from Toktogul did include some form of compensation by the downstream countries. For instance, the downstream countries frequently supplied gas, oil and coal to Kyrgyzstan in order to meet its energy needs. This regional exchange mechanism was coordinated by Moscow.

However, the barter agreement among the Central Asian countries experienced some changes in the post-Soviet period. Both downstream countries Uzbekistan and Kazakhstan have stopped delivering oil and gas and started selling them at world market prices to their neighboring countries, including Kyrgyzstan. Consequently, Kyrgyzstan increased the winter release from the Toktogul in order to generate the necessary amount of energy for country´s need during the winter months. Thus, the new energy regime of the Toktogul caused the release of 75% of water during the non-vegetation and 25% during the vegetation seasons (FES 2004). The domination of energy use upon irrigation (one) in the Toktogul caused numerous visible damages to the downstream countries. For instance, the cotton and wheat fields did not get enough water during the spring-summer seasons and the irrigation areas were flooded as a result of vast water discharge during the autumn-winter months.

Figure 1. Syrdarya river basin

For the current regional water crisis are often blamed the ineffective water management institutions. It is stated that the water management institutions such as International Fund for Saving Aral Sea (IFAS), Interstate Commission for Water Coordination (ICWC) and Basin Water Organizations (BVOs) failed to face the challenges of the changed political

and economic situation in the region after collapse of the Soviet Union (ICG 2002). The institutions still focus on irrigation purposes of water and pay less attention to hydropower needs of the upstream countries. Water institutions failed not only in setting out a single regional water regime by integrating the national interests but also in the establishment of enduring regulatory mechanisms (Kayumov 2012).

Though there are a number of researches done on the performance of water management institutions in Central Asia (ICG 2002), none of them assessed how these institutions are performing from the perspective of "insider" (the experts working directly for the respective water management institutions. The primary objective of this paper to address this gap and review the effectiveness of water management institutions in a quantitative manner through combining the "insiders" view with the perspective of "outsiders" (the experts not working directly for the respective water management institutions). In this regard, this paper attempts to answer the central question how effective are currently performing the water management institutions in the Syrdarya basin.

Theory and methodological background

In order to answer the central question of the paper, first of all, we have to find out what effectiveness in transboundary water management is and how can we measure it. Many scholars agree in general terms that international environmental institutions are considered to be effective if they solve the problems that caused their establishment. In addition to problem solution, several other evaluation standards have been applied to assess the institutional effectiveness in the last two decades. Summarizing the scholar contributions it is to say that the effective institutions are those that:

- change the political behavior of involved actors (Behavioral change)
- have high level of compliance of member states (Compliance)
- meet satisfaction of all member states (Collective optimum)
- show improvements to the extent that happened in the absence of the institution (No regime counterfactual)
- show improvements against performance of other institutions

Though these evaluation standards have been scrutinized intensely in the debates of the scholars most of them remained uneasily applicable in the practice. For instance, problem solution was a misleading standard because, on the one hand, there was an issue of time extension or non-existence of a common view in the issue area among involved actors (Underdal 2001). On the other hand, it was difficult to establish a causal relation between the effects of institution and state on given problem (Bernauer 2002). "Behavioral change" was a poor standard, because it does not capture the extent to which riparian countries are able to resolve any particular problem. The standards such as "compliance" were not suitable for measuring effectiveness, since high level of compliance does not necessarily mean a high level of performance (Chayes and Chayes 1993). Further, "collective optimum" was also critical, because actors sometimes seek fairness and

equity, the definitions of which are not always explainable in quantitative terms (Underdal 2001). "No regime counterfactual" was difficult to apply, because it can be too speculative (Keohane and Levy 1996).

In other words, the current state of research on effectiveness does not suggest any commonly accepted criterion for defining the effectiveness. Indeed, it is difficult to create a common definition for effectiveness because of the simple fact that the effectiveness in transboundary water management is constructed in nature. It is a matter of individual perceptions, judgments and interpretations. Observers may use various sources for judgment. Some may formulate their own judgment points and others retell the judgment of others, which is not insured against failed interpretation. This normative pluralism causes that each case may produce multiple and sometimes conflicting perceptions (Kleiboer 1998).

The question which standard for measuring effectiveness is the most appropriate and valid is too complex to be completely answered here. Practically, each basin has its own measurement standard and it varies simply from basin to basin. If "behavioral change" is the main objective of the particular basin institution, the achievement of institutional goal may be the objective of another basin institution. Instead of setting a generalized standard for measuring the effectiveness, I suggest in this paper to focus merely on five aspects of institutional performance - specificity, feasibility, flexibility, transparency and effectiveness of organization as suggested by Marty (Marty 2001).

Frank Marty argues that water management institutions have high potential of successful performance when they are specific, feasible, flexible, transparent and effective in organization. According to him, specific institutions are effective, because they are particular in an issue area and can provide rules and regulations for behavior. Feasible institutions are effective because they assess the resources and skills available realistically in order to be capable of coping with the problem. Flexible institutions are effective because they are capable of adapting to changing problems and interests of actors. Transparent institutions are successful because they include stakeholder´s participation in institutional performance. Institutions are effective if they are provided with the effective structure and organization within the institution.

Applying the conceptual idea of Marty, I conducted semi-structured interviews with the experts of water management institutions in Syrdarya basin. The interview partners were selected carefully based on their institutional and professional background. In order to get the "insider" view, I interviewed the employees of regional water management institutions and for the "outsider" perspective, I interviewed the independent experts that are not working for the same water management institutions. During the semi-structured interviews all selected interviewees were asked to rate from "1" to "5" the accomplishment of each above mentioned institutional aspect. "1" is considered to be the highest rate, whereas "5" is the lowest. After rating the performance of the institutions, the mean and variance of the given statements are determined. The comparison of the

"insider" and "outsider" perspectives makes possible to triangulate different perceptions and give more objective picture about the performance of the water management institutions. The interviews were conducted differently according to the available time and distance. Whenever possible, I preferred to make face to face interviews. For some of the interview partners who were on their field trips, out of country or for any other reasons out of office, I asked for telephonic interviews or they filled out the electronic questionnaires (See: Annex). Due to the sensitivity of the water issues in Central Asia, most of the interviewees asked for anonymity. Therefore, no names are mentioned in the article.

In this regards, the paper is structured in the following way. In the beginning, I give a brief historical description of formation of the regional water regime in Central Asia that is followed by general information about the current structure of the regional water management institutions. Further, I assess the water management institutions such as IFAS, ICWC and BWO Syrdarya and deliver the statements of the interviewees. In the final part of the paper, I make some concluding remarks on the outcomes of semi-structured interviews.

Formation and structure of water regime

Formation of the current water regime in the Syrdarya basin was actually the outcome of the irrigation plans of the Russian empire. The Russian scientist A.I. Voyejkov had suggested in 1908 about the possibility of the effective agricultural practice in the region. The idea was taken on by the Director of the Land Improvement Department, Prince V.I. Masalsky in 1913, although never implemented (CAWater-Info 2014). Voyejkov's idea to build a large-scale irrigation system in Central Asia was practically realized first during the Soviet period, i.e. when in 1966 during the May Plenum of "*Agit-Prop*" (Soviet agitation and propaganda program) proclaimed the program of "wide-scale construction of water reservation systems" in Soviet Union. Based on the decision of the plenum, each Soviet republic was to plan the irrigation of hundred thousands of hectares of land and construction of large-scale water management systems.

These plans were agreed upon by republican and federal organs of *Gosplan* (State Planning Committee) and approved in the meetings of *Kompartiya* (Communist Party) (Dukhovny 2000). For each basin, so called schemes for complex use and protection of water resources were created to assess water resources and irrigated lands. The first schema for Syrdarya was created by *Gosudarstvenaya ekspertnaya kommisiya* (State Experts Committee) of *Gosplan* in February of 1973. After some adjustments between 1976 and 1978, the schema was finally adopted in 1979. This schema remained as a main regulating mechanism in Naryn/Syrdarya river basin until extreme deficiency of water resources occurred in the middle of 1980s, which led to the interference of central state organs into the process of water distribution in the Aral Sea basin. It is to note that in the

middle of 1980s, the water level in Aral Sea decreased to 22 meters and volume reduced from 1064 km³ to 115 km³ (Dukhovny 2000).

Under these circumstances it became apparent that there is a need of management of main water carriers of Aral, Amudarya and Syrdarya rivers at regional level. For this purpose, in 1986 a new schema on the management of water resources was introduced which was accompanied by creation of so called "*Uprvodhoz Syrdarya*". Main task of this institution was to monitor and control water distribution and allocation. In 1987 *Uprvodhoz Syrdarya* was replaced by Basin Water Organizations (BWOs) on Amudarya and Syrdarya rivers. The BWO Syrdarya took control rights over all main diversion facilities along the Syrdarya river. (See: Figure 3). Both BWOs regulated water resources based on rules and schemas agreed among republics and approved by Minvodhoz SSSR (Ministry of Water Management of the USSR) (Dukhovny 2000).

When the Soviet Union collapsed in 1991, some immediate measurements were needed to sustain the regional water management system in Central Asia. In order to keep the stability in interstate water relations and conflict-free regulation of water resources of the Aral Sea Basin, the heads of water economy organizations of Central Asian governments pledged to create regional mechanism for regulation of water resources.[1] On 18 February 1992, the first interstate document was signed in Almaty - "Agreement between the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan, Turkmenistan and the Republic of Uzbekistan on Cooperation in Interstate Water Resources Use, Protection and Common Management". With this agreement, all parties agreed on the establishment of Interstate Commission for Water Coordination (ICWC) with its executive and inter-departmental control entities - BWO "Amudarya" and BWO "Syrdarya". In this way, the ICWC practically took over the function of the former Ministry of Water Management of the USSR.

At a later stage, other interstate water organizations emerged such as: 1) International Fund for saving the Aral Sea (IFAS) with its headquarters in Almaty, and 2) the Interstate Commission for the Aral Sea (ICAS), with headquarters in Tashkent. The role of IFAS was, primarily, to generate funds, while ICAS was in charge of the Aral Sea Basin Program (ASBP) implementation. In 1993 a third body, i.e. the Interstate Commission for Sustainable Development (ICSD), was established. Based in Ashgabat, the ICSD´s major objective was to protect environment in the region.

In 1993, the ICWC was placed under the ICAS and in 1997 the latter merged with the IFAS. Today, IFAS is the main organization for all regional water regimes. Primary function of IFAS is to develop and finance environmental and scientific projects aimed to recover environmental areas exposed to the Aral Sea catastrophe. It is headed by one of

[1] Statement of heads of water economy organizations of Central Asian Republics and Kazakhstan adopted on 10-12 October 1991 meeting in Tashkent http://www.icwc-aral.uz/legal_framework.htm. Last access on 02.12.2013

the presidents of five states on a rotational basis. The Executive Committee (EC IFAS) that comprises of prime ministers of five Central Asian states carries out the executive functions.

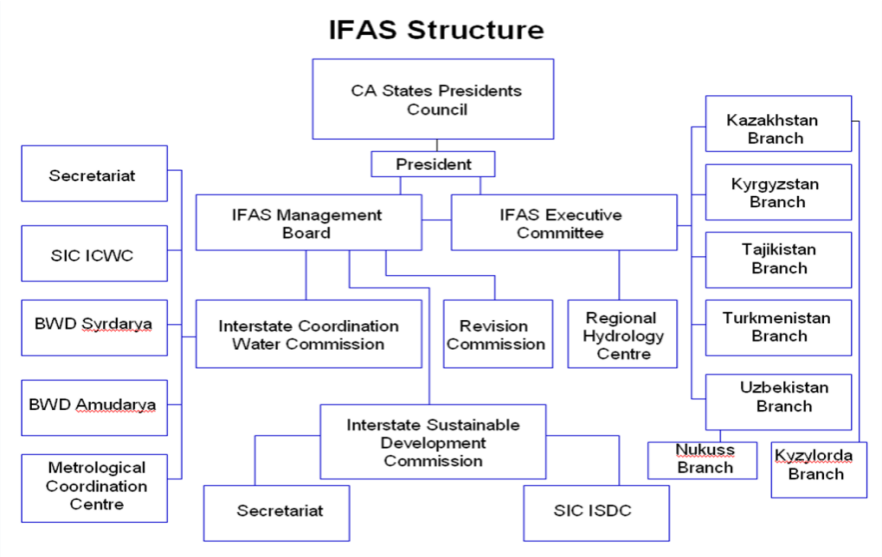

Figure 2: IFAS Structure (Source: www.icwc-aral.uz)

The IFAS management board currently consists of: 1) The Interstate Commission for Water Commission (ICWC) including subdivisions such as Secretariat, Scientific Information Centre, BWO "Amudarya", BWO "Syrdarya", and Metrological Coordination Centre 2) the Interstate Commission for Sustainable Development (ICSD) including subdivisions such as Secretariat and Scientific Information Centre and 3) the Revision Commission - one representative at the level of deputy Minister of Finance from one of the member states (The Agreement about the Status of IFAS and its Organizations 1998) (See Figure 2.).

ICWC is represented by the deputy ministers of water management organizations of the Central Asian states. It is the highest decision-making body regarding the issues of regional water allocation and distribution. It entrusts the function of water resources management, development and maintenance of sustainable hydrological processes in the regional rivers to the water resources ministries. The ICWC Planning Meeting is conducted quarterly, with the participation of high level government representatives from Central Asian states in order to define and adjust seasonal water allocations and reservoir operations on transboundary waters. Plans over water distribution and allocation are confirmed at the ICWC meeting. The ICWC also conducts working meetings and extraordinary sessions to discuss the monitoring of water deliveries and other problems with regard to water supply.

Currently, the ICWC operates through five executive bodies, i.e. the Scientific Information Center (SIC ICWC), the ICWC Secretariat, Coordination for Metrology as well as the Amudarya and Syrdarya BWOs. As the ICWC is not institutionalized per se, its secretariat takes the responsibility for facilitating the ICWC meetings. As such, it prepares programs and projects with the other sister organizations and controls the financial issues in connection to the BWOs. However, it does not carry any responsibility above the ICWC and does not consider any complaints on the activity of the ICWC (Statute of the Interstate Commission for Water Coordination of Central Asia 2008).

The SIC ICWC is responsible for creation of database, analysis as well as support and implementation of programs to enhance water conservation measures (Statute of the Scientific-Information Center of ICWC 1999).

The Amudarya and Syrdarya BWOs are responsible for the technical aspects of water allocation, distribution and management at basin level. The BWOs organize water supply to the ICWC member states, operate hydro-schemes and intakes and carry out measures for improvement of the environmental situation and control of the quality of used water resources (Statute of the Basin Water Association "Amudarya" and "Syrdarya" 1992).

Particularly, the Syrdarya BWO is responsible for the planning and monitoring of seasonal water allocations in the Syrdarya basin. The BWO plans and submits proposals for the approval of the ICWC and implements the operating regimes of the Syrdarya reservoir cascade and water supply quotas to the riparian states. It also performs the operational management, control and monitoring of water withdrawals and operates waterworks facilities and water intake structures. The BWO controls the regime in Naryn, Karadarya, Chirchik and Syrdarya rivers from the Uchkurgan and Andijan hydropower stations to the Chardara reservoir. The BWO Syrdarya also manages national facilities on the Chirchik river in Uzbekistan. The central office of the BWO Syrdarya is located in Tashkent and there are four branch offices throughout Uzbekistan. Every month, the BWO presents to the ICWC members detailed information on present water resources usage. Every year, the BWO controls water resources amounting on average to 34 km³ of 37 km³ or over 90 percent of the annual river flow in the Syrdarya basin (Statute of the Basin Water Association "Syrdarya" 1992).

Considering this, the organizational framework of the water management institutions in Central Asia can be defined as complex one as the focus of the organization is given to several water issues in the region. Within this complex IFAS structure, we have to define main bodies dealing directly with water allocation and distribution in the Syrdarya basin. According to the organizational structure of the IFAS, there are in fact three main bodies that might have direct influence on the distribution of the Syrdarya water resources. These are the BWO Syrdarya, the Interstate Commission for Water Coordination (ICWC) and the International Fund for Saving Aral Sea (IFAS).

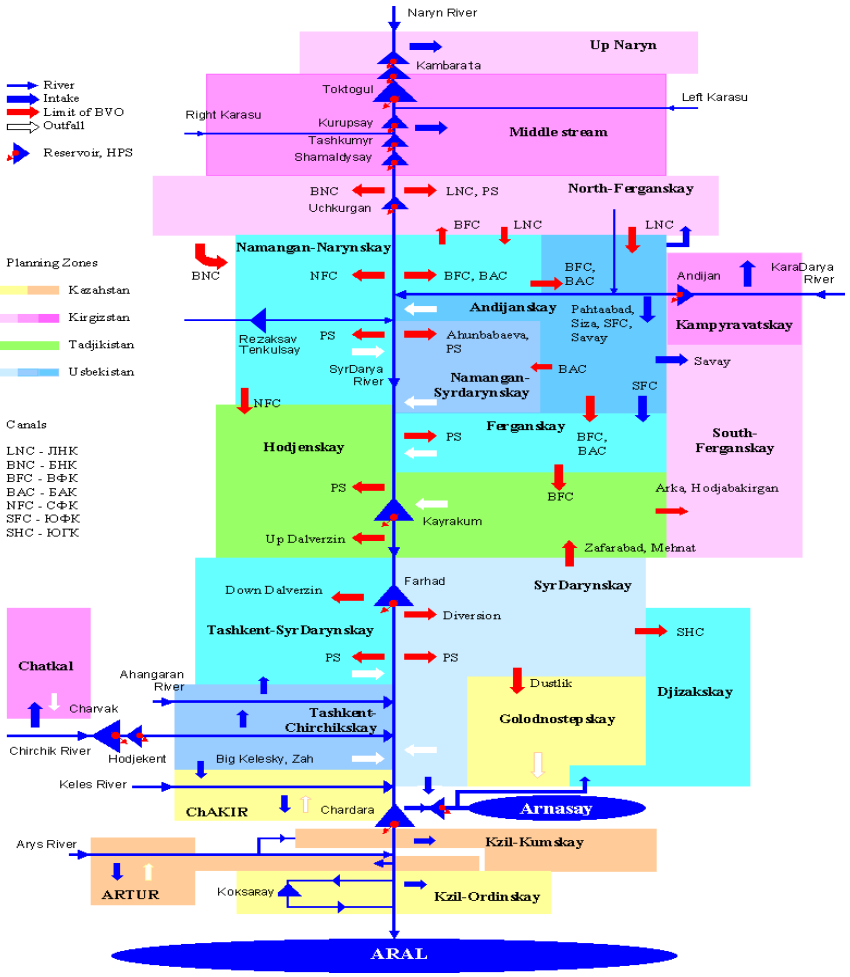

Figure 3: Syrdarya´s linear scheme (Source: www.icwc-aral.uz)

Measuring the effectiveness of water regime

In order to assess the effectiveness of the water regime in Central Asia, I focused on five features of the institutional performance, namely *specificity, feasibility, flexibility, transparency and effectiveness in the organization* were taken as described by Frank Marty. Due to the fact that the qualitative research at IFAS and ICWC level could not be realized, I selected the interviewees among the personnel of the SIC ICWC, who have internal insights and broad knowledge on regional institutional performance. At the same time, I interviewed at least 4 independent experts (previous international organization employees and academicians that are in charge with water management) and compared the results of these interviews with interviews the employees of water management institutions from Syrdarya river basin. All selected interviewees were asked to rate the accomplishment of particular institutional feature at three levels, as indicated in the following tables. A „5" is considered as the highest rate, whereas a „1" as the lowest. In general, I conducted around 15 interviews with high level experts. Though it seems a bit

few to make a significant conclusion based on limited number of interviews, one has to take into consideration that there are not so many experts working for the regional water management institutions and on the other hand, water is very highly sensitive political problem in Syrdarya basin, so that water experts are not reluctant to take part in these kinds of interviews. In the next lines, I will elaborate the results of the interviews more in detail.

1.1 Measuring the effectiveness of BWO Syrdarya

Table 1. Performance of Syrdarya BWO (assessed by water experts from Syrdarya BWO)

Syrdarya BWO	1. Specificity	Mean	Variance	2. Feasibility	Mean	Variance	3. Flexibility	Mean	Variance	4. Transparency	Mean	Variance	5. Effectiveness	Mean	Variance
Rate	5-5-5	5	0	5-5-3	4.3	0.5	5-5-5	5	0	5-5-5	5	0	5-5-3	4.3	0.5
								Mean	4.7						
								Variance	0.5						

With respect to *specificity* of the BWO Syrdarya, the personnel gave a good assessment (5), as the tasks and goals of the institution, despite some internal/external problems, are accomplished properly. The BWO Syrdarya is dealing with distribution of water, control, operational regulation, monitoring and reporting.

The *feasibility* issue of the institution is assessed relatively lower than specificity (4.3). The BWO Syrdarya accomplishes, actually, the function of a River Basin Organization (RBO). However, regular rights of RBO are not given to the BWO Syrdarya. This low rate is related also to the issue of financial situation and technical equipment available for the BWO. In fact, sometimes there is a lack of information due to delay of information provision by Metrological Center. Currently, this complicates the accomplishment of the given task and submission of the reports on time. The technological equipment of the BWO is assessed to be at middle level. The problems are seen also in exploitation and bureaucratic issues. Nevertheless, the human resources are evaluated excellently.

Regarding the *flexibility* of the institution, the BWO is assessed as very good. (5) However, many water issues in the Syrdarya basin cannot be dealt by the BWO Syrdarya, due to the fact that its authority is simply limited across the basin. There are three interrelated administrative coordination units: Naryn-Karadarinskiy (Andijan)

Golodnostepskaya (Gulistan), Verhovno-Chirchikskaya (Chirchik) and Charvakskaya. The last one is not related to the above-mentioned units and considered as independent unit. The authority of the BWO does not expand to the main reservoirs such as Toktogul and does not operate in any of the key reservoirs. The operation of the Naryn cascade, for instance, is under the Power and Transmission companies of Kyrgyzstan. Other major reservoirs and hydroelectric stations are mostly operated by the national energy agencies. The BWO Syrdarya makes requests to all reservoir operators for water releases during the summer seasons. During winter months (October through March), water releases are determined mainly according to power generation needs in consultation with the BWO Syrdarya. Chardara Reservoir and the section of the Syrdarya from the reservoir down to the Aral Sea that situated in Kazakhstan are under control of the Aral Syrdarya BWO. Aral Syrdarya BWO is a Kazakh government agency operating under the Kazakhstan Committee of Water Resources of the Ministry of Agriculture. This BWO has its head office in Kyzyl-Orda and branch office in Shymkent. It controls the main off-takes and pumping stations and two main collectors which discharge back into the Syrdarya.

With respect to *transparency* of the institution, the BWO Syrdarya reports monthly to the ICWC and quarterly to the inquiries of water management ministries of Central Asian countries. The information is partly published through the special journal "Water Reporting". (*Vodootchet*) The information on the activity of the BWO Syrdarya is also available online.

The *effectiveness* of the organization is also assessed relatively high (4.3). It is assumed that the current centralized structure is effective for the current regional social environment, because there is still a top-bottom approach on the production of particular agricultural commodities such as cotton and wheat. The *effectiveness* of the organization might increase when the BWO Kyzyzlorda and Toktogul dam would be included into the BWO Syrdarya.

It can be argued that on the basis of the assessment of interviewees, the level of *effectiveness* of the BWO Syrdarya is relatively high with respect to *specificity*, *flexibility* and *transparency* of the BWO. Further efforts are needed in terms of *feasibility* and *effectiveness* in the organization, which include, among others, improvement of the regular inflow of finance and enhancement of the coordination and control rights of the BWO in the whole basin.

1.2 Measuring the effectiveness of IFAS/ICWC

Table 2. Performance of the IFAS and ICWC (assessed by the water experts from SIC ICWC)

IFAS and ICWC	1. Specificity	Mean	Variance	2. Feasibility	Mean	Variance	3. Flexibility	Mean	Variance	4. Transparency	Mean	Variance	5. Effectiveness	Mean	Variance
Rate	5-5-4-4	4.5	0.25	4-3-3-3	3.25	0.32	4-3-3-4	3.5	0.25	4-3-3-4	3.25	0.25	4-3-3-4	3.5	0.25
							Mean	3.65							
							Variance	0.26							

The performance of the IFAS and ICWC is assessed relatively lower than the BWO Syrdarya (3.65). There is also inconsistence among the interviewees on the institutional performance of the IFAS and ICWC (0.26).

The respondents gave the highest assessment to the specificity of the IFAS and ICWC. According to them, the institutions are specified well enough. A clear scope and goals of the institutions are to be found in the regional water agreements and regulations of the IFAS and ICWC.

The feasibility feature of the IFAS and ICWC, on the other hand, is assessed lower (3.25) due to the fact that there is a need on particular binding agreements on information exchange. The decisions of the both organizations are recommendatory in nature. Though certain systems of analysis on water management are developed, regular financial support is not guaranteed all the time. There are also some external factors that hinder the accomplishment of particular tasks.

According to the interviewees, these organizations are not flexible enough. They adapt with difficulties to the external challenges and changes. There is no such a term as "flexibility" that is mentioned in agreements, regulations or statutes of the institutions. However, certain flexibility is ensured through consulting mechanisms that can turn the activity of the institutions towards a particular direction. One of the interviewees found that the both institutions are not flexible at all.

The transparency of the organization is reflected at an average (3.5). Although, according to the internal agreement of the institutional member, it is stated that the information is completely accessible for the internal users, there is no access for external users. Furthermore, there is a lack of information on energy, which is vital for complex analyses of water and energy inconsistence as well as for extreme situations. Though, the decisions

of the ICWC are published regularly on the official website of CAWater.info, the financial situation of the IFAS (especially financial aspects of the international projects), is not announced; and it is difficult to find such information elsewhere.

With regard to the effectiveness of the institutions, it seems that the most appropriate structure is a centralized way of management. However, in such a centralized management system, public participation must be taken into account as well. It is important to clarify the functions of the structures of the IFAS, ICWC and BWO, to enhance the obligations and rights of the BWOs, scope of activity, to create new units, for instance, basin councils (involvement of all stakeholders) to create a judiciary basis for the joint use and coordination of transnational water resources. The whole system should be controlled through independent controlling revision unit.

Based on these assessments, it can be concluded that the level of effectiveness of the IFAS and ICWC is fairly high with respect to specificity of the institutions. However, their feasibility, flexibility, transparency and effectiveness need further significant improvements. It is also worth to mention that there is some discrepancy between the interviewees on the evaluation of the effectiveness in the organization. While overall the level of effectiveness of the IFAS and ICWC may be considered as medium, this does not yet explain definitely whether these two structures have contributed to the ineffectiveness of the water management institutions in Central Asia. Therefore, it is the aim of the next paragraph to analyze the assessment made by independent experts separately.

1.3 Measuring the effectiveness of IFAS/ICWC

Table 3. Performance of the IFAS (as assessed by independent water experts)

IFAS	**1. Specificity**	**Mean**	**Variance**	**2. Feasibility**	**Mean**	**Variance**	**3. Flexibility**	**Mean**	**Variance**	**4. Transparency**	**Mean**	**Variance**	**5. Effectiveness**	**Mean**	**Variance**
Rate	3-2-2	2.3	0.26	3-2-2	2.3	0.26	3-2-1	2	0.66	4-3-3	3.3	0.22	3-3-1	2.3	0.89
							Mean	2.44							
							Variance	0.45							

Table 4. Performance of the ICWC (as assessed by independent water experts)

ICWC	1. Specificity	Mean	Variance	2. Feasibility	Mean	Variance	3. Flexibility	Mean	Variance	4. Transparency	Mean	Variance	5. Effectiveness	Mean	Variance
Rate	3-2-2	2.6	0.22	3-2-2	2.3	0.26	3-4-1	2.6	1.56	3-1-3	2.3	0.89	3-2-1	2	0.66
								Mean	2.36						
								Variance	0.71						

Table 5. Performance of the BWO Syrdarya (as assessed by independent water experts)

BWO Syrdarya	1. Specificity	Mean	Variance	2. Feasibility	Mean	Variance	3. Flexibility	Mean	Variance	4. Transparency	Mean	Variance	5. Effectiveness	Mean	Variance
Rate	/-/-2	2	0	/-/-2	2	0	/-/-1	1	0	/-/-3	3	0	/-/-1	1	0
								Mean	1.8						
								Variance	0						

Table 5 summarizes the assessment of four independent water experts on the performance of IFAS, ICWC and BWO Syrdarya water management institutions. In comparison to the workers of the institutions, independent experts gave relatively lower rate to the performance of Central Asian water institutions.

Concerning the *specificity* of IFAS, one of the experts agreed to give a middle rate. According to him, goals of the institutions are clearly defined. Another expert´s opinion is that IFAS is very unspecific. Also, it was mentioned that the Aral Sea Basin Programme, which is one of the main tasks of the executive committee of IFAS (EC IFAS), is very broad. On the other hand, water is a broad issue that covers many aspects – from agriculture to energy, land, sustainable development, environmental security, etc. Thus, IFAS as an overarching institution has to be broad and unspecific.

Concerning the *specificity* of ICWC, one of the experts gave an upper-middle rate. According to them, the tasks of ICWC are clearly defined. The institution, however, covers only a part – and currently the less controversial part – of water problems in the region. For instance, the issue of energy/hydropower is excluded, even though it is a crucial issue in the regional water coordination. Also, water quality issues are not tackled. In contrast, the other expert thinks that the way the regional water management institutions are set up and countries cooperate cannot take into account all aspects of the joint water management.

Two experts, have difficulties in assessing the performance of BWO Syrdarya, as they are not familiar with its activity, whereas two other experts gave deviated rates.

The *feasibility* of the IFAS is evaluated as being relatively low. According to one of the independent experts, the skilled human resources are available in the institutions and they are competent and sufficient. The instruments of the regulation are also regularly improved. Yet, financial contribution from the side of the member states does not take place regularly. There is a frequent failure of complying with the agreements agreed upon on the use of water resources. There is no balancing mechanism, which would oversee such failures, especially when one of the member-states does not stick to the agreed water limits. According to another expert, EC IFAS or IFAS in general, provides in its set-up the possibility to make achievements in solving problems. However, in reality, it has a limited function. For example, mandate of the country representatives, financial contributions of the countries and lack of will do not give these institutions a real regional competency – it is currently used rather as a forum to secure national interests of member states.

Concerning the *feasibility* of ICWC, one of the experts assesses that the skilled human resources are available in ICWC. As opposed to the first expert, the second expert characterizes ICWC with poor infrastructure and lack of highly qualified professionals. According to the third expert, the restricted mandate of ICWC makes it less feasible to solve the problem. For restricted institutional goal of ICWC, the restricted mandate might be sufficient on a political level, but the institution lacks capable instruments to ensure implementation of its decisions such as monitoring of water withdrawal, sanctions, etc. One of the experts thinks that the skills and resources of ICWC should give a decent opportunity to see and solve certain problems. However, the political background is not facilitating any progress.

With respect to *flexibility*, according to one of the experts, the organizational structure of IFAS seems to be flexible enough. In contrast, other experts think that it is rather inflexible. None of them can substantiate their rates, though.

With respect to *flexibility* of ICWC, the experts stated that it is flexible. For instance, core changes, when there is a need are introduced based on the decisions of the heads of member-states. According to one of the experts, the current situation is regulated by the decisions of the ICWC. Similarly, another expert states that ICWC´s construction is

flexible enough. Though ICWC members meet together only semi-annually, in a perfect setting, it is enough to agree on general issues, while monthly/weekly/daily adaptation to changes is fulfilled by the subordinated agencies and technical experts such as BWOs, etc. The fact that this does not work is not the fault of ICWC. It is not the deputy ministers and head of water agencies that should meet regularly, but the level below. This certainly would require transferring the water issue from political to technical level. According to the other expert, the institutions are flexible, however, due to the political situation the institutions are not given the opportunity to be flexible.

With regard to the *transparency* of the institutions, one of the experts thinks that IFAS performs well. For instance, the full information about the EC IFAS can be found on Ec-Ifas.org website. Another expert states that during the Kazakh chairmanship EC IFAS strived to enhance its transparency, especially with regard to donors. However, transparency is not institutionalized in IFAS and it always depends on the political will of the chairman.

Concerning the *transparency* of the ICWC, one of the experts thinks that the institution does well. For instance, the information about the activity of the ICWC and BWO Syrdarya are accessible through CAWater.info web portal. In contrast, the second expert thinks that only very short agendas of the meetings are published in the website but no protocols about results of the meeting. In the years when ICWC did not reach an agreement, there was no public notice at all. Also, the third expert thinks that the institutions are transparent and much of the official documentation is easy to find. For instance, the information about the activity of the ICWC and BWO Syrdarya are accessible through CAWaterInfo web portal. The information about the EC IFAS is to be found on the website Ec-Ifas.org.

With respect to *effectiveness* of the IFAS, the institution is evaluated highly by the first expert, because IFAS´s management structure is of a centralized nature. It is stated that it is good for the current water situation in the region. According to another expert, the IFAS was relatively progressing in the second half of 1990s and early 2000s. However, it has been almost five years since the IFAS is slowly losing its significance in reaching the objectives set in its mission. In order to overcome this inefficiency, it was suggested to reconsider its mandate, to reflect a balance of interests of upstream and downstream countries; to decentralize its governing bodies; to reach at least 50% financial sustainability and stop depending solely on international donors. As the third expert assesses, EC IFAS has many shortcomings that hinder its effectiveness: insufficient funds (not under Kazakh chairmanship), unclear mandates, weak legal base, and lack of commitment of member states. On the other hand, IFAS is the only regional organization with all five Central Asian states being its members. It serves as a platform for dialogue and donor coordination. It does not need more centralization, but needs a permanent location, legal and organizational reforms.

With respect to the *effectiveness* of ICWC, the institutions are evaluated lower than the IFAS, because its management structure is of a centralized nature. The experts state that the decentralization is needed for lower levels, for instance, on the level of Water Users Association (WUP). In order to increase the effectiveness on the lower levels, the involvement of the public participation is necessary for the decision making processes. Also, one expert asserts that the ICWC is a functioning regional body and is actively used by the governments of Central Asian states and their respective water ministries. At the same time, in the absence of more effective alternative, the ICWC preserves certain bias towards the downstream countries. Another expert thinks that the members of the ICWC reached an agreement about water distribution over many years. Given the adverse circumstances the ICWC functions still as an institution and many observers see this already as a success.

As we have seen above, the evaluations differed among the interviewed groups although not as much as with respect to the specificity of the institutions. While the BWO Syrdarya performs relatively well across all mentioned features, we see some or significant problems in the feasibility, flexibility, transparency and effectiveness of the IFAS and ICWC.

Table 6: Performance of the water management institutions in the Syrdarya basin

Independent experts				**Internal experts**			
IFAS	2,44	Variance	0,45	IFAS	3,65	Variance	0,26
ICWC	2,36	Variance	0,71	ICWC	3,65	Variance	0,26
BWO	1,8	Variance	0	BWO	4,7	Variance	0,5

Conclusion

This paper was an attempt to explore the weak performance of water management institutions from the "insider" perspective and "outsider" perspective in a quantitative manner. It was rather quick analyses from the initial source, which are not fallen to a greater extent interpretation by the author.

The systematic comparison of assessment of water management institutions experts of Syrdarya basins and independent experts has revealed that from the external perspective it would be too simple to put blame for a major part of the current water crisis in Central Asia on imperfect water management institutions. It can be argued based on assessments of water experts that the level of effectiveness of the BWO Syrdarya is relatively high with respect to specificity, flexibility and transparency of the BWO. Further efforts are needed in terms of feasibility and effectiveness of the structure, which include, inter alia, improvement of the regular inflow of finance and enhancement of the coordination and

control rights of the BWO in the whole basin. Also, it can be concluded that the level of effectiveness of the IFAS and ICWC is fairly high with respect to specificity of the institutions. However, their feasibility, flexibility, transparency and effectiveness need further significant improvements.

Besides, the survey on different perceptions between internal and external experts has shown that the independent experts rate the institutional performance relatively lower than the experts working for respective institutions. Considering this finding, it is to conclude that the perceptions of internal and external experts about the performance of institutions are not completely reliable to give ultimate answer to the performance of water management institutions. All hitherto existing evaluation indicators of regime effectiveness such as compliance, collective optimum, behavioral change, no regime counterfactual are naturally human interpreted constructs. It is a matter of individual perceptions, judgments, interpretations and interests. Independent from the perception and judgements of people, it is to assume that the water crisis roots are connected with a complex of other factors such as economic crises, political instability, legal base, influence of non-regional powers, etc.

Especially, I think it is important among these factors to give priority to modernize the legal framework for water at national and regional level and to focus on funding solutions on complex economic issues - investment, consistent development of market mechanisms of water management, planning and implementation of joint projects. The riparian countries need more time to clarify and agree on estimated reserves of water, as climatic conditions are changing. As long as the regional water relations are governed by an incomplete set of very vague legal framework agreements, any of the reasonable solutions will be treated with caution. The focus must be given on the joint development of detailed legal framework for regional water cooperation.

Finally, I think that the Central Asian countries need more time to learn to cooperate with each other. The actual implementation of cooperation projects in Central Asia is hampered mainly because of mutual mistrust and rivalry and the prevalence of political ambition and excessive politicization of the water issues. The current water issues in Naryn/Syrdarya basin remain so, unless the trust becomes a subject in the negotiation among regional countries. Water would not be any more a subject of conflict among upstream and downstream countries, if common beneficial cooperation mechanism has been established. Apparently, the current institutional mechanism does suit the interests of all riparian countries.

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Appendix:

A questionnaire template for the experts from Southern Africa is added as Appendix.