

River basin management in Central Asia: evidence from Isfara Basin, Fergana Valley

Iskandar Abdullaev¹ · Shavkat Rakhmatullaev²

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Abstract Around the world, state water management organizations are the agents delegated to implement basin-level integrated water resources management strategies. In Central Asia, the hydrographic water management—deeming a river basin or a catchment area a proper water management unit—is a widely accepted concept. Yet, state water bureaucracies are incapable and/or reluctant to interact on water management with the “outsiders”, both domestically and internationally. To overcome this shortcoming, basin councils are promoted as formalized platforms to facilitate inter-sectoral dialogue, and likewise, to support local participatory processes within river basin planning and management. The approach offers a framework of integrating water sector planning and management with environmental, social and economic agendas of a given basin. State water management organizations are designated the role of technical secretariats of such basin councils which should be facilitating and helping to improve other stakeholders’ behavioral response in

watersheds. The paper provides a comprehensive analysis of the process of implementation of the river basin model through the theory of change based on issues, challenges and recommendations identified in the transboundary Central Asian Isfara River Basin shared by Kyrgyzstan and Tajikistan.

Keywords Integrated water resources management · Transboundary watercourses · River basin management and planning · European Water Framework Directive · Central Asia

Introduction

Integrated water resources management (IWRM) became an important externally driven approach for water reforms in Central Asia (CA) (Abdullaev 2012; Karthe et al. 2015). If properly implemented, it was expected to address the most water governance issues in the region (Sokolov 2006; Dukhovny and de Schutter 2011). Presently, the process of integrating IWRM principles into national, river basin and farm-level water management is slow, unbalanced, non-cohesive and unstructured. A significant difference between the IWRM approach and the Soviet-time hydraulic mission lies in the respective inclusion/non-inclusion and participation/non-participation of the public in water resources management processes, including planning, implementation, monitoring, and decision-making (Abdullaev and Rakhmatullaev 2013).

The Global Water Partnership (2012) states that IWRM strategies shall be based on four Dublin principles presented at the 1992 World Summit in Rio de Janeiro. The 1st principle states that “...assign[ing] a river basin or a catchment area to be a water management unit... is the so-

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✉ Shavkat Rakhmatullaev
rakhmatullaev@rambler.ru

Iskandar Abdullaev
iabdullaev@carececo.org

¹ The Regional Environmental Centre for Central Asia (CAREC), 40, Orbita-1 Street, 050043 Almaty, Kazakhstan

² Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Transboundary Water Management in Central Asia Programme, 7A Chimketskaya Street, 100029 Tashkent, Uzbekistan

called hydrographic approach to water management.” In CA, the hydrographic legal and institutional frameworks are already in place. Basin principles are operational in Kazakhstan (Zinzani 2014), are partially implemented in Uzbekistan (Yalcin and Mollinga 2007; Wegerich 2014), Kyrgyzstan and Tajikistan (Ul Hassan et al. 2004; Sehring 2009). In Turkmenistan, water management still follows the territorial-administrative model (Lioubimtseva 2015).

Scholars and experts point out that the international donor community has been over-focusing on and supporting the bottom-up approach of engaging local stakeholders mainly through irrigation management transfer (IMT) and participatory irrigation management (PIM) via water user associations (WUA) (Yakubov 2012). However, most of the time the aspects of effective water administration, i.e., extending support to capacity building of state water management organizations (WMO) in the process of IWRM reforms, have been ignored (Rakhmatullaev and Abdullaev 2014). Thus, the paradox is that, on the one hand, weak state WMOs are in need of change, but on the other hand, exactly they are the ones meant to bring this change (Suhardiman et al. 2014).

Now, water management is solely the business of state WMOs with limited human and technical capabilities and degraded infrastructure. State WMOs are lacking preparedness to integrate the interests of different uses and users on all levels, which results in frequent regional, national and local contestation over water resources (Abdullaev et al. 2012; Rakhmatullaev et al. 2013). The only outcome of IWRM-related reforms so far has been the change of WMOs title—instead of territorial water management organizations they are now called river basin water management administrations.

Thus, as of now neither inclusive water user associations nor integrated basin water organizations are established in major Central Asian water systems/watersheds. On the national level, the issue of decentralizing fiscal, technical and political authority in the water sector remains largely unattended (Abdullaev et al. 2009).

The implementation of specific locally oriented projects may allow adapting the IWRM concept to domestic agents and local conditions (Grigg 2008). As a development hypothesis, the paper discusses the suitability of the river basin management (RBM) model for IWRM implementation in the Central Asian context. The hypothesis is tested against the theory of change and renders both project staff and external counterparts an opportunity to critically review, i.e., revise and improve the rationale, and evidence used to support aid programming.

The case study provides a detailed analysis of the river basin management approach, i.e., international water treaties, joint basin institutes, stakeholder participation, information and database, basin planning and management

tools, utilized within the Transboundary Water Management in Central Asia (TWM CA) programme implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) in partnership with the Central Asian Regional Environmental Center (CAREC).

River basin management in Central Asia

National level

Presently, the interaction between WUAs and state WMOs—both of them possessing mandate to manage water, although on different levels—is the biggest drawback of water reforms. In reality, water officials generally perceive WUAs as subordinate and dependent partners (Sehring 2009). This is a rather expected outcome in CA, where the state is simultaneously the decision-maker and the operator. Ideally, strong institutional options should exist on different levels to manifest the needs of water users, local communities and other concerned parties. Therefore, a blend of bottom-up and top-down models should be used for practical IWRM application (Butterworth et al. 2010).

To address the pressing issue of interaction between state WMOs and non-state agents at large (including but not limited to WUAs), basin councils are advocated as formalized platforms to facilitate inter-sectoral dialogue and support local participatory processes within the water sector in the broader basin planning setting (Lankford and Hepworth 2010; Schmeier 2012). It is vital to forge such platforms within existing national WMOs to enhance the facilitating role and their behavioral response to other stakeholders in tackling water management issues (Fisher et al. 2011).

Basin councils may act as a platform for balancing the decision-making power and the empowerment of local communities in a given basin (Molle 2009). Recent empirical evidence indicates that since mid-2000s the national water codes of Kazakhstan, Kyrgyzstan and Tajikistan had been amended to give special attention to the institutional aspects of river basin management such as basin councils and basin plans. The most advanced internationally advocated basin council practices are observed in Kazakhstan.

Transboundary level

Creation of joint river basin organizations, including elaboration of mandates, roles and responsibilities for international river basins requires time, resources and well-structured expertise (Lautze et al. 2012). It is important to study the international and reassess the CA regional

experience on basin management (O'Hara 2000). The Soviet era basin water authorities—the Amu Darya and Syr Darya Basin Water Administrations (BWA)—and the post-Soviet Chu-Talas River Commission of Kyrgyzstan and Kazakhstan may serve as role-models for potential RBM implementation.

In the context of existing regional water management institutes such as BWAs, there have been skepticism and mistrust between states as to objectivity and impartiality of water allocation (Abdolvand et al. 2014). The situation may be attributed to increasing nationalization of water policies impeding the transfer of national authority over to existing regional water agencies (Janusz-Pawletta 2015). In the broader sense, after the collapse of the Soviet Union Central Asian countries made dissimilar choices and followed diverging nation-building trajectories. In its turn, that triggered more unilateral and/or bilateral rather than integrating regional processes, including natural resources management (Rakhmatullaev et al. 2010a, b).

Basin councils can become a viable instrument of cross-border cooperation on water resources management. Since the collapse of the Soviet Union, international donors have been actively supporting cooperation in large river basins of the Amu Darya and the Syr Darya Rivers through the prism of transboundary management (Vinogradov and Langford 2001; Libert and Lipponen 2012). Yet, numerous small transboundary rivers and irrigation canals in Central Asia are being neglected (Wegerich et al. 2012; Groll et al. 2015). In fact, it is exactly on this grass-root level where the full spectrum of water management variables, links and challenges is observed (Sadoff and Grey 2005; GWP and INBO 2012; ICG 2014).

The European Union Water Strategy

To ensure long-term sustainable use and management of water resources across the European Union based on the Dublin principles; in 2000 the EU adopted the Water Framework Directive (WFD). By adopting it, the EU took a groundbreaking step as it became the new legal IWRM-oriented model of managing and protecting water. The WFD's core idea is to manage water not within political and/or territorial-administrative borders but rather within natural geographic and hydrological systems, i.e., as per the river basin district concept (EC 2012).

RBM plans are the main mechanism for WFD application. RBM offers a scheme to fuse water development planning and management with environmental, social and economic evolution of a given river basin (Hooper 2005; EC 2012; Schulze and Schmeier 2012). The approach is not novel. Over centuries, it has evolved in different forms and formats as a single- or multi-purpose and a comprehensive

vs integrated approach (Barrow 1998). Its earlier versions were mainly technocratic in nature and were driven by engineers. As the world was changing, water technocrats had to share their decision-making authority with other stakeholders and public agents with a considerable focus on environmental priorities (Ostrom 1992; Abbott and Jonoski 2001; Swallow et al. 2006).

In an attempt to promote cooperation between Central Asia and Europe, the EU adopted the Central Asia Strategy for sharing experience and expertise in various development fields, including natural resources management (the EU Council 2007).

The National Policy Dialogues (NDP) is a tool of the EU Water Initiative (EUWI) customized for Central Asia to generate support for IWRM implementation among international donors and national partners. NPDs are held in all (Central Asian StatesCAS) except Uzbekistan (UNECE 2012). NPD activities are based on IWRM principles as stated in the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (the Water Convention), the UNECE/WHO-Europe Protocol on Water and Health, the WFD and other relevant documents.

The German Water Initiative

In April 2008, during its European Union Presidency and as part of its EU Strategy, Germany launched the Berlin Process Water Initiative aimed to intensify regional collaboration on water management in Central Asia (TWM CA 2013; Abdolvand et al. 2014). The project¹ commenced in 2009 after five special missions to prepare programmatic interventions and generate political support from CASs. It has three different interlinked levels: (1) regional (political)—supporting the Executive Committee of the International Fund for Saving the Aral Sea (IFAS EC),² (2) IWRM in transboundary river watersheds and (3) national pilot projects to enhance water management (technical cooperation in CASs). They have tied different policy-making strata and helped to sustain the programme's impact in different levels. By supporting national priorities, national pilot projects (Component 3) were able to generate a significant backing among national-level policy makers.

¹ The TWMCA Programme is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in partnership with the United Nations Economic Commission for Europe (UNECE), the Central Asian Regional Environmental Center (CAREC) and national partners.

² The IFAS EC is a regional organization set up by five CA Presidents in 1992 to coordinate environmental, water management and sustainable development efforts. Since 2013, the organization has been headed by Uzbekistan.

Component 1 was crucial for maintaining regional cooperation mechanisms. In this context, basin-level interventions were accepted both nationally and regionally.

Phase I (2009–2011) of the TWM CA Programme was implemented by the GIZ with the financial support of the German Federal Foreign Office. Since 2012, the Programme (Phase II) has been co-funded by the EU within the European Union Regional Environment Programme for Central Asia (EURECA). Enhancing regional cooperation and partnership between Europe and CA on basin-level IWRM constitutes one of its key objectives (EURECA 2013). The Water Management and Basin Organizations in Central Asia (WMBOCA) Initiative is one of EURECA's important elements specifically targeting regional introduction of RBM models. The core concept of the EU strategy within the WMBOCA framework is to build efficient and sustainable water institutes in the region of CA.

Four countries of the region (except Uzbekistan) are involved in the EU WMBOCA. It should be noted that the Isfara transboundary river basin is shared by three riparian states of Kyrgyzstan, Tajikistan and Uzbekistan. The paper presents project outcomes from Kyrgyzstan and Tajikistan. Although the TWM CA Programme was not able to engage Uzbekistan in the Isfara River Basin activities, regular briefings were held with national level Uzbek partners to share its progress. Moreover, the draft Isfara transboundary agreement stipulates for the third party (Uzbekistan) accidence in the future.

The Isfara is a classic example of a small transboundary river in CA shared by two or more countries. Since Uzbekistan is not a signatory to the EU WMBOCA, the project was not implemented in the respective Uzbek sub-basin. Nevertheless, the project team had held several consultations with Uzbek water authorities in the attempt to engage them in corresponding cooperation activities.

Study area characterization: the Isfara River Basin

The Isfara River is a small transboundary sub-basin within the greater Syr Darya river basin system. It does not discharge into the Syr Darya (Fig. 1). The river starts in the Alay mountain range by the confluence of the Kshemysh and the Karavshin tributaries in the western part of Kyrgyzstan and flows through northern Tajikistan. Three CASs, namely Kyrgyzstan (Batken District of Batken Region), Tajikistan (Isfara and Kanibadam Districts of Sughd Region) and Uzbekistan (Besharyk District of Fergana Region) are using its water mostly for irrigation (85 %), industrial, drinking, and other purposes.

The basin climate is continental with hot summer and mild winter. The elevation of the valley part of the basin is

400–800 m above sea level (a.s.l), whereas the elevation in its highlands part ranges from 1400 up to >3000 m (Sughd WMA 2012). The annual long-term mean precipitation is about 146 mm with reported extreme values of 88 and 557 mm.

The Isfara River is fed by snow packs and glaciers. The annual mean river runoff (discharge) amounts to approximately 0.47 km³. The watershed occupies the area of about 3420 km². The river's total length is 107 km (Batken WMA 2011). It starts in the Shurovsky Glacier at the altitude of about 3300 m a.s.l, flows through Batken region in Kyrgyzstan, then through the territories of Tajikistan and Uzbekistan, and finally discharges into the Big Fergana Canal. 90 % of the annual runoff is observed from mid-April till the end of October with the 182-day long high-water period.

The total basin population exceeds 498,000 inhabitants, 85 % of which reside in the Tajik sub-basin and the rest (79,236 persons)—in the Kyrgyz part. The total irrigated land amounts to 55,600 ha, around 40,900 ha of which is located on the Tajik side of the basin and 14,690 ha—in Kyrgyzstan. The water withdrawal from the Isfara is reported to total 220 mln m³ in the Kyrgyz sub-basin and 411 mln m³ in the Tajik part, respectively. Uzbekistan receives only a fraction of the river's flow. Its irrigated land fed by the Isfara water is rather limited (Pak et al. 2013).

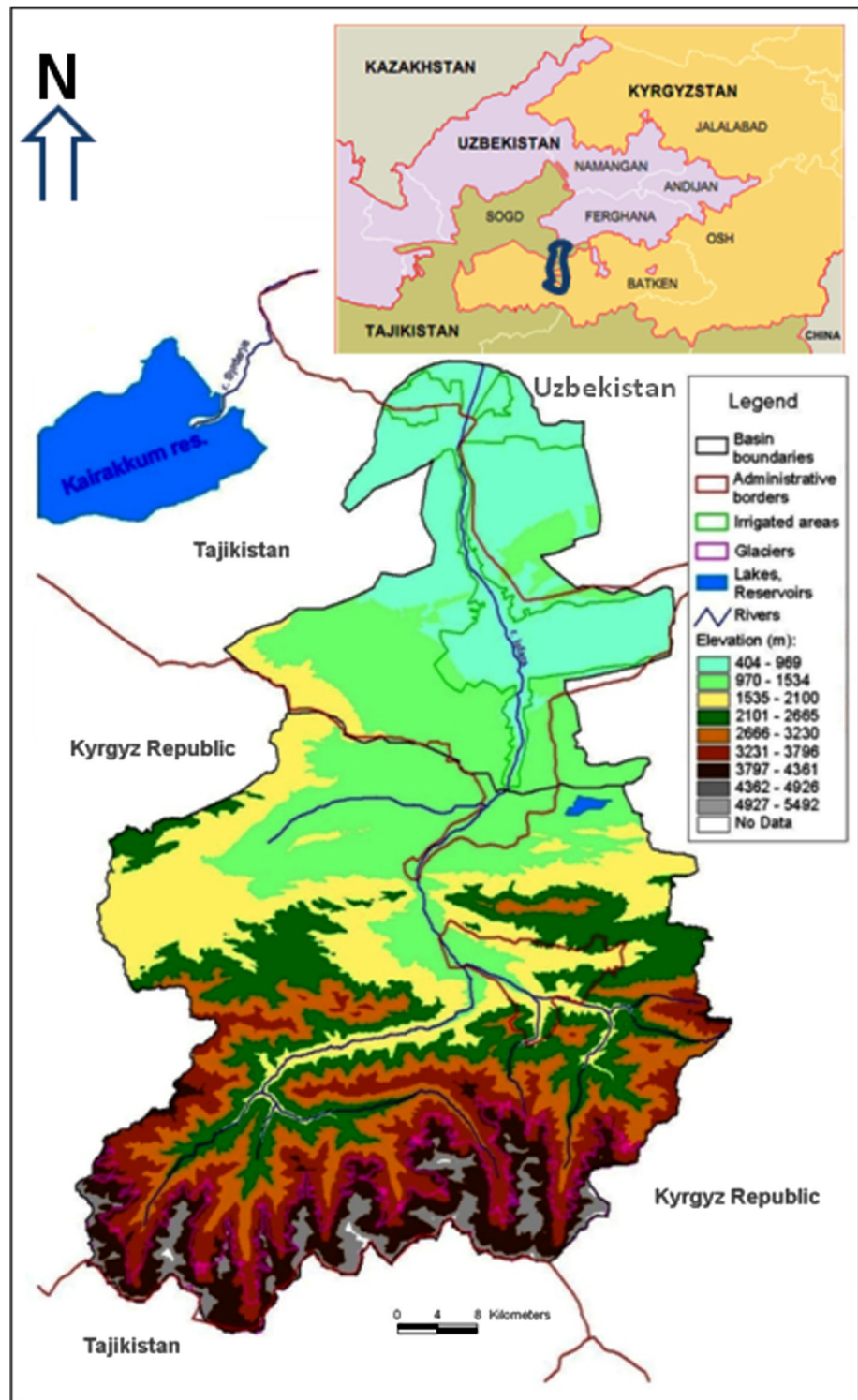
The industries in the basin include agriculture (tobacco), ore mining (mercury, gold, antimony, and coal), and local small-scale gas and oil extraction (UNEP 2005). Key agricultural crops include cereals, fruit and vegetables (especially, apricots once famous in Central Asia). Agriculture is the key economic sector as it provides for the largest share of local employment, population earnings and tax revenues. Also present are a number of industries developed during the Soviet-time with only 20–25 % present utilization of production capacity.

Materials and methods

Conceptual framework: a theory of change

A theory of change (ToC) (CARE International 2012) is one of the most widely used planning tools for development interventions providing better insights to both external players and project staff (Valters 2013). Earlier efforts on improving development interventions resulted in the introduction of the log frame system for regular project monitoring and evaluation (Duncan 2012). However, application of the theory of change requires the use of rather structured analytical instrumentarium explaining the overall logic of planned project/program actions (Valters 2013). Clearer pathways of project implementation and

Fig. 1 Location of the transboundary Isfara River Basin, Central Asia



perceived change patterns help to visualize a project’s impact paths.

GIZ (former GTZ) has developed tools for effective development project implementation in line with the theory of change (GTZ 2009). The TWM CA Programme utilized

Capacity Works (GTZ 2009) to plan and to monitor the impact of its interventions. The Capacity Works system builds on these experiences and supplements the methodological repertoire with the view into the future. Capacity Works is a management model to support contract and

cooperation management, especially during implementation phase although it is also suitable for project assessment and preparation as well as the concluding phases (GTZ 2009).

Two external project reviews and project planning (in the beginning of each phase) exercises were conducted as per the guidelines provided in the Capacity Works (GTZ 2009). Both of them helped to (1) internalize the project logic among the project staff; (2) build up common understanding among project staff, stakeholders, and partners; and (3) formulate a clear step-by-step approach as to project execution, monitoring and assessment.

Such methodological instruments as descriptive policy analysis, interviews, observations, project participation to collect evidence-based information, design of development hypothesis had been applied within the project. Evaluation of shortcomings/lessons learnt was central for streamlining mitigation/adaptation measures. Comparative retrospective data analysis was utilized to gain deeper historical understanding of the basin context. Structured and semi-structured interviews of national, region- and local-level policy makers allowed filling the gaps in data collection and verification.

Results and discussion

Development hypothesis

Water is a key resource for sustainable and long-term progress of Central Asia. Water's exhaustible character makes it precious and contested. The conflict may stem between uses, users, and geographic locations. Territorial organization and sectoral water management coupled with competition for water may nurture severe inequalities. Therefore, the RBM model could be an appropriate tool for IWRM utilization in Central Asian conditions. It may reduce potential tension through integration of users, uses and resources within a given basin.

In CA, however, government has territorial organization; resource allocation and administration follow the same pattern. As a result, serious obstacles may rise on the way to effective implementation of RBM principles. However, by balancing the interests of various players both IWRM and RBM approaches may enhance coordination of administration, state water management and water users through basin councils. In addition, the two models could help to weigh the decision-making potential and the empowerment of local communities.

Collection of information

Historical analysis of water sharing in the Isfara Basin context

The Soviet period During the Soviet times, the development of new lands across the three Central Asian Soviet Socialist Republics (SSR), namely Kyrgyz, Tajik and Uzbek SSRs in the Greater Fergana Valley, and the disagreements among the riparian states brought about the need to intensify water cooperation and management of ever-expanding interwoven irrigation networks. Thus, the representatives of national WMOs had several joint meetings, including one on the Isfara Basin, under the auspices of the central Moscow Water Ministry (Pak et al. 2013). The meetings' decisions took the format of binding protocols that were hardly ever implemented in reality.

There were four main agreements (protocols) concerning the use and management of the Isfara River and related hydraulic facilities (e.g., the Tortgul Water Reservoir) by the riparian states (Table 1). Water allocation shares were amended over time due to changes in the water sector and complaints by the riparian states. The most relevant water sharing agreement for the Isfara was signed in Moscow on April 10, 1980 with the participation of the representatives of the Kyrgyz and Uzbek national WMOs but in the absence of respective officials from the Tajik SSR (1980 Protocol).

To sign the protocol, i.e., to finalize the allocation of water shares and to speed up the practical implementation of the agreement, the representatives of national WMOs of the three concerned SSRs had a local meeting (the town of Isfara, Tajik SSR) on June 12, 1980. However, the Kyrgyz SSR did not agree to the proposed water allocation quotas. Thus, it was decided that the central Water Ministry would calculate the annual Kyrgyz share of the Isfara's runoff. The process stalled in 1985. In early 1986, national WMOs of the three riparian republics agreed to use the 1982 water allocation model, which remains valid until now.

Contemporary transboundary context Cooperation on water issues, especially in transboundary watersheds requires political will and good institutional capacity. In 1992, the countries of the region agreed to follow the previous Soviet water allocation principles in all aspects of interstate water management (Ziganshina 2009; Rahaman 2012). That was a bold and long-term decision made in the difficult circumstances of the collapse of the old Soviet system. Its rapid de-centralization resulted in chaos and elimination of numerous joint institutes in Central Asia.

At present, Soviet-time agreements are ignored in many small transboundary basins; parties do not adhere to water

Table 1 Water sharing quotas and agreements for the Isfara River between Kyrgyzstan, Tajikistan and Uzbekistan (Source: Protocol of 1980; Wegerich et al. 2012; Pak et al. 2013)

Soviet Socialist Republic	Water allocation (%)				
	Protocol of 1958	Protocol of April, 10 1980	Protocol of June 12, 1980	Protocol of 1982	Protocol of May 16, 1991
Kyrgyz	2	37	17	22	23
Tajik	57	55	48	40	46
Uzbek	41	8	35	35	31

sharing agreements against the backdrop of growing water demand (SDC 2008; ICG 2014). Transboundary basin agencies and/or legal systems capable of addressing emerging differences are absent. Therefore, to resolve shared water management issues it is vital to forge systemic IWRM-based models. In fact, in 2008 the Presidents of Kyrgyzstan and Tajikistan met in the city of Khudjand (Tajikistan) and agreed to streamline and institutionalize a joint transboundary water cooperation platform. As the result, the Inter-Ministerial Working Group (IMWG)—comprised of national WMO and other relevant state agencies’ representatives from both countries—was established to discuss ad hoc bilateral water issues.

Planning

The core element of the Isfara Basin IWRM scheme is the long-term planning with four interlinked components: (1) supporting the development of the treaty on international watercourses between the two riparian states, (2) establishing joint transboundary basin cooperation institutes (in case of signing the treaty), (3) fostering public and stakeholder participation, and (4) applying data management and river basin planning tools.

The water treaty mentioned above will provide a legal platform for international collaboration and establishment of joint bodies. Corresponding regulations and organizations aim to guarantee enforcement of joint decisions by the Isfara Basin riparian states. Public and stakeholder participation is a pre-requisite for acceptance and support of the Isfara Basin joint management by local communities and other concerned agents.

RBM interventions were designed using both bottom-up and top-down models. They were planned with full engagement of partner WMOs and stakeholders from the very beginning: pre-assessment and planning stages via participation in every meeting (Fig. 2). Therefore, project partners greatly contributed to project design as well as its implementation, i.e., creating/facilitating clear partners’ ownership of the process.

The smoothness of the planning stage was achieved by the fact that the project was extensively involved in the Water Treaty and data management activities since 2009, i.e., Phase I (2009–2011) (Abdullaev et al. 2012). The

lessons learnt from Phase I were applied during further project efforts. Identical methodologies were used in separate sub-basins in Kyrgyzstan and Tajikistan taking account of domestic and sectorial differences. Even though two separate basin plans were anticipated, the project strived to hold joint working group meetings and encouraged experts to share information that helped to ensure compatibility of proceeding joint actions in case of signing the Water Treaty.

Comprehensive review of Kyrgyz and Tajik national legal and institutional frameworks was carried out during the project-planning phase. The analyses focused on the evaluation of RBM elements within national legislations (Table 2). In 2012, amendments certain IWRM and RBM institutional aspects (basin councils and basin plans) were introduced to the Water Code of Tajikistan. In Kyrgyzstan, basin councils and basin plans have been incorporated in the national Water Code since 2005. Thus, during the initial phase of the project the legal conditions in two concerned countries were quite different.

Implementation

The Water Treaty

To structure their transboundary cooperation, the two riparian states officially requested the TWM CA programme to facilitate the process of drafting the Water Treaty by the IMWG. The framework agreement on cooperation to use international rivers between the governments of Kyrgyz Republic and the Republic of Tajikistan (the Water Treaty) aimed to create a systemic interstate legal environment for cross-border water management collaboration.

In the course of initial negotiations, the parties had decided to sign a legal document only for the Isfara River Basin, i.e., to use it as a pilot watershed. It was agreed to draft a larger Water Treaty in case of successful implementation of the smaller one. However, the negotiations were slow and certain problems emerged. The parties declared that the larger framework agreement was necessary, the need of accelerating the drafting of a generic agreement stating key transboundary cooperation guidelines being the main argument—the concern was that the growing number of water conflicts could impede regional security.

Fig. 2 Main steps for development of RBM basin plans

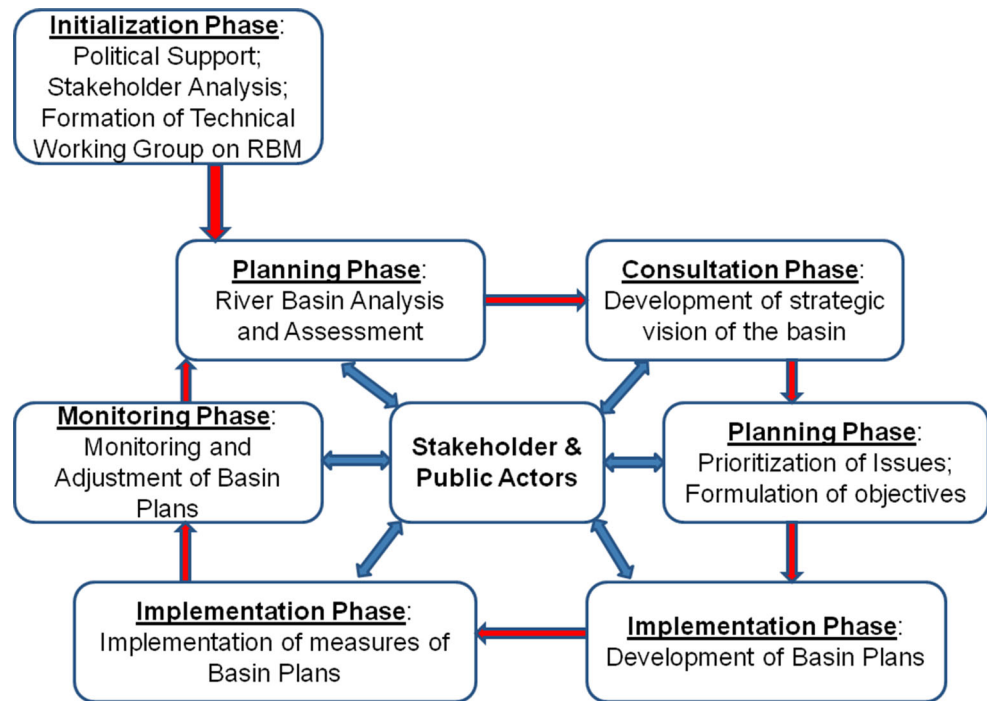


Table 2 Legal provisions on IWRM and RBM within water legislation of Kyrgyzstan and Tajikistan (Source: Water Code of the Kyrgyz Republic, 2012; Water Code of the Republic of Tajikistan, 2012)

Country	IWRM and RBM elements					
	IWRM and RBM principles	Inclusion of all water resources (State water fund)	Public and stakeholder participation; gender aspects; WUA	Horizontal and vertical coordination National Water Council, Basin Councils	Water/Basin management and planning Integrated scheme of water use and protection, water balance National Water Strategy, Basin Plans	Information and database systems
Kyrgyzstan						
Water Code of the Kyrgyz Republic (January 12, 2005 amended October 26, 2013)	Chapter 1, Article 5	Chapter 1, Article 4	Chapter 1, Article 6 Chapter 4, Article 21	Chapter 1, Articles 2,5 Chapter 2, Articles 7–10, 18, 20	Chapter 1, Article 5 Chapter 2, Articles 9,10 Chapter 3, Article 18–20	Chapter 17, Article 93–95
Tajikistan						
Water Code of the Republic of Tajikistan (November 10, 2000 amended April 16, 2012)	Chapter 1, Article 2 Chapter 23, Article 140	Chapter 1, Article 4	Chapter 1, Article 13 Chapter 7, Article 43 Chapter 11, Articles 74, 78	Chapter 1, Articles 6–7 Chapter 23, Article 140	Chapter 1, Articles 8, 9 Chapter 23, Articles 134, 138, 139, 140	Chapter 23, Article 137

Numerous IMWG consultations were held to formulate the Water Treaty. To review its content a consultative-advisory national inter-sectoral working groups (Larger

WG) were established by the riparian states. The Larger WG included representatives of the ministries of foreign affairs and justice, taxation agencies, border control

services, and customs. First, the Larger WG reviewed the Water Treaty inside each country to reflect the domestic priorities and legal requirements. Second, during its proceeding joint meetings of national Larger WGs met to review the Treaty’s national “versions”, work out mutually acceptable provisions and share opinions.

If signed, the Water Treaty will hallmark an absolutely new kind of transboundary collaboration framework in arid Central Asia. Some existing cross-border agreements in CA exclusively regulate water sharing and/or infrastructure management (e.g., agreements on the Syr Darya and the Chu-Talas River Basins) (UNECE 2012).

The Water Treaty regulates the key aspects of bilateral cooperation in all transboundary watercourses, including the structure of joint basin organizations, climate change adaptation programs, operation and maintenance of hydraulic infrastructure, hazard and risk management, monitoring and information exchange plans, public participation, etc. It consists of twenty clauses and is executed in Russian and English.

Drafting, review and consulting of the Water Treaty went on for about 3 years (2009–2011) and are not yet complete. At present, the parties’ parliaments and governments are reviewing the document. Kyrgyz and Tajik legal settings differ. In Tajikistan, the Treaty may be signed by the Prime Minister upon approval of all relevant ministries. In Kyrgyzstan, it shall undergo parliamentary adoption. Border demarcation and other interstate issues should be taken into account as well. Unfortunately, since the fall of 2013 the relations between the countries soured due to frequent border incidents in the Isfara River Basin.

The situation may either become an obstacle for signing the document or, on the contrary, prompt further structuring of interstate relations including on water management.

Basin Institutions

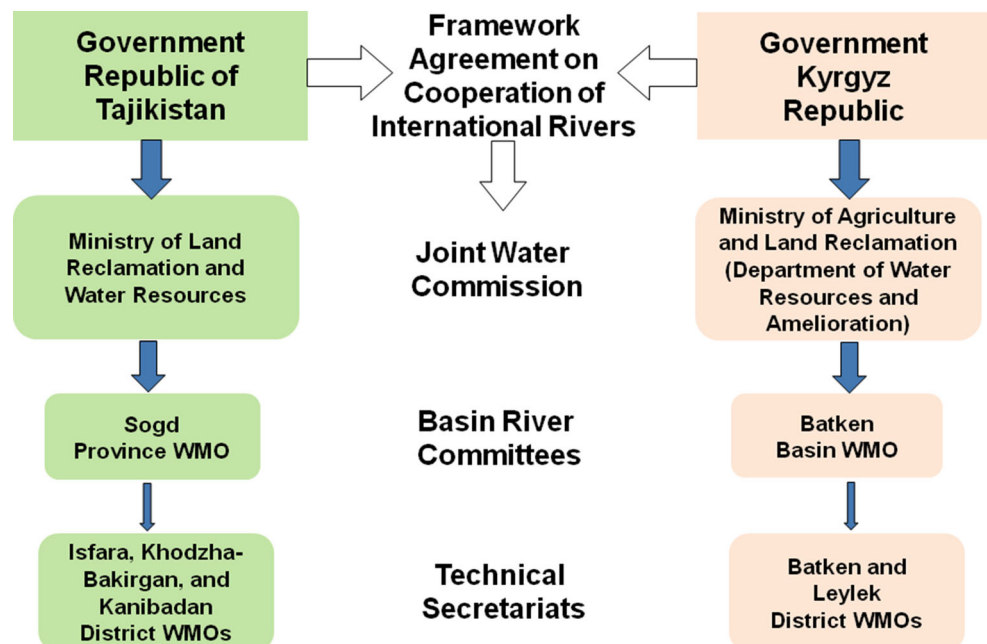
IWRM implementation requires comprehensive stakeholder participation measures. A target interventions program should include analysis of stakeholders, their roles and views on water management in a given river watershed (Swyngedouw 2009). Thus, the series of seminars and training exercises on stakeholder mapping had been conducted for IMWG/Larger WG members in both sub-basins.

The Kyrgyz-Tajik Water Treaty has not been yet signed, however, the IMWG/Larger WG proposed the river basin management organizational structure for the transboundary Isfara River Basin (Fig. 3). The Joint Water Commission comprised of the representatives of both countries shall be its top-tier bilateral body.

Mere existence of legal provisions to introduce RBM principles does not imply a clear and easy path to setting up joint agencies in transboundary watersheds. Riparian states tend to exert their sovereignty and vest such bodies with only limited functions. As was mentioned above, to facilitate and prepare the two countries for the establishment of joint river basin organizations with respective basin plans, the Technical RBM Working Groups (WGBP) were created in the Kyrgyz and Tajik sub-basins.

The WGBPs consist of water experts from local WMOs and other influential state and non-state agents (environmental, emergency, hydrometeorological, local

Fig. 3 Organizational framework of potential joint basin institutions for the transboundary Isfara River Basin



governance, water user, NGOs, etc.). The membership of the Kyrgyz sub-basin WGBP was stipulated by the national Water Code of 2005 containing the explicit list of state stakeholders.

The Tajik sub-basin WG was formed by inviting relevant basin state and public stakeholders. In early 2012, at the time of project implementation the Water Code of Tajikistan contained no such provisions. Later in 2012, corresponding amendments were made to incorporate basin councils into the document although with a rather generic description of their structure. As a result, WGBP membership fully corresponds to the composition of the basin councils in both sub-basins.

To formalize the work of the WGBPs, the national water agencies issued decrees nominating their members and providing WGBPs with specific mandates to draft pilot basin plans. The decrees state the procedures after drafting the basin plans, i.e., WGBPs members will present them to respective national water agencies for potential scaling up or modification as per national legal requirements.

Another important observation is that there is still no official basin council in the Kyrgyz part of the watershed. De facto (according to the 2005 Water Code), state WMO will act as a technical secretariat for basin council of all large rivers. In both countries, basin councils are public consultative-advisory platforms. The Kyrgyz partners explain the situation by the limited funding of council activities from the national budget.

The level of public participation and stakeholder water management roles in respective sub-basins also differ considerably. In Kyrgyzstan, civil society has a traditionally stronger profile than in Tajikistan due to political differences. The main goal of stakeholder analysis and mapping was to change WMO perception of “outsiders”, try to shake the conventional “hydraulic mission mentality” as well as to create room and tools for stakeholder participation in water management (Mollinga 2008).

Reflection and evaluation: shortfalls and lessons learnt

State WMOs operating in CA lack institutional learning infrastructure to enhance their physical and human capacity. Therefore, the project devoted its utmost attention to organizational development and capacity building of concerned agencies. All project implementation steps emphasized public and stakeholder engagement via such participatory platforms as technical working groups, basin councils, etc. Basin planning processes in both Kyrgyz and Tajik sub-basins were participatory as well as inclusive to generate proper ownership.

Basin plans

Historical evidence suggests that certain IWRM elements existed within the Soviet centralized system, although, in a different form. At that time, Integrated Schemes of Water Resources Protection and Use Plans (SCWRUP) were drafted for large watersheds and economic zones with partial inclusion of smaller basins (sub-basins). In Central Asia, the SCWRUPs existed in the Syr Darya and the Amu Darya River Basins. Although a SCWRUP is similar to a basin plan, there are several significant differences between them (Table 3).

In other words, this proves that CA experts are familiar with the general basin planning framework (Rakhmatullaev et al. 2010c). The majority of water managers and experts in the CAR had been well trained in the Soviet times and are deeply aware of SCWRUP methodology. To complement the basin planning model and gain wider support, the project activities also targeted clear distinction between the two approaches. The strategy proved to be effective for further elaboration and wider understanding of proposed models. As of now, even though national WMOs are required to develop basin plans by domestic water codes, it is too early to say whether basin plans will be replicated in other watersheds.

Table 3 Similarities and differences of basin plan and Integrated Scheme of water resources use and protection

Aspects	Basin planning	Integrated scheme
Scale and RWM style	Sub-basins of any size and scale. Decentralized mode of WRM	National, main river basins. Centralized mode of WRM
Stakeholder and public participation	Participation in plan drafting	Informing on most important elements of the scheme
Technical solutions vs institutional interventions	Both are presented in balanced manner	Technical solutions are overwhelming
Environmental WRM aspects	Given a priority	Receive equal attention with other sectors
Funding/economical aspects	Detailed up to each activity, diversified funding sources, economic tools	General for blocks of activities, mainly state funded, pollution payments as one of the funding tools

Basin plans may become the starting point of identifying sources to fund the implementation of priority projects. Thus, WGBP members began not only to discuss the common issues internally. They are now listening to and hearing water management concerns of local farmers and WUAs.

Information exchange

The Kyrgyz and Tajik Isfara Basin WMOs have been exchanging data—signing paper-based protocols of agreed water shares—since the Soviet times. The parties agreed to use existing water sharing protocols and to integrate them into database systems (Abdullaev and Rakhmatullaev (2014)). Identical technical and methodological support was extended to both sides for developing two types of ICT tools: (1) internet-based database (tabular) and (2) land-use GIS maps (spatial analysis). For example, the database system architecture was designed in accordance with the needs of WMOs in terms of content, format, language and interface, yet with diverging outcomes—full-scale operation in the Kyrgyz part and only partial in the Tajik part.

It is premature to implement transboundary data exchange between Kyrgyzstan and Tajikistan due to the absence of legal framework (the Water Treaty) and a joint river basin organization. In terms of GIS, two separate sub-basin maps for the Isfara River Basin were created by the Kyrgyz and Tajik teams, respectively. The execution of a joint map for the whole Isfara Basin has been underway since 2009 but is not yet completed. Many unresolved issues such as administrative borders, ownership of hydrotechnical facilities and infrastructure, and delineation of watersheds remain.

Generating support

The most crucial element of successful RBM implementation is the commitment of national water agencies in each CAS. Therefore, to generate political support TWM CA Programme presented the RBM concept and its implementation structure to respective national water authorities. A series of awareness-raising meetings and round tables with national water partners had been held to promote the RBM model and implementation work plans. Kyrgyz and Tajik water bodies issued letters expressing their support of the programme and desire to contribute to RBM interventions.

Their assistance included identification of agencies to develop lower-tier basin water management plans (down to basin, sub-basin and territorial WMOs), establishment of genuine working basin planning groups (WGBP)

responsible for drafting, advocating and disseminating basin plans.

Inter-sectoral participation and collaboration of various state stakeholders within the WGBPs was quite challenging despite the *de jure* provisions of the water codes and special decrees. *De facto* many efforts were taken to kick-start WGBP operation. It should be noted that after several rounds of WGBP meetings the stakeholders did start to take the process seriously, listened to each other, and shared insights of basin development.

Sub-basin approach

The choice of the sub-basin approach served as the launching pad for drafting the basin plans. All training and capacity building activities involving Kyrgyz and Tajik partners had to be carried out separately due the absence of the water treaty. The same methodological inputs were applied to both parties in terms of content, duration and funding. Yet, the main challenge was to keep the river basin plans similar and compatible within the framework of the future transboundary cooperation (in case of signing the Water Treaty). Thus, a round of joint meetings was held to share data and build confidence among the experts and the WGBPs of the two countries.

Seminars, ad hoc and regular trainings were utilized extensively to train WGBP members on basin plan drafting both in terms of human and institutional capacities. The educational efforts focused on various aspects of basin planning and management like typology of river basin organizations, prioritizing challenges, basin plans and basin councils per se, climate change adaptation measures, financial and economic instruments, IWRM concepts, etc.

Expert input

In the beginning of basin plan development and the launch of WGBPs, several introductory/confidence building meetings were organized to foster mutual understanding of the RBM concept and agreement on activities' timeframe. To strengthen the process even more, each such consultation included a session to develop terms of reference (ToR). The corresponding themes were discussed, agreed and approved by WGBP members in each sub-basin. All efforts were designed in such a way so as to ensure the final approval and implementation of the basin plans as well as to highlight the commitment and responsibility of WGBPs (partners). That helped to "internalize" the process, i.e., to reduce the feeling of its externality.

Another strategy to generate the sense of ownership among national partners and facilitate inter-sectoral communications was to extensively involve local/national

expertise and not to resort to only international/external sources. Expected climate change modeling and GIS hazards mapping was done by foreign specialists, while short-term consulting tasks to carry out various environmental SWOT analysis on water and land resources, legal and institutional systems, and hazards were executed by local subject matter experts.

Each consultant had to present his/her findings to the extended WGBPs for further review and approval. Although ToRs were explicitly stated to contain the main tasks, some of the reports were poor in quality and inconsistent with the requirements. The experts reporting to the WGBPs received critical comments and were requested to improve their reports. The process became a good learning and capacity building activity.

Due to the lack of institutional framework and know-how among local experts, international consultants were invited to deliver applied climate change modeling and hazard-mapping training. Yet, even these consultancies were discussed and approved by WGBP members.

Scaling up/dissemination

To disseminate the obtained results and inform the wider public of the basin plans, a series of public hearings was held with the participation of local population, the mass media, NGOs, and farmers. The idea of public hearings was voiced by WGBP members to familiarize the public with project activities. That was the first such experiment in CA, and therefore, provided a vital learning experience. Public hearings may be used further to inform the citizenry on crucial environmental (i.e., water) developments. In both sub-basins, hundreds of people attended the events, which made the process truly inclusive and participatory.

The development of RBM guidelines (handbook) became another critical knowledge-sharing avenue. Its content and structure were developed in close cooperation and consultations with the national partners during WGBP meetings. As of now, the Russian language handbook is undergoing translation into local languages.

Conclusion

The case study clearly demonstrates that IWRM implementation in transboundary Central Asian watersheds is a long-term process. Development of legally binding agreements like the Kyrgyz-Tajik Water Treaty is a time-consuming political process. Moreover, the Treaty must be complemented by institutional arrangements (i.e., joint water management bodies) and tools (i.e., information and data management systems). The principal finding of the study, however, is that internalization of transboundary

cooperation processes requires considerable institutional and human capacity building efforts among local (basin-level) WMOs.

Despite the declaration to implement IWRM, Central Asian States are experiencing difficulties as to its practical basin-level deployment. In fact, full-scale but unbalanced and non-cohesive efforts to support the establishment of public WUAs by the international donor community took place amid little attention to capacity building and strengthening of state WMOs.

As a result although the latter are responsible for water sector reforms, they are hesitant to collaborate with the “outsiders” to water management: civil society, local communities, and water users. The legal basis for basin planning and management are in place. Generation of political will and local support, inter-sectoral cooperation—both domestically and on the transboundary scale—remain a challenge. Therefore, formation of genuinely working processes with the involvement of stakeholders within river basin organizations requires time and resources.

As anywhere else, the externally driven nature of water reforms has posed a serious problem in CA. Therefore, carefully designed steps to generate and internalize the ownership of the changes are the prerequisites of successful IWRM changes. Transboundary RMB is a political process. Lack of attention to specific political settings and processes may seriously hinder embedment of transboundary cooperation mechanisms.

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