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TECHNICAL BRIEF

The Technical Brief presents the information on applying Integrated Water Resources Management (IWRM) in Central Asia. This document was prepared in order to familiarize all stakeholders including decision-makers responsible for improving water management with the results of implementing the Fergana Valley Integrated Water Resources Management Projects (the IWRM-Fergana Project).

Интегрированное управление водными ресурсами в Ферганской долине

The IWRM-Fergana Project

KYRGYZSTAN, TAJIKISTAN, AND UZBEKISTAN

IWRM-FERGANA PROJECT

The Fergana Valley Integrated Water Resources Management Project (the IWRM-Fergana Project) is implemented by the Sub-Regional Office of the International Water Management Institute (IWMI) together with the SIC ICWC in collaboration with national water management organizations of three Central Asian States Kyrgyzstan, Tajikistan, and Uzbekistan under financial support of the Swiss Agency for International Development and Cooperation (SDC). The project was initiated as the pilot one with the purpose of further dissemination the IWRM principles and methods over the whole territories of above countries. The uniqueness of this project lies in selecting the pilot area the Fergana Valley that is the most densly populated region in Central Asia covering the territories of three neighboring countries.

DEZA DIREKTION FÜR ENTWICKLUNG UND ZUSAMMENARBEIT
DDC DIRECTION DU DÉVELOPPEMENT ET DE LA COOPÉRATION
DSC DIREZIONE DELLO SVILUPPO E DELLA COOPERAZIONE
SDC SWISS AGENCY FOR DEVELOPMENT AND COOPERATION
COSUDE AGENCIA SUIZA PARA EL DESARROLLO Y LA COOPERACIÓN

IWMI International Water Management Institute

SIC ICWC

APPLYING THE IWRM PRINCIPLES

Most of the economic sectors depend on water supply. Sectoral approaches have dominated in water management in the past and remain the prevailing ones up to now. Such a non-integrated approach to water management results in uncoordinated use of this scare natural resources. The sectoral approach hampers the social development and economic growth in the Central Asian developing countries such as Kyrgyzstan, Tajikistan, and Uzbekistan. A comprehensive or integrated approach becomes therefore the top priority both for developing and developed countries. Irrespective of our wish to recognize this fact, the water is already an integrant resource within the framework of national economy management. Taking into account the existence of numerous and complicated links between different economic activities and water resources, which affect or can be affected by water management methods, it is advisable to employ a more harmonious and integrated approach.

A water policy influences upon the economic development and vice versa a micro-economic strategy affects sustainable water use. Competition for water is rising due to population growth, climate changes, and pollution of available natural water reserves. Therefore, top managers of different economic sectors must actively keep track of the decision-making process related to water problems and of impacts of their decisions on water resources in their own countries and in the neighboring states. In this connection, IWRM is the useful and unique tool for tackling specific development challenges and optimizing water use for achieving social, economic, and environmental targets.

The IWRM principles are the result of generalization of progressive world experience gained in the field of water resources management. The main purpose of applying the IWRM is to provide economic efficiency, social equity, and ecological sustainability in the process of water use. Simultaneous consideration of all kinds of water uses is envisaged under the IWRM approach. Integrating different water uses is the difficult process because during long time they were being independently considered. At the same time, the main aspect is that the water use should be planned in the context of achieving social, economic, and environmental goals. This is the methodical and difficult process of integrating different water uses, as well as of water sharing and monitoring. It requires revising the current policy and legislation and reforming the existing water management organizations and their modes of operation; and the most important aspect is "change-over" of the way of people's thinking all water users.

"IWRM is the process that promotes the coordinated development and management of water, land, and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems"

(the Global Water Partnership, Technical Committee, TEC Background Papers 4, 2000).

IWRM is based on four basic principles (the Dublin principles, 1992):

- Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment;
- Water development and management should be based on a participatory approach, involving all water users;
- Women play a central part in the provision, management and safeguarding of water:
- Water has an economic value in all its competing uses and should be recognized as an economic good

As was abovementioned, IWRM is not just about managing physical resources; it is also about reforming human systems to enable people to benefit from those resources.

HOW TO PUT IWRM INTO PRACTICE AND WHAT TO DO?

First of all, it is necessary to create the proper conditions:

The enabling environment

I. Policies setting goals for water use, protection and conservation.

II. Legislative framework the rules that should be observed to achieve policies and goals.

III. Financing and incentive structures allocating financial resources to meet water needs.

Institutional roles

I. Creating an organizational framework forms and functions.

II. Institutional capacity building developing

human resources.

Management instruments
I. Water resources assessment understanding resources and needs.
II. Plans for IWRM combining development options, resource use and human interaction.
III. Demand management using water more efficiently.
IV. Social change instruments encouraging a water-oriented civil society.
V. Conflict resolution managing disputes, ensuring sharing of water.
VI. Regulatory instruments allocation and water use limits.
VII. Economic instruments using value and prices for efficiency and equity.
VIII. Data bases, establishing the information systems, Information management and exchange improving knowledge for better water management.

Thus, an IWRM approach is based on three pillars: - positive change in the enabling environment, in institutional roles, and in management instruments (Figure 1).

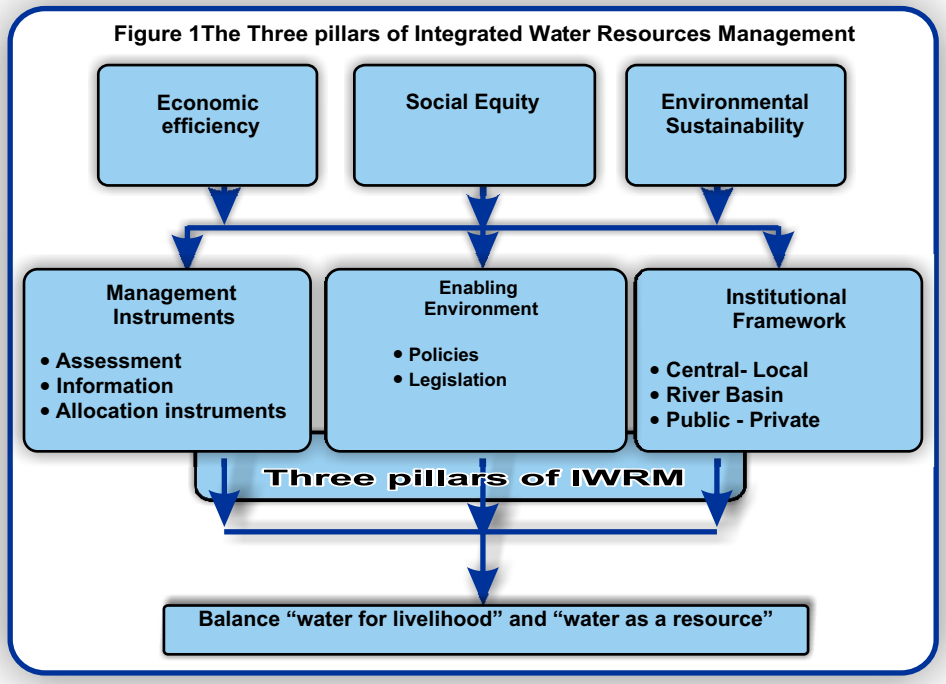
The conception of the IWRM-Fergana Project is founded on the IWRM principles covering three main fields of activity: establishing the enabling environment, adequate water management organizations based on the participatory approach, and using management tools.

At present, the structural reforms are in progress in new independent countries in Central Asia where this project is implemented under transition economy conditions. The reforms of all economic spheres including the agricultural and water sectors are carried out. For the water sector it means the shift from the centralized planning and management system to the systems based on integrated approaches. This transition period is characterized by changes in the water use pattern and by development of market relations between suppliers and consumers.

For example, the law specifying WUAs' activity and payment for water supply services was adopted in Kyrgyzstan. At the same time, the special department for supporting WUAs was established under the Ministry of Agriculture and Processing Industry. This department that functions as a structural unit of the ministry is responsible for establishing WUAs and coordination of the international donors' activity facilitating WUAs' development. IWRM and hydrological principles of water management were already introduced in Kyrgyzstan. The law specifying WUAs' activity and payment for water supply services were also adopted in Tajikistan as well. The draft of Water Code and the law specifying the WUAs' activity are under preparation in Uzbekistan; at the same time the pilot project for studying water charging problems was implemented here, and the important Decree No 320 of July 21, 2003 that directs the transition of the national water management system to the basin principles of water management, was issued by the Cabinet of Ministers.

The IWRM-Fergana Project is implemented in the dense populated oasis in Central Asia the Fergana Valley that covers the territories of three adjoining states - Kyrgyzstan, Tajikistan, and Uzbekistan. The project was initiated as the pilot one with potential up-scaling and replication over all countries participants of this project. The IWRM approaches and methods were elaborated at previous phase of the project. Therefore, during the current phase the tasks of their introduction within the pilot irrigation systems were being solved. The uniqueness of this project consists in establishing water management agencies that are based on the active mobilization of

Figure 1The Three pillars of Integrated Water Resources Management



water users and their participation in governance activity at all hierarchical levels.

Last years, the IWRM-Fergana Project successfully introduces these measures at four hierarchical levels: command areas of tertiary irrigation canals, secondary irrigation canals, main irrigation canals, and the national water management system. Successful activity associated with establishing new water management agencies based on the participatory approach is conducted on the basis of active mobilization of water users within the command areas of the Aravan-Akbura Canal (Osh Province, Kyrgyzstan), the Khodjia-Bakirgan Canal (Sogd Province, Tajikistan), and the South-Fergana Canal (Andijan and Fergana Provinces, Uzbekistan) (see Figure 2). This activity financed by the Swiss Agency for International Development and Cooperation is implemented under the direction of the SIC ICWC and the Regional Office of the International Water Management Institute.

A distinguishing feature of this project is the use of available scientific and practical achievements in the water sector. Introduction of the participatory institutions established by approbation and of farmers' own free will and broad public awareness activity provided the appreciable results. These new organizations Water User Groups (WUG), Canal Water Committees (or the Unions of Water Users), and the Councils of WUAs facilitate further development and sustainable water management. In this way, the project supports the introduction of IWRM in Central Asia, and transition from the governmental governance towards a public-governmental partnership. This transition means the following:

- First of all, involving water users and all stakeholders into water resources management; and
- Reforming the existing hierarchy of water management based on the participatory approach.

PROJECT BREAKTHROUGHS

A. Improving land and water productivity

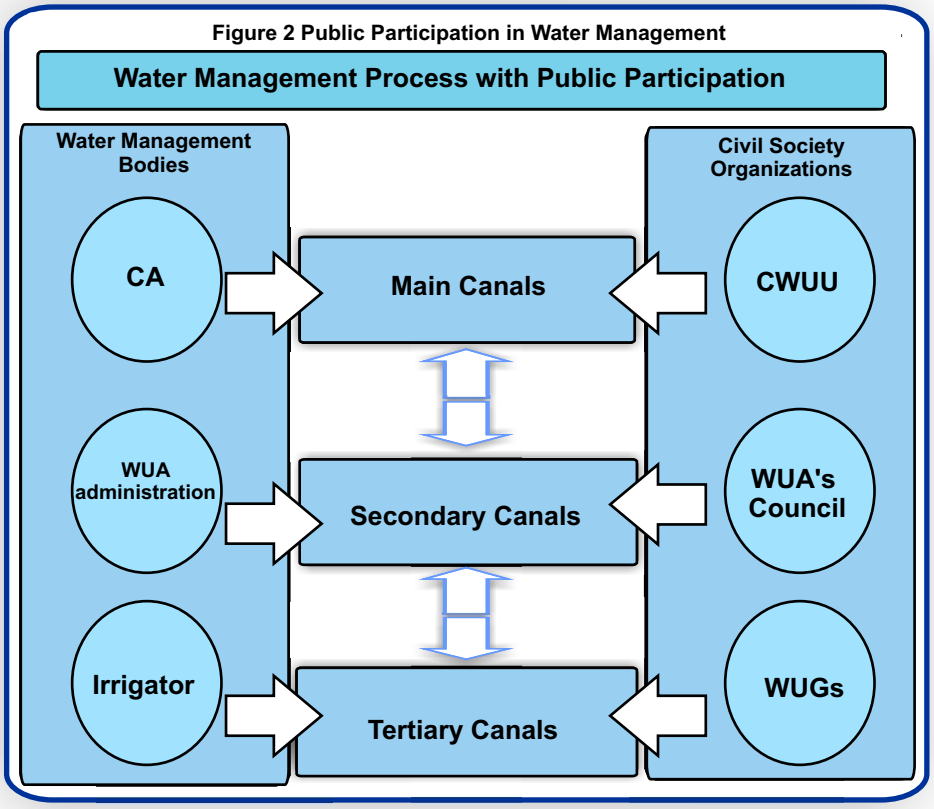
The introduction of technological and technical approaches developed for improving land and water productivity in the project area enabled the reduction of water consumption on cotton fields by 34 percent, raise of cotton yields by 21 percent, and improvement of the efficiency of water use by 69 percent. A net profit of cotton production at the farms' level has increased by US$ 156.6 per hectare on the demonstration plots in Uzbekistan, by US$ 508.1 per hectare in Tajikistan, and by US$ 1001.7 per hectare in Kyrgyzstan where market relations are more advanced.

A. Establishing Water User Groups (WUGs)

Integrating of water users into the informal groups being formed according to the hydrological principles at the level of command areas of tertiary irrigation canals and below enables them:

- to reduce the number of water applications and required water volumes in comparing with the former practice;

Figure 2 Public Participation in Water Management



● to improve irrigation water supply for farmers and to decrease the level of their troubles related to water allocation, as well as to reduce water losses, to facilitate water governance and distribution, to improve water services and collection of fees; and
● to provide the high efficiency of land and water use and to raise farmers' incomes;
● now the farmers located in tail parts of irrigation canals are satisfied with water supply because water is timely delivered to their fields.

At the same time, the respected local old men traditionally become the leaders of WUGs who lend credibility to these informal organizations and form the institutions of local governing that allow settling disputes among water users in the amicable manner.

C. Establishing Water User Associations (WUAs) based on the hydrological principles

Integrating of water users into the Water User Association within the hydrological boundaries of command areas of tertiary irrigation canals facilitates:

● decreasing the dependence of water users on a few water sources irrigation canals;
● improving water supply;
● reducing water losses;
● facilitating water management and maintenance of distribution irrigation infrastructure;
● increasing the fee collection for servicing WUA's members;
● decreasing the number of complains concerning water supply;
● improving on-farm and inter-farm water infrastructure;
● reducing the pollution of irrigation canals; and
● lessening the inefficient releases of irrigation water into drainage systems.

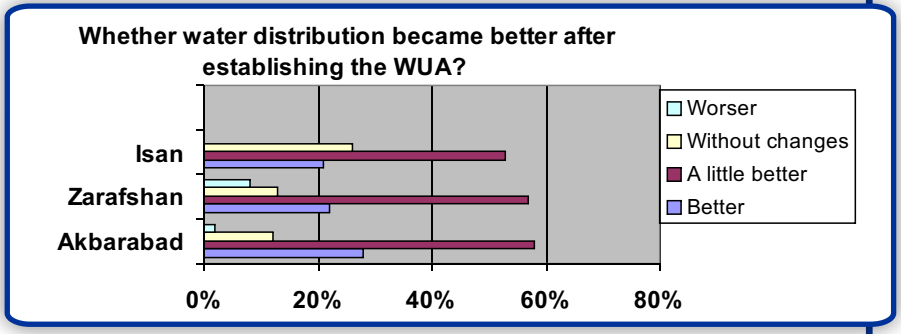
The broad public participation is provided at the level of WUA - the WUA's Council, Arbitral Committee, Auditing Commission, Meetings of WUA's members water users, farmers, and other stakeholders (aksakals, representatives of local authorities, Makhallya Committees, and other executive bodies).

The process of developing WUGs and WUAs within the command areas of the South Fergana Canal (SFC), Aravan-Akbura Canal (AAC), and Khodjia-Bakirgan Canal (KBC) is illustrated in Figures 1,2, and 3.

The routine monthly meetings of Pilot WUAs' directors for the exchange of know-how and experience, which become more and more popular, are useful action for all. Such meetings allow planning and adjusting joint activity, getting acquainted with the advanced experience, and disseminating it over other WUAs. During the last meetings the main attention was being attracted to the organizational issues, fee collection, construction of hydrometric stations and flow-measuring structures etc.

Table 1 Developing WUGs within the command areas of

	Main Canal	WUA	Secondary canals	Number of WUGs	Area, ha
1	South Fergana Canal (SFC)	Zilol Suv Fayzi	Bakhor	1	106
				1	187
			K-7	1	419
		Omad Zilol	May	1	82
				1	201
		Akbarabad	Akbarabad 2	1	153
			RP-1	1	86
				1	104
		Sub-total for the SFC		**8**	**1338**
2	Aravan-Akbura Canal (AAC)	Joypas	Joypas	7	200.61
			Tail Canal	3	98
			Joypas	3	83.6
			KD	7	149.8
		Murza-Adji	Kayirma 2	7	413.8
		Japalak	Bak	2	28.3
			Sokolok	3	72.54
		Jani-Arik	Kura	2	55
			Kanjirga	1	17
		Isan	Outlet canal 4	3	51.68
			Jenish	7	207.52
		Sub-total for the AAK		**45**	**1377.9**
3	Khodjia-Bakirgan Canal (KBC)	Zarafshan	Akkalya	10	453
			Khamdanov	2	68
			Speep Canal	4	261.1
			MKHB	4	162.9
			Leningrad	1	105
		Tochikobod	Outlet canal 7	1	41.44
			Outlet canal 9	1	148.14
			Outlet canal 10	1	119.83
			Outlet canal 11	1	115.24
			Outlet canal 6	1	102.55
			PS Selkan	1	153.52
		Turdibaev	Outlet canal 5	1	122.8
		Sub-total for the KBC		**28**	**1853.5**
	Total			**81**	**4569.4**



Source: Inspection of three pilot WUAs in the Fergana Valley in 2006.
Author: M. Yakubov, the IWRM-Fergana Project, IWMI, 2006

Table 2 Developing of WUAs on the SFC

No	Hydrological unit (HU)	WUAs within the HU	Area, ha	Potential WUAs within the HU	Area, ha
1	Akbarabad	Zilol Suv Fayzi	3,664		
		Omad Zilol	1,789		
		Kuva Onary	734		
		Tolmazor Chasmasi	3,399		
		Guliston Kubbo	3,444		
		Musajon Ismailov	3,102		
		Akbarabad	2,831		
2	Besholish	Khojibek Zoirjonobod	2,507		
				Yakatut	786
				Obiravon	2,009
				Zarturgunboy	4,187
				Umarov	3,297
				Varzak Suv Yullari	630
				Ok Oltyn	4,473
3	Margilon			Bannopov Kodirali	3,643
				Eshonguzar Soy	3,155
				Namuna, Khavasmand, Niezov	2,384
4	Faziobad			Niezov, Otakulov, Okbuyra, Zilol, Zulayho	2,227
				Povilgon Obihaet	1,314
	Total		21,470		28,105

especially under the emergency situations, and lowering the level of water users' dissatisfaction regarding activity of the water management administration. If prior to the transition towards water management based on the hydrological principles the process of coordination and decision-making in case of a disputable situation included the interactions with a few administrations at the provincial and district levels, then now after establishing the CA at all pilot canals the decision-making process became more simple and effective. The conflicts between water users at the boundaries of administrative units practically ceased. As a result of the contracts signed with WUAs, water supply to WUAs along the canal was improved as well (Figure 1). The problems related to water delivery to water users located at tail sections of the canal were settled to a great extent. Water users do not spend the night at the canal as in the past waiting for their turn according to the schedule of water rotation and do not lock the gates of check structures by dozen of locks to avoid unauthorized interference into the process of water distribution.

The distinguishing feature of approaches within the framework of this project is its grounding on available scientific achievements in the water sector. Through establishing the institutions of public participation at all three hierarchical levels (Figure 2) the project promotes the further creating and developing the conditions for sustainable water management. It is quite possible that this new type of the CA will be introduced over the entire territory of former Soviet republics.

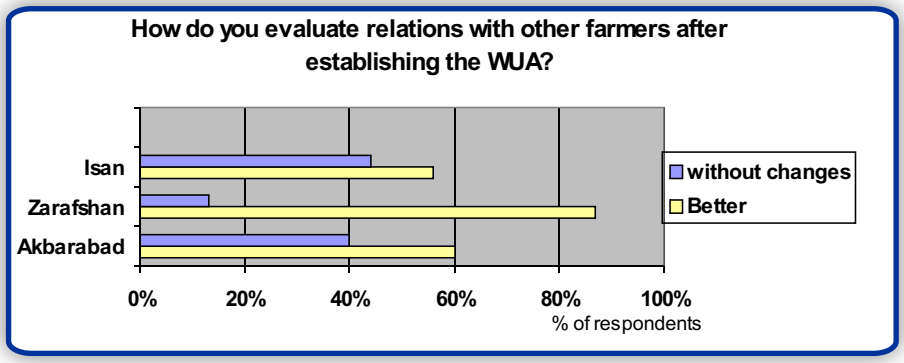
D. Establishing a new organization for management of an irrigation canal the Canal Water Users Union

A new organizational structure in principle for water resources management at the level of an irrigation canal was developed within the project framework. Governmental water management organizations and the Canal Water Users Union (CWUU) through their executive body the Canal Administration (CA), carry out O&M of an irrigation canal jointly. This institutional innovation has enabled improving water management and facilitating considerably water distribution. Initiated organizational measures at the level of irrigation canals (the SFC and KBC) are not perfect for the time being, but meanwhile they successfully operate at the AAC.

The routine meetings with the participation of the Canal Water Users Union have allowed improving the mutual understanding,

E. Establishing the National Project Groups for Coordination and Promotion (NPGCP)

The National Project Groups for Coordination and Promotion that consist of top managers representing different ministries responsible for water resources management were established in the countries participating in the project implementation. These



Source: Inspection of three pilot WUAs in the Fergana Valley in 2006.
Author: M. Yakubov, the IWRM-Fergana Project, IWMI, 2006

groups coordinating project activity are facilitating the political perception of project lessons and methods as well as the dissemination of project results at the national level.

STAFF TRAINING AND DEVELOPING OF TECHNOLOGIES FOR NEW WATER MANAGEMENT ORGANIZATIONS

The Guidelines and Operational Manuals were elaborated by joint efforts of the IWMI and SIC ICWC for each component of water management activity at the levels of an irrigation canal, WUA, and farms. These documents are used as the manuals at all training courses and may be useful for staff training and raising the level of water manager's skill. The Management-Information System was developed for WUAs and the CA; more than 300 training seminars were held at all levels of the water management hierarchy the main canal, WUAs, and farms.

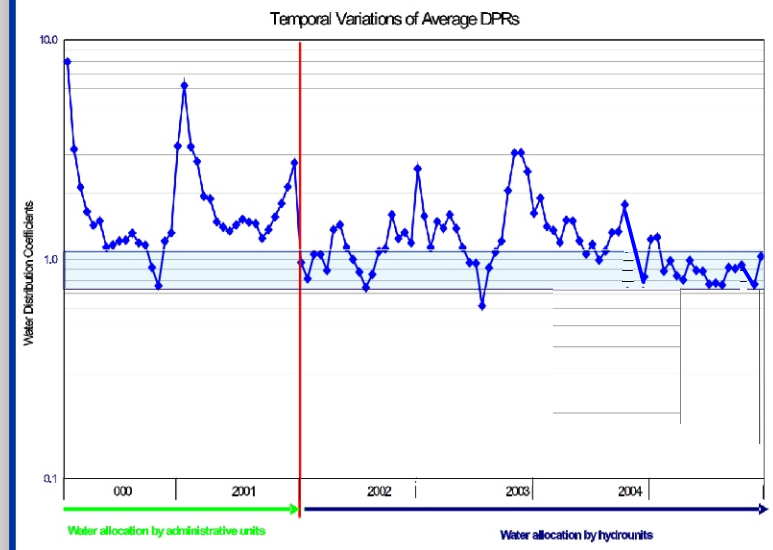
CONCLUSION AND RECOMMENDATIONS

Implementation of the IWRM concept depends on interaction of some interrelated elements and, first of all, on the institutional framework of newly created water management organizations, management tools based on the appropriate scientific-methodological basis, the monitoring and evaluation system (including hydrometric, information and other modules), as well as the supportive state policy, financing, incentives, and legislative system including state normative documents, laws, by-laws, and regulations specifying the order of payments for water services, pollution etc. Thus, the interaction of all IWRM elements is necessary for achieving sustainable, equal, and equitable distribution of water resources.

Table 3 Developing WUAs on the KBC

No	Hydrological unit (HU)	WUAs within the HU	Area, ha	Potential WUAs within the HU	Area, ha
1	HU 1				
2	HU 2	Turdibaev	1,665		
		Zarafshan	1,050		
		Tochikobod	716		
				CF Samadov	1,996
3	HU 3			DF Kasimov	559
4	HU 4			DF Khodjabakirgan	1,338
	TOTAL		**3,431**		**3,893**

Source: I. Abdullaev, J. Kazbekov, M. Yakubov, Kh. Manthrithilaki, and K. Jumaboev: Institutional Reforms at the Main Canal's Level and Their Implication for Water Resources Management (By the Example of the South Fergana Canal, Uzbekistan), Manuscript.



TECHNICAL BRIEF
ISSUE № 1, 2006 г.

A TECHNICAL BRIEF SERIES: "LESSONS LEARNT FROM THE IWRM-FERGANA PROJECT"

This series of technical briefs acquaints a reader with the problems of water resources planning and management within the framework of the IWRM-Fergana Project and new practical approaches to tackle them. The data and assistance of international and national scientific-research institutions that are engaged in water problem studies facilitated the preparation of this brief. The brief is destined for the government officials related to planning and implementing the agrarian and water policy.

The authors welcome your comments, reviews, and questions that can be sent to the addresses mentioned below. At your desire an electronic version of this technical brief may be sent by e-mail, or it can be downloaded from www.iwmi.org/centralasia.

The issues of training related to introducing the IWRM principles would be reviewed in the next brief of this series. The educational system needs to be adapted to new training methods of water specialists with the different level of their professional skill that occupy different posts within the framework of the water management hierarchy. It is necessary to put in practice a new curriculum reflecting the IWRM approaches at all levels of the water management system.

About the IWMI

The International Water Management Institute (IWMI) is a nonprofit scientific-research organization funded by the International Advisory Group for Agricultural Researches and is focusing on the sustainable use of water and land resources in agriculture and on the water needs of developing countries in Asia and Africa. The IWMI works with its partners to develop tools and methods to help these countries eradicate poverty through more effective management of their water and land resources. Its mission is the improvement of water and land resources management for food livelihoods and nature.

About the SIC ICWC

The Scientific-Information Center of the Interstate Coordination Water Commission for Central Asia (SIC ICWC) was established in 1993.

The SIC ICWC is an informational-analytical unit developing the methods and approaches providing the sustainable development of the water sector in CAR, improvement of water management and the environment in the region.

The SIC ICWC is collaborating with the network of scientific and design organizations in five new independent countries of Central Asia, and at the same time it has established the national offices in three countries that, in turn, provide the exchange by scientific information at the national level.

ИУВР - ФЕРГАНА

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The IWMI program is implemented under the umbrella of the ICARDA International Center accredited in Uzbekistan that, together with the IWMI, forms the International Advisory Group for Agricultural Researches.

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