



## **INTEGRATED WATER RESOURCES MANAGEMENT FOR SUSTAINABLE DEVELOPMENT OF UZBEKISTAN**

### **Integrated Water Resource Management and Water Efficiency Plan for Zarafshan River Basin Project**

**Jaco Cilliers**

*Deputy Resident Representative*

**UNDP Uzbekistan**

*Uzbekistan has a long history of irrigated agriculture. Today with continued population growth, industrial expansion, urban development and increased pollution of water resources require innovative approaches to efficient water management and conservation. The Integrated Water Management and Water Efficiency Plan for Zarafshan River Basin project works to promote a balance between economic and social needs and environmental sustainability, with special emphasis on increasing the role of women in managing water resources. The project will contribute to strengthening the legal and regulatory framework and support the integration of water management issues into relevant intersectoral policy frameworks.*

*In this brochure we showcase what the project has achieved to date and hope that this publication will provide you with useful information.*

*I take this opportunity to congratulate the people of Uzbekistan with the forthcoming celebration of the 20th anniversary of the Uzbekistan's independence and to wish peace and prosperity.*

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On field training, Chirchik, Tashkent province (photo is taken by project)

## IWRM PROJECT TO BECOME MODEL FOR FUTURE NATIONAL PLAN DEVELOPMENT

**Vokhidjon Akhmadjonov**  
Deputy Head, Water Balance and Water Saving Technologies Division, Ministry of Agriculture and Water Resources of the Republic of Uzbekistan

Uzbekistan, being a country with the largest irrigated area and biggest population in the region, is the most vulnerable in terms of provision of water resources. Only around 18% of water resources needed to water for country's needs is formed within the country, while the main portion of the requirement is covered at the expense of resources of trans-border rivers Amudarya and Syrdarya. In the recent time, lack of water has become a limiting factor for agricultural development.

Taking in to account growth of population, development of economy, as well as amplifying effect that the climate change has on the rivers' behavior, Government of the Republic is doing everything possible to mitigate negative consequences of lack of water resources. International experience shows that introduction of integrated management principles helps addressing the issues of fair distribution of water resources between different economy sectors, while also taking into account environmental interests. Having taken into account all of the above, the government issued a special Resolution to approve implementation of a joint Ministry of Agriculture and Water Resources and the UN Development Program project on development of IWRM and water conservation plan for Zarafshan river basin. This pilot project will serve as a model for development of the national plan in the future. This is why this project is so important for us, and we will put every effort to successful implementation of this project.

## HOW IT ALL BEGAN OR HISTORY OF THE PROJECT

**Ulugbek Islamov**  
IWRM Project Manager

A history of project development was quite interesting. In March 2006, the Ministry of Agriculture and Water Resources of Uzbekistan submitted a letter to the UNDP with the proposal to implement a joint project on development of a Plan of Integrated Water Resources Management (IWRM) for Uzbekistan. The UNDP's Representative Office had endorsed the proposal of the Ministry and initiated a preparatory project phase aimed at design and agreement of the project document. For this purpose, an interdepartmental working group was established and composed of highly skilled experts from the relevant ministries and departments, who started their proactive and joint work to develop a draft project proposal.

The majority of stakeholders recommended the project designers to identify the project area at a lower level, rather than at the national scale. As a result of discussions and proposals, the working group came to the agreement that the IWRM project should focus on the one of river basins of Uzbekistan.

A number of roundtables and bilateral meetings were organised to discuss the project design and its budget with the stakeholders. Based on the recommendations and suggestions, it was decided that the project design will have three components, covering both the national and basin levels. At the national level, the main goal was to develop a modern legal framework on water management. Development of IWRM and Water Use Efficiency Plan would be implemented on a pilot basis covering a certain river basin, for example, the Zarafshan river basin. Successful outcomes of this activity could be scaled up, if possible, to the national level during the second phase. Following intensive joint work and discussions, the project document was endorsed by all stakeholders.

Upon completion of the preparatory phase, a long process of agreeing the project document was initiated. Finally, on August 30, 2009, the Government of the Republic of Uzbekistan approved the special Resolution on Project Implementation and a composition of the Project Board. On December 24, 2009, the Ministry of Agriculture and Water Resources in partnership with UNDP, organised a meeting with participation of all stakeholders, at which the project launch was announced.



Field visit, Nurobod community in Samarkand province (photo is taken by project)

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## VIEW FROM THE OUTSIDE

### Edwin Ongley Ph.D.

#### International Advisor

When I was first invited to participate in UNDP's IWRM program with the Government of Uzbekistan I was immediately impressed by the amount of background work that had been done on this project. Having worked with many IWRM projects around the world, I can say that the project document is amongst the best that I have seen. It not only reads well, but captures IWRM in a way that many IWRM projects fail to do – for example, many IWRM projects are, in fact, not IWRM at all, but is much more narrowly focused on one or two sectors in water management, or, on the activities of the ministry responsible for water. The project in Uzbekistan crosses all relevant sectors and ministries. My second major impression was the focus on an IWRM Plan that is practical and implementable. Elsewhere, many IWRM Plans are theoretical or impractical, or excessively expensive, or propose major institutional change. In countries such as Uzbekistan where there is high degree of professionalism and cumulative long experience in water management and a cooperative en-

vironment between ministries and departments, there is little need to consider major institutional changes. On the other hand, we should at least look at how some minor shifts in institutional responsibilities can create greater efficiencies and cost savings. We do want to consider how to improve stakeholder and public involvement in water planning decisions, especially at the level of the river basin.

There are four very good reasons for introducing IWRM in Uzbekistan as the primary framework for water management in Uzbekistan. These are: **strategic reasons** that focus on water security for Uzbekistan, **practical reasons** that make water management easier and more efficient, **economic reasons** that produce savings through water use efficiencies AND are likely to encourage international donors to contribute to improvements in water management and, lastly, IWRM produces **social** benefits.

#### Strategic reasons: Water security

*Strengthens our position in regards to upstream countries by demonstrating that that we have own house in order and are not making demands on upstream countries without solid justification.*

*Demonstrating that Uzbekistan can develop and implement modern and cost-effective water management will provide regional leadership and will encourage adjacent jurisdictions to adopt similar measures, thereby bringing their decision process more in line with that of Uzbekistan.*

*Implementation of IWRM is very likely to have a significant impact on donors' willingness to increase support to water and agricultural projects.*

#### Practical reasons

- *A clear water law/code provides a comprehensive legislative framework for all actions involving water.*
- *IWRM improves the process of water management through improved institutional coordination and institutional efficiency.*
- *Water pricing through delivery charges is a tool to change user behaviour.*

#### Economic reasons

- *An effective IWRM program has economic benefits at the basin and national level.*
- *Savings in water and related costs through improved water use efficiency.*
- *Allows the government to make more informed strategic decisions on investments in water infrastructure relative to costs and benefits across sectors.*
- *Very likely to bring more donors to the table as they will see that their investments are part of a comprehensive national IWRM strategy*

#### Social reasons

- *Public and stakeholders are part of the planning and decision-making process*
- *Improved water use efficiency benefits everyone*
- *Increased environmental benefits (improved water quality, healthy ecosystems etc.) benefit the public.*
- *Coordinated water management reduces probability of future conflict as water availability is reduced through climate change, increased consumption, etc.*
- *Facilitates change as government moves from inherited Soviet system to more modern management methods, especially in agriculture.*



Ulugbek Islamov (Project Manager), Elena Avanesova ( interpreter), Nazira Abdullaeva (Admin/Finance Assistant), Edwin Ongley (International Advisor of the project)  
(photo is taken by project)

## ON THE LEGAL FRAMEWORK OF INTEGRATED WATER RESOURCES MANAGEMENT IN UZBEKISTAN



Round table on National Water Law and Water Management principles, Tashkent  
(photo is taken by project)

«...water and other relevant legislation of the country requires further improvement towards introduction of IWRM principles on the national scale»

**Yusup Rysbekov**

*IWRM Project National Consultant for Legal Issues*

The World Summit on Sustainable Development in Johannesburg (2002) called the countries of the world to develop and introduce National plans for integrated water resource management. Uzbekistan among other countries, confirmed its commitment to IWRM principles, including watershed-based principle of water resource management, community involvement into water resource management,

cross-sectoral approach, etc.

What is the situation in the legal framework facilitating IWRM introduction in Uzbekistan? The water policy of the republic is reflected, in particular,

in the relevant Decrees and Resolutions of President and the Cabinet of Ministers of the Republic of Uzbekistan.

In pursuance there of are implemented various water resource-related projects, including those directly related to introduction of IWRM principles (such as “IWRM-FERGANA” in Fergana valley, “IWRM and water efficiency plan for Zarafshan river basin”, etc.). As for the legal framework of introduction of IWRM, we should refer, first of all, to Resolution of the Cabinet of Ministers of Uzbekistan № 320 dd. 2003 “On improvement of organization of water resource management”, which governed revision of WRM organizations structure, transition from administrative-territorial to watershed-based principle of irrigation systems management in the country. In particular, under this Resolution were created 10 Basin Irrigation Systems Administration (BISA) and Main Canals System Management Organization for Fergana valley with United Dispatcher Center.

However, the most significant regulatory and legal provisions regarding introduction of IWRM principles were reflected in the legislation related to introduction of amendments and supplements into the Law of Uzbekistan dd. 1993 “On water and water use” with the Law of Uzbekistan dated 25 December 2009, reference # 240 “On introduction of amendments and supplements into specified legislative acts of the Republic of Uzbekistan to strengthen economic reform in agriculture and water resources”. New edition of the Law of Uzbekistan “On water and water use” is the main legal framework for regulation of water relations and introduction of IWRM principles in Uzbekistan. In particular, the law defines that Association of Water Users (WUA) is a non-governmental nonprofit organization (earlier, WUAs didn’t have this status), and that they are created mainly based on hydrographical principle.

At the same time, water and other relevant legislation of the country requires further improvement towards introduction of IWRM principles on the national scale. These objectives will be achieved under the framework of “IWRM and Water Conservation Plan of Zarafshan River Basin” consisting of three Components, first of which is entitled “Improvement of legislative and organizational structure for integrated water resources management in Uzbekistan”. Analysis of the legislation and development, on its basis, draft Water Code and its adoption, as well as development of IWRM plan for Zarafshan river basin would allow disseminating this experience though out the territory of the republic.



Round table on National Water Law and Water Management principles, Tashkent  
(photo is taken by project)

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## PILOT PROJECT ON WATER SUPPLY IMPROVEMENT IN NUROBOD COMMUNITY

**Ilkhomzhon Fayziev**

*National Consultant on Water Supply*

The second component of the Plan for Integrated Water Resources Management and Water Use Efficiency in the Zarafshan River Basin Project includes development of the Integrated Strategy on Water Supply and Sanitation in the Zarafshan River Basin.

The Strategy is focused on water supply improvement for the people living in the river basin area considering projected water scarcity in the longer run. Therefore, the main emphasis of the Strategy will be on improvement and sustainable quality maintenance of the existing ground water supply systems, reduction of water losses in the water distribution system and promotion of water saving among users. The Strategy is designed to comprehensively explore all investment options in the water supply system, including: (i) improved access to water resources; (ii) increase efficiency of delivered water; (iii) quality improvement of portable water; (iv) protection of groundwater resources; and (v) approaches to ensure financial sustainability of services, and to promote water conservation.

To justify the most important considerations of the Integrated Strategy on Water Supply and Sanitation in the Zarafshan River Basin, the Project has provisions for implementation of a pilot project. The pilot will test the basic strategy options, following which, the recommendations made during its implementation, along with the lessons learned, will be incorporated in to the Strategy.

It is important to note that the pilot project will support establishment of a Water Consumer Association (WCA) in the selected community, thus creating conditions for mobilization of local people for construction, operation and maintenance of the portable water supply system. This approach to implementation of the pilot project would promote sustainable management of the local water supply system.

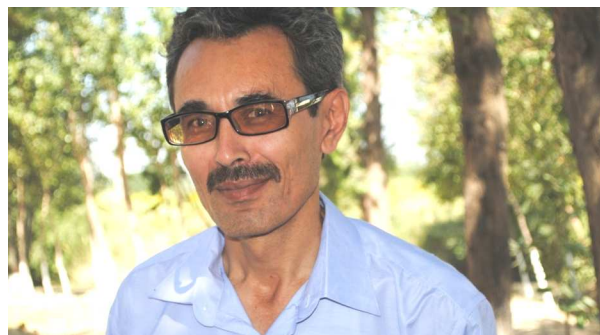
A community Nurobod located in Samarkand district of Samarkand region has been selected as a pilot project area, following the results of the detailed study of feasible options to improve water supply for the rural

population. This community has its own water supply system, however it does not satisfy the growing needs of people in portable water supply. Some part of the population has to use water from imported water sources. Shallow locally made wells are used by population to get water for irrigation purposes.

During preparatory activities, the following aspects have been carefully studied: (i) current status of rural water supply services; (ii) possible sources of water to improve water supply; (iii) community interest in improving quality of their water services and participation in the proposed activities; (iv) possibility of adequate payments for maintenance services related to water supply; and (v) availability of a local sub-investor to provide construction services and subsequent operation of water supply system after completion of the project.

The project will contribute to sustainable rural water supply in Nurobod community of Samarkand district, Samarkand region, with population of 1,185 people, or about 275 households. Active involvement of all stakeholders in construction, operation and further development of the portable water supply system will ensure sustainable development of water supply in the rural area.

Currently, the project design activities are underway, including specification of functions and contribution shares of project partners, as well as announcement of tenders for reconstruction of water supply network in Nurobod community of Samarkand district, Samarkand region.



*Ilkhomzhon Fayziev, National Consultant on Water Supply (photo is taken by project)*



*Field visit, Nurobod community in Samarkand province (photo is taken by project)*

## PILOT PROJECT MEKHNATOBOD-III PUMPING STATION

**Malika Ikramova**

*Manager of the Component*

During preparation of the Strategy of “Improving Water Use Efficiency in the Energy Sector and Pumping Power Efficiency to Reduce Water Supply Cost”, need for a more detailed study of identifying technical and operational issues, finding the root cause and identifying options to rectify them emerged.

To study these issues, it was decided to implement a pilot project. Jointly with experts of the Ministry of Agriculture and Water Resources,

several options in Zarafshan river basin were looked into. As a result, Mekhnatobod-3 pumping station (PS) and its water distribution system located in Pastdargom district were selected. This is a typical pumping station used in the country’s water resource infrastructure system. In total, there are about 500 pumping units of this type, covering irrigated area of more than 1 million hectares.

The water is sourced from Eski-Anchor channel, the discharge of which is 60m<sup>3</sup>/sec. The area attached to the PS is 2164 hectares, out of which, 1864 ha is located in Pastdargom and 300 ha in Nurobod districts. Out of the total arable land, 90% is under cotton and grain crops, while the remaining part is under orchards, vineyards and vegetables.

« ... rehabilitation of this pilot project will restore more than 150 hectares of farms which have been withdrawn due to lack of water».

«Preliminary calculations show that the annual water supply will increase approximately 3.5 million m<sup>3</sup>, operating costs decrease more than 82.7 million sum, and farms’ income (38 farming enterprises and 240 farmers) will increase by 395 million sum»



Field visit, Mekhnatobod III Pumping station (photo is taken by project)

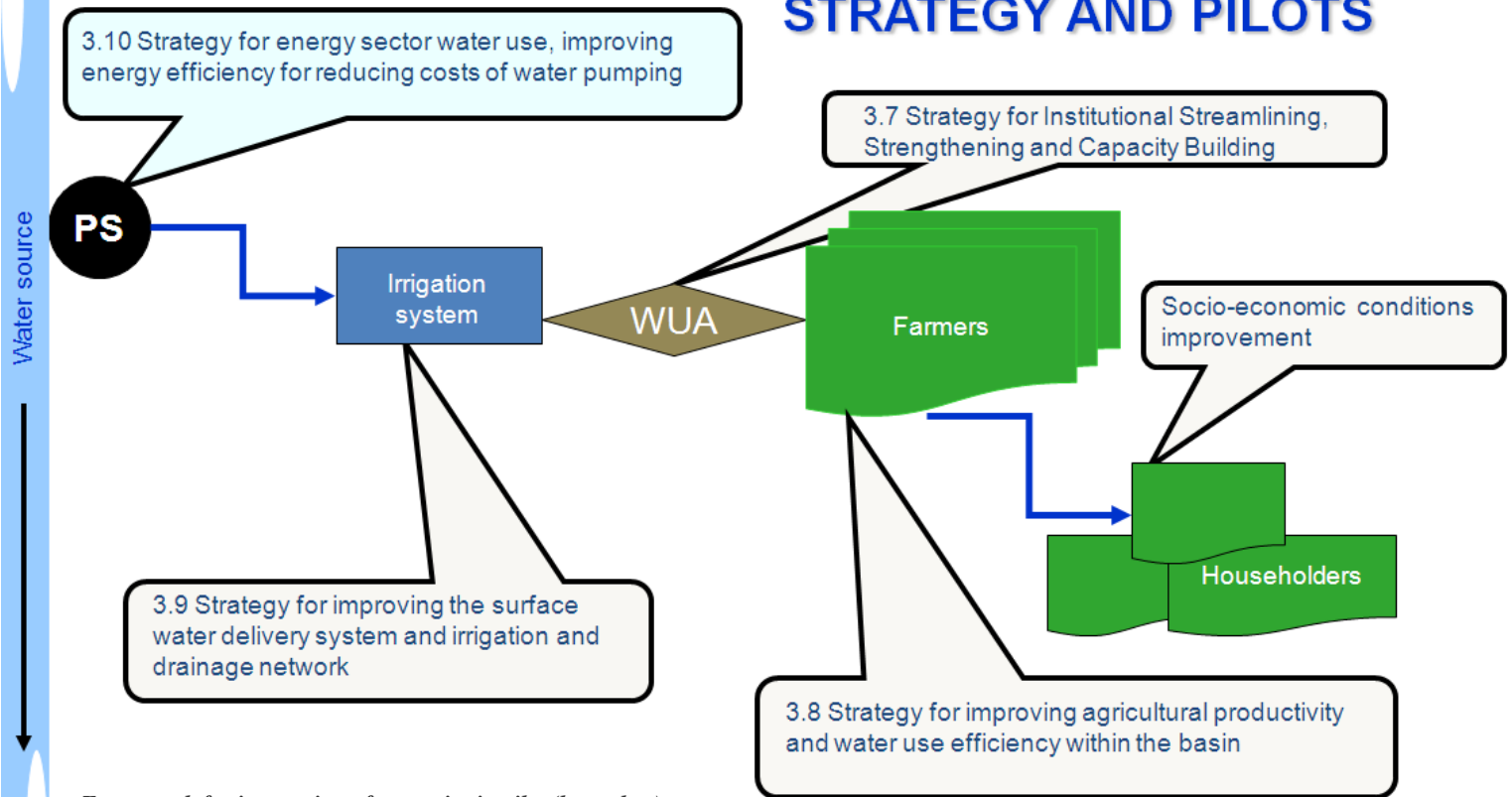


Eski Anchor canal (photo is taken by project)

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## STRATEGY AND PILOTS



Framework for integration of strategies in pilot (by author)

The study revealed that low efficiency of water use in this territory is caused by three factors, namely: facilities reaching end of their life, outdated equipment and loss of water in the channels; low efficiency of water delivery process management is caused by the absence of a modern control system, etc.

Following list of reconstruction and rehabilitation activities was defined during discussion with the local experts:

- Rehabilitation of pumping station system (intake chamber renovated, force main repaired);
- Renovation of the receiving basin;
- Rehabilitation of the irrigation system (building of channel, repair of the discharge outlet and their equipment with shutters and water meters).

Performing these activities would lead to improved equipment operation conditions thanks to clarity of water fed by the pumps. Equipment downtime would reduce, power and maintenance costs would decrease, unproductive water consumption from the discharge line and irrigation system would decline, system efficiency coefficient would increase and control and accounting of water delivery would improve.

To implement planned activities, which were approved by the Ministry of Agriculture and Water Resources, the

process of drafting of working project and estimate documents was started. Process of monitoring of operation of PS Mekhnatobod-3 (analyzing and tracking time of fail-free operation of equipment, downtime, repair, maintenance and spare parts costs, electric power costs, performance, water consumption, etc.), operation of WUA "Progress-Nur", as well as of farming enterprises and dekhkan households whose land is located in the area covered by the PS was organized.

Population and farmers outreach aimed to improve their knowledge on efficient water resource management, as well as water- and energy conservation, improvement of water control and accounting, as well as sparing operation of facilities was started.

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Population and farmers outreach aimed to improve their knowledge on efficient water resource management, as well as water- and energy conservation, improvement of water control and accounting, as well as sparing operation of facilities was started.

## FIELD VISIT TO THE PROJECT AREA IN THE ZARAFSHAN RIVER BASIN

**Gaukhar Kudaybergenova,**  
*Training, Education and Outreach Specialist*

Integrated Water Resources Management and Water Efficiency Plan for Zarafshan



Meeting with Nurobod community members in Samarkand province  
(photo is taken by project)

River Basin (IWRM) - a joint project of the Ministry of Agriculture and Water Resources of Uzbekistan and the UN Development Program - organized a field visit to the project area in Samarkand province on July 29-31, 2011. Participants were representatives of the Ministry of Agriculture and Water Resources, Ministry of Finance, Ministry of Economy, the State Committee of Uzbekistan for Nature Protection, Centre of Hydro-Meteorological Service, Institute GIDROINGEO, "Uzcommunkhizmat" Agency, "Uzbekenergo", Institute of Water Problems and Ecological movement.



2nd Project Board Meeting, Samarkand  
(photo is taken by project)

Through meeting with the staff of the pumping station "Mekhnatobod III" in Pastdargom district, local households, farmers and discussion with local authorities about chronic water

common in other areas of the river basin. After discussions with community members, participants noted the potential benefits from project implementation, which will result in a timely delivery of water to farms and households, energy efficiency, decrease of operation and maintenance costs, water saving and improved welfare of local community.

Field visit was followed by a Project Board Meeting, where participants learned about the intermediary results and further plans of the project. In his presentation, Mr. Ulugbek Islamov, project manager, stressed that "IWRM is a long-term process, which will require political will, in-depth understanding and application of IWRM principles, consistent steps and active participation of all stakeholders".

Further, project staff presented their plans about rehabilitation of the pumping station and its water distribution system, raising awareness of local communities about effective water management and energy saving techniques with special emphasis on increasing the role of women in managing water resources. Additional presentations were made on the gaps in the water legislation, draft of a new water code, and objectives and implementation methodology of Environmental Strategy. «We hope IWRM project will lead to concrete results which people of Uzbekistan can benefit from» - said Mr. Jaco Cilliers, UNDP Deputy Resident Representative in conclusion of the Project Board Meeting.

This field visit is an important step in sharing the project success, encouraging stakeholders to take part in IWRM activities and increasing their sense of ownership.



Meeting in Elbek community of Samarkand province (photo is taken by project)

shortages, participants improved their understanding of present issues in the project area, which are



Photo is taken by project

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## ISSUES OF EQUITABLE PARTICIPATION IN WATER RESOURCE MANAGEMENT

**Gaukhar Kudaybergenova,**  
*Training, Education and  
Outreach Specialist*

In Uzbekistan, like in the rest of the world, life of women is closely related with water. In rural makhalla, a woman's morning starts from taking care of the children, cooking and attending to the home. Delivering water to the home is one of the more important duties, most of the time performed by women. Woman with buckets in the streets of makhalla is a usual sight. It's good if the source of water is nearby. Otherwise one has to walk to the water source and then back, sometimes after waiting for her turn in the line.

Dublin Statement (1992), approved by more than one hundred countries, acknowledged that women play a central part in provision, management and protection of water resources. This provides for the central role of women as water suppliers and users, as well as keepers of living nature, which is something that needs to be reflected in institutional activities on water resource management and development.

Sustainable management of water resources is possible under condition that gender factors are respected, meaning:

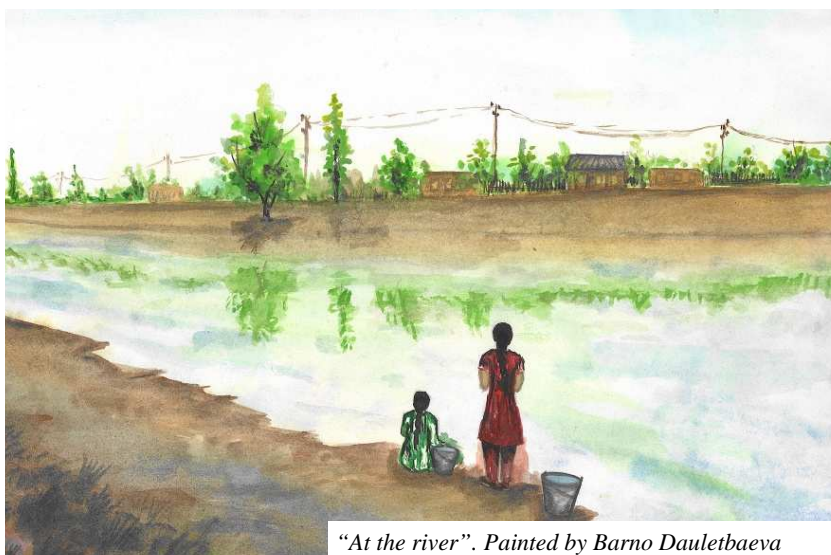
- Positions, roles and responsibilities of men and women, as well as other social groups are taken into account
- Continuous review of the needs, roles, abilities, as well as benefits and burden carried, from the position of women and men, youth and elderly people, etc.

Introducing gender aspects into water resource management requires that three elements are taken into account. Each of the elements facilitates project effectiveness:

1. Each initiative is to include measures aimed at acknowledging the differences and relations between men and women in each separate situation (gender analysis);
2. On the basis of such analysis, all initiatives should include opportunities for men and for women, consider their needs and interests and, where applicable, facilitate promotion of women;
3. Participatory approaches should be used, facilitating equitable participation of men

and women (especially at the decision making level).

It is important to pay special attention to the need of activities that would create condi-



*"At the river". Painted by Barno Dauletbaeva*

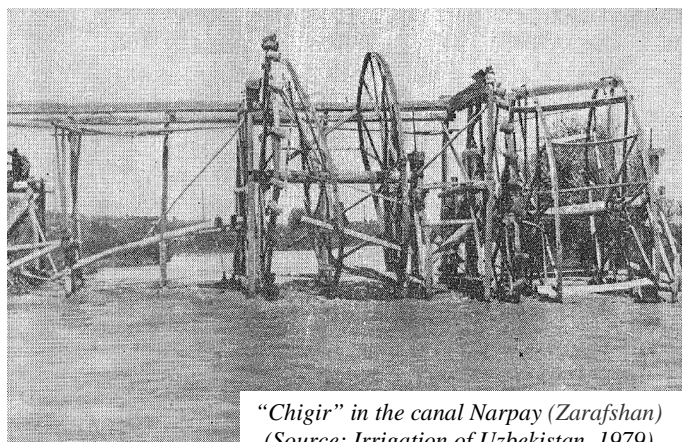
tions for women to realize that their participation is essential for water resources management at the local level. (Based on UNDP Resource Guide: mainstreaming gender in water management)

*«...women play a central  
role in provision,  
management and  
protection of water  
resources»*



*Photo by Vladimir Jirnov*

## PAST AND CURRENT DEVELOPMENT OF IWRM



"Chigir" in the canal Narpay (Zarafshan)  
(Source: Irrigation of Uzbekistan, 1979)

**Bakhodir Mirzaev**  
Water  
Resources  
Management  
Specialist

The some principles of IWRM practices from historical times till present and its development as concept have passed through

several stages and evolution. Overall, ancient irrigation system of Aral Sea Basin proved inherently more stable from an ecological, political, social, and institutional perspective than that of any other irrigation-based society in human history.

There can be distinguished four main stages in the evolution of IWRM and it occurs along an uninterrupted pathway and overlap considerably (UN Water Virtual Learning Centre):

- 1) The Sectoral Approach -1820 to 1950s;
- 2) The Cooperative Approach -1960s and 1970s;
- 3) Management-oriented IWRM -1980s;
- 4) Goal-oriented IWRM -1990s to present.

In this context just back to beginning of 1800s, in Central Asia, native agriculture consisted of both dry and irrigated farming. Dry farming' and pasture management was carried out on the foothills and lower slopes of the mountains. However, in the 1860's began industrial development, extensive irrigation works were in operation along the lower Amu Darya River, Zarafshan, and Fergana Valley. In the region traditional irrigation techniques were remarkably successful considering the materials and tools available at the time. In areas where the water level in the rivers or

in the main canals lay too far below ground level to permit direct flow in the irrigation system, the "chighir", or irrigation wheel was used (Matley 1970). That was sustainable approaches and oldest principles of the IWRM which last with industrial boom.

IWRM has gone beyond the traditional description of the resource and integrating or balancing demand. The concept now embodies integration across sectors, integration of use, integration of demand, integration with the environment, and integration with the people (UN Water Virtual Learning Centre).

There is no single solution that fixes all problems related with water. **Progress may be slow - Have patience.** Past experience shows from different developed countries that implementation of IWRM is a process that could take several decades. Success in some areas may be accompanied by continuing challenges in others. Certain goals such as full economic sustainability and reconciling human water needs with the needs of ecosystems

will require substantial changes to current practice and culture, and will therefore take even longer to achieve. Given the short-term focus of politicians and policymakers in most areas, there is always the temptation to seek quick solutions and abandon the IWRM process if immediate gains are insufficient. But persistent, patient progress on multiple fronts is necessary to achieve the ultimate goals of IWRM (Xie 2006). (To be continued... next issues)

### Definition of IWRM used by UNDP, 1991:

*"IWRM is necessary to combat increasing water scarcity and pollution. Methods include water conservation and reuse, water harvesting, and waste management. An appropriate mix of legislation, pricing policies and enforcement measures is essential to optimise water conservation and protection"*

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### What is IWRM?

*'Integrated water resources management is a process which promotes the coordinated development and management of water, land and related resources in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems' (Global Water Partnership 2000).*

### Water Management Principles

At the International Conference on Water and the Environment (ICWE), held in Dublin, Ireland in 1992, over 500 participants representing 100 countries and 80 international organizations and NGOs, the following principles were recommended to guide global water management and development efforts:

**Principle 1 "Ecological":** Fresh water is a **finite and vulnerable** resource, essential to sustain life, development and the environment.

**Principle 2 "Institutional":** Water development and management should be based on a **participatory** approach, involving users, planners and policy-makers at all levels.

**Principle 3 "Gender":** Women play a central part in the provision, management, and safeguarding of water.

**Principle 4 "Instrument":** Water has an **economic** value in all its competing uses and should be recognized as an economic good.



## WATER USE EFFICIENCY IN ZARAFSHAN RIVER BASIN: ENVIRONMENT, DATA MANAGEMENT AND EDUCATION

**Malika Ikramova**

*Manager of the Component*

There are over 6 million people living in the Zarafshan river basin. Their food security depends on crop production on the area of more than 550 thousand hectares of irrigated lands, which require sufficient water availability. Along with that, other sectors among which energy, public utilities, industry and environment, also depend on water availability to meet their water needs. The integrated water resources management (IWRM) is specifically aimed at meeting of the water requirements of all the above-mentioned sectors.

Currently, the project activities are going on to prepare the following strategies: (i) environmental strategy; (ii) improvement of data management (data collection mechanisms, data processing and dissemination of information to make informed decisions); and (iii) education, communication and outreach.

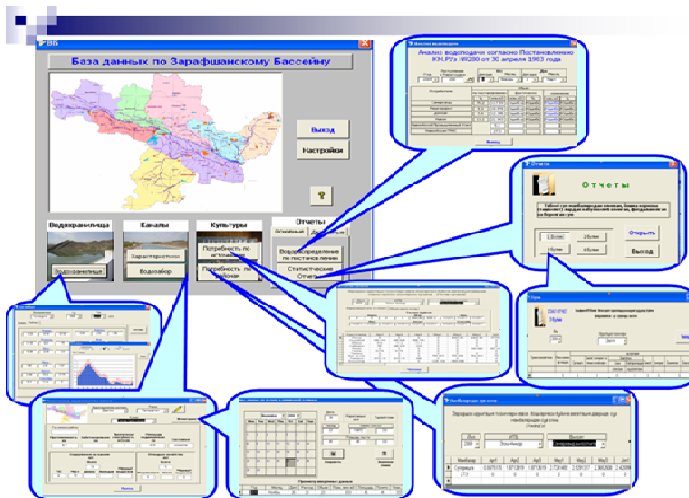
The Environmental Strategy aims at improvement of the environmental water flow rate through development of a comprehensive and practical environmental strategy to be consistent with the IWRM, acceptable to the government, and implemented as part of the IWRM Plan within next 10-20 years. The appropriate activities will be developed to improve the environment, including compliance with the environmental flow rates, as well as quality improvement of both surface and groundwater, restoration and conservation of biological diversity. The selected team of highly qualified local specialists have started studying the current environmental situation in the river basin, and reviewing completed activities and implemented projects aimed at environmental issues, and specifically at land and water quality. The Strategy on Improved Data Management is focused on improvement of data collection, their processing and dissemination of information to

make informed decisions. This will be developed through the joint efforts of specialists from the Central Asian Research Institute SANIIRI having many-year experience in this area. The relevant specialists have started reviewing of the current situation with information security in the basin and its management mechanisms.

The aim of the Strategy on Education, Communications and Outreach is to make impact on the wider population in terms of changing people's attitude towards water as an exhaustible natural resource. The Strategy includes several activities to increase public awareness and inform the decision makers about the content of the IWRM in Uzbekistan in general and in the Zarafshan river basin, in particular. The outreach



*2nd Project Board Meeting, Samarkand  
(photo is taken by project)*



*Sample of Data Base on Zarafshan River Basin*

particularly applies to those facilities with complex electro-mechanical equipment and automated control systems being under construction, reconstruction and modernization with use of loan funds from the International Financial Institutions.

Within the frameworks of this section, it is planned to develop activities aimed at capacity building of water specialists of both middle and senior levels, to familiarize them with the latest achievements in the field of land and water management, irrigation, drainage, and environment. To assist in enhancing of the capacity building activities, it is proposed to launch a pilot project at the Advanced Training Centre under the Tashkent Institute of Irrigation and Land Reclamation, which will strengthen the Centre, increase its capacities and facilitate its further development.

strategy will be designed for a short-term (3 years) and long-term (4-10 years) periods. The strategy will include estimation of the basic costs of each component and staffing requirements.

It is equally important to train specialists in the areas of water management and operation of hydraulic structures and canals. This

## ZARAFSHAN RIVER BASIN

The Zarafshan river basin is part of the Aral Sea basin and originates from the glaciers in Tajikistan and flows into Uzbekistan. The catchment of the Zarafshan River has an area of approximately 143,000 km<sup>2</sup>. The Uzbek part of the catchment alone covers an area of 131,000 km<sup>2</sup> (90%). River basin is home to approximately 6 million people, 64% of which are rural population.

The Zarafshan originates at 2750 m above sea level in the Hissers mountains of northern Tajikistan and flows the first 300 km on Tajik territory and ends after a total length of 870 km in the Bukhara region, in Uzbekistan. In olden days the Zarafshan was a tributary to the Amu Darya. Due to the utilization of the Zarafshan for irrigated agriculture and due to the expansion of the irrigated area, the Zarafshan neither reaches the Amu Darya nor Bukhara today.

The long term average run off of the river is 5.91 km<sup>3</sup>/year, of which only 0.76 km<sup>3</sup>/year are formed in Uzbekistan. Currently 85% of water resources of the basin are used in irrigation, 11% is used for hydropower production and thermal power plant cooling purposes. Communal services consume 1%, industry consumes 3%, and fisheries and other uses consume less than 1%. The river is currently over-allocated with an average annual water deficit of 1.3 km<sup>3</sup>. The difference between annual runoff of 5.91 km<sup>3</sup> and the annual surface water consumption of 6.6 km<sup>3</sup> is met through recycling of untreated return flows. (Sources: UNDP, 2007, *Integrated Water Management and Water Efficiency Plan for Zarafshan River Basin Project Document*. NBT, 2010, *Review of Existing Water Resources Management Arrangements in Zarafshan River Basin*)

## GENERAL WATER FACTS

Because 70% of the Earth is covered by water, it is called the 'Blue Planet'.

Yet only 2.5% of the world's water is freshwater, while 97.5% is oceans.

Only 0.3% of the world's freshwater is available from rivers, lakes and reservoirs; 30% is groundwater, while the rest is stored in distant glaciers, ice sheets, and mountainous areas – all places that we can hardly access.

About two thirds of the human body is water. Some parts of the body contain more water than others. For example, 70% of your skin is water.

You can survive about a month without food, but only 5 to 7 days without water.

Most of our food is made up of water: tomatoes (95%), spinach (91%), milk (90%), apples (85%), potatoes (80%), and beef (61%).

More than half of the world's animal and plant species live in an aquatic environment.

Within 25 years, half the world's population could have trouble finding enough freshwater for drinking and irrigation.

Currently, over 80 countries, representing 40% of the world's people, are subject to serious water shortages.

Conditions may get worse in the next 50 years as populations grow and as global warming disrupts rainfall patterns.

A third of the world lives in water stressed areas where consumption outstrips supply.

These and other Water Facts can be found on the Environment Canada website:

[http://www.ec.gc.ca/water/en/nature/prop/e\\_facts.htm](http://www.ec.gc.ca/water/en/nature/prop/e_facts.htm)



*"Chigir" in Kashkadarya province (photo is taken by project)*



*Water distribution structure, Samarkand province (photo is taken by project)*



*Canal Eski Anchor, Samarkand province (photo is taken by project)*

### Project Duration:

January 2010 - January 2013

### Total Budget:

USD 1,205,451

UNDP:

USD 1,136,165

SDC:

USD 23,080

Government (in kind):

USD 46,206

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*"This project is one of the most complex and, at the same time, promising projects implemented by UNDP in Uzbekistan. Shall the project succeed in providing visibility to all the benefits of integrated water resource management approach, this would create great opportunities for introduction of IWRM approach throughout the country. This, in turn, would directly facilitate improving livelihoods of millions of Uzbekistan people, especially those living in the rural areas".*

**Ziyodullo Parpiev, Advisor-Economist, UNDP Uzbekistan**



**The views expressed in this newsletter are those of the authors and do not necessarily represent the views of UNDP**